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Pre-clinical medical school curriculum on trauma-informed care improved confidence in caring for survivors of sexual assault

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Abstract

Background

Survivors of sexual assault (SA) and intimate partner violence (IPV) frequently experience re-traumatization within the healthcare system, leading to medical mistrust and increased loss to follow-up. Provider discomfort and inadequate training are recognized barriers to trauma-informed care, yet mandatory medical school curriculum addressing SA/IPV remains critically underdeveloped. This study evaluated the effectiveness of pre-clinical trauma-informed SA/IPV curriculum via confidence scores and self-identified challenges in caring for survivors.

Methods

A one-week long, three-part curriculum was delivered to first-year students at The Ohio State University College of Medicine between 2021–2023. This included a 15-minute pre-recorded lecture on the neurobiology of trauma and physician role, a 2-hour in-person panel featuring male and female survivors, and a faculty-led session with a standardized patient (SP) encounter. Students completed pre- and post-intervention surveys rating Likert-scale confidence in supporting a friend and a patient. Free responses were analyzed via qualitative thematic analysis mapped to ACGME core competencies.

Results

Among 257 included students, confidence increased significantly from pre- to post-intervention for supporting a friend and a future patient ($p < 0.01$), with higher baseline confidence for supporting a friend. Students with prior trauma-informed care or advocacy experience had greater baseline confidence but still improved significantly, as did those without prior exposure. No significant difference was observed between gender groups ($p > 0.01$). Of 18 identified challenge themes, interpersonal communication concerns decreased most, while systems-based practice concerns and the desire for additional practice increased. Lastly, "difficulty relating to the patient" was unchanged.

Conclusions

Our practice-based SA/IPV curriculum significantly improved student confidence regardless of prior training and shifted challenges from foundational communication fears toward systems-based practice concerns. Combining knowledge acquisition, survivor panels, and low-stakes SP practice within existing curricular structures offers a feasible and easily replicable model for embedding trauma-informed care education early in training.

Introduction

Sexual assault (SA) and intimate partner violence (IPV) are traumatic experiences with profound physical, psychological and social consequences that affect all demographics. Worldwide, 32% of women have been victims of SA/IPV[1]. In 2022, the Centers for Disease Control released the results of a survey of 15,152 women and 12,419 men which found nearly 50% of women and over 40% of men had experienced sexual violence, physical violence and/or stalking by an intimate partner in their lifetime[2]. For individuals belonging to marginalized groups, including ethnic, racial and gender minorities, these rates are significantly higher[3]. These reports are often considered underestimates, as survivors commonly choose not to report due to safety concerns, guilt, self-blame, or fear of judgement[4].

Survivors of SA/IPV experience high rates of chronic medical conditions[5]. Despite their greater healthcare needs, survivors are less likely than the general population to engage in ongoing medical care. For many survivors of SA/IPV, the emergency department is one of the first points of contact after an assault. 21% of survivors seek acute medical care[6]. This interaction can heavily influence a survivor's recovery and willingness to seek future medical care. Unfortunately, this interaction is often poor. In fact, the sexual assault nurse examiner (SANE) program was developed in the 1970s to address widespread documented neglect and re-traumatization[7]. After receiving acute care in the emergency department, only 28% of male and female survivors sought the recommended medical care and counseling[8]. These findings are correlated with higher rates of medical mistrust. A 2025 study showed women who had experienced previous forced or threatened rape scored an average of 5.11 points higher on the 60-point Group-Based Medical Mistrust Scale compared to women who had not[9]. Unfortunately, survivors today often describe their interaction with healthcare providers as a "second rape", as they were blamed, dismissed, disbelieved, denied autonomy, and treated with an overall lack of empathy[10]. This re-victimization leaves them feeling distressed and reluctant to seek further help[11]. As a result, these patients are more frequently lost to follow-up, only returning to receive care when their medical concerns are emergent.

An important contributing factor to this gap in healthcare is provider discomfort in caring for survivors. A 2020 survey of emergency department providers found less than half felt confident they could avoid retraumatizing SA survivors[12]. Even if providers feel comfortable, a pervasive worry is there is not enough time to provide adequate care. A 2024 survey of 179 US physicians found commonly perceived barriers to providing trauma-informed care included time constraints, lack of resources, provider stress, and lack of education/training on the topic[13]. Unfortunately, this translates to visible gaps in care which can go unnoticed by providers. Physicians significantly underestimate the negative impact they have on survivors, and survivors report significantly more secondary trauma from the medical system than physicians predicted[11].

