

BRIEF ARTICLE

Improving Medical Student Confidence Performing Skin Biopsies Through an Interactive Workshop

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ABSTRACT

Introduction: At the University of Texas Health San Antonio Long School of Medicine, many students have expressed hesitancy in actively participating when a skin biopsy is needed at the community dermatology free clinic. To address this, we hosted a workshop where medical students could directly learn how to perform shave and punch biopsies from dermatology residents.

Methods: A PowerPoint presentation covering the preparation, types, and aftercare of biopsies was given pre-workshop. Four dermatology residents were assigned to groups of students. During the workshop, students practiced the full procedure of performing a biopsy. Pre- and post-surveys were administered immediately and four months after the workshop. Qualitative responses were converted into a 4-point Likert scale, and a Wilcoxon signed-rank test was used for statistical analysis.

Results: 26 student responses were collected immediately after, and 17 were collected four months after the workshop. There were significant increases in comfort assisting with performing skin biopsies ($p < 0.001$), performing biopsies under supervision ($p < 0.001$), and preparing for a biopsy ($p < 0.001$) immediately and four months after the workshop. Additionally, there were significant increases in knowledge of the utility of biopsies ($p < 0.001$) and the different biopsy types ($p < 0.001$) immediately and four months after the workshop. The number of correct answers to the five-item knowledge quiz significantly increased ($p < 0.001$) immediately and four months after the workshop.

Conclusion: Our workshop improved student confidence in preparing for, assisting with, and performing skin biopsies and has demonstrated sustained efficacy.

INTRODUCTION

Despite skin disease being one of the leading causes of morbidity in the United States, there is a lack of dedicated medical education in treating common skin conditions.¹ McCleskly et al. reported that many dermatology programs expect medical

students to be able to diagnose and treat common skin conditions, but with limited time in medical school, many medical schools face difficulty incorporating dermatology education into their curricula.^{2,3} At the University of Texas Health San Antonio (UTHSA) Long School of Medicine (LSOM), medical students have exposure to dermatology for a single week as an

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academic module at the end of their second year with no direct patient exposure. For additional exposure, medical students can volunteer at a community student-run free clinic that serves the uninsured and underinsured population of San Antonio, Travis Park Dermatology Clinic (TP). This clinic is invaluable as no dermatology-focused clinical skills workshops are offered at LSOM nor at most other medical schools. However, many student volunteers have expressed hesitancy in taking an active role when a skin biopsy is needed due to a lack of experience in performing skin biopsies. To address this gap in knowledge and skills, the TP team hosted a workshop where medical students could directly learn how to perform shave and punch biopsies from dermatology residents.

METHODS

This study obtained institutional review board exemption from UTHSA. In September 2022, 26 medical students participated in the biopsy workshop. A ten-item pre-survey was administered at the beginning of the workshop. Survey questions focused on assessing general knowledge of skin biopsies and comfort level assisting and performing biopsies. The survey also included a 5-item objective knowledge quiz. A PowerPoint presentation was given using information adapted from the American Academy of Dermatology about the preparation, types, and aftercare of biopsies. Four dermatology residents from UTHSA were assigned to groups of five students for interactive instruction; oranges and peaches were used as skin models (**Figure 1**). Students practiced performing shave and punch biopsies, including injecting lidocaine, obtaining the biopsy, and using Drysol for hemostasis and petroleum jelly for wound

care. Post-surveys were given immediately and four months after the workshop to assess long-term retention. Optional open-ended feedback questions were included in the post-survey. The pre-and post-survey data were matched into a spreadsheet. Qualitative responses were converted into a 4-point Likert scale, and the total number of correct answers from the 5-item quiz was tallied for each respondent. A Wilcoxon Signed Rank Test was used for statistical analysis.



Figure 1. Materials used for the interactive biopsy workshop.

RESULTS

A total of 26 student responses were collected immediately before and after the workshop: 9 MS1s, 15 MS2s, and 2 MS3s. 17 responses were collected four months after the workshop; 6 MS1s, 9 MS2s, and 2 MS3s. There were significant increases in comfort when it came to assisting residents or faculty with performing skin biopsies ($p < 0.001$), performing biopsies under supervision ($p < 0.001$), and gathering the materials for a biopsy ($p < 0.001$) immediately and four months after the workshop. Additionally, there were significant increases in perceived

Table 1. Results of 10-item survey questions including 5 qualitative questions and 5-item biopsy knowledge quiz.

