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# BMJ Open

## Students' and clinicians' perceptions of medical student mistreatment: a cross-sectional vignette survey

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# **Students' and clinicians' perceptions of medical student mistreatment: a cross-sectional vignette survey**

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**ABSTRACT**

**Objectives**

The mistreatment of medical students remains pervasive in medical education. Understanding the extent to which clinicians and students recognise mistreatment can assist in creating targeted interventions that reduce mistreatment. The objective of this study was to use clinical vignettes to assess perceptions of medical student mistreatment among medical students and clinical faculty at an Australian University.

**Design, setting and participants**

This cross-sectional study used a survey of medical students and clinical faculty in an MD program at Macquarie University in Sydney, Australia. Data were collected via an online survey between 13 July and 27 July 2020.

**Outcome Measures**

Fourteen clinical vignettes were developed based on commonly reported themes of mistreatment. An additional control vignette was also included, and these 15 vignettes were distributed via email to all 169 MD students and 42 teaching faculty at this teaching site. Participants were asked to rate whether the vignettes portrayed mistreatment on a 5-point Likert scale (strongly disagree to strongly agree).

**Results**

Respondents included 83 MD students and 34 clinical faculty. On average, students perceived mistreatment in 9 of 14 vignettes and faculty in 8 of 14 vignettes. Faculty and student perceptions aligned in themes of sexual abuse, physical abuse, and in the control vignette depicting a constructive teaching style. Perceptions differed significantly between faculty and students ( $p<0.05$ ) for 5 vignettes across the themes of gender discrimination, requests of

students to perform non-educational tasks, humiliation, specialty-choice discrimination, and requests to perform a task beyond the student's capacity.

## Conclusion

Agreement on what constitutes appropriate behaviour is crucial to ensuring that a culture of mistreatment can be replaced with one of kindness, equity, and respect. This study demonstrated the successful use of vignettes to compare perceptions of mistreatment, with faculty and student perceptions differing across a variety of themes.

## KEYWORDS

Medical Education, Mistreatment, Perceptions, Vignettes, Training

## ARTICLE SUMMARY

### Strengths and limitations of this study

- Successfully identifies themes of medical student mistreatment where perceptions between staff and students differ therein adding to the limited international and Australian data on the underlying factors which contribute to the culture of mistreatment of medical students.
- Builds on previous vignette studies to further compare perceptions of mistreatment between medical students and staff, through development of a vignette set which addresses more subtle forms of mistreatment.
- Simple and repeatable design with a set of vignettes based on evidence-based themes which can be utilised at other institutions and longitudinally at Macquarie University to further study and to also educate staff and students on mistreatment.

- The study showed that the short vignette set utilised could be further refined and extended in future studies to further tease out the potential differences between staff and students and better understand the culture of mistreatment in medical education.
- The study had a small sample size and was limited to a single Australian institution.

**INTRODUCTION**

Medical student mistreatment encompasses a spectrum of behaviours which can negatively impact medical students on clinical rotations.[1,2] Commonly reported types of mistreatment include neglect, humiliation, verbal abuse, gender discrimination, sexual harassment, requests to perform non-educational tasks and specialty-choice discrimination.[1,3,4] The effects of medical student mistreatment include fear, self-doubt, burnout, change in specialty-choice, depression and even suicidal ideation.[3,5-9] Mistreatment has also been demonstrated to negatively impact communication within medical teams and ultimately impact quality of care and patient safety.[10-12]

The mistreatment of medical students is a longstanding issue with studies from the early 1990s indicating that up to 85% of medical students experienced mistreatment.[2,3,13] Subsequent studies indicate an ongoing, widespread problem; a systematic review of 51 studies on medical student experiences between 1987 and 2011 indicated that 59.4% of trainees had experienced at least one form of harassment during their training and that this rate had not declined over time.[4] A 2005 Finish study of 665 students found that medical students reported every form of mistreatment more commonly than those in the Faculties of Humanities, Education, Sciences and Technology.[14] These behaviours are perhaps passed on from teacher to learner, resulting in a transgenerational culture whereby mistreatment is perpetuated by those who themselves have been mistreated.[2,15] Barriers to change include inadequate recognition and

disagreement between faculty and students of what constitutes mistreatment.[16] Appropriate conduct should be defined explicitly in terms of what is acceptable behavior. A mutual understanding of mistreatment is essential for developing a positive learning environment.[10,17]

Previous research has indicated that clinical vignettes can be used in combination with structured discussion to educate around appropriate behaviours and lead to alignment in perceptions of what constitutes mistreatment.[16,18,19]

Research by Kulaylat et al,[20] and Ogden et al,[21] demonstrated the successful use of vignettes to compare perceptions of mistreatment between students and staff. A key difference between these studies was the type of vignettes used. Ogden et al applied vignettes demonstrating quite overtly abusive behaviours, while Kulaylat et al used vignettes portraying more subtle demonstrations of mistreatment. It is these subtle, and more frequent forms of mistreatment that lead to a suboptimal learning environment which our study set out to investigate.[22]

The aim of our study was to examine and compare the perceptions of medical students and teaching clinicians of mistreatment using clinical vignettes. The University, from which participants were recruited, presented a unique setting to investigate this topic as its medical programs first commenced in 2018. Therefore, the MD program did not have a pre-existing, ingrained, culture. Examination of the perceptions of student mistreatment thus had the potential to identify areas requiring early intervention, in order to lay a strong foundation for a positive culture of respect from the outset.

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**METHODS**

**Study design and participants**

A cross-sectional survey was distributed by email to all 169 medical students and 42 faculty participating in the medical program at Macquarie University in Sydney, Australia. The survey was open for 14 days in July 2020 with reminder emails being sent on days 7 and 12. Recruitment was promoted through closed student social media groups. Participants consented to participation, they were able to leave the survey at any time and there was no consequence for not participating, nor for submitting an incomplete survey.

**Survey Instrument**

Previous studies have successfully used clinical vignettes to measure perceptions of medical student mistreatment.[20,21] We developed 15 clinical scenarios in the form of written vignettes (see Appendix 1). Fourteen of these portrayed commonly reported forms of mistreatment, including neglect, humiliation, verbal abuse, gender discrimination, sexual harassment, requests to perform non-educational tasks and specialty-choice discrimination.[3,4,18,20,21] One vignette was developed to demonstrate an effective teaching style which avoids mistreatment by facilitating self-education (Vignette 11 – Appendix 1). The vignettes were drafted by the authors and then piloted by 10 students enrolled in the university’s MD program, and 3 researchers from the Australian Institute of Health Innovation (AIHI). The vignettes were refined by incorporating feedback collected from this pilot. The survey was designed in the web based Qualtrics Survey application (Qualtrics, Provo, UT).[23] The survey first asked participants their age, gender, stage of training or faculty position. The survey then asked participants to rate the 15 clinical vignettes on a 5-point Likert scale (*strongly disagree, disagree, neutral, agree, strongly agree*) in response to the question; to what degree do you agree/disagree that this scenario demonstrates unprofessional behaviour?

## Analysis

Survey responses were analysed using IBM Statistical Package for the Social Sciences (SPSS Version 26). Descriptive statistics were used to summarise the demographic characteristics of the participants and their responses to the vignettes. For each vignette a Wilcoxon-Rank test was used to determine if the cohort's mean response score was significantly higher or lower than a score of 3 (ie a neutral response on the Likert scale) with p set at  $<0.05$ . A Mann-Whitney U test was used to compare whether there was a difference in the responses of students and faculty for each vignette. This non-parametric test was performed as the data were not normally distributed.

## Ethical Approval

Participants provided informed consent Macquarie University Human Research Ethics Committee approved the study (reference 5359).

## Patient and Public Involvement

No patient involvement.

## RESULTS

A total of 117 participants completed the survey (83 students and 34 faculty). The response rate for students was 49.1% and 81% for staff. Participant demographics are summarised in Table 1. The student cohort was majority female (60.2%), and the faculty cohort was majority male (52.9%). The students age ranged between 18-34, where the staff age ranged between 18-65+, with majority of the staff being in the groups 35-54. There was a higher response rate from the first- and second-year students, compared to the third years. The majority of the staff respondents were consultants, with no residents completing the survey.

