Exploring the Impact of Brief Training on Student Pharmacists’ Naloxone Communication Skills

By
Kelly Jankowski

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Delesha Carpenter, Faculty Mentor
Exploring the impact of brief training on student pharmacists’ naloxone communication skills

Kelly Jankowski, PharmD Candidate 1; Trish Mashburn, PharmD 1, Amanda N. Stover 1, Ph.D., MPH; Donna M. Evon, Ph.D. 2, Scott A. Davis, Ph.D. 1, Delesha Carpenter, Ph.D., M.S.P.H 1 1. UNC Eshelman School of Pharmacy 2. Department of Medicine, The University of North Carolina at Chapel Hill

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Abstract

**Background:** It is unknown whether video or written materials are more effective at improving naloxone communication skills among pharmacists.

**Objective:** To explore: a) whether videos that model naloxone communication skills lead to improvements in student pharmacists’ naloxone knowledge, self-efficacy and patient communication skills and b) whether any trends in improvements differ between video versus written materials.

**Methods:** A pilot randomized controlled trial was conducted that randomized student pharmacists (N=31) to receive training about the use of naloxone to reverse opioid overdoses either by video (experimental) or written materials (control). Primary outcomes were change in: (1) perceived barriers to dispensing naloxone, (2) naloxone communication self-efficacy, (3) naloxone knowledge, and (4) naloxone communication. Naloxone communication was assessed via two simulated patient interactions. Two blinded coders used an observation guide to assess students’ naloxone communication. Linear regressions were used to evaluate change in outcomes measures.

**Results:** For the entire sample, naloxone knowledge and self-efficacy to communicate about naloxone increased and barriers to dispensing naloxone decreased (all p-values < 0.001). Additionally, communication skills improved significantly (p < 0.001) for the entire sample. Students were less likely to use the word ‘overdose’ during their post-training simulated patient encounter. In unadjusted analyses, students with video resources reported significantly higher self-efficacy post-training than the control group (p = 0.047). However, analyses that controlled for demographic characteristics and baseline barriers, knowledge, self-efficacy, or communication levels, found that training material type was not a significant predictor of change in any outcome.

**Conclusion:** This pilot study revealed that brief naloxone training can improve students’ knowledge, self-efficacy, and communication. Given the small sample, results are inconclusive regarding impact of training type on outcomes. A larger trial is needed to evaluate different training materials’ effects on student pharmacists’ naloxone communication and knowledge.

**Keywords:** naloxone; communication; student pharmacists
Introduction

In the United States (U.S.), over 70,000 overdose deaths were reported in 2019, with 71% of those being opioid-related.¹,² Naloxone is a highly effective medication used to reverse opioid overdoses and is available in multiple formulations, including the commonly dispensed Narcan® nasal spray.³ Although the overall naloxone dispensing rate has increased, the dispensing rate per high-dose opioid prescription is still low.⁴

Community pharmacists are one of the most accessible health professionals, with patients visiting community pharmacies significantly more often than primary care physicians (13 vs. 7 visits per year, respectively).⁵ Given their accessibility and monthly patient interactions, pharmacists have unparalleled ability to educate and dispense naloxone.⁶ In recent studies, community pharmacists and student pharmacists frequently omitted important counseling points.⁷,⁸ However, pharmacist barriers to dispensing naloxone include: lack of training on effective naloxone communication, integrating counseling into workflow, and moral or ethical concerns.⁹,¹⁰,¹¹,¹²

Effective naloxone training could increase pharmacists’ confidence to communicate about and dispense naloxone.¹³,¹⁴ However, it is unknown which training method is most effective. Both written and video resources are readily accessible online.¹⁵,¹⁶ Naloxone training studies with student pharmacists have been limited to evaluation of longer trainings (up to 2 hours) that may be more difficult to integrate into pharmacy school curricula.¹⁷,¹⁸,¹⁹,²⁰,²¹,²² These studies also did not directly compare the effectiveness of different naloxone training materials. Therefore, this pilot trial explored whether brief video resources improved student pharmacists’ naloxone communication and knowledge compared to written materials.

Study Design and Methods

Setting. A convenience sample of student pharmacists was recruited from the University of North Carolina (UNC) Eshelman School of Pharmacy, which is a four-year professional program located in Chapel Hill, NC. Data were collected from November 2020 to April 2021.

Participant Eligibility and Recruitment. All student pharmacists (first-year through fourth-year) were eligible to participate. Students who were part of the first author’s research course were excluded from participation (Figure 1). Participants were recruited via an email sent to the UNC pharmacy listserv. The study was also announced to three student organizations.

