

Effects of mistreatment in medical schools: how to evaluate? A brief review

Efeitos de maus-tratos nas escolas médicas: como avaliar? Uma revisão breve

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ABSTRACT

Introduction: The occurrence of abuse, harassment and mistreatment of medical students is a widespread phenomenon and not a problem limited to certain countries or particular schools. Such behavior during medical training creates hostile learning environments, induces stress, depressive symptoms, may impair performance and patient care.

Objective: To analyze the methodology used in recent studies to describe the consequences of mistreatment on medical student's life and academic performance.

Method: A brief review of the literature indexed in 6 international databases was carried out (PubMed, Scopus, Web of Science, SciELO, PsycINFO and Cochrane Library). The descriptors were categorized into two groups, one containing different types of violence and the other contemplating the studied population.

Results: A total of 20 articles were selected for this study and all of them based their research methodology on the use of questionnaires, scales and/or interviews. The strengths and weaknesses of these methodologies were discussed, and the use of simulation was suggested as a new methodological alternative.

Conclusion: This review reinforces that mistreatment of medical students has remained frequent over time and it is closely related to the students' mental health and performance impairment. The authors recommend a new methodological approach to collect data related to the effects arising from a hostile learning environment.

Keywords: Medical Education; Harassment; Depressive Symptoms; Academic Performance.

RESUMO

Introdução: A ocorrência de abusos, assédio e maus-tratos sofridos pelos estudantes de Medicina é um fenômeno generalizado e não um problema limitado a certos países ou escolas específicas. Tal comportamento durante o treinamento médico cria ambientes hostis de aprendizagem, induz estresse e sintomas depressivos, e prejudica o desempenho acadêmico e o atendimento aos pacientes.

Objetivo: Este estudo teve como objetivo analisar a metodologia utilizada em pesquisas recentes para descrever as consequências de maus-tratos na vida e no desempenho do estudante de Medicina.

Método: Realizou-se uma breve revisão da literatura indexada em seis bases de dados internacionais (PubMed, Scopus, Web of Science, SciELO, PsycINFO e Cochrane Library), em que se categorizaram os descritores em dois grupos: um com os diversos tipos de violência e o outro com a população pesquisada.

Resultado: Selecionou-se um total de 20 artigos para este estudo, e todos eles basearam sua metodologia de pesquisa na aplicação de questionários, escalas e/ou entrevistas. Os pontos fortes e fracos das metodologias empregadas nos artigos selecionados foram discutidos, e sugeriu-se o uso da simulação como uma alternativa metodológica.

Conclusão: Esta revisão reforça que episódios de maus-tratos entre estudantes de Medicina ainda permanecem frequentes ao longo do tempo e que estão intimamente relacionados com prejuízo na saúde mental e no desempenho do estudante. Os autores recomendam nova abordagem metodológica para que se possam coletar dados relacionados aos efeitos advindos de um ambiente de aprendizagem hostil.

Palavras-chave: Educação Médica; Assédio; Sintomas Depressivos; Desempenho Acadêmico.

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INTRODUCTION

The mistreatment of medical students is prevalent throughout the world and has been pointed out since the early 1980s¹. In 2011, The Association of American Medical Colleges² more specifically described mistreatment through a list of behaviors with an effort to clarify the definition. Examples include sexual harassment, humiliation, psychological or physical punishment, and harassment based on race, religion, gender, or sexual orientation; behaviors which portray disrespect for the dignity of others and unreasonably interfere with the learning process.

A considerable number of studies³⁻⁶ have found that most medical students around the world experience high incidence rates of mistreatment during training. A meta-analysis carried out in 2014, including 59 studies, reported that the combined prevalence of harassment and discrimination of medical students was about 59.6%⁷.

Although mistreatment situations are not exclusive to medical training environments, Rautio et al.⁸ found a higher prevalence in medical courses when compared to courses in human science and technology areas. Some teachers have stated that these abuses are an unavoidable part of medical education^{9,10}. However, abusive behaviors result in negative effects on the students' well-being and learning abilities. Reports indicate^{9,11,12} that perceived abuse has been associated with long-term mental health consequences such as depression, alcoholism, and suicidal attempts. Students who have been victims of mistreatment, belittlement, harassment, or bullying report a loss in their relationship with teachers, are more dissatisfied with their professional choice, and more frequently consider dropping out of the course, feeling more stressed and depressed.

