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ARTICLE



# Same behavior, different provider: American medical students' attitudes toward reporting risky behaviors committed by doctors, nurses, and classmates

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**ABSTRACT**

The bioethics literature lacks findings about medical students' attitudes toward reporting risky behaviors that can cause error or reduce the perceived quality of health care. A survey was administered to 159 medical students to assess their likelihood to directly approach and to report various providers—a physician, nurse, or medical student—for three behaviors (poor hand hygiene, intoxication, or disrespect of patients). For the same behavior, medical students were significantly more likely to approach a classmate, followed by a nurse and then a doctor ($p < .0001$), to ask for behavioral modification. Across all three health care provider types, medical students were most likely to report intoxication ($p < .0001$). Medical students' willingness to approach or report a provider for a risky or unprofessional behavior is influenced by the type of health care provider in question. Medical schools should implement patient safety curricula that alleviate fears about reporting superiors and create anonymous reporting systems to improve reporting rates.

**KEYWORDS**

health policy; medical humanities; professional ethics; social science research; health care delivery

The American Medical Association (AMA) Code of Medical Ethics defines medical error as an "unintended act or omission or a flawed system or plan" that may pose a risk to a patient's safety (AMA 2017). Recent estimates place medical error as the third leading cause of death in the United States,suggesting an increasing need to prevent, easily identify, and remediate such errors when they do arise (Makary and Daniel 2016; Bates et al. 2009; Leape 2002). Common medical errors include medication errors, hospital-acquired infections, errors in teamwork, and diagnostic errors (Pham et al. 2012). Not only are such mistakes harmful to patient health and safety, they are also implicated in billions of dollars lost annually in the United States (Thomas et al. 1999). However, medical errors are not the only aspect of patient care that can lead to poor outcomes; the AMA Code of Medical Ethics also states that physicians must adhere to a high quality of health care delivery that includes effective communication and promotion of patient safety(AMA 2017). The AMA encourages peer review and reporting systems in order to reduce medical error and improve the quality of health care delivery by physicians(AMA 2017). Despite the AMA's encouragement of physicians to report and review the behaviors of their peers, disclosure rates are low. Previous studies have shown that the majority of physicians would hypothetically disclose major or minor medical errors, but a significantly smaller number actually had reported similar errors in the past, either to patients or to an institutional safety department (Kaldjian et al. 2008; Kaldjian et al. 2007; Mazor, Simon, and Gurwitz 2004; Mariner 2001). A similar trend has been identified for reporting of physicians who are impaired on the job or who are incompetent (DesRoches et al. 2010). Low error disclosure rates among physicians have been corroborated by a finding that the most common reporters were nurses rather than resident physicians or attending physicians, owing to more time that nurses spend directly involved with patient care (Osmon et al. 2004) Among health care providers, common reasons for poor reporting include lack of time, fear of punishment, and fear of peer disapproval (Mariner 2001; Cullen et al. 1995).

The literature lacks evidence of medical students' attitudes toward reporting errors or questionable behaviors by physicians, nurses, and fellow classmates. Medical students, particularly in their final 2 years of training, spend a significant amount of time directly involved with patient care, learning from and observing various health care providers. Thus, they play an instrumental role in patient safety and should report behaviors that may lead to errors or that may be perceived as unethical or inappropriate in the practice of medicine. While a single study found that 38% of Canadian medical students would be willing to approach someone performing an unsafe behavior in a clinical setting, 85% of the students also said that it would be difficult for them to question authority (Doyle et al. 2015). A similar study with a small sample size ($n = 92$) in the United States found that even after participating in an educational curriculum, only about half of medical students who observed an error reported it to a resident or faculty member (Madigosky et al. 2006). The complex hierarchy in medicine may contribute to students' fears of speaking up when they notice questionable behaviors (Lempp and Seale 2004), but no study has characterized how differences in authority among different health care providers influence students' likelihood to report.

To our knowledge, this is the first study that characterizes the reporting attitudes of American medical students toward a

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health care provider performing an inappropriate or error-prone behavior. Despite the complex hierarchy of authority in the hospital, and with course evaluations and future careers at stake, medical students should not exhibit differences in their likelihood to report a physician, nurse, or classmate for the same behavior. Understanding medical students' attitudes toward reporting certain health care providers and certain behaviors, as well as the reasons that may contribute to poor reporting rates, will allow for the development of interventional educational curricula to promote patient safety and quality health care delivery.