After indicating interest, students were emailed information and the informed consent form. Students scheduled a simulated patient (SP) encounter and provided verbal consent to participate.

Procedures. The UNC IRB deemed the study exempt (IRB #20-2327). The initial SP scenario was recorded on Zoom and enacted by the first author using a standardized
The patient in the scenario was a 32-year-old female visiting the pharmacy for the first time with prescriptions for oxycodone, oxycontin, and Narcan®. The SP asked the student what Narcan® is used for and why her doctor would give her Narcan® since she has taken her pain medications for years and takes them exactly as prescribed. She also asked what she needs to know about it, how to use it, and what it costs.

This SP script was developed based on responses from 40 interviews with patients at high-risk of overdose. A panel of community pharmacists and individuals with expertise in healthcare communication and substance use developed the script. Training to enact the script involved three training sessions where the first author practiced enacting the scenario with pharmacists on the research team in order to convey authenticity.

Immediately following the initial Zoom encounter, the student completed a baseline survey and was then randomized to receive either video or written training materials. Students were given approximately 2 months to complete training due to competing course and experiential education demands. A final encounter and post-training survey were completed 1-2 weeks post-training. Students had up to 3 weeks to complete the surveys after encounters; a maximum of 3 weekly reminder emails were sent. Pre- and post-training communication was assessed by two blinded coders using an observation guide.

Randomization. Students were randomized with a random number generator to receive either written training materials (control; N=16) or video training materials (experimental; N=15).

Interventions. The intervention group received a 20-minute “Narcan® Pharmacist Training” video and a 7-minute “How to Use Narcan®” video from Narcan®’s website. The first video included verbiage for discussing Narcan®, counseling points, and dispensing, while the second video showed proper administration technique. The control group received written handouts from naloxonesaves.org including 12 total pages of information on administration, counseling points, and suggested verbiage.

Sample Size and Statistical Power. A sample size of 30 students was chosen for this pilot randomized controlled trial due to feasibility, as the study investigator completed 60 SP encounters over a 6-month period. Because the effect size for these naloxone training materials has not been previously reported, this study explored potential trends based on group assignment.

Measures. Ten-minute surveys were completed online via Qualtrics.

Barriers to dispensing naloxone. Students reported how concerned they were about 10 barriers to dispensing naloxone while on a community pharmacy rotation, including: lack of time and concerns it will make people use more opiates. Items were adapted from a previously validated questionnaire and additional questions were created based on a literature review on barriers to dispensing naloxone. Response options were
measured on a 4-point ordinal scale (1=not a concern to 4= major concern; higher mean scores indicated greater perceived dispensing barriers.

*Naloxone self-efficacy*. Using a reliable and valid opioid overdose knowledge and attitudes measure\(^{25}\), six items were adapted to measure students’ confidence to: (1) dispense to customers, (2) dispense according to NC state law, (3) educate customers to recognize opioid overdose signs, (4) use the teach-back method, (5) engage in counseling when the pharmacy is busy, and (6) discuss naloxone in a way that does not offend customers. Items were measured on a 4-point ordinal scale ranging from 1=not at all confident to 4=very confident.

*Naloxone Knowledge*. Seven knowledge questions were developed based on training content that was covered in both the control and experimental groups. Areas assessed included what Narcan® is used for, how long Narcan® lasts, and administration techniques. Items were scored as incorrect=0/correct=1, with higher scores (range: 0-7) indicating higher levels of naloxone knowledge.\(^{25}\)

*Sociodemographic Measures*. Students reported their age, gender identity, race, year in pharmacy school, future career plans, and whether they had received any previous naloxone training.

*Communication Measures*. An observation guide based on a similar guide developed to assess the fidelity of an opioid overdose program was modified to assess students’ naloxone communication.\(^{26}\) Observation guide items were modified according to prior literature and input from pharmacists and researchers on the study team.\(^{13,23,26}\) Both verbal and non-verbal communication skills were assessed using the following scale: skill not demonstrated (0), skill needs development (1), or skill demonstrated with competence (2).

Four verbal communication domains were rated: (1) encouraged patient to have Narcan® in home, (2) thoroughly explained Narcan® administration, (3) spoke simply without using jargon, (4) used clear/professional intonation of voice. Verbal communication scores could range from 3-12, with higher scores indicating better communication.