There is hope. Medical training on trauma-informed care has been shown to improve provider comfort and knowledge which directly improved patient outcomes[14–16]. These data underscore the need for training in trauma-informed care early during medical school to avoid revictimization and improve patient outcomes. Unfortunately, trauma-informed medical school curriculum is critically underdeveloped. This

is evidenced by the relatively scarce literature on sexual assault medical education. To our knowledge, there are only two other published studies on the implementation of mandatory curriculum: one which was developed at Rush Medical College[17], and the other was developed by our group at The Ohio State University[18]. Regarding IPV, there are only three additional papers on mandatory curriculum from UCLA, University of Massachusetts, and Uniformed Services University[19–21]. This is deeply problematic as the USPSTF guidelines recommend screening patients for sexual assault once a year[22], and this topic is tested on medical board exams[23], meaning training is lagging behind its own standards.

To address this gap in training, we worked with community providers to introduce students to a longitudinal sexual assault curriculum which seamlessly fits into their existent curriculum on reproductive health. The design integrated student feedback and the literature regarding many of the setbacks SA/IPV survivors face when seeking medical care. The result is a curriculum which we hope will improve the state of care for survivors of SA/IPV. Importantly, the principles taught can be applied broadly to care for patients with any form of trauma.

Methods

Description of the curriculum

This curriculum was delivered to first-year medical students at The Ohio State University College of Medicine as part of the Endocrine and Reproductive Disorders block. The curriculum consisted of three key components delivered over the course of 1 week: a virtual pre-recorded lecture, a patient panel, and a faculty-led training session followed by a standardized patient (SP) encounter, delivered in that order.

The virtual lecture was a 15-minute introductory module on the neurobiology of trauma and the physician's role compared to other interprofessional and community-based partners, such as nurses, social workers, and sexual assault advocates. This was followed by a 2-hour in-person patient panel. The panel opened with a 15-minute introduction, led by an emergency medicine physician, on the importance of screening and how to screen survivors. In making this curriculum, we first surveyed students on who they wanted to hear from, and a majority endorsed their desire to hear from a physician in addition to survivors. Next, students heard from both male and female survivors of sexual violence. The survivors shared their personal stories, their interaction with the medical system, and their experience with the forensic exam and law enforcement. Specifically, there was an emphasis on how their interactions with healthcare influenced their recovery and willingness to seek follow-up care. They also discussed positive actions future physicians took to rebuild trust. The panel closed with a 30-minute question-and-answer session. The questions were submitted via notecards and an online form so facilitators could pre-screen questions. Of note, while the survivors did not feel the need for pre-screening questions, the facilitators wanted to diminish potential indirect harm to fellow medical student survivors and to encourage questions as they could be submitted anonymously (which a vast majority were). Three to five days later, students had an opportunity to put their knowledge into practice during a small group encounter with an

SP who disclosed a previous history of sexual abuse. SP encounters demonstrate established efficacy in improving real-world communication skills[24–26]. The groups were 8–10 students in size and were led by a physician facilitator. The students were given a 30–40-minute faculty-led training session with an accompanying worksheet which summarized the most salient points. Students were provided with a resource card which could be worn behind their badge. These resources were obtained in coordination with the local rape-crisis center, the Sexual Response Network of Central Ohio (SARNCO), and personally vetted by the research team. Students were encouraged to reference this worksheet and resource card during the encounter. The SP had a chief complaint of amenorrhea and was nervous they could be pregnant. This feeling of loss of control brought up previous memories of abuse, which were disclosed in the social history during sexual assault screening. In this module, we wanted to emphasize the inadequacy of asking “do you feel safe at home?” and required a more direct question like “Has anyone ever forced you to have sex even when you did not want to?” In addition, we wanted students to ask which type of resource the patient wanted (individual counseling, support group, connection to a crisis center) as mental health resources are not “one size fits all”. Students received feedback and help from their peers and the physician facilitator. This curriculum was a part of their usual weekly practical skills training sessions, so students were familiar with the group they practiced with.

Due to the sensitive nature of this topic, steps were taken to ensure the curriculum caused minimal distress. The patient panel was placed on a Friday morning, with no other mandatory curricular responsibilities that day. This was done partly based on feedback from students that the panel was emotionally challenging. Patient panel speakers were screened and selected in part based on their demonstrated ability to filter their stories as not to cause unnecessary secondary trauma and ability to lighten the mood when appropriate. This was assessed by having survivor speakers give a practice talk during interviews or to direct us to an example of their work (i.e. publicly recorded talk). In attendance at the panel were the college of medicine counselor and SARNCO advocates. Students were made aware of these support people and were directed to find them outside the lecture hall if needed. Finaly, resources were displayed at the start of the panel, and a mindfulness exercise concluded the session to help center students with heightened emotions.

The SP scenario in the faculty-led training session centered around a previous abusive relationship that happened years ago without any remaining contact with the abuser. These details were deliberately simplified, so there would be no need for safety planning, mandatory reporting, or involvement of law enforcement. SPs were personally trained each year by the research team and encouraged to give enthusiastic responses to emotional support offered by students. Training included advice on how the SP could guide responses and provide gentle feedback, including redirecting the conversation if students asked an inappropriate or probing question. We wanted this to be a positive experience. We also encouraged students to take breaks and ask other students for help.

