On-the-Go Training: Downloadable Modules to Train Medical Students to Care for Adult Female Sexual Assault Survivors

Molly Siegel, MD*; Estela Chen Gonzalez, Olindli Wijesekera, Katherine Finkelstein, Randi Petricone, NP, Lois Glass, MSW, Annie Lewis-O'Connor, PhD, Conor Duffy, MPH, Nadia Quijije, MD, Gail March, PhD, Shannon Bell, MD

*Corresponding author: mollyesiegel@gmail.com

Abstract

Introduction: Every medical provider encounters patients who have experienced sexual assault, and a patient’s interaction with the medical system can impact long-term outcomes. Training to provide appropriate, compassionate care for this population is lacking in most medical school curricula. This educational resource contains three downloadable modules to train medical students in providing improved care for adult female survivors of sexual assault so students can feel more confident and empowered in caring for this population. Methods: The modules are composed of an informational video on initial medical management, a patient interview simulation video, and a set of audio interviews on suggestions for practice. Interdisciplinary experts assisted in the modules’ development. Associated materials include a 10 question pre- and posttest of medical knowledge, with additional survey questions to assess student attitudes and satisfaction outcomes. Results: A cohort of 32 medical student volunteers from all class years tested the modules. Overall, student scores improved 20% (95% confidence interval, 16%-23%) from pre- to posttest. Students reported that their comfort in caring for an adult female sexual assault survivor increased after completion of the modules (p = .025). On the whole, students reported on the postsurvey that the modules enhanced their education, improved their comfort, and were appropriate for their level of education. Discussion: These modules can enrich an undergraduate medical curriculum in a currently underaddressed topic, the care of female patients with a history of sexual assault and trauma. Empowering and educating students to care for this patient population can result in improved health outcomes.

Keywords

Communication, Sex Offenses, Self-Directed Learning, Sexual Assault, Sexual Trauma, Sexual Violence, Sexual Offenses, Trauma-Informed Care

Educational Objectives

By the end of this activity, learners will be able to:

1. Describe the initial medical evaluation and management of an adult female survivor of sexual assault.
2. Identify elements of care that are supportive of patients’ recovery.
3. Recognize health care provider behaviors that can be damaging to patients’ recovery.
4. Develop a foundation to deliver empathic, compassionate, and sensitive care for female patients with a history of sexual assault and trauma.

Introduction

It is valuable for future clinicians in every specialty to have training in trauma-informed care, including for female patients who have experienced sexual assault, as sexual assault is both common and far-reaching and has devastating consequences. Women have a 17.6% lifetime prevalence of sexual assault,¹ and
survivors of sexual assault have unique medical and psychiatric needs. A search on MedEdPORTAL for sexual assault or sexual violence elicited excellent resources on child and adolescent sexual assault, as well as trainings for medical students to counsel and screen patients for intimate partner violence, but no resources with a focus on caring for adult female survivors of sexual assault. Our literature review also revealed that while many medical schools include curricula on domestic violence and child abuse, they do not address management of sexual assault, suggesting there is little research on or development of curricula in this field. This is the first educational resource in MedEdPORTAL with a focus on training medical students to provide trauma-informed care for adult female patients who have recent or remote history of sexual assault.

According to the Substance Abuse and Mental Health Services Administration, a trauma-informed provider is one who realizes the impact of trauma, can recognize and respond to signs and symptoms of trauma, and avoids retraumatization. Interactions with the health care system can have significant medical and psychological impacts on survivors of sexual assault, impacts both positive and negative. This educational resource addresses the medical approach to a woman who has been sexually assaulted and includes a video module on acute medical management, a video module of a patient interview simulation, and an audio module on suggestions for practice. The experience of caring for a patient who has experienced sexual assault is uniquely challenging, and we intend these modules to help students understand both the medical management of sexual assault and how to practice in a compassionate, trauma-informed manner that contributes to patients' recovery and trust in the health care system.

We designed these modules in response to student interest and a recognized need for such a curriculum at our institution. Initially developed to enhance a new elective including clinical experience caring for patients who have experienced sexual assault, these modules also function as an isolated educational experience for interested students.