Additionally, three non-verbal communication skills were assessed: (1) expressed warmth, (2) used respectful demeanor, (3) actively engaged with patient (made eye contact). The non-verbal scores could range from 3-9, with higher scores indicating better non-verbal communication.

Coders also documented: (1) whether students used an analogy (e.g., fire extinguisher) to describe naloxone (Yes, No, or Other), (2) the term used to describe an overdose (overdose, opioid overdose, opioid emergency, bad reaction, other), (3) whether they related the need for naloxone to patient-specific risk factors (e.g., presence of asthma), and (4) if they needed a “how do I use it?” prompt prior to discussing administration.
Data analysis. Two coders who did not interact with the students were trained to code naloxone communication with the observation guide. Coders were blinded to the group assignment and pre- vs. post-assessment. After introductory training, coders were provided with both sets of Narcan® training resources to gain a better understanding of what was covered and were given three example videos to code. Discrepancies were discussed and coders identified ways to increase inter-coder reliability. This process was repeated until the coders achieved greater than 75% inter-coder reliability, at which time they began to separately code the remaining encounters.

Quantitative data were analyzed using SPSS Version 26 (Armonk, NY). Descriptive statistics were calculated and unadjusted pre-post differences in outcome variables (barriers, self-efficacy, knowledge, verbal communication, non-verbal communication) were examined using chi-square statistics and t-tests as appropriate. Linear regressions were then conducted with group assignment as the main independent variable. Regressions included the following co-variates: age, gender, race (White vs. non-white), year in pharmacy school, and previous naloxone training. In all regressions, the baseline measure of the outcome variable of interest was included as a control variable. For example, the regression for post-training self-efficacy controlled for baseline self-efficacy.

Results

Sample characteristics. The intervention group had significantly more females (p < 0.05) (Table 1). Six (19%) students had previous naloxone training, ranging from a recent topic discussion during a community rotation to a class-based skills session in a pharmacy school class.

Barriers to Dispensing. For the entire sample, barriers to dispensing naloxone significantly decreased after training; from 22.5 (SD 6.1) pre-training to 17.7 (SD 5.4) post-training, (t(29)= 6.96, p < 0.001). In unadjusted analyses, there were no significant differences by intervention group (Table 2). Additionally, the variable for intervention group was not significant in the regression model. However, two variables were significant: students who reported a greater number of barriers at baseline reported a greater number of barriers post-training (p < 0.001, B=0.55, 95% CI (0.28, 0.82)), and students in higher pharmacy class years reported fewer barriers post-training (p < 0.05, B=-2.02, 95% CI (-4.03, -0.01)) (Table 3).

Self-efficacy. For the entire sample, naloxone communication self-efficacy increased significantly from pre- to post-training; mean scores were 12.5 (SD 3.9) pre-training and 19.6 (SD 2.8) post-training, (t(29)= 8.59, p < 0.001). In unadjusted analyses, the intervention group reported significantly higher self-efficacy post-training than the control group (p = 0.047) (Table 2). Intervention group was not significant in the regression model, but students in higher years reported higher confidence post-training (p < 0.001, B=2.97, 95% CI (1.45, 4.49)) (Table 3).
Naloxone knowledge scores improved significantly from pre- to post-training; with mean knowledge scores of 3.97 (SD 1.3) pre-training and 4.70 (SD 1.1) post-training ($t_{29} = 2.89$, $p=0.007$). In unadjusted analyses, the intervention and control group post scores were not significantly different (Table 2). No variables were significant in the regression model for naloxone knowledge (Table 3).

Counseling Points. The number of counseling points increased from 2.27 (SD 1.8) pre-training to 5.13 (SD 2.0) post-training ($t_{29} = 6.83$, $p<0.001$). In unadjusted analyses, the intervention and control group post scores were not significantly different (Table 2). No variables were significant in the regression model for counseling points (Table 3).

Non-verbal communication. For the entire sample, non-verbal communication improved significantly from pre- to post-training; mean non-verbal communication scores were 6.10 (SD 0.8) and 7.00 (SD 1.3), respectively ($t_{29} = 4.38$, $p < 0.001$). In unadjusted analyses, there were no significant differences by intervention group (Table 2). Additionally, the variable for intervention group was not significant in the regression model. However, two variables were significant: students who had lower baseline non-verbal communication scores had lower scores post-training ($p < 0.05$, 0.64 (-0.001, 1.28)) and older students had higher non-verbal communication ratings post-training ($p < 0.01$, 0.38 (0.09, 0.67)) (Table 3).