During our first year of implementation, we sat in on sessions and held debriefing session with our SPs to understand potential opportunities for improvement. We learned some students did not get a disclosure, and the facilitator either had to step in, or the encounter ended prematurely. To remedy this,

the second year we adjusted our facilitator notes, PowerPoint, and counseled the SPs to have a more active role in guiding the encounter. While it is difficult to control physician compliance with facilitator notes or individual physician facilitation skills, we can adjust the instructions we give to SPs. The following year we debriefed with our SPs, who noted all students were receiving a disclosure without the need for post-encounter facilitator intervention. To our knowledge, only one classroom of students did not receive a disclosure. After data handling procedures detailed below, this likely only affected a few data points.

Evaluation of the curriculum and data handling

Students were asked to complete pre- and post-intervention surveys. Data was collected between 2021–2023. Data was collected in accordance with our approved IRB. All data were checked for consenting individuals to the Lead-Serve-Inspire (LSI) curriculum repositories and non-consenting students were removed. Each student was only allowed one response. For example, if a student repeated the curriculum, only their initial reactions were included in the analysis. After removing these duplicates, every pre-questionnaire only had one post-questionnaire. Additionally, there were no missing values, as all students filled out every part of the survey. This resulted in 257 total participants.

Students were asked to rank their confidence on a Likert-style scale in caring for survivors of sexual violence when providing support to either a friend or a patient. Participants were asked to report prior exposure to curriculum on trauma-informed care or SA/IPV-related community advocacy work. Additionally, we conducted a qualitative review of short-answer responses from participants regarding challenges they foresaw in providing care to survivors, which they answered pre- and post-curriculum.

Statistical analyses

All measured parameters were reported ± standard error of the mean. Statistical analyses were performed using Prism v.11 software. A Shapiro-Wilkes test was performed to determine the normality of our data. Our data was not normal, so we proceeded with an alpha of 0.01 to determine statistical significance. For most quantitative analyses, two-way ANOVAs were run due to a 2 x 2 factorial design. For the analysis of overall confidence, there were only two groups compared (pre- and post-curriculum), so a Welch's t-test was used. In the case of significant interactions, Sidak's multiple comparisons post-hoc tests were run.

To complete the qualitative review, three MD/PhD student content experts and two teaching faculty members reviewed student responses and identified overarching themes. The content experts randomly divided the data equally. These content experts individually reviewed student responses and independently created a theme to assign to each student. The student content experts then met to compare generated themes, agree upon a list of themes, and assign a consensus theme for each student response. From there, teaching faculty refined the wording of themes based on the ACGME six

core competencies[27] and common bioethical principles. Using this refined list, the responses were randomly divided in half and the two faculty experts individually assigned themes to each student response without knowing the theme the student content experts had assigned. Finally, consensus was reached for the final themes for each response through an iterative process. Every student response could be assigned up to three themes. This process was repeated for both pre- and post-intervention survey responses. Overall, 18 challenge themes were identified and an additional theme for noted appreciation for the curriculum.

Results

The demographics of the participants are represented in Table I.

Table I

Demographics by gender, race, and ethnicity.

Gender		
Male	111	43%
Female	146	57%
TOTAL	257	100%
Race and Ethnicity		
African American	23	9%
Asian, Chinese	33	13%
Asian, Indian	23	9%
Asian, Other Asian	20	8%
Latinx	26	10%
Other	14	5%
N/A	1	0%
Non-Hispanic White	117	46%
TOTAL	257	100%

Trauma-informed Care Curriculum Increased Student Reported Confidence Scores

Student confidence scores significantly increased from pre- to post-intervention overall (Fig. 1A) and when broken down into helping a friend and in providing medical care (Fig. 1B). Comparing types of support, students reported higher confidence scores for helping a friend versus a patient (Fig. 1B).

Lastly, we did not find a significant difference in confidence scores between gender groups ($p > 0.01$).

This information is additionally presented summarized in a table format including the number of male and female students (Table II).