In response to the interests and needs of the modern learner, the modules are compatible with multiple technological approaches. It is our intention that learners approach these modules individually. This allows flexibility regarding when and how the modules are completed, so they can be incorporated into students' other coursework. All three can be either streamed from a computer or downloaded to a smartphone or tablet to be watched or listened to on the go. The pre- and posttests with survey questions can be either be printed out on paper or filled out on a smartphone or tablet.

The additional advantages of these modules are that they can be used by learners individually to prepare for an applicable rotation, such as in the OB/GYN clinic or emergency department, but can also stand alone as a supplement to their education, as learners will encounter patients with a history of sexual assault in all their clinical rotations. Medical students from all class years, both preclinical (years 1 and 2) and clinical (years 3 and 4), tested these modules. Since the modules use medical language and build on medical knowledge, it is preferable that they be used by a medical student who has had a few months of preclinical training, although they are certainly appropriate for trainees beyond the medical school level. These modules are also intended to be applicable to students in all specialties. They were created with multidisciplinary experts in the field of sexual assault care from the OB/GYN and psychiatry departments.
at our institution and other local institutions that were contacted through our city’s rape crisis organization. The modules were created so that patients with supportive and knowledgeable providers could have improved psychosocial outcomes. We anticipate that better preparation of trainees for encounters with this patient population will lead to improved trainee experience, as well as patient care, and that learners will bring these skills forward to provide trauma-informed care throughout their careers.

Methods

In developing these modules, we followed a systematic instructional design process that was based on the ADDIE (analyze, design, develop, implement, and evaluate) instructional design framework. The educational theories of behaviorism, constructivism, social learning, and cognitivism were applied to discover (analyze the needs of the topic with a literature search, expert interviews, and competitive analysis), design (compose the modules’ goals and learning objectives for active learning), develop (generate the modules and create pre- and postmodule surveys), and deploy (beta test the modules with a target population, revise as necessary, and post for usage). The modules were scripted and developed with the input of specialized experts who have interdisciplinary expertise in the field of sexual assault and medical education. We worked closely with our city’s rape crisis center and connected with local experts both within and outside our own university hospital system.

Students informally queried before the development of the curriculum requested that the modules fit easily into their current lifestyle and study schedule, be viewable on a variety of devices, and be brief in length, rather than a traditional hour-long lecture. Many students at our institution prepare for exams with supplemental video and audio on smartphones and tablets. With this in mind, the modules were designed to fit easily and flexibly into a student’s routine. Learners can work through the modules on a home computer or with a group or can download the modules as video and audio to listen to while commuting or exercising. The modules adapt to an individual’s preferences.

We recommend that students have adjunct clinical experiences caring for this specific patient population to enhance their learning and communication skills. If these modules are paired with a clinical experience directly caring for survivors of sexual assault, we recommend that facilitators be present as a support system for medical students and that students be offered an option for counseling and other resources, based on local availability. These modules and related clinical experiences do have the potential to be psychologically traumatic for some students, so each institution should have resources available and a system in place to aid students if difficulties arise.

These modules were tested by voluntary recruitment of students through emails to the medical school, and students from all class years responded. Students who expressed interest were provided with the files for the modules (Appendices D-G) and pre- and posttests (Appendices C & H) with survey questions to download. Students responded within 3 weeks by turning in their pre- and posttests and completed survey questions via email.

The curriculum consisted of the following:

- Facilitator guide (Appendix A).
- Student guide (Appendix B).
- Pretest and survey (Appendix C).
Module 1: Initial Medical Management of Sexual Assault in the Adult Female Patient, 11:33 minutes, video (Appendix D).
Module 2: Patient Interview Simulation, 7:49 minutes, video (Appendix E).
Module 3: Suggestions for Practice, 26:35 minutes, audio (Appendix F).
Suggestions for Practice Increased Speed, 19:13 minutes, audio (Appendix G).
Posttest and survey (Appendix H).