## Methods

### Study design

The study was conducted during May and June 2016 at the University of California, Irvine School of Medicine under institutional review board approval. At the University of California, Irvine School of Medicine, there are electronic anonymous reporting systems in place that students are informed of during their third-year orientation, and that can be used to report not just personal conflicts with attendings, residents, and other health care providers, but also errors or unethical behaviors. An electronic survey was developed via REDCap and e-mailed to all current medical students to assess their responses to three hypothetical scenarios in which different medical providers—either attending physicians, nurses, or fellow medical students—committed an act that could lead to medical error. In order to control for each hypothetical scenario, students were presented with the same scenario three times but with a different provider involved each time. All scenarios were worded so as to remain gender neutral. The scenarios are described as follows:

> Scenario 1: You are a medical student completing a rotation in your institutional hospital's Intensive Care Unit. While participating in rounds, you notice that *(physician/nurse/medical student)* did not wash his/her hands prior to and after interacting with several patients. As you learned during your medical education, hand hygiene is critical to preventing the spread of potentially deadly infections in the hospital, and you are concerned for the safety of the patients in the unit.

> Scenario 2: You are a medical student completing a rotation in your institutional hospital's surgery department. Upon discussion with a *(physician/nurse/medical student)* prior to his/her procedure, you smell alcohol on his/her breath. You are concerned that the *(physician/nurse/medical student)* is intoxicated at work.

> Scenario 3: You are a medical student completing a rotation at an out-patient facility. On several encounters, you notice that the *(physician/nurse/medical student)* is consistently disrespectful to patients, using a mocking tone when discussing their illnesses. You are concerned that his/her behavior is negatively impacting interactions with patients.

Upon being presented each scenario, students were asked how likely they would be to approach the provider and ask him or her to modify the behavior—practice proper hand hygiene, not participate in the surgical procedure, or practice more empathy and respect toward patients—on a 7-point Likert scale from "very unlikely" to "very likely." Students were also asked how likely it would be for them to report this behavior to the hospital's safety (or equivalent) department, again on a 7-point Likert scale. Those students who reported a response of "very unlikely," "moderately unlikely," or "somewhat unlikely" for the latter question were additionally asked what were some reasons why they would be unlikely to report the offense. Finally, students were asked whether they had experienced an unethical violation by a physician, nurse, or medical student, and whether they in fact reported that behavior.

### Study participants and recruitment

All current medical students who were present in the University of California, Irvine School of Medicine's e-mail database were sent a standardized REDCap email with study information and a link to a consent page in addition to the survey instrument. Four follow-up e-mails were sent, each week for 4 weeks, to remind the students about the study and the opportunity to participate. Students were informed about the voluntary nature and anonymity of their responses. As an incentive for completing the questionnaire, students were entered in a raffle for an Amazon gift card; students' contact information for raffle entry was automatically separated by REDCap in order to preserve anonymity of responses. In total, 439 students were e-mailed, and 159 took the survey (36% response rate). Due to the low response rate, this study cannot be used to make generalizations about University of California, Irvine School of Medicine medical students, nor can it be generalized to medical students in the United States; however, the results do allow for the formation of hypotheses about student perceptions of reporting behaviors.

### Data analysis

Data were analyzed using Excel, and responses to Likert scale data were reported as means ± standard deviations. In order to determine whether there were significant differences in students' likelihood to approach a health care provider and to report a behavior if the provider in question were a physician, nurse, or medical student, two-tailed paired-sample *t*-tests were performed on the response data. Paired-sample *t*-tests were also performed to determine whether there were significant differences in the students' likelihood to approach a health care provider and to report a behavior among the three hypothetical scenarios. As such, four a priori hypotheses were tested, and within each hypothesis nine paired-sample *t*-tests were performed.

To account for multiple comparisons and reduce the likelihood of false-positive results, hypothesis testing was conducted using Bonferroni adjusted alpha levels of .0014 (.05/36). It is important to note that not every student provided a response to every single question in the survey instrument, so only completed responses were considered for each paired *t*-test. Additionally, we provide descriptive statistics for reasons why students would not report behaviors, as well as for students' past experiences with observing unethical behaviors and reporting them.

