THE ARTS IN HEALTH PROFESSIONS EDUCATION

Comparing Photovoice to Traditional Reflection to Identify Student Learning on a Medical Mission Trip

Elizabeth Skoy, PharmD, Amy Werremeyer, PharmD

North Dakota State University, Fargo, North Dakota

Submitted April 1, 2019; accepted July 19, 2019; published April 2020.

Objective. To compare the effectiveness of photovoice with traditional reflection as a methodology to identify student learning during an international advanced pharmacy practice experience (APPE).

Methods. Over seven years, seven cohorts of two to three pharmacy students completed an APPE in which they participated in a medical mission trip to Guatemala. Cohorts were assigned to use either photovoice or traditional reflection techniques to identify and document their learning. After returning from the mission trip, a focus group was conducted with each cohort of students. Students' comments were audio-recorded and the audio recording was transcribed and the text was qualitatively analyzed. In addition, all students completed the Inventory for Assessing the Process of Cultural Competence Among Healthcare Professionals (IAPCC-SV) before and after travel.

Results. All 18 students who participated in the mission trips, (nine in each group) agreed to participate in the study. Several themes were identified when the transcripts of the focus group sessions were reviewed. Students in both groups emphasized learning about the enhancement of pharmacy skills, cultural appreciation, and self-examination in their reflections. However, students in the photovoice group emphasized three additional areas that were not emphasized by students in the traditional reflection group: emotional impact, critical reflection on privilege, and ethical distribution of health resources. Students' post-intervention mean scores on the IAPCC-SV increased more for the photovoice group (8.5 points) than the reflection group (6.8); however, this difference was not significant.

Conclusion. Students who used photovoice focused more on the connection between their learning and emotional or moral experiences than did students who used traditional reflection techniques. Photovoice may represent a promising methodology for deeper reflection into affective learning domains because of students' connection between visual images and their lived experiences.

Keywords: photovoice, qualitative research, reflection techniques, international health

INTRODUCTION

Written reflections have been widely used in pharmacy education to identify student learning during educational activities such as service learning and advanced pharmacy practice experiences (APPEs). Reflection is a key component of the experiential learning model. The experiential learning model states that as an individual reflects on an educational experience, the reflection leads to the development of theories and conclusions.¹ Although reflection is widely used, it is not always intuitive and can be challenging for many students.²

Photovoice is a participatory action research methodology used to capture and characterize individual

experiences through the use of photography and discussion. It was originally developed by Wang and colleagues and gives participants a "voice" through the use of photographing everyday occurrences and realities and communicating these to others, which empowers them to make changes.^{3,4} Although photovoice has typically been used among underrepresented populations, it has also been used to identify student learning, including learning that takes place on APPEs.⁵⁻¹⁰ As a form of arts-based research, photovoice provides a means of rich and deep visual representation of experiences and concepts that would otherwise be challenging for students to capture with words.¹¹

Although photovoice has been shown to be effective in identifying learning, it is unknown whether its use is superior to traditional reflection techniques. The objective of this study was to evaluate the effectiveness of photovoice compared to traditional reflection as a

Corresponding Author: Elizabeth Skoy, North Dakota State University, Fargo, North Dakota, PO Box 6050, Dept 2660 (Pharmacy Practice), Fargo, ND 58108. Tel: 701-231-5669 E-mail: Elizabeth.Skoy@ndsu.edu

methodology to identify student learning during an APPE in international health.

METHODS

Seven cohorts of pharmacy students (n=18) from 2010-2016 participated in an international APPE centered on a medical mission to Guatemala. This experience has previously been described in the literature.¹² Each year, the cohort consisted of two or three fourth-year pharmacy students who had been selected to participate through a written essay and interview process.

The APPE lasted a total of five weeks of which 10 days were spent serving on a medical mission team that cared for patients at clinics in rural areas of Guatemala. The medical team usually consisted of two medical doctors, three nurses, one nurse practitioner, one dentist, a team pharmacist, two medical students and two nursing students. The pharmacy students, under the direction of the team pharmacist, who was also a faculty member, were responsible for evaluating medications, organizing and operationalizing the dispensing of medications, educating patients, and consulting with other members of the medical team.