Table II: Confidence in providing support to survivors by context and prior exposure to trauma-informed care curriculum. T-test. * : $p < 0.0001$

Prior Experience	Pre-Intervention	Post-Intervention		
	Mean (SD)	Mean (SD)	Mean Difference (SD)	n (M/F)
Confidence in Providing Medical Care				
Yes	2.81 (0.90)	3.88 (0.77)	1.07 (0.11)*	111 (39/72)
No	2.12 (0.85)	3.63 (0.73)	1.49 (0.09)*	146 (72/74)
Total	2.42 (0.93)	3.73 (0.76)	1.31 (0.82)*	257 (111/146)
Confidence in Supporting a Friend				
Yes	3.52 (0.94)	4.31 (0.68)	0.78 (0.11)*	111 (39/72)
No	2.96 (0.95)	3.91 (0.72)	0.95 (0.10)*	146 (72/74)
Total	3.20 (0.99)	4.08 (0.73)	0.88 (0.78)*	257 (111/146)

Students identified less challenges related to interpersonal communication after the curriculum

We conducted a qualitative review of student responses to the question “What do you imagine will be the biggest challenge to providing survivors of sexual violence appropriate medical care and support?” The number of students who mentioned a particular theme in their response is shown in a summarized table, pre- and post-curricular intervention (Table III).

Table III

Student perceived challenges in providing care for survivors of sexual violence pre- and post-curriculum. Reported value is number of students who identified each challenge in their free response.

Challenges Identified	Pre-Intervention (n)	Post-Intervention (n)	Difference (n)
Patient Care			
Sexual assault screening and history gathering	28	40	12
Collecting medically relevant information	17	10	-7
Providing patient-centered care	40	26	-14
Doing the least harm (non-maleficence)	18	4	-14
Systems-Based Practice			
Lack of knowledge of resources	10	23	13
Navigating time constraints	6	19	13
Knowing the physician's role	15	22	7
Interpersonal Communication			
Difficulty with relating to patient	8	8	0
Avoiding patient re-traumatization	29	19	-10
Establishing trust and safety	65	51	-14
Empowering survivor	22	8	-14
Not knowing what to say	35	27	-8
Providing emotional support	34	22	-12
Professionalism/Autonomy			
Respecting patient's boundaries	16	29	13
Patient barriers to receiving care	10	11	1
After the visit fears	4	9	5
Personal & Professional Development			
Desire for practice-based skill development	23	28	6
Maintaining personal wellness and boundaries	13	17	4
Curriculum Evaluation			
Appreciation for curriculum	0	13	13
Total	393	373	-20

The most commonly identified challenges before completion of the curriculum were regarding providing patient centered care and establishing trust and safety. Many of the comments within these topics noted concern about saying the “right” thing and nervousness about making matters worse. For example, one student stated, “I think being so afraid of saying the wrong thing or something offensive might make it difficult to establish a trusting relationship with the patient.” Another student noted, “The biggest challenge for me is figuring out the best way to approach the situation without feeling intimidated or that I would make things worse somehow.” Students were concerned about being genuine and non-rehearsed, and they were afraid their empathy would not be believed: “When offering condolences and words of affirmation, I fear patients might believe they are not genuine or sincere.” The themes changed dramatically pre- and post-curriculum. The overarching theme that had the largest decrease in concerns was related to interpersonal communication (e.g. establishing trust and safety, avoiding patient re-traumatization, not knowing what to say). “Now that I've watched an SP encounter where I was able to see how conversations can play out and how to address a patient's feelings, I feel a bit more at ease.” A topic of note with sizable increase, was the desire for more practice: “I know what things I should say now, but I just need practice in order to do a good sensitive job.”

The theme that increased the most was systems-based practice (e.g. navigating time constraints, knowledge of resources). “The biggest challenge is likely the limited clinic visit time.” Many students also identified concerns regarding difficulty in respecting the patient’s boundaries and not being able entirely solve the survivors concerns in one visit. This was exemplified in two students’ responses: “One of the biggest challenges I can imagine…is our tendency as doctors to want to help and fix things…but in this scenario, we will have to learn to be patient. We will have to learn that we need to give these patients their space and allow them to set the timeline. We cannot be overly pushy in trying to treat these patients.” Similarly, another student noted “As medical students we want to be able to solve the problem, and in this case, we will not be able to solve it and instead will have to just be there and listen.”

One topic that did not change was difficulty relating to the patient. One student shared: “I would want to convey a real sense of empathy and show them that I care, but that will be difficult without having personal experiences to relate to. I just want it to come across as genuine compassion and care.”

Discussion

Overall, students deeply cared and valued this education. None said this topic was unimportant; none started with the highest confidence rating for all questions. Students recognized the weight of the importance of the interactions survivors have with the medical system, and this often led to fear of saying the wrong thing. Survivors often feel brushed off by healthcare providers citing them as cold and unfeeling[11,28]. This curriculum gives a window into future physicians at the beginning of their training, showing they may feel helpless and scared. For example, in our sit-ins during some of the encounters, we observed students sometimes “froze.” During the debrief session, they expressed they became so afraid of saying the wrong thing that, at first, they said nothing at all. Overtime, this can lead to provider burnout, and training has been shown to be protective[29,30].