## Results

In total, 159 medical students at the University of California, Irvine School of Medicine

participated in the study, with a mean age of 27.1 across 9 different years of study, including students completing additional degrees (PhD and/or master's degrees) (Table 1). Paired-sample *t*-tests of each of each of the three scenarios revealed significant differences between the likelihood of students to approach a physician, nurse or student (see Figure 1). Regardless of the hypothetical scenario, students were most likely to approach a fellow medical student, followed by a nurse, and then a physician, to ask him or her to modify the behavior.

Paired-sample *t*-tests of each of each of the three scenarios also revealed some significant differences between the likelihood of students willing to report a physician, nurse or student (see Figure 2). For the hand hygiene scenario, students were significantly more likely to report a nurse over a physician over a student but not more likely to report a nurse compared to a student. In the intoxication scenario, students were as likely to report physicians, nurses, and a student. In the disrespect scenario students were most likely to report a fellow medical student, followed by a nurse, and then a physician.

Next we applied paired-sample *t*-tests to see whether students were more or less likely to report physicians or nurses across the three scenarios (see Figure 3). Students were significantly more likely to approach a physician for intoxication than for a hand-hygiene violation, and for intoxication more than for disrespect, but there were no differences in the likelihood to approach a physician for a hand-hygiene violation versus disrespect When the provider was a nurse, students were significantly more likely to approach him or her for intoxication than for a hand-hygiene violation, but no other significant differences were found. Finally, when the health care provider was a fellow medical student, there were no significant differences in approaching him or her for any of the violations.

Finally, we looked across each ethical scenario and found significant differences between the likelihood of students to report physicians, nurses and fellow students (see Figure 4). Regardless of the health care provider committing the behavior, students were more likely to report intoxication, followed by disrespect, and then a hand-hygiene violation.

**Table 1.** Demographic characteristics of medical students ($n = 159$).

| Age (years), | |
|---|---|
| mean ± SD | 27.1 ± 5.6 |
| Gender, % (*n*) | |
| Female | 56.6 (90) |
| Male | 43.4 (69) |
| Medical school year, % (*n*) | |
| 1 | 34.6 (55) |
| 2 | 10.7 (17) |
| 3 | 26.4 (42) |
| 4 | 20.8 (33) |
| 5 | 0.03 (5) |
| 6 | 0.01 (1) |
| 7 | 0 (0) |
| 8 | 0.01 (1) |
| 9 | 0.01 (1) |
| No response | 0.03 (4) |