Each cohort of students was assigned to utilize either Photovoice or traditional reflection techniques to identify and document their learning during the mission trip. Although documenting their reflections was a requirement for the APPE, participation in the research study was completely voluntary and did not affect their grade. If students chose to participate in the study, they were also asked to complete the Inventory for Assessing the Process of Cultural Competence Among Healthcare Professionals-Student Version (IAPCC-SV)¹³ before and after the mission trip. The IAPCC-SV is a 20-item assessment that has been validated to measure cultural competence numerically and categorically in health professional students. This study was approved by the North Dakota State University Institutional Review Board.

Over the course of the seven-year study period, nine students were assigned to the photovoice group. Prior to departure, each student in this group was given a 27-exposure disposable film camera and asked to capture images showcasing their learning. For student and patient safety, students were instructed not to take photos of illegal activity or airports (for national security reasons), and not to take photos of individuals without first obtaining permission from the person (or a parental guardian when applicable). Students were told they could capture as few or as many photographs as they deemed necessary up to the exposure limit.

The use of the disposable camera was two-fold: first, students were required to be selective of the photographs

they took because the camera had a limited number of exposures. Second, they would not be able to view the photographs immediately and thus would focus on the experience rather than the quality of the image they had taken. Faculty members also provided students with a journal in which they were instructed to document each photograph and why they chose to take the picture to aid in future reflection. In addition, students were encouraged to use the journal for written reflection about their experiences while abroad.

Upon returning to the United States, the students' photographs were developed. Within one week, a focus group led by the authors was held in which the students from the year's cohort participated. During the focus group, students took turns discussing their photographs and corresponding journal entries with their peers. Students were encouraged to comment on each other's photographs and written reflections to promote dialogue.

Over the course of the seven-year study, nine students were assigned to the traditional reflection group. Students in this traditional group were provided with a journal and asked to record their thoughts and experiences daily, as well as provide examples of their learning while abroad. Within one week after returning to the United States, the authors led a focus group in which the students from the year's cohort participated. During the focus group, students openly reflected with their peers about their journal entries.

All focus group sessions were audio-recorded and the audio recording was transcribed and the text qualitatively analyzed. The authors jointly performed line-by-line open-source coding of the transcriptions. A qualitative researcher who was a medical sociologist and had not participated in the APPE performed the initial data analysis. After two additional cycles of hand coding, the sociologist and the authors jointly identified a list of themes from the transcripts. Discussion and reconciliation of the emergent themes resulted in a thematic framework. Finally, the authors compared the thematic framework resulting from the photovoice group with that of the control group. A *t* test was used to examine differences in mean IAPCC-SV scores.

RESULTS

The students in the photovoice group and those in the control were similar in age (range 23-26 years in both groups), ethnicity, and previous experience working with underserved patient populations (four students in each group). Thematic comparison revealed that students in both groups emphasized learning about enhancement of pharmacy skills, cultural appreciation, and self-examination. These three themes encompassed the students' recognition

of growth in their abilities to use their foundational knowledge to provide better patient care, recognition of cultural differences from their own background, and recognition about aspects of personal growth or change in perspective, respectively, as a result of their experience. Examples of quotations and corresponding photos (where applicable) in Appendix 1 were chosen for publication because of their representation of the central tenets of the emergent themes. In some cases, the discussion around a single photo encompassed more than one theme, which can be seen in the latter portion of Appendix 1.

Students in the photovoice group emphasized three additional learning themes that were not emphasized by the traditional reflection (control) group students: emotional impact, critical reflection on privilege, and ethical distribution of health resources (Appendix 1). These themes reflected students' expression of emotions they experienced doing the work of patient care or collaborating with team members, internal/external dialogue about taking things for granted because of privilege of always having had access to them, and inner/outer conflict about what it meant to be fair in the face of limited medication/medical supplies, respectively.

All students' IAPCC-SV scores increased, indicating growth in cultural competence (Table 1). However, the

mean score increase for students in the photovoice group (8.5 points) was numerically larger than that for students the reflection group (6.8), but this difference was not significant ($p=.31$).