Table 1.1 Demographics of Staff Participants	
Characteristic	n (%)
Number	34 (29.1%)
Gender	
Male	18 (52.9%)
Female	16 (47.1%)
Age	
18-24	1 (2.9%)
25-34	3 (8.8%)
35-44	9 (26.5%)
45-54	13 (38.3%)
55-64	6 (17.6%)
65+	2 (5.9%)
Stage of Training	
Resident	0
Consultant	24 (70.1%)
Medical Educator	8 (23.5%)
Researcher	2 (6.4%)

Table 1.2 Demographics of Student Participants	
Characteristic	n (%)
Number	83 (70.9%)
Gender	
Male	33 (39.8%)
Female	50 (60.2%)
Age	
18-24	60 (72.3%)
25-34	23 (27.7%)
Stage of Training	
1 <sup>st</sup> Year	31 (36.9%)
2 <sup>nd</sup> Year	35 (41.7%)
3 <sup>rd</sup> Year	17 (21.4%)

**Table 2** – Mean Likert Response, Wilcoxon-Rank and Mann-Whitney U Test outcomes for the vignettes.

Table 2 presents the mean Likert response (out of 5) and standard deviation for faculty and student cohorts for each of the vignettes, grouped into their respective themes of mistreatment. The higher the mean, the greater the respondent agreement that the scenario portrayed mistreatment. A mean greater than 3 suggests that on average, the cohort agreed that the vignette exhibited mistreatment. This table also presents the Wilcoxon Rank test and Mann Whitney U test results for each of the vignettes.

Vignette	Faculty		Student		Faculty compared to Student responses	
	Mean, SD	WR Test (P-Value)	Mean, SD	WR Test (P-Value)	Mean, SD	MWU Test (P-Value)
<b>General Neglect / Requests to do Non-educational Tasks</b>						
V1: Student told to sit quietly in corner to not disrupt a busy clinic.	3.41, 1.01	0.026	3.01, 0.99	0.740	3.12, 1.01	0.061
V4: Student asked to collect consultant's breakfast from café.	4.32, 0.98	0.000	3.94, 0.89	0.000	4.05, 0.93	0.009
V6: Consultant calls student 45mins after meeting time to inform them they will be a further hour late.	2.91, 1.33	0.656	3.28, 1.07	0.020	3.17, 1.16	0.127
V9: Student asked to type up stack of handwritten clinic notes instead of teaching them during clinic.	3.71, 0.97	0.001	3.54, 1.02	0.000	3.56, 1.00	0.420
<b>Speciality-Choice Discrimination:</b>						
V7: Female student wanting to do surgery told to reconsider if she wants children in the future.	2.12, 0.77	0.000	2.43, 0.99	0.000	2.34, 0.94	0.099
V8: Surgeon lets aspiring surgeon scrub in instead of aspiring physician.	3.29, 1.06	0.156	3.67, 0.91	0.000	3.59, 0.97	0.058
V15: Aspiring radiologist told to consider other specialties that would be more fun.	2.62, 0.89	0.008	2.96, 0.98	0.891	2.86, 0.96	0.035
<b>Belittlement/Humiliation:</b>						
V2: Consultant laughs with patient while student attempts x-ray interpretation incorrectly.	4.29, 0.80	0.000	3.73, 0.98	0.000	3.89, 0.96	0.003

V10: Student called idiot for forgetting part of a physical exam.	4.79, 0.41	0.000	4.59, 0.70	0.000	4.65, 0.63	0.140
<b>Gender Bias/Discrimination:</b>						
V3: Male student gets to scrub in instead of female student so he can hold a “heavy” leg.	3.74, 1.05	0.001	3.66, 0.98	0.000	3.68, 1.00	0.601
V14: Female student given opportunity to practice chest exam on a female patient instead of male student.	2.91, 1.06	0.769	2.47, 0.98	0.000	2.60, 1.02	0.026
<b>Sexual Harassment:</b>						
V5: Consultant complementing female student’s appearance.	3.65, 1.23	0.006	3.47, 1.15	0.001	3.52, 1.17	0.387
<b>Control – Positive Reinforcement Teaching:</b>						
V11: Student asked to review ECG interpretation after making mistake the first time.	1.79, 0.77	0.000	1.88, 0.86	0.000	1.85, 0.83	0.708
<b>Request to perform task beyond capacity:</b>						
V12: Student asked to take bloods despite not being confident to do so.	3.38, 1.04	0.033	3.99, 0.92	0.000	3.81, 0.99	0.002
<b>Physical Abuse:</b>						
V13: Student attempting venous access in emergency is pushed out of way for being too slow.	3.15, 1.28	0.493	3.20, 1.28	0.140	3.18, 1.27	0.817

SD; Standard deviation, WR; Wilcoxon-Rank, MWU; Mann-Whitney U, P-Value; <0.05

Likert Scale – 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), 5 (Strongly Agree)

**Figure 1** – Proportion of student and staff responses in reporting their level of agreement that vignettes exhibited mistreatment.

In this figure, the 5-point Likert data were categorised into 3 groups; disagree (Strongly disagree or disagree), neutral, and agree (strongly agree or agree) and used to graphically illustrate and compare responses of staff and students within each of the respective themes of mistreatment.

On average, faculty agreed (mean > 3) that vignettes V1-V5, V9, V10 and V12 portrayed mistreatment, whereas students on average agree that vignettes V2-V6, V8, V9, V10 and V12 portrayed mistreatment. On average, faculty disagreed (mean < 3) that vignettes V7, V11, and V15 portrayed mistreatment, whereas students on average disagreed that vignettes V7, V11 and V14 portrayed mistreatment. Consideration of the Wilcoxon rank test demonstrated that the mean response for staff was neutral for vignettes V6, V8, V13 and V14, while the mean response for students was neutral for vignettes V1, V13 and V15. Thus, faculty on average agreed mistreatment was illustrated in 8 of the 14 vignettes, and students on average agreed mistreatment was illustrated in 9 of the 14 vignettes. Both cohorts on average disagreed that the control vignette (V11) exhibited mistreatment.

We found a significant difference between faculty and student responses for vignettes V2, V4, V12, V14 and V15. For both vignette 2 (Consultant laughs at a student's mistake: faculty 4.29, 0.80; student 3.73, 0.98) and vignette 4 (Student asked to get a consultant's breakfast: faculty 4.32, 1.01; student 3.94, 0.89) faculty were more likely to agree that this was mistreatment compared to students. Conversely, for vignette 12 (Student asked to take blood while unconfident: faculty 3.38, 1.04; student 3.99, 0.92), students were more likely to agree that it was mistreatment compared to faculty. For vignette 14 (Female student asked to attend female patient: faculty 2.91, 1.06; student 2.47, 0.98), students were more likely to disagree that the vignette portrayed mistreatment compared to faculty who on average reported a neutral response. Conversely, for vignette 15 (Aspiring radiologists told to consider another specialty: faculty 2.62, 0.89; student 2.96, 0.98) faculty were more likely to disagree that this was mistreatment compared to the students who on average provided a neutral response.

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For the theme of general neglect, in vignettes V4, and V9, both faculty and students on average agreed that these vignettes portrayed mistreatment. Within the theme of specialty-choice discrimination, students on average were more likely than staff to agree that the clinical scenarios portrayed mistreatment although only statistically significant in V15. For both V7 and V15, Faculty and students on average disagreed that the vignettes portrayed mistreatment. For the theme of gender discrimination, both faculty and students on average agreed that the vignette portrayed mistreatment. However, in V14, where a male is disadvantaged due to his gender, students on average disagreed that the vignette portrayed mistreatment, and faculty on average reported a neutral response. For the themes of belittlement/humiliation, and sexual harassment, both staff and students strongly agreed that these two vignettes exhibited mistreatment. Notably, only approximately half of both faculty and students responded that the physical abuse vignette (V13: Student attempting venous access is pushed out of the way) portrayed mistreatment.