Therefore, it is noted that in addition to representing a common phenomenon in the medical training environment, mistreatment can result in several types of damage with different characteristics. Some result from sporadic situations, while others, from persistent ones. Some represent immediate damage, such as impairment in the relationship with the teacher and in the acquisition of knowledge. Others, however, are identified later and can have a long-term impact on the students' lives, including depression, increase consumption of alcoholic beverages and even dropping out of the course. Thus, the question arises: how to collect data involving such a sensitive subject and with such diversified outcomes, using an ideal approach? What has been practiced in the existing literature?

Thus, the main goal of this study was to analyze/evaluate the methodology used in recent research describing the consequences of a hostile learning environment on quality of

life, mental health and/or academic performance and propose a new approach.

METHOD

Study type: short review

A literature search was carried out from November 2019 to January 2020 to evaluate the recent literature related to the effects that any type of mistreatment can cause to undergraduate medical students and residents.

Keyword selection and database search

A comprehensive literature search was performed in 6 databases: PubMed, Scopus, Web of Science, SciELO, PsycINFO and Cochrane Library. The terms initially used in the search included descriptors and words from the text associated with key concepts related to the review topic. The terms were divided into 2 broad categories: 1) mistreatment types in the academic environment ("mistreatment", "harassment", "sexual harassment", "belittlement", "abuse", "intimidation", "bullying" and "violence"); 2) target population ("medical students", "medical school", "residents", "clinical internship" and "medical interns"). The search terms were refined during the bibliographic search and different combinations of descriptors and keywords were used according to the database and available controlled vocabularies. The Endnote[®] program was used to organize and manage references, as well as to eliminate duplicates.

Eligibility criteria

Inclusion/exclusion criteria were applied using a modified PICO - Population, Intervention, Comparison, Outcome - framework, which offers a useful, structured, and tailored approach to determine whether an article could be included or excluded from the research. However, the PICO formula was modified by substituting 'comparison' for 'environment' (Table 1).

Table 1. PICO framework.

P (population)	medical student OR medical school OR resident OR medical intern OR clinical internship
I (intervention)	harassment OR mistreatment OR belittlement OR bullying OR sexual harassment OR abuse OR intimidation OR violence
C (comparison)	clinical workplace OR hospital OR learning environment OR academic environment
O (outcome)	deleterious effects on life quality OR depression OR alcoholism OR stress OR anxiety OR poor learning environment OR satisfaction/dissatisfaction with career planning

Inclusion criteria using the PICO method. *P* Population, *I* Intervention (variable of interest), *C* Comparison (substituted for Environment as it more accurately aligns with this research), *O* Outcome.

The inclusion criteria comprised original studies, which included longitudinal studies - cohort and case-control, cross-sectional studies, case reports, experience reports, and experimental studies. Only articles written in English, Portuguese, or Spanish languages from 2005 to 2019 that described deleterious/negative effects of different types of mistreatment in medical students or residents were selected. The exclusion criteria comprised articles published before 2005 and those addressing the issue of academic violence, but not describing its impact on students. Studies discussing the consequences of mistreatment of any health care professionals or students from other health areas were also excluded. Research letters, articles without abstracts (because the abstracts were checked to review the article) and book chapters were not included in this review.

After this first step, a manual search of the references from the selected studies was also performed and the relevant data were summarized and organized.

RESULTS

One thousand, two hundred and seventy-eight (1,278) articles were found in the six databases (PubMed: 203; Scopus: 347; Web of Science: 355; SciELO: 53; Cochrane Library: 31; PsycINFO: 289). After excluding the duplicates, 706 articles

remained. From these, based on the eligibility criteria, 688 articles were excluded. Through a manual search of the 18 selected articles, two more were included, resulting in a total of 20 articles that were analyzed in this research (Figure 1).

This brief review showed that all abovementioned authors used questionnaires or scales as instruments to collect data. Some complemented their research with interviewing techniques. A description of all comparative parameters related to the methodologies used in these 20 studies was performed. The results are organized and displayed in Table 2.