DISCUSSION

This study was the first to compare the use of traditional reflection techniques, such as journaling and focus groups, to the use of photovoice. Although the two groups identified similar themes that emphasized their learning, the photovoice group identified three themes that were not identified by the control group. These themes, emotional impact, critical reflection on privilege, and ethical distribution of health resources, have emotional and moral undercurrents. Students using photovoice may have emphasized the emotional and moral aspects of learning more because they were able to view and reflect on the photographs they had taken, which helped them retrieve/recall feelings and thoughts from that moment that may have otherwise been lost/gone undocumented. As early as 1957, Collier noted that while conducting an interview, showing participants pictures elicited longer and more comprehensive interviews and had the ability to stimulate and release emotional information from participants to a greater degree than did conventional

Table 1. Comparison of IAPCC-SV Scores of Fourth-Year Pharmacy Students Who Used the Photovoice Method of Reflection While on a Medical Mission Trip and Those Assigned to a Control Group

	Pre-intervention Mean Score (Level of Cultural Competence)	Post-intervention Mean Score (Level of Cultural Competence)	Mean Change
Photovoice Group			
Student 1	54 (aware)	65 (competent)	11
Student 2	66 (competent)	71 (competent)	5
Student 3	66 (competent)	77 (proficient)	11
Student 4	55 (aware)	71 (competent)	16
Student 5	63 (competent)	71 (competent)	8
Student 6	61 (competent)	69 (competent)	8
Student 7	63 (competent)	71 (competent)	8
Student 8	64 (competent)	70 (competent)	6
Student 9	67 (competent)	70 (competent)	3
Mean	62.1	70.6	8.5
Traditional Reflection (Control) Group			
Student 1	57 (aware)	61 (competent)	4
Student 2	60 (competent)	66 (competent)	6
Student 3	64 (competent)	71 (competent)	7
Student 4	62 (competent)	64 (competent)	2
Student 5	53 (aware)	63 (competent)	10
Student 6	53 (aware)	63 (competent)	10
Student 7	67 (competent)	73 (competent)	6
Student 8	69 (competent)	75 (proficient)	6
Student 9	65 (competent)	75 (proficient)	10
Mean	61.1	67.9	6.8

interviews.¹⁴ Harper posited that the visual aids associated with photo-elicitation tap into “a different part of human consciousness than do words-alone,” allowing deeper considerations of the meaning and emotions behind images.¹⁵ Previous literature also identified that photovoice and photography can elicit an emotional response from graduate students by adding structure to values and feelings.¹⁶

In addition, the photovoice group could have reflected on these additional areas simply because they had the photographs in front of them as one of the strengths of photovoice is its ability to facilitate critical dialogue through discussions of the deeper meanings behind photos and the symbolism the photos might represent.¹⁰ Power and colleagues argued that “photographs represent shared practices of speaking and silence that tie people together or contain people and provide a sense of community and continuity affectively” and, hence, result in a different kind of data.¹⁷ In our study, the students using photovoice did exactly this, as reflected in one student’s comment, “Going back and visually reflecting helps you to recall what you experienced on some level. . . It captures that part of your brain that’s actually humanly invested in it.” Interestingly, many of the students did not recall having had emotional connections to their work until reflecting on the captured photos. One student commented “This [the reflection focus group] was more emotionally exhausting that I thought it would be. . . I didn’t remember having a rollercoaster of emotions when I was there. . .” These findings suggest that photovoice may represent a promising methodology for deeper reflection into affective learning domains because of students’ connection between visual images and their lived experiences.

All learning themes emphasized by both the photovoice and control groups are consistent with learning outcomes that have previously been reported in relation to pharmacy students participating in IHEs.¹⁸ The growth in cultural competence experienced by the students as a result of the IHE, as measured by the IAPCC-SV is similar to or larger than that seen with other experiences involving international service learning.^{19,20} Lack of statistically significant changes in the mean scores between groups coupled with the same number of students in each group who experienced an upward change in cultural competence category (three in each group) suggests that use of photovoice may not have a greater effect on cultural competence growth than a traditional reflection approach. Future studies with larger sample sizes should revisit this question.

Our findings should be viewed with the limitations of the study in mind. First, learning outcomes from an

international APPE and the results obtained from tests administered upon completion may vary by location, length of stay, type of experience, and even group dynamics. Also, the small sample size (ie, the number of students who participated) limits the generalizability of the results and the power to detect a statistical difference between groups. The faculty members who served as preceptors for the APPE also performed some of the qualitative analysis of reflection data, which introduces a significant potential for bias. However, the medical sociologist who did not participate in the APPE served as an impartial voice in order to minimize bias in the results.

Use of photovoice presents some challenges, including the cost of disposable cameras and development of photographs and the significant time investment of approximately six hours per student to conducting focus groups and transcribing and analyzing reflection data. In addition, students initially found the use of photovoice to be challenging because of the open-ended nature of their participation with it. One student summed up her experience with photovoice this way, “I was really challenged on this assignment because it’s vague, but once I was assured over and over again that it’s truly whatever you see, [capture it,] write about it, and that’s it, I really came to like it.”