**DISCUSSION**

This study used 15 clinical vignettes to examine perceptions of medical student mistreatment and compare differences in the views of students and the clinical faculty involved in their education. Overall, faculty on average correctly agreed that mistreatment was portrayed in 8 of the 14 vignettes (57%), and students on average agreed that mistreatment was portrayed in 9 of the 14 (60%). Both faculty and students recognised that the control vignette did not represent mistreatment. For 5 of the 15 vignettes faculty and students reported divergent views. This occurred across the themes of humiliation, neglect, gender discrimination, specialty-choice discrimination and requests of students to perform a task beyond their capacity. Perceptions were found to align across the themes of sexual abuse, physical abuse, and constructive feedback. Thus, while most participants accurately recognised mistreatment described in the

vignettes, there were several themes where mistreatment was not recognised. Overall, there was close alignment in the views of faculty and students but also important differences.

Specialty-choice discrimination involves comments and discriminatory behaviours by clinical supervisors which may discourage students from pursuing certain specialties based on the supervisors' preconceptions and biases.[24-26] Three vignettes illustrated this theme (V7, V8 and V15). For V15 - an aspiring radiologist is told to consider other specialties that would be more fun. Students on average reported this as mistreatment unlike faculty who rated this as neutral. This may reflect students placing weight on the views of consultants when such comments may be perceived by consultants as light hearted and part of the flippant and frequent nature in which these comments are passed onto medical students, which normalises the "banter" for the teaching physicians.[2,24] More concerning was the finding that both students and faculty disagreed that V7 (which illustrates a female medical student being discouraged from a career in surgery if she wanted to have children) portrayed mistreatment. Our results suggest an embedded belief by both faculty and students that this vignette represents a true statement, namely that for women, seeking a surgical specialty is incompatible with having children. Whether the inclusion of a female consultant delivering this information in the vignette influenced respondents is unknown. However, given the prominence of evidence about the extent to which female students are known to experience discrimination and be dissuaded from pursuing a career in surgery[8,27] it is disquieting that faculty respondents disagreed that this vignette represented inappropriate behaviour. Career counselling is crucial for medical students, particularly in their clinical years, but unfortunately advice is often given informally and inappropriately based on stereotyped opinions of various specialities.[28] These comments have the capacity to sway students into being dishonest about their career aspirations and may result in them shifting their career paths from their genuine interests.[25,28] Our

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findings highlight that this is an area which requires further attention to ensure faculty understand the potential ramifications of negative comments made about a student’s choice of specialty.

There are a variety of clinical situations that create unequal training conditions for both male and female students.[29] The theme of gender discrimination was explored in V3 (discrimination of a female) and V14 (discrimination of a male). In both vignettes, a higher proportion of faculty than students (V3 – 67% staff and 61% students; V14 – 32% staff and 15% students) agreed that the vignettes portrayed mistreatment. This difference was found to be statistically significant in V14 ( $p = 0.026$ ). Interestingly, participants were much more likely to agree that it was mistreatment when it was a female student (V3 – staff 3.74, student 3.66), compared to when it was a male student (V14 – staff 2.91, student 2.47) being discriminated against. In fact, in V14 where a male is discriminated against, students on average disagreed that it was mistreatment and staff on average formed a neutral response. Gender discrimination is more likely to influence female students’ specialty-choice,[8] whereas males are more likely to report that their gender negatively impacted their clinical experience during rotations such as obstetrics and gynaecology.[30] These findings highlight that this theme of mistreatment requires further understanding. These differences in perceptions could be explored through educational sessions for staff and students that focus on defining mistreatment in the clinical setting and specifically addressing how gender discrimination may adversely impact both male and female students uniquely.

V12 depicted a student being requested to complete a procedural task on a patient, despite admitting to the supervising clinician that he is not confident performing this task. Students were significantly more likely than staff to agree that this vignette portrayed mistreatment.

Several studies have indicated that this experience is common. For example, Hicks et al found that nearly half of all medical students reported being placed in clinical situations which require them to act unethically, such as being given responsibilities beyond their capacity.[31] Education around this theme should consider the ethical conflict for students around their duty to put the safety of patients first, while also having an obligation to learn skills necessary for future patient care.[32] Students should understand the importance of playing an active role in the clinical team to become adequately trained, but also be provided with skills to navigate situations where a supervising physician makes a request for which the student believes they are not competent to perform. Supervising physicians also require training in skills to support students in such situations.

V13 portrayed physical abuse whereby a student is physically pushed by a senior physician to gain access to a patient in an emergency. Less than half of both staff and student participants agreed that this portrayed mistreatment of the medical student, and both groups on average rated this item as neutral. Although an emergency, it should be apparent to all staff and students that this sort of physicality is unnecessary and belittling. The failure of students to interpret this as mistreatment suggests a level of acceptance of this behaviour and warrants further exploration with more extensive vignettes on this theme to draw firm conclusions.

## Implications

Within the field of medicine, there exists a hidden curriculum where much of medical education occurs outside of the formal curriculum and can embody a variety of unpleasant attitudes and behaviours that occur in the clinical setting.[29,33] Gan *et al.*[22] suggest that frequent, subtle and adverse behaviours can lead to a suboptimal learning environment for medical students. To overcome this culture, it is important that the medical community collectively understands

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what constitutes mistreatment. The results from our study highlight that for several themes of mistreatment there exists differences in perceptions between staff and students. Workshops for staff and students which aim to better define mistreatment can be helpful in shifting attitudes. A study by Kulaylat *et al.*[16] found that trainees often commence medical school with discordant views on learner mistreatment, but following onboarding sessions, there is a reduction in variability in perceptions of unprofessional behaviours. Our study highlights the potential role for vignettes as an educational tool for such onboarding sessions, through their demonstrable usefulness in examining perceptions of mistreatment. Further, vignette studies can be used to support evidence-based approaches to teaching practices and positively shape educational culture.

**Strengths and Limitations**

The strengths of this study include that it successfully investigated perceptions of mistreatment through clinical vignettes, highlighting several themes where perceptions between staff and student differ. This expands our understanding of learner mistreatment, adding to the limited data on the underlying factors which may contribute to the culture of mistreatment of medical students. Furthermore, it builds on previous vignette studies, through development of a vignette set which addresses more subtle forms of mistreatment. Finally, it does this through using a simple and repeatable design with a set of vignettes based on evidence-based themes of mistreatment which may be utilised at other institutions and longitudinally at Macquarie University.

This study had several limitations. The sample size was small and limited to a single academic institution and therefore may not reflect the perceptions of students and staff from other institutions. The vignettes involved the mistreatment of medical students by teaching

physicians which may result in group membership bias when interpreting the vignettes, such that students and staff may give concession to the person in the vignette from the same group as themselves. Finally, the vignettes were developed based on evidence-based themes of mistreatment, however, did not address all types of mistreatment. The themes of mistreatment were not obtained through validated quantitative methods and could have failed to identify forms of mistreatment that are not well documented in the current literature. Additionally, the vignettes were designed to address subtle forms of mistreatment and as a result, the nature of these vignettes may have made it more difficult to tease out differences in the perceptions between the two groups.

### Recommendations

Future research should further refine and extend such vignettes to examine the perceptions of students and faculty of mistreatment. They should explore a greater variety of forms of mistreatment, while having several vignettes for each theme to better tease out the differences in perceptions. Larger studies across multiple institutions would provide a better understanding of the differences in perceptions, particularly by comparing responses from universities with a long history of medical education with those with younger programs. This could provide better insight into the behaviours that are perceived differently and consequently those that need to be explored when defining mistreatment in onboarding sessions for medical students and clinical faculty. Longitudinal studies could further investigate if there is a point in time where perceptions shift, and if so, determine when perceptions between students and clinicians begin to align.

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**CONCLUSION**

Perceptions of medical mistreatment during training were found to differ between Faculty and students across several themes. Establishing alignment of perceptions is essential to ensure that this transgenerational culture of mistreatment can be replaced with a culture of kindness, equity, patience, and respect. This study has highlighted the efficacy of clinical vignettes in assessing perceptions and suggests a potential role for their use in clinical workshops which seek to better define mistreatment and ultimately change these pervasive behaviours. Further studies investigating the perceptions of medical student mistreatment are crucial to better understanding learner mistreatment in medical education.

**DATA SHARING**

No additional data available.

**CONFLICTS OF INTEREST**

No conflicts of interest to report.

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**AUTHOR STATEMENT**

All authors listed made substantial contributions to the design, analysis, and interpretation of the data. All authors participated in the drafting process, as well as providing final approval for the version to be published.