Facilitators were provided with information to enhance the use of this curriculum (Appendix A). Student instructions guided students to complete the curriculum (Appendix B). Learning and student satisfaction were assessed during beta testing with the pretest (Appendix C) and posttest (Appendix H), which were completed prior to and following completion of the three modules, respectively. Module 1: Initial Medical Management of Sexual Assault in the Adult Female Patient (Appendix D) provided a general overview of medical management in an acute setting such as an emergency department. Module 2: Patient Interview Simulation (Appendix E) provided examples of how trauma-informed care would look in practice. This was intended to represent to students that many of their usual practices in a clinical setting might need to be modified to provide improved care for survivors of sexual assault. Module 3: Suggestions for Practice (Appendix F) provided a foundational basis for trauma-informed care. Using an interview format, it included expert speakers from interdisciplinary fields describing what trauma-informed care means to them and how they incorporate trauma-informed care in their medical practice. The module was also offered at increased speed for students who prefer to listen at a faster pace (Appendix G). We recommended students complete all three modules, as they were designed to be complementary, with minimal overlap in content. While students participating in this beta test did complete all three, it could be appropriate to incorporate only one or two of the modules in specific settings.

Students who agreed to participate completed the same 10-question knowledge assessment before and after the modules. Scores were defined as number of questions answered correctly out of 10, with each question representing 1 point. The difference between the pre- and posttest scores was computed for each student, and a paired t test was used to look for overall improvement. Improvement in score was defined as a positive mean score difference where the confidence interval (CI) did not include zero. Mean score difference was also stratified by medical school year and clinical phase to examine potential differences between levels in these variables. Clinical phase was defined as either preclinical (years 1 and 2) or clinical (years 3 and 4). Mean difference in score was compared between preclinical and clinical medical students and analyzed with a paired t test. Consistency of improvement for individual questions was examined using McNemar’s test. One participant did not record pretest responses for questions 9 and 10. This student’s responses were excluded from the cumulative analysis looking at mean scores but were included for McNemar’s tests looking at individual questions 1-8.

Students also responded to a question on their comfort with caring for a patient following a sexual assault, rating themselves from Very uncomfortable (1) to Very comfortable (5). Pre- and posttest responses to this survey question were analyzed with a chi-square test.

The postmodule survey also included questions concerning the modules’ effectiveness and level of difficulty. The response frequencies to these questions were first tabulated overall and then stratified by medical school year and clinical phase. Students also indicated whether they enjoyed the particular format of the modules (either video or audio-only).
Results

Thirty-two students volunteered to test the curriculum. All class years were represented: 34% (11 out of 32) first year, 9% (three out of 32) second year, 28% (nine out of 32) third year, and 25% (eight out of 32) fourth year. Low participation by second-year class may have been related to overlap with timing for board exam preparation.

Students had a statistically significant increased score of 2.0 (95% CI, 1.6-2.3) for the knowledge-based questions from pre- to posttest ($p < .0001$). This indicated that on average, students answered two additional questions correctly after completing the modules. Comparing the difference in score between preclinical and clinical medical students, there was a statistically significant difference in which preclinical medical students scored 0.7 (95% CI, 1-13) higher than clinical medical students ($p < .0415$). There was an observable increase in score improvements with increasing medical year, although it was not statistically significant, suggesting more potential for learning in earlier class years (Table 1).

| Students by Group | Mean Difference in Test Score (95% CI) |
|-------------------|---------------------------------------|
| All Students ($N = 31$) | 2.0 (1.6-2.3) |
| Year 1 ($n = 11$) | 2.4 (1.8-2.9) |
| Year 2 ($n = 3$) | 2.3 (1.3-3.4) |
| Year 3 ($n = 9$) | 1.8 (1.2-2.4) |
| Year 4 ($n = 8$) | 1.6 (1.0-2.3) |
| Preclinical ($n = 14$) | 2.4 (1.9-2.8) |
| Clinical ($n = 17$) | 1.7 (1.3-2.1) |

Abbreviation: CI, confidence interval.

Ten-question test with 1 point per question.