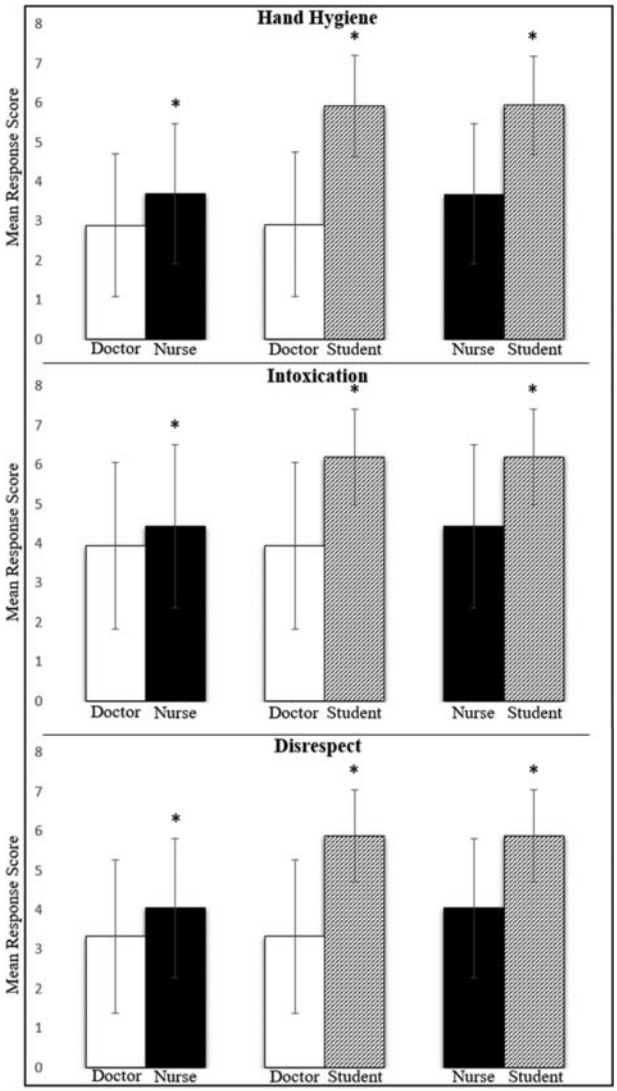


**Figure 1.** Comparing students' likelihood to approach each health care provider for a behavioral offense when controlling for the behavior. Paired-sample T-test comparisons. Asterisks indicate statistically significant differences ($p < .0014$).

Descriptive statistics of student responses revealed that fear of retribution and fear of being identified were the two most common reasons why students would not report a behavior, and this trend was found across all three ethical scenarios regardless of health care provider. Descriptive statistics also revealed that while many students may have observed an unethical behavior by a health care provider, few actually reported that behavior. While 31 respondents (19.6%) encountered a physician acting unethically, only 4 of them (12.9%) actually reported the behavior. Additionally, 18 respondents (11.4%) encountered a nurse acting unethically, yet only 3 (16.7%) reported the behavior. Similarly, 18 respondents (11.4%) encountered a fellow classmate acting unethically and only 3 (16.7%) reported the behavior.

## Discussion

Medical students have the potential to play critical roles in the safety and quality of health care delivery. To our knowledge, this is the first study that analyzes how American medical

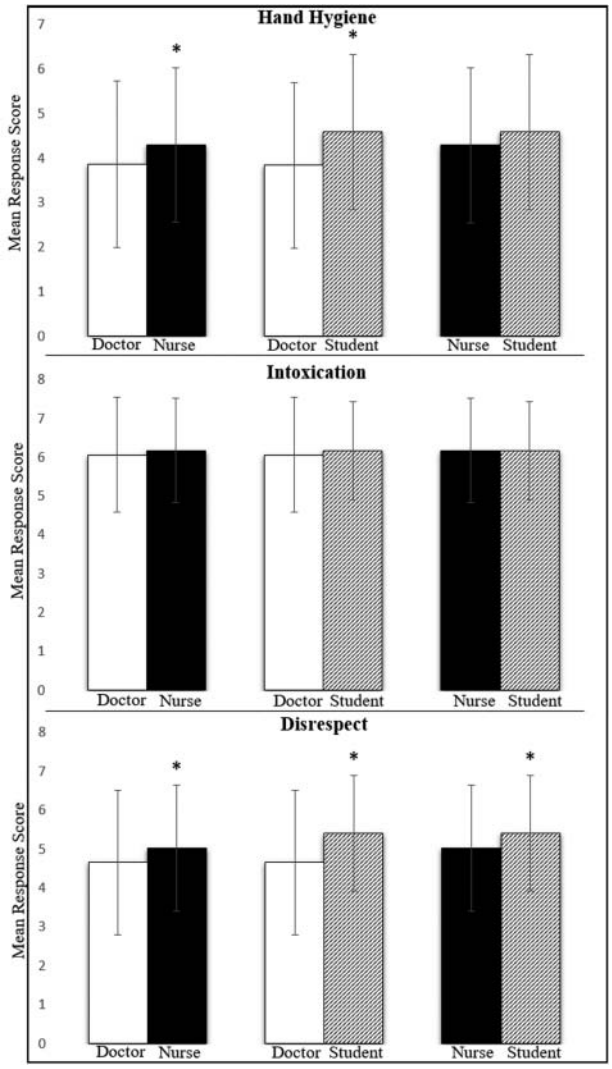


Figure 2. Comparing students' likelihood to report each health care provider for a behavioral offense when controlling for the behavior. Paired-sample *t*-test comparisons. Asterisks indicate statistically significant differences ($p < .0014$).