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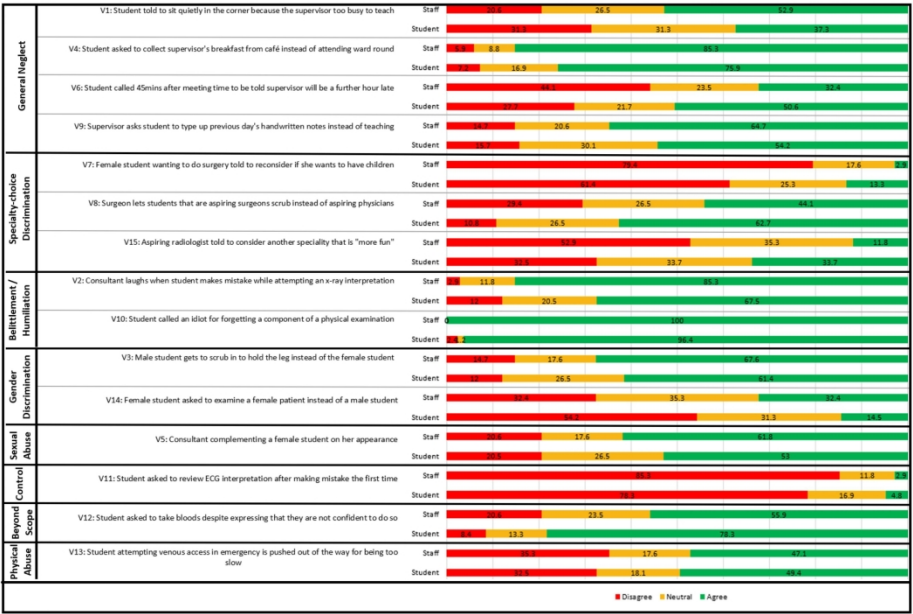


Figure 1 – Proportion of student and staff responses in reporting their level of agreement that vignettes exhibited mistreatment.

297x210mm (300 x 300 DPI)

**APPENDIX:**

## Appendix 1 – Clinical Vignettes

	Vignettes:
1	A medical student arrives to clinic for placement with a cardiologist. The cardiologist has a busy morning, due to patient bookings back-to-back. The cardiologist says to the student “In order to get through all these patients, I’ll need you to just sit in the corner quietly. Try not to interrupt.”
2	A respiratory registrar asks a medical student to interpret a chest x-ray in front of a patient during their consultation. The student interprets the x-ray incorrectly. The registrar laughs with the patient and comments, “Maybe we can discuss x-ray interpretation later on.”
3	Two medical students, Max and Lucy, arrive at the operating theatres for placement with an Orthopaedic Surgeon. The Surgeon informs them that only one student can scrub in today. The surgeon says, “Maybe today we will let Max scrub in given that I’ll need him to hold the leg and its quite heavy.”
4	A consultant is busy doing morning ward rounds with a registrar, resident and medical student. Given that the medical student is just observing, and the resident is busy recording the notes, the consultant requests that the student collects her breakfast from the café next door and informs the student, “I’ll catch you up later on.”
5	A female student has been on placement with a male neurologist for 4 weeks. She arrives after the weekend with a new haircut. The neurologist says, “Your hair looks really nice today. You should wear it like this more often.”
6	A medical student is scheduled to start placement at 8am in clinic with an endocrinologist and arrives on time. The endocrinologist calls at 8:45am and informs the student that they are running late, so the student should find something to do for the next hour.
7	A female neurologist, Dr Smith is discussing career options with a female medical student (Jessica). Jessica informs Dr Smith that she would like to do neurosurgery. Dr Smith says “I

	wanted to do surgery as well until I had children. Have you considered how doing surgery will impact this aspect of your life?"
8	A gastrointestinal surgeon is teaching a group of four medical students in theatre today. Before scrubbing, he asks the students who wants to be a surgeon. Two students raise their hands and two do not. The surgeon says, "Okay, we'll get these two future surgeons to scrub in today."
9	A dermatologist informs her medical student that she has a busy day of bookings so does not have much time for teaching today. She instead pulls out a pile of handwritten notes from the previous day and says, "Here, I'll get you to type these out for me. There is plenty to learn amongst this. Try googling it first, but you can ask me questions to clarify anything else this afternoon."
10	A medical student returns from examining a patient's cardiovascular system. The student reports the findings to the registrar. The registrar replies with, "Okay, good and what was the patient's blood pressure?" The student says, "Sorry I forgot to record it." The registrar replies with, "What sort of idiot forgets to take blood pressure in a cardiovascular exam?"
11	An emergency consultant asks a medical student to interpret an ECG. The student reports no abnormalities. The consultant insists that there are and asks the student to take some time to read up on ECG interpretation and try again after lunch.
12	A resident asks a medical student if he is confident in taking bloods. The student answers, "I've done it before, but I'm not confident." The resident replies, "You'll be fine. I am flat out with these notes. Head over to bed 10 and take the bloods and come back and let me know when you're done."
13	A patient in emergency experiences a cardiac arrest. ALS is commenced and a student fails twice to get venous access. As he attempts a third time, a senior emergency doctor pushes the student out of the way to do it himself.
14	Two students, Lilly and Luke, are present in a respiratory clinic. The first patient is a 45yo woman presenting after a recent asthma attack. The respiratory resident asks one of the

	students to examine the patient, saying “Sorry Luke, maybe we will get Lilly to examine this patient, so she doesn’t feel uncomfortable taking her top off.”
15	15) A student is discussing his career options with his consultant during an anaesthetic rotation. The student expresses his desire to become a radiologist. The anaesthetist replies with, “That’s no fun, you should do something in theatre, like surgery or anaesthetics.”

# BMJ Open

## Students' and clinicians' perceptions of medical student mistreatment: a cross-sectional vignette survey

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# Students' and clinicians' perceptions of medical student mistreatment: a cross-sectional vignette survey

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**ABSTRACT**

**Objectives**

The mistreatment of medical students remains pervasive in medical education. Understanding the extent to which clinicians and students recognise mistreatment can assist in creating targeted interventions that reduce mistreatment. The objective of this study was to use clinical vignettes to assess perceptions of medical student mistreatment among medical students and clinical faculty at an Australian University.

**Design, setting and participants**

This cross-sectional study used a survey of medical students and clinical faculty in an MD program at Macquarie University in Sydney, Australia. Data were collected via an online survey between 13 July and 27 July 2020.

**Outcome Measures**

Fourteen clinical vignettes were developed based on commonly reported themes of mistreatment. An additional control vignette was also included, and these 15 vignettes were distributed via email to all 169 MD students and 42 teaching faculty at this teaching site. Participants were asked to rate whether the vignettes portrayed mistreatment on a 5-point Likert scale (strongly disagree to strongly agree).

**Results**

Respondents included 83 MD students and 34 clinical faculty. On average, students perceived mistreatment in 9 of 14 vignettes and faculty in 8 of 14 vignettes. Faculty and student perceptions aligned in themes of sexual abuse, physical abuse, and in the control vignette depicting a constructive teaching style. Perceptions differed significantly between faculty and students ( $p<0.05$ ) for 5 vignettes across the themes of gender discrimination, requests of

students to perform non-educational tasks, humiliation, specialty-choice discrimination, and requests to perform a task beyond the student's capacity.

## Conclusion

Agreement on what constitutes appropriate behaviour is crucial to ensuring that a culture of mistreatment can be replaced with one of kindness, equity, and respect. This study demonstrated the successful use of vignettes to compare perceptions of mistreatment, with faculty and student perceptions differing across a variety of themes.

## KEYWORDS

Medical Education, Mistreatment, Perceptions, Vignettes, Training

## ARTICLE SUMMARY

### Strengths and limitations of this study

- Successfully identifies themes of medical student mistreatment where perceptions between staff and students differ therein adding to the limited international and Australian data on the underlying factors which contribute to the culture of mistreatment of medical students.
- Builds on previous vignette studies to further compare perceptions of mistreatment between medical students and staff, through development of a vignette set which addresses more subtle forms of mistreatment.
- Simple and repeatable design with a set of vignettes based on evidence-based themes which can be utilised at other institutions and longitudinally at Macquarie University to further study and to also educate staff and students on mistreatment.
- The study showed that the short vignette set utilised could be further refined and extended in future studies to further tease out the potential differences between staff and students and better understand the culture of mistreatment in medical education.
- The study had a small sample size and was limited to a single Australian institution.