Verbal communication. For the entire sample, verbal communication improved significantly from pre- to post-training. Specifically, mean verbal communication scores were 7.03 (SD 1.5) pre-training and 8.63 (SD 1.5) post-training ($t_{29} = 5.00$, $p < 0.001$). In unadjusted analyses, there were no significant differences by intervention group (Table 2). Additionally, no variables, including intervention group, were significant in the regression models (Table 3).

Students used different terms to describe naloxone’s purpose post-training. Specifically, the term “overdose” was used less frequently (n=12 pre and n=5 post, $p = 0.04$). Additionally, the term “opioid overdose” (n=9 pre and n=7 post) was used less frequently post-training, though this decrease was not statistically significant. The terms “opioid emergency” (n=0 pre and n=5 post) and “bad reaction” (n=0 pre and n=3 post) were used more often post-training.

Training did not significantly increase the number of students who compared naloxone to a fire extinguisher or EpiPen (n=5 pre-training and n=6 post-training). However, several students compared naloxone to a seatbelt (n=4) or a security blanket (n=1) post-training; these terms were not used by any students before training. On the post-training survey, two students reported that the video module was too long (20:49) and monotone, making it difficult to watch in one sitting. Additionally, one student suggested that the written resource should include information on administration to children. Another student requested more information on the standing order.
Discussion

This pilot randomized controlled trial explored whether brief video and written naloxone training resources differentially impacted student pharmacists’ knowledge and communication skills. The evidence was inconclusive as to whether video or written materials were more effective, with one exception that students who viewed videos reported significantly higher self-efficacy post-training. Although differences in outcomes between students appeared small, as a whole, the sample demonstrated significant improvements in knowledge, self-efficacy, and communication after completing brief written or video trainings. This finding is encouraging as it may be easier for pharmacy schools to integrate brief naloxone trainings into their curricula, which would help students provide high-quality counseling during early immersions and practice experiences.

Overall, students reported fewer barriers to dispensing and felt significantly more confident post-training. Those in higher years reported fewer barriers and more confidence with counseling and dispensing naloxone. This finding is expected, given that students with greater opportunities to interact with patients should have more confidence when counseling.

Students demonstrated improved communication post-training. Older students had higher non-verbal communication ratings post-training, suggesting that age plays a role in effectively communicating about naloxone, regardless of year in pharmacy school. Interestingly, there was not a significant increase in students using the term “fire extinguisher”, although it was mentioned in both resources. The term “seatbelt” was used significantly more after training, which shows that many students found the suggested analogy helpful when explaining naloxone’s purpose. Less use of the word “overdose” post-training indicates that training can encourage students to use less stigmatizing verbiage.27

This study has several limitations. Being a pilot study, it was not powered to detect significant differences between training materials. A future comparative effectiveness study is needed to determine differences among training modalities. Nonetheless, preliminary data was provided, including effect size data, to help design a larger trial. Generalizability is also limited, as the study included a small sample of student volunteers at one university. Selection bias is a potential limitation as only students most interested in naloxone likely participated. Although the trainings did not contain identical information, we ensured that surveys and observation guide questions assessed topics that were addressed in both the written and video resources. We also could not verify whether students actually watched the videos. Training time between completion and assessment on communication also varied between students. Additionally, the SP was a pharmacy student, which could have influenced the interactions with study participants. However, blinded coders who did not know the participants coded the communication data.
CONCLUSIONS

Brief naloxone communication training can improve student knowledge, self-efficacy, and communication. The associations between training type and study outcomes were inconclusive. Nonetheless, these preliminary data and effect size estimates will be useful in designing a future efficacy trial with a larger, more heterogeneous sample to detect differences between training materials to improve student pharmacist outcomes.

References


Table 1. Baseline characteristics of intervention (video training materials) versus control (written training materials) group participants (n = 31)