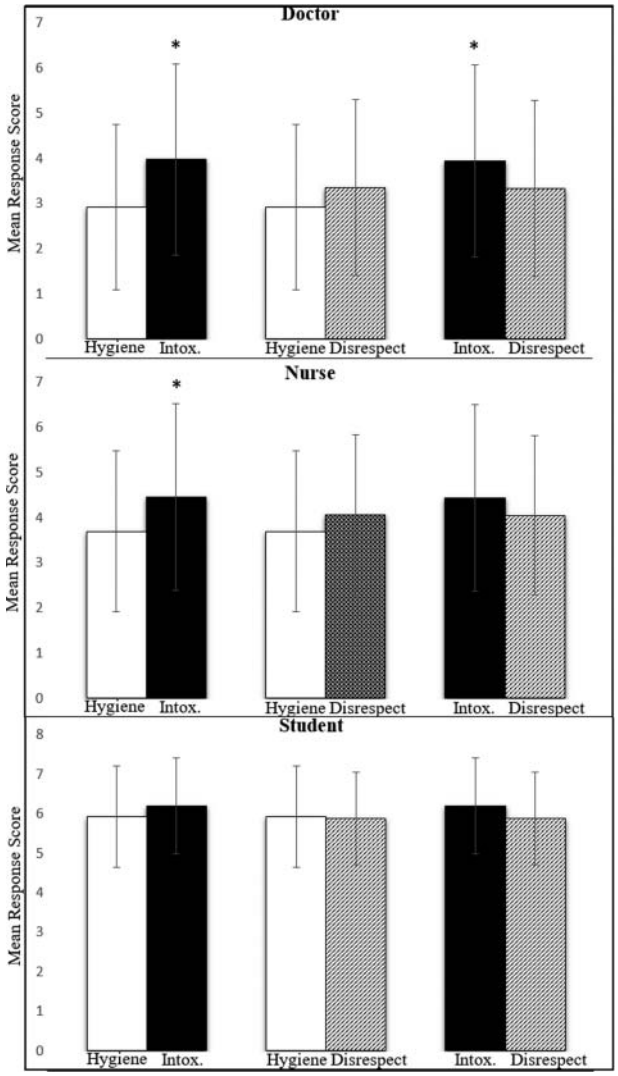


Figure 3. Comparing students' likelihood to approach each health care provider for a behavioral offense when controlling for the provider in question. Paired-sample *t*-test comparisons. Asterisks indicate statistically significant differences ($p < .0014$).

students' likelihood to approach and report certain behaviors is influenced by the health care provider involved in those behaviors. Due to the small sample size and low response rate (36%), as well as self-reported survey bias, the findings cannot be generalized to all medical students at the University of California, Irvine School of Medicine, nor to medical students in the United States as a whole. The topic, however, is of importance to all medical schools and ethics faculty in those medical schools, and serves as a valuable initial assessment. Generally, we found that for the same behavior—whether it be poor hand hygiene, intoxication, or disrespect—medical students in the sample were most likely to approach a fellow classmate to ask him or her to rectify the behavior, followed by a nurse, and then a physician. However, students' likelihood to report each health care provider to an institutional safety department was variable across each scenario, suggesting that students seem to take into account both the behavior and the health care provider in question. When we controlled for the health care provider with the questionable behavior, there was variability in students' likelihood to approach the individual to ask for behavioral modification, suggesting again that students consider both the behavior and the health care provider in question when making the decision to approach him or her. But with regard to reporting, across all three health care providers, medical students were most likely to report intoxication, followed by disrespect, and then poor hand hygiene, suggesting that the degree of the behavioral offense plays a contributory role in reporting behavior. The most common reasons for students who claimed that they were unlikely to report a behavior were fears of being identified or of retribution.

Our finding that medical students are most likely to approach a classmate, followed by a nurse and then a physician, for the same behavioral offense is consistent with the notion that students would have a difficult time questioning figures of authority (Doyle et al. 2015). Indeed, the hidden curriculum of medical education, in which students informally learn about the culture of medicine through exposure to the clinical environment (Lempp and Seale 2004; Hafferty and Franks 1994; Hafferty 1998; Cribb and Bignold 1999), includes the concept of a hierarchy that places those with more knowledge, such as physicians, higher up in the ranks than medical students in