We found our curriculum significantly increased confidence scores regardless of prior training in survivor advocacy. This shows our curriculum was both effective and provided novel information. Further, it was helpful for increasing confidence in providing care to both patients and friends, showing an improvement generally in interpersonal communication. Looking at the qualitative analyses, we begin to better understand the reasons behind the increased confidence scores.

An important topic that kept arising is the fear of not coming across as genuine. We postulate this may be due to lack of practice, one of the themes which increased after our training sessions. During undergraduate and traditional medical school training, we were often given scripts to say: “I believe you,” “you are brave,” “thank you for telling me.” These are affirming phrases to use when appropriate and are a part of our teaching as well. However, without an opportunity to develop language that feels right to each individual student, it can come across as contrived. Our survivor speakers during the patient panel echo this, saying even when providers try to empathize with them, it sounds like they are repeating rehearsed phrases instead of actually sitting in the moment with them and acknowledging their concerns. We knew the SP encounter would be fundamental to the development of natural language, since SP encounters are well-documented to improve real-world patient communication skills[24–26]. It is important to have opportunities to use these phrases in low-stakes environments that simulate a real encounter.

Adjustments were made to make the experience less stressful as detailed in the Methods section, and we maintained a balance of giving students confidence, while not making them overly confident. Our data suggest that, while student concerns decreased in number, they did not go away. They shifted from basic concerns of how to begin the conversation, to more advanced concerns like how to provide care under time pressure, or how to screen appropriately while respecting patients may not be ready to disclose. In our fourth-year medical school sexual assault curriculum, we address how to provide trauma-informed care using methods that do not take extra time such as providing affirming statements, using open body language, and asking before touching the patient.

The concern that did not change is “difficulty with relating to the patient.” This worry does not arise for treatment and counseling on other medical problems, however, and healthcare providers should not need to experience a condition to provide appropriate care. Yet, the same concern has been found in previous studies on SA. One study demonstrated that while the majority of emergency physicians felt equipped to discuss sexually transmitted infections and emergency contraception, significantly less felt equipped to discuss sexual assault[12]. Although personal experience with illness may provide physicians with additional perspective, lived experience is neither necessary nor sufficient for providing competent and compassionate care[31]. Instead, skills and knowledge must be developed through targeted curriculum.

While our study shows our curriculum is effective, one inherent limitation to our study includes potential variability in facilitator-to-facilitator expertise. We tried to minimize this by providing a PowerPoint, student handout, detailed facilitator notes, and SP training. However, there is a potential some facilitators veered from the intended course objectives. Additionally, we acknowledged previously that

some students did not elicit an SP disclosure as a potential limitation; although this was remedied and only affected a few data points. These factors could have underestimated the positive effect of the curriculum on confidence scores and contributed to variability. Both a benefit and limitation to our study is our curriculum was integrated into a weekly class in which students already had previous opportunities to interview SPs with other chief complaints. Therefore, students had several months to become comfortable with their peers and faculty facilitator, were in a supportive environment, and were already familiar with how to interview SPs. With this being a sensitive subject, there is a risk of the inverse: students could have felt more intimidated knowing they were being observed by trusted peers. Overall, these limitations had minor impacts on the resultant confidence scores. However, future studies examining the impact of these variables on confidence ratings are underway.

Our data analysis has already led to curricular improvements. We saw how anxious students were even after efforts to make it a low-stakes experience. In response, we included a slide with expectations for the session: “1) Complete a normal history of the chief complaint, 2) Screen this patient for sexual violence as discussed in the worksheet, 3) Provide appropriate empathetic statements, 4) During counseling: provide a resource based on patient preferences (use your resource cards!)”. Additionally, we provided tips based on these responses like “If you overstep, just apologize. Survivors will appreciate that you care!” and “You can create a safe space with non-judgmental questions, open body language, and affirming responses.” Additionally, while we created badge reel resource cards for every student, we noticed an increase in the student-identified challenge “lack of knowledge of resources”. We found many were not receiving them during the SP session. We began distributing the cards at the patient panel instead, demonstrated their intended use, and observed many students immediately place them on their badge reel. During our fourth-year course, we were able to catch these students who did not originally receive them. This exemplifies the importance of validating each step of newly implemented curriculum.

Finally, we emphasize medical educators can prioritize SA/IPV education and create effective curriculum through our “lessons learned”: 1) conduct early surveys to build curriculum that meets the students where they are; 2) utilize knowledge acquisition (e.g. papers, modules), experiential events (patient panels), and low-stakes skill practice (SP encounters) as complementary tools; 3) be willing to make adjustments through “real-time” student feedback; and 4) attempt to use existing curricular spaces to integrate SA education and overcome barriers related to a packed curriculum.