DISCUSSION

Training to become a physician and the practice of Medicine are activities that cause a significant amount of stress for individuals. Common sources of stress include negative aspects of the learning environment, heavy workloads, lack of time, competition among colleagues, financial concerns, health issues, and peer/faculty relations are some of most common social and environmental challenges faced by medical students around the world³⁰. Several studies^{12,30-32} indicate that these stressors have significant effects on individuals and that a significant percentage of medical students reports anxiety and/or depression symptoms in response to stressors. Why should another stressor be embedded into this training?

Figure 1. Literature search flowchart.

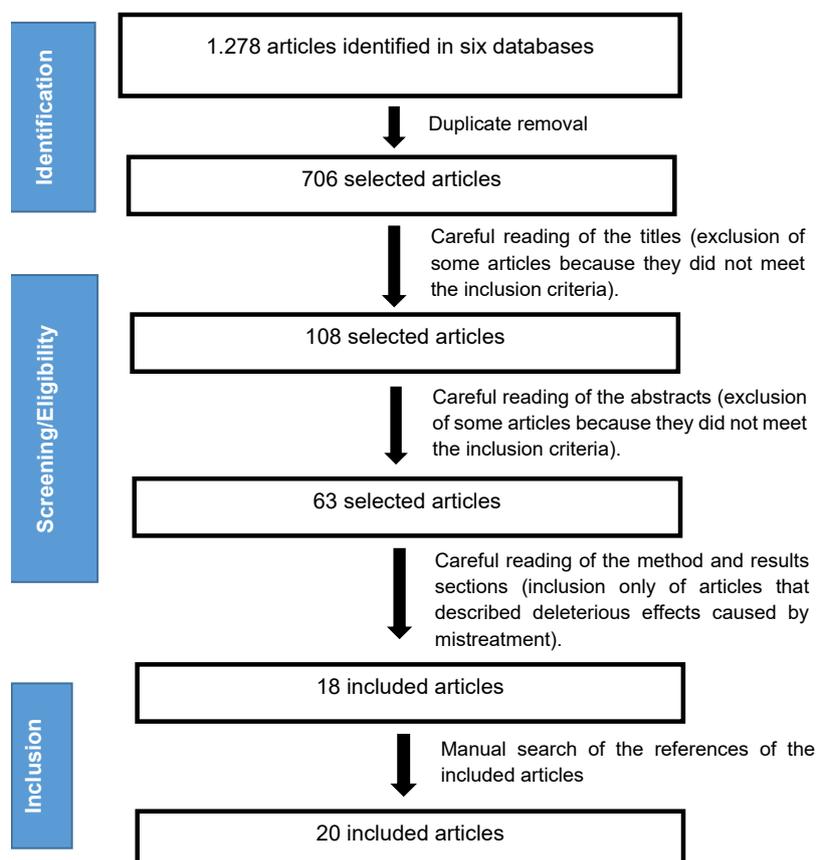


Table 2. Comparative analysis of the methods used to determine the prevalence of mistreatment and its effects on medical students.