From this study, the authors have identified some potential areas for future research. First, the authors from this study only analyzed the transcribed focus group interviews for comparison. Future research using photovoice as a means of reflection could investigate the analysis of photographs themselves. Also, assessing the quality of critical reflection achieved with using photovoice compared to that using traditional reflection techniques could also contribute to the literature.

CONCLUSION

Students focused more on the connection between their learning and emotional or moral experiences when using photovoice than when using traditional reflection methods during an international APPE. Photovoice may be a promising methodology for evoking deeper reflection into affective learning domains because of students’ connection between visual images and their lived experiences.

ACKNOWLEDGMENTS

The authors would like to thank Gina Aalgaard Kelly, PhD, for her assistance with data analysis. A portion of this research was funded by a seed grant from the North Dakota State University College of Health Professions.

REFERENCES

1. Forrest MES. On becoming a critically reflective practitioner. *Health Information Libr J.* 2008;25(3):229-232. doi:10.1111/j.1471-1842.2008.00787.
2. Bouldin AS. Reflection is not reflexive. *Am J Pharm Educ.* 2017;81(9):6832. doi:10.5688/ajpe6832.
3. Baker TA, Wang CC. Photovoice: use of a participatory action research method to explore the chronic pain experience in older adults. *Qual Health Res.* 2006;16(10):1405-1413. doi:10.1177/1049732306294118.
4. Wang C, Burris MA. Photovoice: concept, methodology, and use for participatory needs assessment. *Health Educ Behav.* 1997;24(3):369-387. doi:10.1177/109019819702400309.
5. Leipert B, Anderson E. Rural nursing education: a photovoice perspective. *Rural Remote Health.* 2012; 12(2).
6. Mulder C, Dull A. Facilitating self-reflection: the integration of photovoice in graduate social work education. *Soc Work Educ.* 2014;33(8):1017-1036. doi:10.1080/02615479.2014.937416.
7. Whitfield D, Meyer H. Learning from our students: photovoice and classroom action research. *Science Education Review.* 2005;4(4):97-103.
8. Meyer H, Kroeger S. Photovoice as an educational action research tool. *Qualitative Research Journal.* 2005;5(2):185.
9. Werremeyer A, Skoy E, Aalgaard Kelly G. Exploration of learning during an international health elective using photovoice methodology. *Pharmacy (Basel).* 2016;4(4). doi:10.3390/pharmacy4040039.
10. Wilson JE, Smith MJ, Lambert TL, George DL, Bulkley C. A novel use of photovoice methodology in a leadership APPE and pharmacy leadership elective. *Curr Pharm Teach Learn.* 2017;9(6):1042-1054. doi:10.1016/j.cptl.2017.07.018.
11. Wagner PE, Ellingson LL, Kunkel A. Pictures, patience, and practicalities: lessons learned from using photovoice in applied communication contexts. *J App Commun Res.* 2016;44(3):336-342. doi:10.1080/00909882.2016.1192292.
12. Werremeyer AB, Skoy ET. A medical mission to Guatemala as an advanced pharmacy practice experience. *Am J Pharm Educ.* 2012;76(8):156. doi:10.5688/ajpe768156.
13. IAPCC-SV. *Transcultural CARE Associates.* June 2015. <http://transculturalcare.net/iapcc-sv/>. Accessed March 23, 2020.
14. Collier J. Photography in anthropology: a report on two experiments. *Am Anthropol.* 1957;59(5):843-859. doi:10.1525/aa.1957.59.5.02a00100.
15. Harper D. Talking about pictures: a case for photo elicitation. *Vis Stud.* 2002;17(1):13-26. doi:10.1080/14725860220137345.
16. Schell K, Ferguson A, Hamoline R, Shea J, Thomas-Maclean R. Photovoice as a teaching tool: learning by doing with visual methods. *International Journal of Teaching and Learning in Higher Education.* 2009;21(3):340-352.
17. Power NG, Norman ME, Dupré K. Rural youth and emotional geographies: how photovoice and words-alone methods tell different stories of place. *J Youth Stud.* 2014;17(8):1114-1129. doi:10.1080/13676261.2014.881983.
18. Peterson SC, Paiva MA, Wilby KJ. A Systematic meta-ethnographic review of the beneficial outcomes of international internships to student pharmacists. *Am J Pharm Educ.* 2017;81(7):5974. doi:10.5688/ajpe8175974.
19. Keane E, Provident I. Combining online education with international service learning to increase cultural competence. *Internet J Allied Health Sci Pract.* 2017;15(3). <https://nsuworks.nova.edu/ijahsp/vol15/iss3/6>.
20. Kohlbry PW. The impact of international service-learning on nursing students' cultural competency. *J Nurs Scholarsh.* 2016;48(3):303-311. doi:10.1111/jnu.12209.