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**INTRODUCTION**

Medical student mistreatment encompasses a spectrum of behaviours which can negatively impact medical students on clinical rotations.[1,2] Commonly reported types of mistreatment include neglect, humiliation, verbal abuse, gender discrimination, sexual harassment, requests to perform non-educational tasks and specialty-choice discrimination.[1,3,4] The effects of medical student mistreatment include fear, self-doubt, burnout, change in specialty-choice, depression and even suicidal ideation.[3,5-9] Mistreatment has also been demonstrated to negatively impact communication within medical teams and ultimately impact quality of care and patient safety.[10-12]

The mistreatment of medical students is a longstanding issue with studies from the early 1990s indicating that up to 85% of medical students experienced mistreatment.[2,3,13] Subsequent studies indicate an ongoing, widespread problem; a systematic review of 51 studies on medical student experiences between 1987 and 2011 indicated that 59.4% of trainees had experienced at least one form of harassment during their training and that this rate had not declined over time.[4] A 2005 Finish study of 665 students found that medical students reported every form of mistreatment more commonly than those in the Faculties of Humanities, Education, Sciences and Technology.[14] These behaviours are perhaps passed on from teacher to learner, resulting in a transgenerational culture whereby mistreatment is perpetuated by those who themselves have been mistreated.[2,15] Barriers to change include inadequate recognition and disagreement between faculty and students of what constitutes mistreatment.[16] Appropriate conduct should be defined explicitly in terms of what is acceptable behavior. A mutual understanding of mistreatment is essential for developing a positive learning environment.[10,17]

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3 Previous research has indicated that clinical vignettes can be used in combination with  
4 structured discussion to educate around appropriate behaviours and lead to alignment in  
5 perceptions of what constitutes mistreatment.[16,18,19]  
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12 Research by Kulaylat et al,[20] and Ogden et al,[21] demonstrated the successful use of  
13 vignettes to compare perceptions of mistreatment between students and staff. A key difference  
14 between these studies was the type of vignettes used. Ogden et al applied vignettes  
15 demonstrating quite overtly abusive behaviours, while Kulaylat et al used vignettes portraying  
16 more subtle demonstrations of mistreatment. It is these subtle, and more frequent forms of  
17 mistreatment that lead to a suboptimal learning environment which our study set out to  
18 investigate.[22]  
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31 The aim of our study was to examine and compare the perceptions of medical students and  
32 teaching clinicians of mistreatment using clinical vignettes. We considered the aforementioned  
33 spectrum of mistreatment, by defining mistreatment as unprofessional behaviours on behalf of  
34 the medical educator, which negatively impact the learning experience of the student. The  
35 University, from which participants were recruited, presented a unique setting to investigate  
36 this topic as its medical programs first commenced in 2018. Therefore, the MD program did  
37 not have a pre-existing, ingrained, culture. Examination of the perceptions of student  
38 mistreatment thus had the potential to identify areas requiring early intervention, in order to  
39 lay a strong foundation for a positive culture of respect from the outset.  
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**METHODS**

**Study design and participants**

A cross-sectional survey was distributed by email to all 169 medical students and 42 faculty participating in the medical program at Macquarie University in Sydney, Australia. The survey was open for 14 days in July 2020 with reminder emails being sent on days 7 and 12. Recruitment was promoted through closed student social media groups. Participants consented to participation, they were able to leave the survey at any time and there was no consequence for not participating, nor for submitting an incomplete survey.

**Survey Instrument**

Previous studies have successfully used clinical vignettes to measure perceptions of medical student mistreatment.[20,21] We developed 15 clinical scenarios in the form of written vignettes (see Appendix 1). Fourteen of these portrayed commonly reported forms of mistreatment, including neglect, humiliation, verbal abuse, gender discrimination, sexual harassment, requests to perform non-educational tasks and specialty-choice discrimination.[3,4,18,20,21] One vignette was developed to demonstrate an effective teaching style which avoids mistreatment by facilitating self-education (Vignette 11 – Appendix 1). The vignettes were drafted by the authors and then piloted by 10 students enrolled in the university’s MD program, and 3 researchers from the Australian Institute of Health Innovation (AIHI). The vignettes were refined by incorporating feedback collected from this pilot. The survey was designed in the web based Qualtrics Survey application (Qualtrics, Provo, UT).[23] The survey first asked participants their age, gender, stage of training or faculty position. The survey then asked participants to rate the 15 clinical vignettes on a 5-point Likert scale (*strongly disagree, disagree, neutral, agree, strongly agree*) in response to the question; to what degree do you agree/disagree that this scenario demonstrates unprofessional behaviour? The Qualtrics Survey

application provides the investigator with the IP address of the survey respondents, which were screened to ensure that no single participant responds more than once to the survey.

## Analysis

Survey responses were analysed using IBM Statistical Package for the Social Sciences (SPSS Version 26). Descriptive statistics were used to summarise the demographic characteristics of the participants and their responses to the vignettes. Given that the survey yielded ordinal Likert data, Median and interquartile range was used. A Mann-Whitney U test was used to compare whether there was a significant difference between students and faculty response for each vignette. This non-parametric test was performed as the data were not normally distributed.

## Patient and Public Involvement

No patient involvement.

## RESULTS

A total of 117 participants completed the survey (83 students and 34 faculty). The response rate for students was 49.1% and 81% for staff. Participant demographics are summarised in Table 1. The student cohort was majority female (60.2%), and the faculty cohort was majority male (52.9%). The students age ranged between 18-34, where the staff age ranged between 18-65+, with majority of the staff being in the groups 35-54. There was a higher response rate from the first- and second-year students, compared to the third years. The majority of the staff respondents were consultants (70.1%) – being physicians employed by the university to teach medical students who have completed fellowship training in their respective specialty. Medical educators and researchers were those respondents employed by the faculty to teach medical students, however, may not be practicing physicians themselves.

Table 1.1 Demographics of Staff Participants	
Characteristic	n (%)
Number	34 (29.1%)
<b>Gender</b>	
Male	18 (52.9%)
Female	16 (47.1%)
<b>Age</b>	
18-24	1 (2.9%)
25-34	3 (8.8%)
35-44	9 (26.5%)
45-54	13 (38.3%)
55-64	6 (17.6%)
65+	2 (5.9%)
<b>Stage of Training</b>	
Resident	0
Consultant	24 (70.1%)
Medical Educator	8 (23.5%)
Researcher	2 (6.4%)

Table 1.2 Demographics of Student Participants	
Characteristic	n (%)
Number	83 (70.9%)
<b>Gender</b>	
Male	33 (39.8%)
Female	50 (60.2%)
<b>Age</b>	
18-24	60 (72.3%)
25-34	23 (27.7%)
<b>Stage of Training</b>	
1 <sup>st</sup> Year	31 (36.9%)
2 <sup>nd</sup> Year	35 (41.7%)
3 <sup>rd</sup> Year	17 (21.4%)

Table 2 presents the median Likert response (out of 5) and the corresponding first and third interquartiles for the faculty and student cohorts. These have been presented for each of the vignettes grouped into their respective themes of mistreatment. The higher the median, the greater the respondent agreement that the scenario portrayed mistreatment. A median greater than 3 suggests that the median response for the cohort was in agreeance that the vignette

exhibited mistreatment. This table also presents the Mann Whitney U test results for each of the vignettes.

**Table 2** – Median Likert, Interquartile range, and Mann-Whitney U Test outcomes for survey responses to the vignettes in faculty and student cohorts.