Authors	Studied population	Main analyzed consequences	Method	Sample (S) / Response rate (Rr)	Prevalence
Shochet RB et al. ¹³ (2013)	Fourth-year medical students from 1 school in the United States	Impact level on learning	Cohort survey using a questionnaire developed by the authors	S: 119 Rr: 71%	42%
Cook AF et al. ¹⁴ (2014)	Third-year medical students from 24 schools in United States	Burnout	Cross-sectional survey using a questionnaire + a validated two-item version of the Maslach Burnout Inventory	S: 919 Rr: 61%	~70%
Wilkinson J et al. ¹⁵ (2006)	Students from all medical schools in New Zealand	Both negative and positive consequences for mental health and quality of life	Cross-sectional survey using a questionnaire developed by the authors	S: 1660 Rr: 83%	68%
Gan R, Snell L ¹⁶ (2014)	Final-year medical students from 1 school in Canada	Suboptimal learning experiences	Qualitative descriptive study with focal group interviews + a questionnaire with open-ended questions developed by the authors	S: 174 Rr: 23%	90%
Heru A et al. ¹⁷ (2009)	Third and fourth-year medical students from 1 school in the United States	Symptoms of posttraumatic stress	Cross-sectional survey using a questionnaire developed by the authors + the revised Impact of Event Scale	S: 91 Rr: 78%	73%
Owoaje ET et al. ¹⁸ (2012)	Final-year medical students from 1 school in Nigeria	Only negative consequences involving mental health, quality of life, social relationships, and academic performance	Cross-sectional survey using a semi-structured questionnaire developed by the authors	S:269 Rr: 100%	98%
Hardeman RR et al. ¹⁹ (2016)	Undergraduate medical students from 49 schools in the United States	Depression symptoms	Longitudinal web-based survey using a questionnaire developed by the authors + PROMIS Emotional Distress - Depression short-form	S: 5823 Rr: 79% (in the first approach) Rr: 64% (in the final approach)	95% (in the final approach, when students were in their final year)
Acik Y et al. ²⁰ (2008)	Residents from 7 hospitals in Turkey	The victim's immediate reactions to the experience	Cross-sectional survey using a semi-structured questionnaire	S: 2442 Rr: 70%	68%
Xie Z et al. ²¹ (2017)	Undergraduate medical students from 1 school in China	Only negative consequences involving quality of life and career planning	Cross-sectional survey using a questionnaire developed by the authors + the Short Form-36 (SF-36) Scale Testing Quality of Life	S: 180 Rr: 87%	30%
Peres MFT et al. ²² (2016)	Undergraduate medical students from 1 school in Brazil	The way students perceive their course and professional choice	Cross-sectional survey using a questionnaire developed by the authors	S: 1072 Rr: 31%	92%

Continue...

Table 2. (Continuation) Comparative analysis of the methods used to determine the prevalence of mistreatment and its effects on medical students.

Authors	Studied population	Main analyzed consequences	Method	Sample (S) / Response rate (Rr)	Prevalence
Nagata-Kobayashi S et al. ⁵ (2009)	Residents from 37 hospitals in Japan	Both negative and positive effects on mental health, quality of life and work performance	Cross-sectional survey using a questionnaire developed by the authors	S: 619 Rr: 57%	85%
Rademakers JJDJM et al. ²³ (2008)	Medical internship students from 2 schools in Netherlands	Well-being and "professional" performance	Cross-sectional survey using a questionnaire developed by the authors	S: 311 Rr: 73%	20% (only rated sexual harassment)
Nagata-Kobayashi S et al. ²⁴ (2006)	Fifth and sixth-year medical students from 6 schools in Japan	Only negative effects on mental health, quality of life and academic performance	Cross-sectional survey using a questionnaire developed by the authors	S: 559 Rr: 49%	68%
Frank E et al. ¹¹ (2006)	Undergraduate medical students from 16 schools in United States	Only negative effects on mental health and quality of life	Longitudinal survey using a questionnaire developed by the authors	S: 2884 Rr: 80% (in the first approach) Rr: 48% (in the final approach)	85% (in the final approach, when students were in their final year)
Maida AMS et al. ²⁵ (2006)	Undergraduate medical students from 1 school in Chile	Only negative effects on mental health and quality of life	Cross-sectional survey using a questionnaire developed by the authors	S/Rr: not described; 757 students participated	91%
Gagyor I et al. ²⁶ (2012)	Undergraduate medical students from 1 school in Germany	Only negative effects on mental health	Cross-sectional survey using a questionnaire developed by the authors	S: 1222 Rr: 32%	88%
Scott KM et al. ²⁷ (2015)	Medical students attending the final clinical-based training from 2 schools in Australia	The way students perceive their professional choice and evaluate their academic performance	Cross-sectional survey using a questionnaire developed by the authors	S: 151 Rr: 97%	51%
Olasoji HO ¹⁰ (2018)	Fourth-year medical students from 1 school in Nigeria	Negative effects on well-being and positive or negative effects on academic performance	Cross-sectional survey using a questionnaire + semi-structured interview developed by the author	S: 52 Rr: 90%	85%
Puranitee P et al. ²⁸ (2019)	Pediatric residents from 1 hospital in Thailand	Burnout	Cross-sectional survey with a mixed-method design: Maslach Burnout Inventory, the Postgraduate Hospital Educational Environmental Measure (PHEEM), Work-Related Quality of Life scale (WRQoL) + an individual interview	S: 42 Rr: 97%	51%
Hu YY et al. ²⁹ (2019)	Residents from 262 surgical residency programs in the United States	Burnout and suicidal thoughts	Cross-sectional survey using a questionnaire developed by the authors	S: 7464 Rr: 99%	50%