Conclusion

Physicians do not choose to re-traumatize survivors of SA/IPV, yet unfortunately, this is a common occurrence, leading to serious negative downstream effects. Instead, they start as caring individuals who do not (yet) have adequate training to help. The effectiveness of our novel curriculum in improving confidence can be summarized by one student who said: “I feel much more confident about how I can go about doing this as a medical student and future physician.”

Abbreviations

IPV
Intimate partner violence
SA
Sexual assault
SP
Standardized patient
SARNCO
Sexual Response Network of Central Ohio
SANE
Sexual assault nurse examiner

Declarations

Ethics approval and consent to participate

The study protocol and all procedures were conducted in accordance with the Declaration of Helsinki. Additionally, the protocol was approved by the Ethics Committee of The Ohio State Behavioral and Social Sciences Institutional Review Board, study number: 2022B0437, approved 01/30/2023 to analyze data from 2021–2022 with an extension amendment approved 04/06/2023 to analyze data from 2023. In place of a formal consent process, only data from students who had consented to the Lead-Serve-Inspire (LSI) curriculum repositories were used. This waiver of consent process was approved by the referenced IRB.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

SEMA contributed to curricular creation, conceptualization, study design, data collection, qualitative and quantitative methodological design, performed quantitative and qualitative analysis, data interpretation, table and figure creation, and was a major contributor in manuscript writing and submission. JRG

contributed to curricular creation, conceptualization, study design, data collection, qualitative methodological design, qualitative analysis, and contributed to manuscript writing. KPD contributed to curricular creation, conceptualization, study design, data collection, qualitative methodological design, qualitative analysis, and was a major contributor to manuscript editing. RT contributed to data curation and quantitative analysis. CB performed qualitative analysis and provided supervision. AKF performed qualitative analysis, contributed to qualitative methodological design, provided supervision, and contributed to manuscript editing. All authors read and approved the final manuscript.

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Data Availability

The anonymized datasets generated and/or analyzed during the current study are not publicly available due the desire to protect student privacy but are available from the corresponding author on reasonable request.

References

1. Human Reproduction Special Programme (HRP). Violence against women prevalence estimates, 2023: global, regional and national prevalence estimates for intimate partner violence against women and non-partner sexual violence against women. (2025).
2. Center for Disease Control. About Sexual Violence. Sex Violence Prev https://www.cdc.gov/sexual-violence/about/index.html (2025).
3. Bureau of Justice Statistics. Violent Victimization by Sexual Orientation and Gender Identity, 2017–2020. https://bjs.ojp.gov/library/publications/violent-victimization-sexual-orientation-and-gender-identity-2017-2020 (2022).
4. Wieberneit M, Thal S, Clare J, Notebaert L, Tubex H. Silenced Survivors: A Systematic Review of the Barriers to Reporting, Investigating, Prosecuting, and Sentencing of Adult Female Rape and Sexual Assault. Trauma Violence Abuse. 2024;25:3742–57.
5. Leemis RW et al. The National Intimate Partner and Sexual Violence Survey: 2016/2017 Report on Intimate Partner Violence. Natl Cent Inj Prev Control Cent Dis Control Prev (2022).
6. Amstadter AB, McCauley JL, Ruggiero KJ, Resnick HS, Kilpatrick DG. Service Utilization and Help Seeking in a National Sample of Female Rape Victims. Psychiatr Serv. 2008;59:1450–7.
7. Ledray LE. Sexual assault nurse examiner, SANE: Development & operation guide. J Emerg Nurs. 1998;24:197–8.