Vignette	Faculty	Student	MWU Test Faculty Vs Students
	Median, Q1 – Q3	Median, Q1 - Q3	P value
<b>General Neglect / Requests to do Non-educational Tasks</b>			
V1: Student told to sit quietly in corner to not disrupt a busy clinic.	4, 3 - 4	3, 2 - 4	0.061
V4: Student asked to collect consultant's breakfast from café.	5, 4 - 5	4, 4 - 5	0.009
V6: Consultant calls student 45mins after meeting time to inform them they will be a further hour late.	3, 2 - 4	4, 2 - 4	0.127
V9: Student asked to type up stack of handwritten clinic notes instead of teaching them during clinic.	4, 3 - 4	4, 3 - 4	0.420
<b>Speciality-Choice Discrimination:</b>			
V7: Female student wanting to do surgery told to reconsider if she wants children in the future.	2, 2 - 2	2, 2 - 3	0.099
V8: Surgeon lets aspiring surgeon scrub in instead of aspiring physician.	3, 2 - 4	4, 3 - 4	0.058
V15: Aspiring radiologist told to consider other specialties that would be more fun.	2, 2 - 3	3, 2 - 4	0.035
<b>Belittlement/Humiliation:</b>			
V2: Consultant laughs with patient while student attempts x-ray interpretation incorrectly.	4, 4 - 5	4, 3 - 4	0.003
V10: Student called idiot for forgetting part of a physical exam.	5, 5 - 5	5, 4 - 5	0.140
<b>Gender Bias/Discrimination:</b>			
V3: Male student gets to scrub in instead of female student so he can hold a "heavy" leg.	4, 3 - 4	4, 3 - 4	0.601

V14: Female student given opportunity to practice chest exam on a female patient instead of male student.	3, 2 - 4	2, 2 - 3	0.026
<b>Sexual Harassment:</b>			
V5: Consultant complementing female student's appearance.	4, 3 - 5	4, 3 - 4	0.387
<b>Control – Positive Reinforcement Teaching:</b>			
V11: Student asked to review ECG interpretation after making mistake the first time.	2, 1 - 2	2, 1 - 2	0.708
<b>Request to perform task beyond capacity:</b>			
V12: Student asked to take bloods despite not being confident to do so.	4, 3 - 4	4, 4 - 5	0.002
<b>Physical Abuse:</b>			
V13: Student attempting venous access in emergency is pushed out of way for being too slow.	3, 2 - 4	3, 2 - 4	0.817

Q1; First Quartile, Q3; Third Quartile, MWU; Mann-Whitney U, P-Value; <0.05  
Likert Scale – 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), 5 (Strongly Agree)

The median response of the faculty agreed (median > 3) that 8 of the 14 vignettes (V1-V5, V9, V10, V12) portrayed mistreatment, whereas the median response of the students agreed (median > 3) that 9 of the 14 vignettes (V2-V6, V8, V9, V10, V12) portrayed mistreatment. The median response of the faculty disagreed (median < 3) that V7, V11, and V15 portrayed mistreatment, and the median response of the students disagreed (median < 3) that V7, V11 and V14 portrayed mistreatment. Both faculty and students recognised that the control vignette (V11) did not represent mistreatment, with the median response being 2 for both cohorts.

Using the Mann-Whitney U-Test, we found a significant difference between faculty and student responses for vignettes V2, V4, V12, V14 and V15. For both vignette 2 (Consultant laughs at a student's mistake) and vignette 4 (Student asked to get a consultant's breakfast), Figure 1 demonstrates that a higher proportion of faculty compared to students agreed that mistreatment was portrayed. Conversely, for vignette 12 (Student asked to take blood while

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3 lacking confidence in the skill), a higher proportion of students agreed that this was  
4 mistreatment. For vignette 14 (Female student asked to attend female patient), a higher  
5 proportion of students compared to faculty disagreed that this was mistreatment – with the  
6 faculty's median response being neutral for this vignette. For vignette 15 (Aspiring radiologists  
7 told to consider another specialty) a higher proportion of faculty compared to students  
8 disagreed that this was mistreatment – with the students' median response being neutral for  
9 this vignette

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12 For the theme of general neglect, both cohorts' median response agreed that V4 and V9  
13 portrayed mistreatment. Figure 1 demonstrates that a higher proportion of faculty agreed in V1,  
14 V4 and V9. Within the theme of specialty-choice discrimination, a higher proportion of  
15 students agreed that the vignettes portrayed mistreatment in all 3 vignettes, although only  
16 statistically significant in V15. In V7 (female student told to reconsider surgical career if she  
17 wants children) both cohort's median response disagreed that this portrayed mistreatment. For  
18 the theme of gender discrimination, both cohorts' median response for V3 (female student  
19 disadvantaged due to gender) agreed that the vignette portrayed mistreatment, however, in V14  
20 (male student disadvantaged due to his gender), the median student response disagreed, and  
21 the median faculty response was neutral. For the themes of belittlement/humiliation, and sexual  
22 harassment, figure 1 demonstrates significant proportions of both staff and students agreeing  
23 that these vignettes exhibited mistreatment. Notably, only approximately half of both faculty  
24 and students agreed that the physical abuse vignette (V13: Student attempting venous access is  
25 pushed out of the way) portrayed mistreatment.

**DISCUSSION**

This study used 15 clinical vignettes to examine perceptions of medical student mistreatment and compare differences in the views of students and the clinical faculty involved in their education. Overall, the median faculty response agreed that mistreatment was portrayed in 8 of the 14 vignettes (57%), and the median student response agreed that mistreatment was portrayed in 9 of the 14 (60%). Both faculty and students recognised that the control vignette did not represent mistreatment. For 5 of the 15 vignettes faculty and students reported statistically significant differing views. This occurred across the themes of humiliation, neglect, gender discrimination, specialty-choice discrimination and requests of students to perform a task beyond their capacity. Perceptions were found to align across the themes of sexual abuse, physical abuse, and constructive feedback. Thus, while most participants accurately recognised mistreatment described in the vignettes, there were several themes where mistreatment was not recognised. Overall, there was close alignment in the views of faculty and students but also important differences.

Specialty-choice discrimination involves comments and discriminatory behaviours by clinical supervisors which may discourage students from pursuing certain specialties based on the supervisors' preconceptions and biases.[24-26] Three vignettes illustrated this theme (V7, V8 and V15). For V15 - an aspiring radiologist is told to consider other specialties that would be more fun. Students' responses were neutral, where staff mostly disagreed that this was mistreatment. This may reflect that supervisors often consider this type of comment light hearted, contributing to the flippant and frequent nature in which these comments are passed onto medical students as a form of "banter." [2,24] More concerning was the finding that both students and faculty disagreed that V7 (which illustrates a female medical student being discouraged from a career in surgery if she wanted to have children) portrayed mistreatment.

Our results suggest an embedded belief by both faculty and students that this vignette represents a true statement, namely that for women, seeking a surgical specialty is incompatible with having children. Whether the inclusion of a female consultant delivering this information in the vignette influenced respondents is unknown. However, given the prominence of evidence about the extent to which female students are known to experience discrimination and be dissuaded from pursuing a career in surgery[8,27] it is disquieting that faculty respondents disagreed that this vignette represented inappropriate behaviour. Career counselling is crucial for medical students, particularly in their clinical years, but unfortunately advice is often given informally and inappropriately based on stereotyped opinions of various specialities.[28] These comments have the capacity to sway students into being dishonest about their career aspirations and may result in them shifting their career paths from their genuine interests.[25,28] Our findings highlight that this is an area which requires further attention to ensure faculty understand the potential ramifications of negative comments made about a student's choice of specialty.

There are a variety of clinical situations that create unequal training conditions for both male and female students.[29] The theme of gender discrimination was explored in V3 (discrimination of a female) and V14 (discrimination of a male). In both vignettes, a higher proportion of faculty than students (V3 – 67% staff and 61% students; V14 – 32% staff and 15% students) agreed that the vignettes portrayed mistreatment. This difference was found to be statistically significant in V14 ( $p = 0.026$ ). Interestingly, participants were much more likely to agree that it was mistreatment when it was a female student compared to when it was a male student being discriminated against. In fact, in V14 where a male is discriminated against, the median student response disagreed that it was mistreatment, and the staff cohort formed a neutral response. Gender discrimination is more likely to influence female students' specialty-

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choice,[8] whereas males are more likely to report that their gender negatively impacted their clinical experience during rotations such as obstetrics and gynaecology.[30] These findings highlight that this theme of mistreatment requires further understanding. These differences in perceptions could be explored through educational sessions for staff and students that focus on defining mistreatment in the clinical setting and specifically addressing how gender discrimination may adversely impact both male and female students uniquely.