The frequency of mistreatment, harassment, and other forms of aggression in medical school, despite the efforts to mitigate them, remains high. Since 2004, two main reasons have been suggested to explain it³³. First, the existence of strongly hierarchical relationship patterns and a medical culture that permeates teaching and learning relationships, perpetuating mistreatment situations as “rites of passage”. Olasoji’s survey¹⁰ pointed out that almost half of the studied sample did not report mistreatment incidents because they thought they were not important enough to be reported and considered them as inherent to medical training. The second is related to the low success rates of implemented strategies to reduce inappropriate attitudes in the academic environment. This same survey showed that the majority (66.7%) of students who reported a “toxic” experience felt neutral to the outcome of reporting. Besides that, Wilkinson et al.¹⁵, alert to the possibility of the existence of an abuse cycle, whereby medical students who have been abused become the perpetrators in the future.

This study made it possible to reaffirm that mistreatment continues to occur very frequently and that the impacts resulting from inappropriate behaviors in the learning environment can move from social, mental, performance-related harm to long-term professional impairment. It was also noted that most of the surveys based their data collection methodology on the use of questionnaires and/or interviews.

According to Lakatos³⁴, the research success depends on the researcher’s ability to correctly choose the appropriate method for the subject they wish to research. The use of questionnaires and the filling out of validated scales represent established methods in the analysis of mistreatment situations in the academic environment. They certainly have several strengths, which should be highlighted, such as the possibility that the participant has to respond at an appropriate moment for themselves and the possibility of maintaining anonymity. However, methodological weaknesses can also be raised. Prodanov³⁵ states that questionnaires cannot suggest or induce responses. It was found that some questionnaires^{11,18} addressed the impacts caused by mistreatment by directing answers to negative effects, giving the respondent no other choice of response. Only in the most recent studies, such as the one by Olasoji¹⁰, answers involving possible “positive” aspects were added, and what could have been considered by many authors as not possible so far, surprisingly pointed out that 37.5% felt the “toxic” practice was useful for learning and made them stronger.

Andrade³⁶ warned that in surveys using questionnaires only, where you cannot have an interviewer present, answers can be biased, leading to an apparent uniformity. That can happen because of the difficulty some respondents may

have to understand some questions. The data obtained from most articles^{13,22,27} that constituted this brief review result from questionnaire analyses only, without the association of a subsequent interview that would allow the participant to solve any type of doubt that arose during the filling out of the questionnaires, or to expose any type of feelings that they were unable to explain when completing the standard questionnaire. And here, it is worth mentioning that the impacts generated by any type of mistreatment represent a complex type of data to be collected, which can vary a lot, whether regarding the affected area or its intensity, as well as variations from individual to individual.

Although it does not represent the majority, some authors^{10,16,28} improved their research by associating questionnaires with interviews when collecting data. However, this is a sensitive issue, and several characteristics of interviewing techniques could also generate bias in the obtained results, but in a different way: the impossibility of anonymity, providing less freedom and security related to the answers and higher risk of bias due to the interviewer’s influence. Lack of anonymity when approaching such a subject can intimidate students into participating and/or giving actually true answers. In the study by Gan and Snell¹⁶, the participation rate was only 23%. Over the past few decades, several authors^{15,33,37} pointed out that students do not report mistreatment because they fear victimization or have concerns related to potential repercussions in performance evaluation.

Furthermore, for the situation in question - impacts caused by a hostile academic environment - not knowing the circumstances in which questionnaires or scales were filled out, makes it difficult to control and verify the real extent of the damages caused *versus* those reported by the students. The cross-sectional nature of surveys using questionnaires, scales or interviews increases this possible bias. Some students, depending on the period of time that elapsed between the incidents and participation in the survey, may have already overcome the situation and, thereby, minimize the damage caused by them. Others, in contrast, in the absence of adequate social support that surrounds them and having low coping capacity, can maximize the losses. In one way or another, the retrospective nature of the collected data limits the available information, and the memory recall of unpleasant situations is often faulty and subject to various hindsight biases³⁸.