8. Darnell D, et al. Factors Associated with Follow-Up Attendance among Rape Victims Seen in Acute Medical Care. Psychiatry. 2015;78:89–101.
9. Anderson KM, Tsuyuki K, Fernandez DeSoto A, Stockman JK. Medical mistrust among diverse survivors of sexual violence: implications for primary health care delivery and engagement. BMC Prim Care. 2025;26:397.
10. CAMPBELL R, WASCO SM, AHRENS CE, SEFL T, BARNES HE. Preventing the Second Rape: Rape Survivors' Experiences with Community Service Providers. J Interpers Violence. 2001;16:1239–59.
11. Campbell R. What really happened? A validation study of rape survivors' help-seeking experiences with the legal and medical systems. Violence Vict. 2005;20:55–68.
12. Chandramani A, et al. A Needs Assessment and Educational Intervention Addressing the Care of Sexual Assault Patients in the Emergency Department. J Forensic Nurs. 2020;16:73–82.
13. Novilla MLB, et al. U.S. Physicians' Training and Experience in Providing Trauma-Informed Care in Clinical Settings. Int J Environ Res Public Health. 2024;21:232.
14. Gilles C, et al. Implementation of a protocol and staff educational sessions improves the care of survivors of sexual assault. Maturitas. 2019;124:39–42.
15. Auten JD, et al. Low-Fidelity Hybrid Sexual Assault Simulation Training's Effect on the Comfort and Competency of Resident Physicians. J Emerg Med. 2015;48:344–50.
16. Chin B, et al. Evaluating the Effectiveness of Trauma-Informed Care Frameworks in Provider Education and the Care of Traumatized Patients. J Surg Res. 2024;296:621–35.
17. Gore DJ et al. Creation of a Medical Student Training to Improve Comfort Providing Trauma-Informed Care to Sexual Assault Survivors. *MedEdPORTAL* 17, 11140.
18. Daily KP, Loftus T, Waickman C, Start AR, Fernandes AK. Beyond the Protocols: a Team-Based Learning Intervention Improving Student Knowledge and Confidence on Caring for Survivors of Sexual Assault. Acad Psychiatry J Am Assoc Dir Psychiatr Resid Train Assoc Acad Psychiatry. 2022;46:486–90.
19. Moskovic C, et al. Intimate Partner Violence in the Medical School Curriculum: Approaches and Lessons Learned. AMA J Ethics. 2009;11:130–6.
20. Jonassen JA, Burwick TN, Pugnaire MP. An interdisciplinary course on domestic and family violence. Acad Med J Assoc Am Med Coll. 1996;71:548.
21. Joyce BL, Jung D, Lucia VC, Kavanagh M, Afonso N. Developing Medical Student Competence in Intimate Partner Violence: a National Priority. Med Sci Educ. 2015;25:229–32.
22. US Preventive Services Task Force. Screening for Intimate Partner Violence and Caregiver Abuse of Older or Vulnerable Adults: US Preventive Services Task Force Recommendation Statement. JAMA. 2025;334:329–38.
23. The United States Medical Licensing Examination. USMLE Content Outline. (2026).
24. Amsalem D, et al. Single-Day Simulation-Based Training Improves Communication and Psychiatric Skills of Medical Students. Front Psychiatry. 2020;11:221.

25. Carvalho IP, et al. Teaching communication skills in clinical settings: comparing two applications of a comprehensive program with standardized and real patients. BMC Med Educ. 2014;14:92.
26. Yu J, Lee S, Kim M, Lee J, Jung YJ. Evaluating medical students' engagement and confidence across three simulation-based education methods: standardized patient, high fidelity simulator, and virtual reality. BMC Med Educ. 2026;26:283.
27. Education FC. for U. M. Foundational Competencies for Undergraduate Medical Education. *AAMC* https://www.aamc.org/about-us/mission-areas/medical-education/cbme
28. Elizabeth Reeves & Janice Humphreys. Describing the healthcare experiences and strategies of women survivors of violence. J Clin Nurs. 2017;27:1170–82.
29. Najmabadi L, Agénor M, Tendulkar S. Pouring From an Empty Cup: Manifestations, Drivers, and Protective Factors of Occupational Stress Among Healthcare Providers of Trauma-Informed Care. J Interpers Violence. 2024;39:2041–75.
30. Maier SL. The emotional challenges faced by Sexual Assault Nurse Examiners: 'ER nursing is stressful on a good day without rape victims'. J Forensic Nurs. 2011;7:161–72.
31. Woolf K, Cave J, McManus IC, Dacre JE. It gives you an understanding you can't get from any book.' The relationship between medical students' and doctors' personal illness experiences and their performance: a qualitative and quantitative study. BMC Med Educ. 2007;7:50.