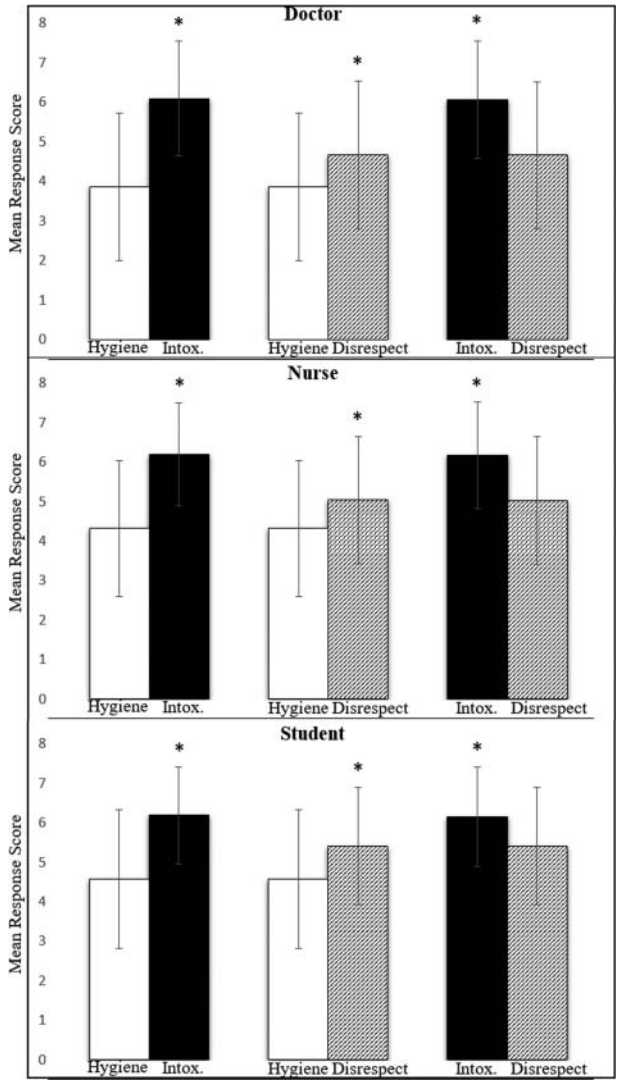


**Figure 4.** Comparing students' likelihood to report each health care provider for a behavioral offense when controlling for the provider in question. Paired-sample *t*-test comparisons. Asterisks indicate statistically significant differences ($p < .0014$).

training (Anderson 1992; Gaufberg et al. 2010; Haidet and Stein 2006). Therefore, it is not uncommon for medical students to experience humiliation as a result of not knowing the answers to questions that are posed to them, and to experience disrespect from physicians and nurses alike (Madigosky et al. 2006; Kost and Chen 2015; Kassebaum and Cutler 1998).

It is likely this culture of medicine itself that propels students to fear approaching superiors—in this case, nurses and physicians—to question certain behaviors (Coverdale et al. 2016). Directly approaching a health care provider for a behavior that threatens patient safety also removes any anonymity for the medical student, and a fear of disciplinary action or humiliation as a result of confrontation may explain our finding. Even with an anonymous reporting system that is present in many medical schools, including the University of California, Irvine School of Medicine, some medical students may believe that those reports may be somehow traced back to them and affect their evaluations or the work atmosphere. Medical students are more familiar with classmates as opposed to other health care providers and are all at the same level within the hierarchy of medicine, which may explain why students are most likely to approach other students for risky behaviors.

However, when we controlled for the health care provider committing the risky behavior, there was variability in students' likelihood to approach the provider to ask for behavioral modification and in students' likelihood to report the behavior to an institutional safety department. For a physician committing a certain behavior, medical students were significantly more likely to approach him or her for intoxication over poor hand hygiene and for intoxication over disrespect, but no differences were found between responses for poor hand hygiene versus disrespect. On the other hand, for approaching nurses the only significant difference in responses was for intoxication versus hygiene, and for approaching students there were no significant differences among the three scenarios. It seems that, in addition to the complex hierarchy that may play a role in a medical student's decision to approach a health care provider, the severity of the behavior in question further contributes to that decision. In fact, previous studies have distinguished between different severities of medical errors in the context of reporting them, finding that physicians themselves are more likely to report errors that result in major patient harm (death) as opposed to minor patient harm (discomfort) (Kaldjian et al. 2008; Kaldjian et al. 2007; Lawton and Parker 2002; Gallagher et al. 2006; Hobgood, Weiner, and Tamayo-Sarver 2006). This finding is consistent with our study, as we found that regardless of the health care provider committing each behavior, medical students were most likely to report intoxication, followed by disrespect and then hand hygiene, suggesting that students did perceive a difference in the severity of patient harm associated with each behavior. It is thus reasonable to consider severity of the behavioral offense as a factor in students' likelihood to approach different providers.