Some authors^{11,19} have proposed a longitudinal survey, with questionnaires being applied at two or more moments, and theoretically, this could minimize the bias of a cross-sectional analysis. However, invariably, these same articles faced the difficulty in maintaining good response rates, as they tend to decline throughout the study.

Besides that, studies always benefit from the use of different methodologies, whatever the area of interest is. The use of simulation could be a methodological alternative that would avoid many of the weaknesses pointed out so far, especially when determining the immediate damage from mistreatment situations in the learning environment (What actually happens to the student at the moment of the mistreatment?; Are learning and performance impaired?).

Riskin et al.^{39,40} have already proven the usefulness of simulation for this type of research by conducting studies that aimed to assess the impact of rudeness on the performance of NICU (Neonatal Intensive Care Unit) medical teams. During training workshops, some teams were randomly assigned to an exposure to rudeness. In both surveys, they showed that rude attitudes had deleterious effect on the teams' performance. Diagnosis and intervention, information sharing, workload, help, and communication were affected.

Setting up scenes of mistreatment in a simulation environment would provide prospective and recorded observation in a nonbiased fashion, typically using audio and video capture. Additionally, some other parameters could be monitored for further analysis, such as heart rate variability, facial and behavioral analysis, and assessment of the proposed task performance. They would be of great value to study with a little more depth the real effects of the stress caused by mistreatment in the academic environment.

It's also necessary to make a very pertinent caveat when discussing the general belief that individuals learn better from stressful events, especially when the source of stress is mistreatment. According to Christianson⁴¹ the information of an event to be remembered will be retained very well if the event itself is the cause of the individual's stress response. If the stress is caused by something peripheral to the information to be remembered, the consolidation of that information will not be improved. So, it is possible to infer that a student who feels stressed during a class where they are learning how to intubate a patient, for example, due to the presence of the teacher's intimidating or abusive attitudes, they may develop a strong memory of the teacher's attitudes and actions, but the memory they will have of the class itself, and of the associated essential learning points is unlikely to be improved.

Therefore, simulation would allow differentiating environments where the student must perform a certain action under intense pressure and stress because their patient's life is at risk from those in which frequent abuse and verbal aggression occur, showing that such attitudes are unnecessary and closely related to learning impairment. Perhaps, it will help to end years of a hierarchical culture that confounds these concepts and postulates these attitudes as necessary for medical training.

CONCLUSIONS

Based on 3 important considerations, it is clear that a new approach is needed to study the impact of a hostile learning environment on students: 1. The prevalence indicated in the majority of the studies continue to show worryingly high rates of mistreatment of medical students; 2. Sufficient documentation already points out that mistreatment to students can result in a wide range of negative outcomes, both in the short and long-term; 3. This review allowed the identification of some methodological weaknesses of studies carried out in area to date.

For future studies, the simulation of learning scenarios showing inadequate teachers' behaviors must be effectively put into practice in order to assess their effects on the students.

AUTHORS' CONTRIBUTION

Patricia Costa Mincoff Barbanti contributed to the study concepts/design, literature search, drafting of the manuscript, critical content review and approval of the final version of the manuscript. Sandra Marisa Pelloso and Sergio Ricardo Lopes de Oliveira contributed to the study concepts/design and approval of the final version of the manuscript. Maria Dalva de Barros Carvalho contributed to the study concepts/design, literature search, critical content review and approval of the final version of the manuscript.

CONFLICTS OF INTEREST

We declare no conflicts of interest.