Appendix 1. Identified Themes and Associated Quotations

Themes Common to Control Group and Photovoice	Example of Student Quote	Corresponding Photo (PV quotes only)
Enhancement of pharmacy skills	<p>Control: “We already knew about all the drugs we were gonna be giving out because they’re fairly basic drugs that we see commonly used and we know quite a bit about, so I feel like I was certainly able to apply that. But the way that I really learned from that was learning how to get all that across to them so that they would be able to understand what we’re saying and especially through the language barrier too. So, I think it was applying the knowledge, but learning how to talk about it in a different way I guess than we normally do.”</p> <p>PV: “As a student pharmacist I’ve never really operated in a pharmacy with these conditions. Our supplies consisted of what we could stuff into duffle bags or purchase in Guatemalan pharmacies. Operating with a limited formulary and the creativity we had to have to do that.”</p>
Cultural appreciation	<p>Control: “One thing I noticed in Guatemala, I think it was their culture, was a sense of community they had. Like when we were in Zunil, [we] asked “Oh, who is this?” and you’d expect it to be a family member. But no, it was like a neighbor who wanted to come along to the clinic and the people helped with translating and stuff and it was very much a community whereas here [in the United States] it’s like—you can’t even tell my mother what I’m taking because of HIPAA.”</p> <p>PV: “[I got] a culture lesson that a lot of people really want cough drops because some restaurants will give them out as like a post-meal treat... There was a lot of that as to how they view healthcare and things like that... I think in the US we just have a lot more types of desserts and candies and so we don’t think of cough drops as a treat, but more of a cough remedy. Some [Guatemalan] people were asking for [cough drops] even though the doctor hadn’t written for them and I didn’t know that that might’ve been the reason why they were asking.”</p>
Self-examination	<p>Control: “I feel like I learned more from them than they learned from me. That’s how I felt before I went, I’m gonna go there and help people and I didn’t think it would change me—[but] now like going shopping, you start to think about, do I really need that and realize how much you have and actually kind of feel bad about yourself when you know that some little boy doesn’t have access to healthcare there.”</p> <p>PV: “... I just took away from this [process of setting up the pharmacy] personally-- Being flexible with whatever you can—time, etc... everyone kind of has their own personality and way of doing things. Like pharmacy, we’re very organized and have our system, but others in the background have different way of doing things and maybe aren’t as organized... [After this experience] I will be open to being versatile and communicating better because that’s not always a strength of mine. I think communicating better, especially when part of a team is something I’ll take away.”</p>
Themes uniquely emphasized by PV participants		
Ethical distribution of resources	<p>“I know one thought I always had was is it better to give many months supply [of medication] to one person who could benefit over the long term, or was it better to just give one month to many people and kind of spread out the supply to many? And I never really decided which was better.”</p>	
Emotional impact	<p>“That one lady who kept asking for Calcium, she kept going to different people to try to get more, saying, ‘Oh I’m a widow’ and [repeating her] sob story, but I didn’t like that I felt irritated by her. And we tried to explain that we have to help a lot of other people, and I tried not to get irritated, but it was just one of those encounters that I was surprised to have.”</p>
Critical reflection on privilege	<p>“I know I haven’t been in a lot of Guatemalan schools, but this is probably 1 of the better ones because we didn’t seem to be in too poor of an area, but it would still be highly criticized in America. I was thinking about my elementary school, the desks we had that could store all our supplies, but these were just desks with no storage or anyplace to keep anything. Just [made me think] about my education... This could make Americans a lot more appreciative of the education we have in the US. A lot of people say ‘have to go to school’ vs. we could be saying ‘get to go to school.’ It could help people to value education rather than being a dreadful experience like a lot of Americans sometimes will see it.”</p>

Abbreviation: PV=Photovoice