Looking at the 10 knowledge-based questions individually, there were statistically significant improvements for questions 3, 4, and 5. These questions test knowledge of prophylactic medication (questions 3 and 5) and incidence of new disease (question 4). For all other questions, the percentage correct either improved or stayed the same, although this was not statistically significant. The three questions that did not change from pre- to posttest had 100% correct responses at pretest (Table 2).

| Question | No. (%) of Students With Correct Responses |
|----------|------------------------------------------|
|          | Pretest | Posttest | $p^a$ |
| 1        | 28 (87.50) | 32 (100) |    |
| 2        | 31 (96.88) | 32 (100) |    |
| 3        | 17 (53.13) | 28 (87.50) | .0034 |
| 4        | 0 (0) | 29 (90.63) | <.0001 |
| 5        | 18 (56.25) | 30 (93.75) | .0005 |
| 6        | 27 (84.38) | 30 (93.75) | .3750 |
| 7        | 32 (100) | 32 (100) |    |
| 8        | 32 (100) | 32 (100) |    |
| 9^b      | 28 (90.32) | 29 (93.55) |    |
| 10^b     | 31 (100) | 31 (100) |    |

*aMcNemar’s test.

bOne participant failed to answer questions 9 and 10 on the pretest; for these comparisons, $N = 31$

Students also rated their comfort level significantly higher on posttest than pretest ($p = .025$). There was a noted shift towards responses of Neutral and Comfortable. Of note, no students chose Very comfortable either before or after taking the modules (Table 3).
Table 3. Pre- and Postsurvey Levels of Comfort in Caring for a Patient Who Was Sexually Assaulted (N = 32)

| Response         | Presurvey | Postsurvey |
|------------------|-----------|------------|
| Very uncomfortable| 2 (6.25)  | 2 (6.25)   |
| Uncomfortable    | 10 (31.25)| 7 (21.88)  |
| Neutral          | 15 (46.88)| 16 (50.00) |
| Comfortable      | 5 (15.63) | 7 (21.88)  |
| Very comfortable | 0 (0)     | 0 (0)      |

Students also provided feedback on whether each of the three modules enhanced their education and improved their comfort caring for this patient population. These responses were further stratified by class year and clinical phase, with observable but not statistically significant differences. The most notable difference was for Module 1, with more clinical students (70.59%) than preclinical students (42.86%) reporting that it improved their comfort with the population, although this was not statistically significant (p = .157). Module 1 focused on the specifics of medical management, which may have felt more relevant to clinical students but overwhelmed preclinical students. Also notably, although only three second-year students participated, all reported that they did not find Module 1 helpful (Table 4). Most students reported that the modules were appropriate for their level of medical education. Only two first-year students found Module 1 too difficult, and one first-year found Module 3 too easy. However, students representing all class years found Module 2 too easy (Table 5).

Table 4. Student Satisfaction by Medical School Year and Phase in Training (N = 32)

| Module/Year/Status | Enhanced Education? | Improved Comfort? |
|--------------------|---------------------|-------------------|
| Module 1 Total     | 28 (87.50)          | 19 (59.38)        |
| Year 1             | 10 (90.91)          | 6 (54.55)         |
| Year 2             | 2 (66.67)           | 0 (0)             |
| Year 3             | 8 (88.89)           | 6 (66.67)         |
| Year 4             | 7 (87.50)           | 6 (75.00)         |
| Preclinical        | 12 (85.71)          | 6 (42.86)         |
| Clinical           | 15 (88.24)          | 12 (70.59)        |
| Module 2 Total     | 23 (71.88)          | 27 (84.38)        |
| Year 1             | 9 (81.82)           | 9 (81.82)         |
| Year 2             | 2 (66.67)           | 2 (66.67)         |
| Year 3             | 6 (66.67)           | 8 (88.89)         |
| Year 4             | 6 (75.00)           | 7 (87.50)         |
| Preclinical        | 11 (78.57)          | 11 (78.57)        |
| Clinical           | 12 (70.59)          | 15 (88.24)        |
| Module 3 Total     | 28 (87.50)          | 27 (84.38)        |
| Year 1             | 11 (100)            | 10 (90.91)        |
| Year 2             | 2 (66.67)           | 2 (66.67)         |
| Year 3             | 6 (66.67)           | 7 (77.78)         |
| Year 4             | 8 (100)             | 8 (100)           |
| Preclinical        | 13 (92.86)          | 12 (85.71)        |
| Clinical           | 14 (82.35)          | 15 (88.24)        |

Students were asked whether they enjoyed using the format for each module—video for the first two modules, audio for the third. For Module 1, 31 out of 32 (96.88%) students reported that they enjoyed the video format, and one (3.13%) did not. For Module 2, 32 out of 32 (100%) reported that they enjoyed the
video format. For Module 3, 27 out of 32 (84.38%) students enjoyed the audio-only format, and five (15.63%) did not.