V12 depicted a student being requested to complete a procedural task on a patient, despite admitting to the supervising clinician that he is not confident performing this task. Students were significantly more likely than staff to agree that this vignette portrayed mistreatment. Several studies have indicated that this experience is common. For example, Hicks et al found that nearly half of all medical students reported being placed in clinical situations which require them to act unethically, such as being given responsibilities beyond their capacity.[31] Education around this theme should consider the ethical conflict for students around their duty to put the safety of patients first, while also having an obligation to learn skills necessary for future patient care.[32] Students should understand the importance of playing an active role in the clinical team to become adequately trained, but also be provided with skills to navigate situations where a supervising physician makes a request for which the student believes they are not competent to perform. Supervising physicians also require training in skills to support students in such situations.

V13 portrayed physical abuse whereby a student is physically pushed by a senior physician to gain access to a patient in an emergency. Less than half of both staff and student participants agreed that this portrayed mistreatment of the medical student, and both groups median response was neutral. Although an emergency, it should be apparent to all staff and students

that this sort of physicality is unnecessary and belittling. At times, physicality may assist, particularly in an emergency, however the same effect should be able to be achieved with verbal instruction from a senior. The failure of students to interpret this as mistreatment suggests a level of acceptance of this behaviour and warrants further exploration with more extensive vignettes on this theme to draw firm conclusions.

## Implications

Within the field of medicine, there exists a hidden curriculum where much of medical education occurs outside of the formal curriculum and can embody a variety of unpleasant attitudes and behaviours that occur in the clinical setting.[29,33] Gan *et al.*[22] suggest that frequent, subtle and adverse behaviours can lead to a suboptimal learning environment for medical students. Furthermore, within this hidden curriculum, behaviours are passed from teacher to learner, perpetuating itself. To overcome this culture, it is important that the medical community collectively understands what constitutes mistreatment. The results from our study highlight that for several themes of mistreatment there exists differences in perceptions between staff and students. Research by Kulaylat *et al.*[16] has shown that workshops for staff and students which aim to better define mistreatment can be helpful in shifting attitudes. Their research found that trainees often commence medical school with discordant views on learner mistreatment, but following onboarding sessions, there is a reduction in variability in perceptions of unprofessional behaviours.[16] Our study highlights the potential role for vignettes as an educational tool for such onboarding sessions, through their demonstrable usefulness in examining perceptions of mistreatment. These sessions could utilise vignettes as a tool to have open discussion in an in-person forum with students and teachers. This would allow both groups to provide insight into their perceptions, while also having a neutral panel from the institutions that can potentially correct certain perceptions that don't align with the

desired training culture. Further, vignette studies can be used to support evidence-based approaches to teaching practices and positively shape educational culture.

**Strengths and Limitations**

The strengths of this study include that it successfully investigated perceptions of mistreatment through clinical vignettes, highlighting several themes where perceptions between staff and student differ. This expands our understanding of learner mistreatment, adding to the limited data on the underlying factors which may contribute to the culture of mistreatment of medical students. Furthermore, it builds on previous vignette studies, through development of a vignette set which addresses more subtle forms of mistreatment. Finally, it does this through using a simple and repeatable design with a set of vignettes based on evidence-based themes of mistreatment which may be utilised at other institutions and longitudinally at Macquarie University.

This study had several limitations. The sample size was small and limited to a single academic institution and therefore may not reflect the perceptions of students and staff from other institutions. Additionally, the response rate for students was only 49.1% and so may not have been reflective of the whole student body. The vignettes involved the mistreatment of medical students by teaching physicians which may result in group membership bias when interpreting the vignettes, such that students and staff may give concession to the person in the vignette from the same group as themselves. Finally, the vignettes were developed based on evidence-based themes of mistreatment, however, did not address all types of mistreatment. The themes of mistreatment were not obtained through validated quantitative methods and could have failed to identify forms of mistreatment that are not well documented in the current literature. Additionally, the vignettes were designed to address subtle forms of mistreatment and as a

result, the nature of these vignettes may have made it more difficult to tease out differences in the perceptions between the two groups. The final limitation noted by the authors was that the vignettes were limited to the clinical setting. Future research could include additional vignettes of learning in the non-clinical environment to broaden the transferability of the findings.

## Recommendations

Future research should further refine and extend such vignettes to examine the perceptions of students and faculty of mistreatment. They should explore a greater variety of forms of mistreatment, while having several vignettes for each theme to better tease out the differences in perceptions. Larger studies across multiple institutions would provide a better understanding of the differences in perceptions, particularly by comparing responses from universities with a long history of medical education with those with younger programs. This could provide better insight into the behaviours that are perceived differently and consequently those that need to be explored when defining mistreatment in onboarding sessions for medical students and clinical faculty. Longitudinal studies could further investigate if there is a point in time where perceptions shift, and if so, determine when perceptions between students and clinicians begin to align.

## CONCLUSION

Perceptions of medical mistreatment during training were found to differ between faculty and students across several themes. Establishing alignment of perceptions is essential to ensure that this transgenerational culture of mistreatment can be replaced with a culture of kindness, equity, patience, and respect. This study has highlighted the efficacy of clinical vignettes in assessing perceptions and suggests a potential role for their use in clinical workshops which seek to better define mistreatment and ultimately change these pervasive behaviours. Further

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studies investigating the perceptions of medical student mistreatment are crucial to better understanding learner mistreatment in medical education.

**DATA SHARING**

No additional data available.

**CONFLICTS OF INTEREST**

No conflicts of interest to report.

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**AUTHOR’S CONTRIBUTIONS**

All authors, DP, RU, RM and JW made substantial contributions to the study. DP was responsible for study conception, design, survey distribution, statistical analysis, and preparation of the final manuscript. RU contributed to the planning, design and drafting of the manuscript. RM contributed to planning, development of the Qualtrics survey, distribution of the survey, acquisition of data and manuscript drafting. JW contributed to development of concept, planning, design and drafting of the manuscript.

**Ethical Approval**

Participants provided informed consent Macquarie University Human Research Ethics Committee approved the study (reference 5359).

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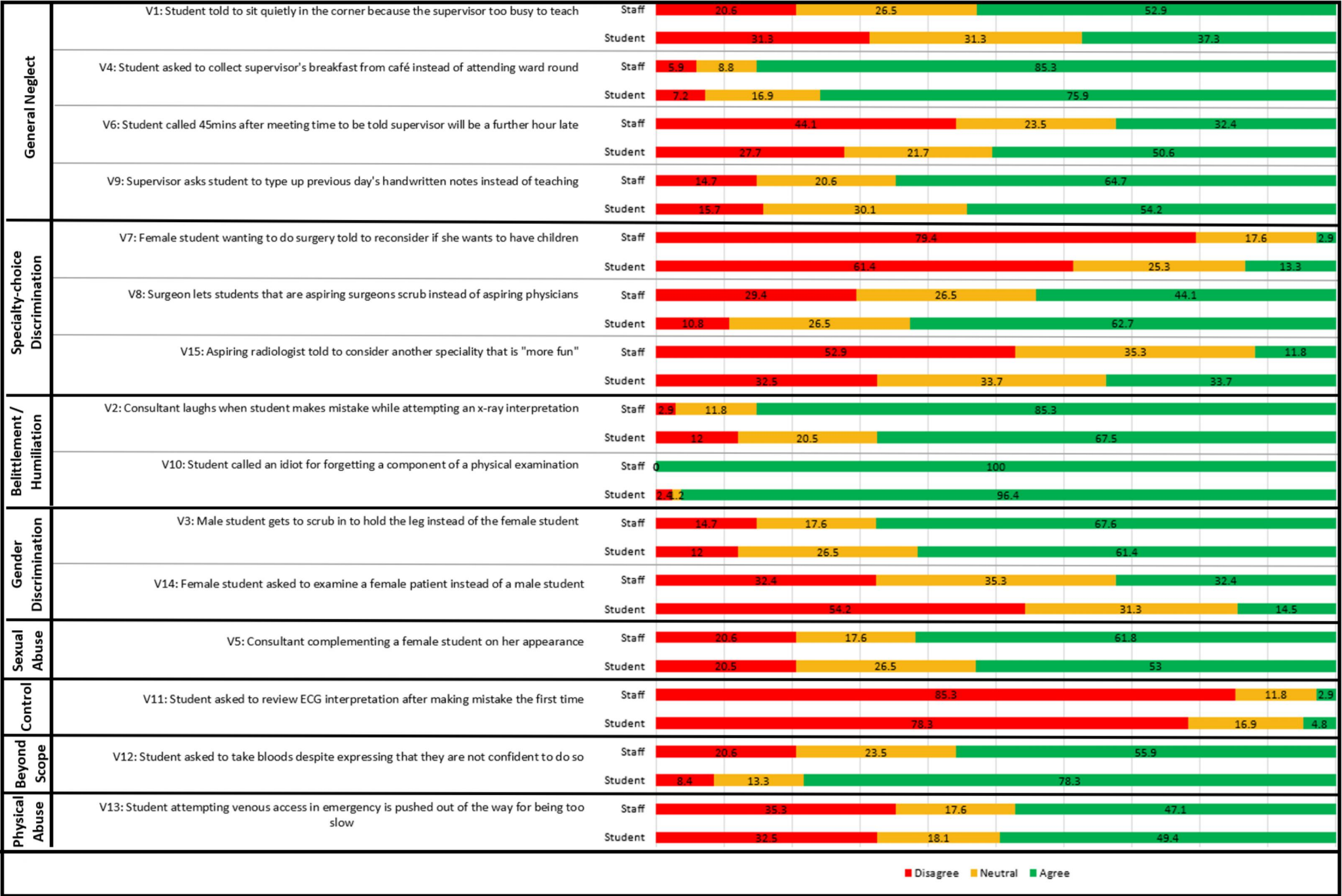
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**Figure 1** – Proportion of student and staff responses in reporting their level of agreement that vignettes exhibited mistreatment.