Figures

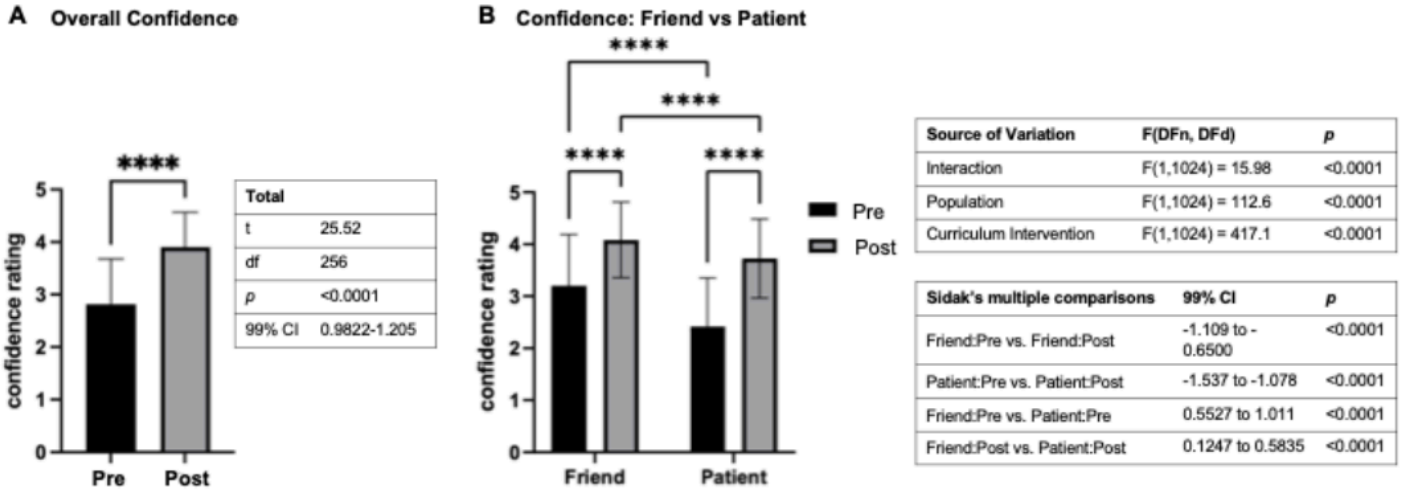
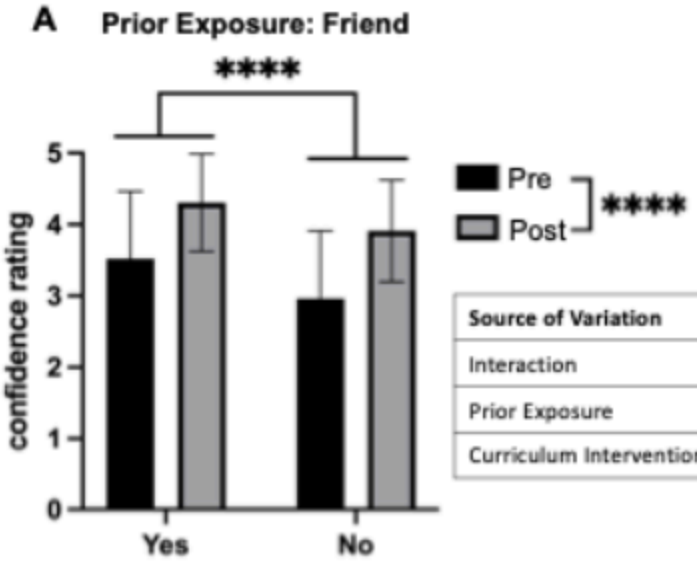
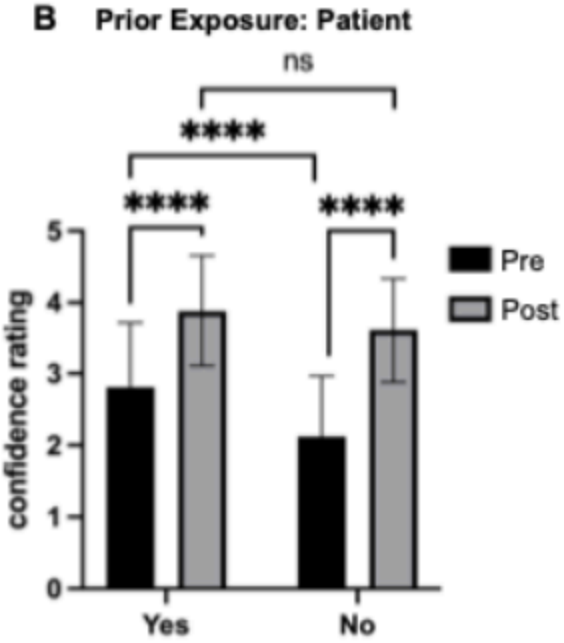


Figure 1

The curriculum improved self-reported confidence scores in caring for a friend and a patient. A) Overall confidence; T-test, B) confidence in caring for a friend versus a patient; Two-way ANOVA. 1=strongly disagree; 5=strongly agree. **** : p<0.0001



Source of Variation	F(DFn, DFd)	p
Interaction	F(1,510) = 1.283	0.2579
Prior Exposure	F(1,510) = 41.67	<0.0001
Curriculum Intervention	F(1,510) = 136.5	<0.0001



Source of Variation	F(DFn, DFd)	p
Interaction	F(1,510) = 8.235	0.004
Prior Exposure	F(1,510) = 44.31	<0.0001
Curriculum Intervention	F(1,510) = 314.1	<0.0001

Sidak's multiple comparisons	99% CI	p
Yes:Pre vs. Yes:Post	-1.403 to -0.7415	<0.0001
No:Pre vs. No:Post	-1.775 to -1.198	<0.0001
Yes:Pre vs. No:Pre	0.3774 to 0.9976	<0.0001
Yes:Post vs. No:Post	-0.03683 to 0.5834	0.0306

Figure 2

The curriculum increased confidence scores regardless of prior exposure to trauma-informed care. A) Confidence in caring for a friend, B) confidence in caring for a patient. 1=strongly disagree; 5=strongly agree. Two-way ANOVA. **** : p<0.0001