The combination of hierarchy and error severity may also be responsible for our finding that there were variabilities in students' likelihood to report a health care provider among the three scenarios. For instance, for the intoxication scenario there were no differences in students' likelihood to report the offense across all three health care providers, but for the hand-hygiene scenario students were more likely to report a nurse over a physician and a student over a physician. It may be that students perceived an offense such as intoxication to be so severe as to trump fears of retribution by a nurse or physician with higher authority, while an offense such as hand hygiene was not severe enough to justify reporting the behavior and facing potential consequences. While medical students do have the potential to contribute to improving the quality of health care delivery, we found that only a handful of students who observed an unethical behavior by a physician, nurse, or classmate in their clinical experiences actually reported that behavior. Coupled with a fear of retribution or a fear of being identified as the most common reasons for students to avoid reporting risky behaviors, this finding suggests that students require both an education in the importance of patient safety and an anonymous means of disclosing medical errors.

The importance of patient safety education in medical school has been addressed (Livorsi et al. 2016; Patey et al. 2007), with several studies implementing new programs and finding improvements in patient safety knowledge (Kow et al. 2016;

Mekhjian et al. 2004; Holzmueller et al. 2005; Wu et al. 2005). However, there is no single standardized safety curriculum that all medical schools in the United States follows. Additionally, anonymous reporting systems are viewed more favorably by health care professionals (Mekhjian et al. 2004) and have been implemented at some institutions (Holzmueller et al. 2005; Wu et al. 2005; Suresh et al. 2004; Taylor et al. 2007), like the University of California, Irvine School of Medicine, but there are limited data available showing that anonymous systems produce significantly greater rates of reporting as compared to non-anonymous systems, possibly due to beliefs that such systems are not entirely anonymous¯ (Wu et al. 2005). We believe that coupling medical student education in patient safety with anonymous reporting systems will resolve some, but not all, discrepancies in reporting behaviors when different health care providers are involved.

However, in order to truly advance the safety culture in terms of the valuable contributions that medical students can make, a more open team-based clinical environment in which all members—physicians, medical students, and nurses alike—are perceived as equally responsible for patient safety should be promoted. If clinical teams can overcome the long-standing hierarchies that often prevent individuals from speaking out when they see behaviors that jeopardize patient safety or health care quality, then medical students may be more willing to directly approach other health care providers for immediate behavioral modifications (Kow et al. 2016; Risser et al. 1999; Morey et al. 2002; Campbell et al. 2001). It is the responsibility of medical schools and medical teams that contain medical students on their clinical rotations to promote patient safety and encourage students to speak when they see questionable behaviors.

This study is not without limitations. While the survey responses were anonymous, social desirability bias still might have caused students to provide more desirable responses. Furthermore, we only surveyed a subset (36%) of medical students at one medical school, so the findings cannot necessarily be generalizable to all medical students at University of California, Irvine School of Medicine nor to all medical students in the United States. Another limitation is that we cannot necessarily elicit students' reasoning behind their different responses based on the provider in question, as we did not specifically include questions regarding student reasoning in this initial survey. Furthermore, the medical students surveyed were in different years of the medical education curriculum and thus had different degrees of clinical experience; because this study did not differentiate responses of students with more versus less clinical experience, it is possible that students with no clinical experience would have significantly different responses. Finally, when students were asked whether they had experienced a health care provider "acting unethically," students might have perceived the question differently. "Unethical" is a broad term that may hold different meanings for different students, so it is not necessarily true that the responses reflect students' observations of behaviors that threaten patient safety. Despite these limitations, this study has implications in the development of patient safety curricula that targets variabilities in student reporting attitudes depending on the health care provider in question. The study also points to fear of retribution and fear of identification as common reasons medical students would not report a questionable behavior, suggesting the need for anonymous error-reporting systems.

## Author contributions

SA was involved in the conception, design, data collection, and/or drafting of the article. AK was involved in the conception and drafting of the article.

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## Conflicts of interest

None.

## Ethical approval

This study was approved by the institutional review board(s) at the University of California, Irvine.

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