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REFERENCES

1. Silver HK. Medical students and medical school. *JAMA*. 1982;247(3):309-10.
2. Association of American Medical Colleges. Medical School Graduation Questionnaire: 2011 All Schools Summary Report. Washington, DC: Association of American Medical Colleges. [access in 20 jan 2020]. Available from: www.aamc.org/download/263712/data/gq-2011.pdf.
3. Finucane P, O'Dowd T. Working and training as an intern: a national survey of Irish interns. *Med Teach*. 2005;27(2):107-13.
4. Scott J, Blanshard C, Child S. Workplace bullying of junior doctors: cross-sectional questionnaire survey. *N Z Med J*. 2008;121(1282):10-4.
5. Nagata-Kobayashi S, Maeno T, Yoshizu M, Shimbo T. Universal problems during residency: abuse and harassment. *Med Educ*. 2009 Jul;43(7):628-36.
6. Askew DA, Schluter PJ, Dick ML, Régo PM, Turner C, Wilkinson D. Bullying in the Australian medical workforce: cross-sectional data from an Australian e-Cohort study. *Aust Health Rev*. 2012;36(2):197-204.
7. Fnais N, Soobiah C, Chen MH, Lillie E, Perrier L, Tashkhandi M, et al. Harassment and Discrimination in Medical Training: a Systematic Review and Meta-Analysis. *Academic Medicine*, 2014;89(5):817-27. doi: 10.1097/ACM.000000000000200.