Two major themes emerged in student comments. One was the need for gender inclusivity in the use of pronouns, as the modules preferentially used she. This was an unintentional oversight, and a statement regarding gender inclusivity was added to appropriate modules and materials (Appendices D, F, & G). The other comment was that for some students, the audio-only module felt long and did not hold their attention well. In response to this, repetitive information was removed, and long responses by speakers were broken up into smaller segments with more frequent questions. A version of this module at an increased speed was added, as many students at our institution prefer to listen to recorded lecture material in the preclinical years at increased speed.

### Discussion

These educational modules contain information obtained from interdisciplinary experts in the field of caring for patients who have experienced sexual assault, presented in an engaging and innovative manner. The modules can be implemented at other institutions in a variety of contexts, with minimal preparation required by learner or preceptor. There is little training at most institutions in trauma-informed care, so these modules may enrich many curricula and have great potential to benefit patients.

One of the challenges we experienced while creating the modules was how to balance the level of content detail with maintaining student engagement. Creating three separate modules rather than encompassing all the information in one was a response to this challenge, but some students still felt the third, audio-only module was too long. We had presumed that with the popularity of podcasts, an audio-only module would be the most preferred. It is unclear whether dissatisfaction with the third module was
due merely to length or also to its audio-only nature. We suspect that briefer modules maximize student engagement.

As for our assessment, the knowledge-based test showed significant learning only for questions related to medical management content from Module 1. The questions regarding the interpersonal skills taught in Modules 2 and 3 may be too easy, as many students answered them correctly on the pretest. This is also a positive finding, as it shows students start with a strong baseline for providing trauma-informed care. Because students reported enjoyment and increased comfort with the population, Modules 2 and 3 appear to have had a positive impact despite lack of knowledge-based evidence.

A limitation of these modules is that they are formulated for individual use, which was intentional in order to allow flexibility with students’ schedules and lifestyles. However, some students may benefit from additional engagement and may find this format isolating, although this opinion was not represented in student comments. An additional limitation is that these modules were tested with students who volunteered to participate, so there may be a selection bias.

We encountered feedback that the modules exclusively used the pronoun she, which is a limitation of these modules, as they were created through the OB/GYN department and have a narrow focus on care for adult women. We narrowed our title to adult female patients to address this limitation. We also added statements at the beginning of Module 1 and end of Module 3 indicating that sexual assault affects patients from all communities and people who identify across a broad range of gender identities and sexual orientations. While some of the material may be relevant beyond the adult female patient, these diverse groups warrant the development of separate modules with input from specialized experts. We noted in the introduction to the first module that child and adolescent sexual assault is also a distinct topic for which different educational materials with input from pediatric experts should be sought.

At our institution, we continue to work with our interdisciplinary team and plan to reach out to a range of experts to build on this curriculum, incorporating videos with increasing detail on providing trauma-informed care in such areas as the psychology of trauma, the forensic exam, a conversation with a survivor, and vicarious trauma for providers, as well as expansion into other patient areas such as lesbian, gay, bisexual, transgender, queer, and gender-nonconforming patient care. It is essential that the next generation of physicians be trained to deliver compassionate, trauma-informed care to survivors of sexual assault, as it has enormous potential to improve health care for this patient population.