<table>
<thead>
<tr>
<th></th>
<th>Intervention group n (%) (N = 15)</th>
<th>Control group n (%) (N = 16)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, years</td>
<td>24 ± 1.4</td>
<td>24 ± 2.2</td>
<td>0.34</td>
</tr>
<tr>
<td>Gender, female</td>
<td>15 (100)</td>
<td>11 (69)</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Race, White</td>
<td>11 (73)</td>
<td>6 (38)</td>
<td>0.34</td>
</tr>
<tr>
<td>Race, African American</td>
<td>0 (0)</td>
<td>1 (6)</td>
<td></td>
</tr>
<tr>
<td>Race, Asian</td>
<td>3 (20)</td>
<td>7 (4)</td>
<td></td>
</tr>
<tr>
<td>Race, African Indian/American Native</td>
<td>0 (0)</td>
<td>1 (6)</td>
<td></td>
</tr>
<tr>
<td>Race, Other</td>
<td>1 (7)</td>
<td>1 (6)</td>
<td></td>
</tr>
<tr>
<td><strong>Year in Pharmacy School</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PY1 (first year)</td>
<td>5 (33)</td>
<td>3 (19)</td>
<td>0.24</td>
</tr>
<tr>
<td>PY2 (second year)</td>
<td>4 (27)</td>
<td>2 (13)</td>
<td></td>
</tr>
<tr>
<td>PY3 (third year)</td>
<td>6 (40)</td>
<td>7 (44)</td>
<td></td>
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<tr>
<td>PY4 (fourth year)</td>
<td>0 (0)</td>
<td>4 (25)</td>
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<tr>
<td><strong>Future Career Plans</strong></td>
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<tr>
<td>Ambulatory Care Pharmacy</td>
<td>3 (20)</td>
<td>2 (13)</td>
<td>1.00</td>
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<tr>
<td>Community Pharmacy</td>
<td>2 (13)</td>
<td>3 (19)</td>
<td></td>
</tr>
<tr>
<td>Hospital Pharmacy</td>
<td>7 (47)</td>
<td>8 (50)</td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>1 (7)</td>
<td>1 (6)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1 (7)</td>
<td>2 (13)</td>
<td></td>
</tr>
<tr>
<td><strong>Previous Naloxone Training</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4 (27)</td>
<td>2 (13)</td>
<td>0.38</td>
</tr>
</tbody>
</table>
Table 2. Descriptive statistics for intervention (video training materials) ($N=15$) and control group (written training materials) ($N=15$)

<table>
<thead>
<tr>
<th></th>
<th>Intervention Group (Video)</th>
<th>Control Group (Written Materials)</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>Range (min, max)</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Barriers to Dispensing</td>
<td>22.4 ± 7.2</td>
<td>26 (14, 40)</td>
<td>22.6 ± 1.2</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>12.9 ± 4.9</td>
<td>16 (6, 22)</td>
<td>12.1 ± 2.7</td>
</tr>
<tr>
<td>Naloxone Knowledge</td>
<td>3.9 ± 1.4</td>
<td>5 (1, 6)</td>
<td>4.1 ± 1.2</td>
</tr>
<tr>
<td>Counseling Points</td>
<td>2.5 ± 1.9</td>
<td>6 (0, 6)</td>
<td>2.1 ± 1.6</td>
</tr>
<tr>
<td>Verbal Communication</td>
<td>7.3 ± 1.7</td>
<td>6 (4, 10)</td>
<td>6.8 ± 1.3</td>
</tr>
<tr>
<td>Non-Verbal Communication</td>
<td>6.1 ± 0.6</td>
<td>2 (5, 7)</td>
<td>6.1 ± 1</td>
</tr>
</tbody>
</table>

|                      | Mean ± SD                   | Range (min, max)                  | Mean ± SD | Range (min, max) | p-value* |
|----------------------|-----------------------------|-----------------------------------|----------|
| Barriers to Dispensing | 19 ± 6.9                    | 27 (12, 39)                      | 16.5 ± 3.2 | 10 (12, 22)      | 0.12     |
| Self-efficacy        | 20.3 ± 2                    | 8 (16, 24)                       | 18.9 ± 3.4 | 11 (7, 17)       | <0.05    |
| Naloxone Knowledge   | 4.9 ± 1.2                   | 4 (2, 6)                         | 4.5 ± 0.9  | 3 (3, 6)         | 0.46     |
| Counseling Points    | 5.1 ± 2.3                   | 8 (0, 8)                         | 5.1 ± 1.8  | 5 (2, 7)         | 0.74     |
| Verbal Communication | 8.4 ± 1.3                   | 5 (6, 11)                        | 8.9 ± 1.6  | 5 (7, 12)        | 0.83     |
| Non-Verbal Communication | 7.1 ± 1.3                  | 3 (6, 9)                         | 6.9 ± 1.3  | 3 (6, 9)         | 0.34     |