8. Rautio A, Sunnari V, Nuutinen M, Laitala M. Mistreatment of university students most common during medical studies. *BMC Med Educ*. 2005;5:36.
9. Ahmer S, Yousafzai AW, Bhutto N, Alam S, Sarangzai AK, Iqbal A. Bullying of medical students in Pakistan: a cross-sectional questionnaire survey. *PLoS One*. 2008;3(12):e3889.
10. Olasoji HO. Broadening conceptions of medical student mistreatment during clinical teaching: message from a study of “toxic” phenomenon during bedside teaching. *Adv Med Educ Pract*. 2018;9:483-94.
11. Frank E, Carrera JS, Stratton T, Bickel J, Nora LM. Experiences of belittlement and harassment and their correlates among medical students in the United States: longitudinal survey. *BMJ*. 2006;333(7570):682.
12. Yusoff MSB, Rahim AFA, Baba AA, Ismail SB, Mat Pa MN, Esa AR. The impact of medical education on psychological health of students: a cohort study. *Psychol Health Med*. 2013;18(4):420-30.
13. Shochet RB, Colbert-Getz JM, Levine RB, Wright SM. Gauging events that influence students’ perceptions of the medical school learning environment: findings from one institution. *Acad Med*. 2013;88(2):246-52.
14. Cook AF, Arora VM, Rasinski KA, Curlin FA, Yoon JD. The prevalence of medical student mistreatment and its association with burnout. *Acad Med*. 2014;89(5):749-54.
15. Wilkinson TJ, Gill DJ, Fitzjohn J, Palmer CL, Mulder RT. The impact on students of adverse experiences during medical school. *Med Teach*. 2006;28(2):129-35.
16. Gan R, Snell L. When the learning environment is suboptimal: exploring medical students’ perceptions of “mistreatment”. *Acad Med*. 2014;89(4):608-17.
17. Heru A, Gagne G, Strong D. Medical student mistreatment results in symptoms of posttraumatic stress. *Acad Psychiatry*. 2009;33(4):302-6.
18. Owoaje ET, Uchendu OC, Ige OK. Experiences of mistreatment among medical students in a university in south west Nigeria. *Niger J Clin Pract*. 2012;15(2):214-9.
19. Hardeman RR, Przedworski JM, Burke S, Burgess DJ, Perry S, Phelan S, et al. Association Between Perceived Medical School Diversity Climate and Change in Depressive Symptoms Among Medical Students: A Report from the Medical Student CHANGE Study. *J Natl Med Assoc*. 2016;108(4):225-35.
20. Acik Y, Deveci SE, Gunes G, Gulbayrak C, Dabak S, Saka G, et al. Experience of workplace violence during medical speciality training in Turkey. *Occup Med (Lond)*. 2008;58(5):361-6.
21. Xie Z, Li J, Chen Y, Cui K. The effects of patients initiated aggression on Chinese medical students’ career planning. *BMC Health Serv Res*. 2017;17(1):849.
22. Peres MF, Babler F, Arakaki JN, Quaresma IY, Barreto AD, Silva AT, et al. Mistreatment in an academic setting and medical students’ perceptions about their course in São Paulo, Brazil: a cross-sectional study. *Sao Paulo Med J*. 2016;134(2):130-7.
23. Rademakers JJ, van den Muijsenbergh ME, Slappendel G, Lagro-Janssen AL, Borleffs JC. Sexual harassment during clinical clerkships in Dutch medical schools. *Med Educ*. 2008;42(5):452-8.
24. Nagata-Kobayashi S, Sekimoto M, Koyama H, Yamamoto W, Goto E, Fukushima O, et al. Medical student abuse during clinical clerkships in Japan. *J Gen Intern Med*. 2006;21(3):212-8.
25. Maida SAM, Herskovic MV, Pereira SA, Salinas-Fernández L, Esquivel CC. Percepción de conductas abisivas en estudiantes de medicina. *Rev Med Chil*. 2006;134(12):1516-23.
26. Gágyor I, Hilbert N, Chenot JF, Marx G, Ortner T, Simmenroth-Nayda A, et al. Frequency and perceived severity of negative experiences during medical education in Germany--results of an online-survey of medical students. *GMS Z Med Ausbild*. 2012;29(4):Doc55.
27. Scott KM, Caldwell PH, Barnes EH, Barrett J. “Teaching by humiliation” and mistreatment of medical students in clinical rotations: a pilot study. *Med J Aust*. 2015;203(4):185e.
28. Puranitee P, Stevens FFCJ, Pakakasama S, Plitponkarnpim A, Vallibhakara SA, Busari JO, et al. Exploring burnout and the association with the educational climate in pediatric residents in Thailand. *BMC Med Educ*. 2019;19(1):245.
29. Hu YY, Ellis RJ, Hewitt DB, Yang AD, Cheung EO, Moskowitz JT, et al. Discrimination, Abuse, Harassment, and Burnout in Surgical Residency Training. *N Engl J Med*. 2019;381(18):1741-52.
30. Damiano RF, de Oliveira IN, Ezequiel OS, Lucchetti AL, Lucchetti G. The root of the problem: identifying major sources of stress in Brazilian medical students and developing the Medical Student Stress Factor Scale. *Braz J Psychiatry*. 2021;43(1):35-42.
31. Bugaj TJ, Cranz A, Junne F, Erschens R, Herzog W, Nikendei C. Psychosocial burden in medical students and specific prevention strategies. *Ment Health Prev*. 2016;4:24-30.
32. Lucchetti G, Damiano RF, DiLalla LF, Lucchetti ALG, Moutinho ILD, da Silva EO, et al. Cross-cultural Differences in Mental Health, Quality of Life, Empathy, and Burnout between US and Brazilian Medical Students. *Acad Psychiatry*. 2018;42(1):62-67.
33. Fried JM, Vermillion M, Parker NH, Uijtdehaage S. Eradicating medical student mistreatment: a longitudinal study of one institution’s efforts. *Acad Med*. 2012;87(9):1191-8.
34. Lakatos EM. Fundamentos de metodologia científica. 5a ed. São Paulo: Atlas; 2003.
35. Prodanov CC. Metodologia do trabalho científico: métodos e técnicas da pesquisa e do trabalho acadêmico. 2a ed. Novo Hamburgo: Feevale; 2013.
36. de Andrade MM. Introdução à metodologia do trabalho científico. 9a ed. São Paulo: Atlas; 2009.
37. Chung MP, Thang CK, Vermillion M, Fried JM, Uijtdehaage S. Exploring medical students’ barriers to reporting mistreatment during clerkships: a qualitative study. *Med Educ Online*. 2018;23(1):1478170. doi: 10.1080/10872981.2018.1478170.
38. Gaba DM. Do as we say, not as you do: using simulation to investigate clinical behavior in action. *Simul Healthc*. 2009;4(2):67-9.
39. Riskin A, Erez A, Foulk TA, Kugelman A, Gover A, Shoris I, et al. The Impact of Rudeness on Medical Team Performance: A Randomized Trial. *Pediatrics*. 2015;136(3):487-95.
40. Riskin A, Erez A, Foulk TA, Riskin-Geuz KS, Ziv A, Sela R, et al. Rudeness and Medical Team Performance. *Pediatrics*. 2017;139(2):e20162305.
41. Christianson SA. Emotional stress and eyewitness memory: a critical review. *Psychol Bull*. 1992;112(2):284-309.



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