Molly Siegel, MD: Resident, Department of Obstetrics and Gynecology, Oregon Health & Science University School of Medicine
Estela Chen Gonzalez: Fourth-Year Medical Student, Obstetrics and Gynecology, Boston University School of Medicine
Olindi Wijesekera: Fourth-Year Medical Student, Boston University School of Medicine
Katherine Finkelstein: ORISE Research Fellow, United States Army Research Institute of Environmental Medicine
Randi Petricone, NP: Clinical Instructor, Department of Obstetrics and Gynecology, Boston University School of Medicine
Lois Glass, MSW: Director, Vicarious Trauma Project, Boston Area Rape Crisis Center; Private Practice, Boston, MA
Annie Lewis-O’Connor, PhD: Director, C.A.R.E. Clinic (Coordinated Approach to Recovery and Empowerment), Brigham and Women’s Hospital; Founder, C.A.R.E. Clinic (Coordinated Approach to Recovery and Empowerment), Brigham and Women’s Hospital
Conor Duffy, MPH: Research Assistant, Department of Obstetrics and Gynecology, Boston University School of Medicine
Nadia Quijije, MD: Director, Burns/Trauma Psychiatry Consultation Service, Massachusetts General Hospital; Psychiatrist, Avery Weisman Psychiatric Consultation Service, Massachusetts General Hospital; Instructor, Department of Psychiatry, Harvard Medical School
Gail March, PhD: Assistant Professor, Department of Medical Sciences and Education, Boston University School of Medicine
Shannon Bell, MD: Founder, LINK Aftercare Clinic, Boston University School of Medicine; Director, LINK Aftercare Clinic, Boston University School of Medicine; Assistant Professor, Department of Obstetrics and Gynecology, Boston University School of Medicine
Disclosures
None to report.

Funding/Support
None to report.

Prior Presentations
Wijesekera M, Chen Gonzalez E, Siegel M, et al. On-the-go training: downloadable modules to educate students in care for sexual assault survivors. Poster presented at: Boston University Medical Campus 12th McCahan Education Day; May 31, 2017; Boston, MA

Ethical Approval
This publication contains data obtained from human subjects and received ethical approval.

Disclaimer
Approved for public release; distribution is unlimited. The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or reflecting the views of the Army or the Department of Defense. The investigators have adhered to the policies for protection of human subjects as prescribed by DOD Instruction 3216.02, and the research was conducted in adherence with the provisions of 32 CFR Part 219. Human subjects participated in these studies after giving their free and informed voluntary consent. Investigators adhered to DoD Instruction 3216.02 and 32 CFR 219 on the use of volunteers in research. Any citations of commercial organizations and trade names in this report do not constitute an official Department of the Army endorsement of approval of the products or services of these organizations.

References
1. Tjaden PG, Thoennes N. Extent, Nature, and Consequences of Rape Victimization: Findings From the National Violence Against Women Survey. Washington, DC: U.S. Department of Justice; 2006.
2. Committee on Health Care for Underserved Women. Committee Opinion no. 592: sexual assault. Obstet Gynecol. 2014;123(4):905-909. https://doi.org/10.1097/01.AOG.0000445581.43112.41
3. Sheets L, Bretl D. The SA pocket tool. MedEdPORTAL. 2012;8:9165. https://doi.org/10.15766/mep_2374-8265.9165
4. McBride R. Talking to patients about sensitive topics: communication and screening techniques for increasing the reliability of patient self-report. MedEdPORTAL. 2012;8:9089. https://doi.org/10.15766/mep_2374-8265.9089
5. Most-included topics in medical school clerkships. Association of American Medical Colleges website. https://www.aamc.org/initiatives/cir/481478/ci12.html. Accessed October 8, 2017.
6. Trauma-informed approach and trauma-specific interventions. Substance Abuse and Mental Health Services Administration website. https://www.samhsa.gov/nctic/trauma-interventions. Updated August 14, 2015. Accessed May 5, 2017.
7. Campbell R, Wasco SM, Ahrens CE, Seti T, Barnes HE. Preventing the “second rape”: rape survivors’ experiences with community service providers. J Interpers Violence. 2001;16(12):1239-1259. https://doi.org/10.1177/088626001016012002
8. Campbell R, Raja S. Secondary victimization of rape victims: insights from mental health professionals who treat survivors of violence. Violence Vict. 1999;14(3):261-275.
9. Branch RM. Instructional Design: The ADDIE Approach. New York, NY: Springer; 2009.