Note: *p-value comparing intervention and control group without adjusting for co-variates
Table 3. Linear regression model predicting barriers to dispensing naloxone, naloxone self-efficacy, naloxone knowledge, verbal communication, non-verbal communication, and counseling points after reviewing training materials (N=30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Barriers to Dispensing Naloxone Beta (95% CI)</th>
<th>Naloxone Self-Efficacy Beta (95% CI)</th>
<th>Naloxone Knowledge Beta (95% CI)</th>
<th>Counseling Points Beta (95% CI)</th>
<th>Verbal Communication Beta (95% CI)</th>
<th>Non-verbal Communication Beta (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention Group (Video)</td>
<td>-2.55 (-5.45, 0.36)</td>
<td>-0.89 (-3.03, 1.25)</td>
<td>-0.37 (-1.38, 0.64)</td>
<td>0.42 (-1.57, 2.40)</td>
<td>0.32 (-1.26, 1.91)</td>
<td>-0.08 (-1.32, 0.93)</td>
</tr>
<tr>
<td>Baseline</td>
<td>0.55 (0.28, 0.82)**</td>
<td>-0.26 (-1.59, 0.07)</td>
<td>0.26 (-0.19, 0.70)</td>
<td>0.30 (-0.26, 0.85)</td>
<td>0.33 (-0.16, 0.81)</td>
<td>0.64 (-0.001, 1.28)*</td>
</tr>
<tr>
<td>Age</td>
<td>-0.12 (-0.90, 0.66)</td>
<td>-0.23 (-0.82, 0.36)</td>
<td>-0.09 (-0.37, 0.18)</td>
<td>0.40 (-0.13, 0.92)</td>
<td>0.16 (-0.24, 0.57)</td>
<td>0.38 (0.09, 0.67)**</td>
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<tr>
<td>Gender (Female)</td>
<td>-1.00 (-4.78, 2.78)</td>
<td>-0.90 (-3.89, 2.08)</td>
<td>-0.88 (-2.22, 0.45)</td>
<td>-0.82 (-3.44, 1.80)</td>
<td>-0.28 (-2.27, 1.70)</td>
<td>0.45 (-0.94, 1.84)</td>
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<td>White Race</td>
<td>-1.10 (-4.16, 1.97)</td>
<td>-0.89 (-2.94, 1.15)</td>
<td>-0.27 (-1.22, 0.68)</td>
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<td>0.31 (-1.19, 1.81)</td>
<td>0.03 (-1.08, 1.13)</td>
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<td>Year in Pharmacy School</td>
<td>-2.02 (-4.03, -0.01)*</td>
<td>2.97 (1.45, 4.49)**</td>
<td>0.22 (-0.59, 1.03)</td>
<td>0.02 (-1.30, 1.33)</td>
<td>-0.24 (-1.21, 0.72)</td>
<td>-0.36 (-1.00, 0.29)</td>
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<tr>
<td>Previous Naloxone Training</td>
<td>1.19 (-2.10, 4.48)</td>
<td>0.81 (-1.70, 3.33)</td>
<td>-0.32 (-1.40, 0.76)</td>
<td>-0.76 (-2.86, 1.34)</td>
<td>-0.17 (-1.80, 1.46)</td>
<td>-0.20 (-1.34, 0.94)</td>
</tr>
</tbody>
</table>

Note: *p < 0.05 ** p < 0.01 *** p < 0.001; Barriers were measured using a scale of 1-4 with higher scores reflecting higher concern with dispensing naloxone. Self-efficacy was measured using a scale of 1-4 with high scores reflecting higher self-efficacy. Naloxone Knowledge was measured using a point system (0-6) with higher scores reflecting more knowledge about naloxone. Verbal communication was measured using a scale of 1-3 with high scores reflecting higher competence with verbal communication. Non-verbal communication was measured using a scale of 1-3 with high scores reflecting higher competence with non-verbal communication. Counseling points were measured using a point system (0-8) with higher scores reflecting more counseling points mentioned during simulated encounter.
**Figure 1. Enrollment**

Total population (n=588) (1\textsuperscript{st}, 2\textsuperscript{nd}, 3\textsuperscript{rd}, & 4\textsuperscript{th} year UNC pharmacy students)

Assessed for eligibility (n=31) (Completed interest survey)

Excluded (n=0)

Randomized (n=31)

Allocated to intervention (n=15) (Video Materials)

Allocated to control (n=16) (Written Materials)

Lost to follow-up (n=0)

Lost to follow-up (n=1)

Analysis

Analysed (n=15)

Excluded from analysis (n=0)

Analysed (n=15)

Excluded (lost to follow-up) (n=1)
Report Addendum

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