Survey Questions	p-values; immediately post-workshop n = 26	p-values; 4 months post-workshop n = 17
How knowledgeable are you about what biopsies are used for?	p <0.001	p <0.001
How knowledgeable are you about the different types of biopsies that dermatologists perform?	p <0.001	p <0.001
How comfortable are you with gathering the materials needed to perform a biopsy?	p <0.001	p <0.001
How comfortable are you with assisting a resident or faculty dermatologist with performing a skin biopsy?	p <0.001	p <0.001
How comfortable are you with performing a biopsy on your own under the supervision of a resident or faculty?	p <0.001	p <0.001
5-item biopsy knowledge quiz	p <0.001	p <0.001

knowledge of the utility of biopsies (p <0.001) and the different biopsy types (p <0.001) immediately and four months after the workshop. The number of correct answers to the five-item knowledge quiz significantly increased (p <0.001) immediately and four months after the workshop; the mean number of correct answers was 1.80 (SD = 0.94)

before the workshop, 4.54 (SD = 0.65) immediately after, and 3.47 (SD = 1.37) 4 months after (**Table 1**). Open-ended feedback collected at the end of the workshop supported this workshop as a positive and helpful tool for medical students; 10 out of 25 feedback responses stated that

they enjoyed learning from the residents the most.

DISCUSSION

Within the past five years, 85% of educators reported that time devoted to teaching dermatology has either remained unchanged or decreased, with a median of 10 hours of dermatology instruction in medical school.² Thus, supplementing the primary curriculum with workshops supported by the home dermatology program may improve student confidence and knowledge in performing foundational dermatology procedures. Additionally, based on the positive feedback, learning directly from dermatology residents in a small group setting may facilitate student engagement and offer beneficial mentorship.⁴ This can translate to student involvement in their school's student-run free clinics (SRFCs) and their performance during away rotations.

SRFCs are valuable resources for medical students to improve their interprofessional and clinical skills during their medical training.⁵ At TP, medical students can work directly with residents and faculty to provide dermatologic care to vulnerable patient populations. Students are expected to obtain patient histories, perform focused skin exams, present their findings to dermatology faculty and residents, and participate actively in management. Biopsies are fundamental procedures performed at TP for any equivocal skin findings. Supervised medical students can perform the procedure with patient consent. One of our goals with our workshop was to improve student confidence and understanding of the process involved in a biopsy in a supportive learning environment.

Dermatology is considered the third most competitive specialty, and as a result, there is a heavy emphasis on performing well during sub-internships and away rotations.⁶ Many dermatology programs expect rotators to be able to diagnose and treat dermatologic conditions, which may be difficult for students who have inadequate exposure to dermatology during medical school.³ Some programs may even allow rotators to perform biopsies under supervision, which is challenging if limited education has been offered. Thus, although not formally studied, our results suggest that additional training for medical students interested in dermatology could enrich the dermatology education at LSOM and possibly other medical schools so that students are better prepared during their dermatology rotations—at home institutions and away rotations.

Our study found that hosting a biopsy workshop improved medical student confidence in preparing for, assisting with, and performing skin biopsies and has demonstrated sustained efficacy. Limitations to our study include our small sample size and being a single-center study; however, given our cohort's results and positive feedback, we plan to host future workshops to improve dermatology education at LSOM. Future directions include incorporating suturing practices and inviting dermatology faculty to participate, further increasing mentorship opportunities.

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References:

1. Lim HW, Collins SAB, Resneck JS Jr, et al. The burden of skin disease in the United States. *J Am Acad Dermatol*. 2017;76(5):958-972.e2. doi:10.1016/j.jaad.2016.12.043
2. Cahn BA, Harper HE, Halverstam CP, Lipoff JB. Current Status of Dermatologic Education in US Medical Schools. *JAMA Dermatol*. 2020;156(4):468-470. doi:10.1001/jamadermatol.2020.0006
3. McCleskey PE, Gilson RT, DeVillez RL. Medical Student Core Curriculum in Dermatology Survey. *J Am Acad Dermatol*. 2009;61(1):30-35.e4. doi:10.1016/j.jaad.2008.10.066
4. Henry-Noel N, Bishop M, Gwede CK, Petkova E, Szumacher E. Mentorship in Medicine and Other Health Professions. *J Cancer Educ*. 2019;34(4):629-637. doi:10.1007/s13187-018-1360-6
5. Seif G, Coker-Bolt P, Kraft S, Gonsalves W, Simpson K, Johnson E. The development of clinical reasoning and interprofessional behaviors: service-learning at a student-run free clinic. *J Interprof Care*. 2014;28(6):559-564. doi:10.3109/13561820.2014.921899
6. Chen A, Shinkai K. Rethinking How We Select Dermatology Applicants-Turning the Tide. *JAMA Dermatol*. 2017;153(3):259-260. doi:10.1001/jamadermatol.2016.4683