In this figure, the 5-point Likert data were categorised into 3 groups; disagree (Strongly disagree or disagree), neutral, and agree (strongly agree or agree) and used to graphically illustrate and compare responses of staff and students within each of the respective themes of mistreatment.



**APPENDIX:**

## Appendix 1 – Clinical Vignettes

	Vignettes:
1	A medical student arrives to clinic for placement with a cardiologist. The cardiologist has a busy morning, due to patient bookings back-to-back. The cardiologist says to the student “In order to get through all these patients, I’ll need you to just sit in the corner quietly. Try not to interrupt.”
2	A respiratory registrar asks a medical student to interpret a chest x-ray in front of a patient during their consultation. The student interprets the x-ray incorrectly. The registrar laughs with the patient and comments, “Maybe we can discuss x-ray interpretation later on.”
3	Two medical students, Max and Lucy, arrive at the operating theatres for placement with an Orthopaedic Surgeon. The Surgeon informs them that only one student can scrub in today. The surgeon says, “Maybe today we will let Max scrub in given that I’ll need him to hold the leg and its quite heavy.”
4	A consultant is busy doing morning ward rounds with a registrar, resident and medical student. Given that the medical student is just observing, and the resident is busy recording the notes, the consultant requests that the student collects her breakfast from the café next door and informs the student, “I’ll catch you up later on.”
5	A female student has been on placement with a male neurologist for 4 weeks. She arrives after the weekend with a new haircut. The neurologist says, “Your hair looks really nice today. You should wear it like this more often.”
6	A medical student is scheduled to start placement at 8am in clinic with an endocrinologist and arrives on time. The endocrinologist calls at 8:45am and informs the student that they are running late, so the student should find something to do for the next hour.
7	A female neurologist, Dr Smith is discussing career options with a female medical student (Jessica). Jessica informs Dr Smith that she would like to do neurosurgery. Dr Smith says “I

	wanted to do surgery as well until I had children. Have you considered how doing surgery will impact this aspect of your life?"
8	A gastrointestinal surgeon is teaching a group of four medical students in theatre today. Before scrubbing, he asks the students who wants to be a surgeon. Two students raise their hands and two do not. The surgeon says, "Okay, we'll get these two future surgeons to scrub in today."
9	A dermatologist informs her medical student that she has a busy day of bookings so does not have much time for teaching today. She instead pulls out a pile of handwritten notes from the previous day and says, "Here, I'll get you to type these out for me. There is plenty to learn amongst this. Try googling it first, but you can ask me questions to clarify anything else this afternoon."
10	A medical student returns from examining a patient's cardiovascular system. The student reports the findings to the registrar. The registrar replies with, "Okay, good and what was the patient's blood pressure?" The student says, "Sorry I forgot to record it." The registrar replies with, "What sort of idiot forgets to take blood pressure in a cardiovascular exam?"
11	An emergency consultant asks a medical student to interpret an ECG. The student reports no abnormalities. The consultant insists that there are and asks the student to take some time to read up on ECG interpretation and try again after lunch.
12	A resident asks a medical student if he is confident in taking bloods. The student answers, "I've done it before, but I'm not confident." The resident replies, "You'll be fine. I am flat out with these notes. Head over to bed 10 and take the bloods and come back and let me know when you're done."
13	A patient in emergency experiences a cardiac arrest. ALS is commenced and a student fails twice to get venous access. As he attempts a third time, a senior emergency doctor pushes the student out of the way to do it himself.
14	Two students, Lilly and Luke, are present in a respiratory clinic. The first patient is a 45yo woman presenting after a recent asthma attack. The respiratory resident asks one of the

	students to examine the patient, saying “Sorry Luke, maybe we will get Lilly to examine this patient, so she doesn’t feel uncomfortable taking her top off.”
15	15) A student is discussing his career options with his consultant during an anaesthetic rotation. The student expresses his desire to become a radiologist. The anaesthetist replies with, “That’s no fun, you should do something in theatre, like surgery or anaesthetics.”

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STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract See Pages 1-2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found See Page 2-3 – Line 25 - 61
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported See Page 4-5 – Lines 80 - 114
Objectives	3	State specific objectives, including any prespecified hypotheses See Page 5 – Line 116
Methods		
Study design	4	Present key elements of study design early in the paper See Page 6 – Line 128
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection See Page 6 – Line 128 - 153
Participants	6	(a) Cohort study—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up Case-control study—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls Cross-sectional study—Give the eligibility criteria, and the sources and methods of selection of participants See Page 6 – Line 127-133
		(b) Cohort study—For matched studies, give matching criteria and number of exposed and unexposed Case-control study—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable N/A
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group See Page 7 – Line 155
Bias	9	Describe any efforts to address potential sources of bias See Page 6 – Line 150
Study size	10	Explain how the study size was arrived at See Page 7 – Line 170
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why See Page 6 – Line 147

## Statistical methods

- 12 (a) Describe all statistical methods, including those used to control for confounding  
 See Page 7 – Line 155-160
- 
- (b) Describe any methods used to examine subgroups and interactions  
 N/A
- 
- (c) Explain how missing data were addressed  
 N/A
- 
- (d) *Cohort study*—If applicable, explain how loss to follow-up was addressed  
*Case-control study*—If applicable, explain how matching of cases and controls was addressed  
*Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy  
 See Page 7 – Line 155-160
- 
- (e) Describe any sensitivity analyses  
 N/A

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<b>Results</b>		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed <a href="#">See Page 7 – Line 170</a> (b) Give reasons for non-participation at each stage <a href="#">N/A</a> (c) Consider use of a flow diagram <a href="#">N/A</a>
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders <a href="#">See Page 8 – Line 180</a> (b) Indicate number of participants with missing data for each variable of interest <a href="#">N/A</a> (c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount)
Outcome data	15*	<i>Cohort study</i> —Report numbers of outcome events or summary measures over time <i>Case-control study</i> —Report numbers in each exposure category, or summary measures of exposure <i>Cross-sectional study</i> —Report numbers of outcome events or summary measures <a href="#">See Page 9 – Line 188</a>
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included <a href="#">See Page 9 – Line 188</a> (b) Report category boundaries when continuous variables were categorized <a href="#">N/A</a> (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period <a href="#">N/A</a>
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses <a href="#">See Page 9 – Line 188</a>
<b>Discussion</b>		
Key results	18	Summarise key results with reference to study objectives <a href="#">See Page 11 – Line 235-247</a>
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias <a href="#">See Page 16 – Lines 348-362</a>
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence <a href="#">See Page 12 – Lines 249 – 335</a>
Generalisability	21	Discuss the generalisability (external validity) of the study results <a href="#">See Page 15 – Lines 315</a>

## Other information

Funding 22 Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based  
See Page 18 – Line 396

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at [www.strobe-statement.org](http://www.strobe-statement.org).