

Problem & PURPOSE

- Out-of-hospital cardiac arrest is a leading cause of death in the United States, with survival highly dependent on rapid bystander CPR.
- Rural communities often experience longer EMS response times and limited access to formal CPR training.
- Many rural high school students graduate without Basic Life Support education, despite being capable and willing to respond in emergencies.
- The purpose of this quality improvement project was to increase access to evidence-based BLS training for rural 11th and 12th grade students and evaluate changes in CPR knowledge and confidence.

Available Knowledge & Rationale

- Integrating Basic Life Support training into rural high school curricula can improve bystander CPR readiness, strengthen community resilience, and potentially improve survival outcomes during cardiac emergencies (Hamednia et al., 2025; Zenani et al., 2022).
- Hands-on and interactive BLS instruction is more effective than lecture-based education because it improves engagement, supports skill acquisition, and builds confidence in emergency response (Pivac et al., 2022; Silva et al., 2024).
- Rural communities face longer EMS response times and lower rates of bystander-administered CPR, making early CPR training especially important in these settings (Peters et al., 2022; Smith et al., 2023).

Methods

Context

- Setting: Rural Midwestern high school
- Inclusion criteria: Students in 11th or 12th grade who had participated in the BLS training session, provided active assent, and had passive parental consent to complete study surveys.
- Exclusion criteria: Students who did not provide assent, whose parent/guardian declined participation, or who did not complete all three surveys.

Intervention

- A 45-minute hands-on BLS training session was delivered to 11th and 12th grade students during health science class.
- Instruction included AHA hands-only CPR content, AED awareness, videos, discussion, manikin practice, and scenario-based learning.
- Content included recognition of cardiac arrest, scene safety, calling for help, chest compression rate/depth, and AED awareness.

Methods Continued

Study of Intervention

- A single-group pretest-posttest design with a two-week follow-up was used. Students completed surveys before training, immediately after training, and two weeks later.
- Anonymous student-generated codes were used to match responses across all three time points while maintaining confidentiality.
- Data collection included student CPR knowledge and self-reported confidence/willingness to respond in an emergency.
- Descriptive statistics were used to summarize mean knowledge and confidence scores. Paired-samples *t*-tests were used to compare pre- and post-intervention scores and post-intervention scores with two-week follow-up scores.

Measure

- A 15-item electronic survey assessed CPR confidence and knowledge. Five Likert-scale items measured confidence and willingness to act. Ten multiple-choice items measured BLS knowledge.
- Outcomes included change in knowledge and confidence immediately after training and retention of gains at two weeks.

Data Analysis

- Descriptive statistics were used to analyze mean knowledge and confidence scores at all three time points
- Confidence scores:
 - Paired-samples *t*-test
 - Compared pre-, post-, and two-week follow-up means
- Knowledge scores
 - Paired-samples *t*-test
 - Compared pre-, post-, and two-week follow-up means

Acknowledgements

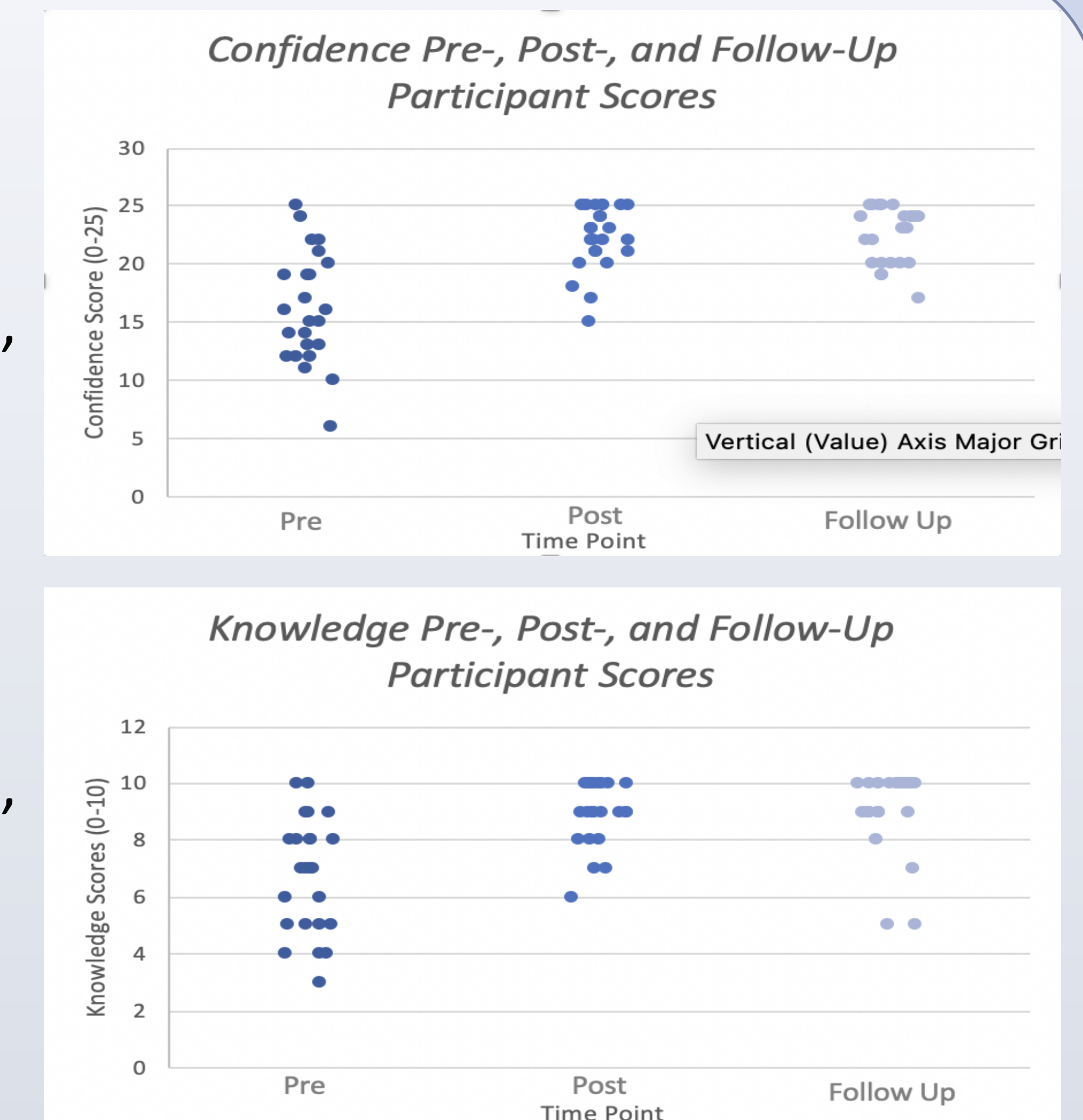
- Thank you to the participating students, school administration, school nurse, faculty advisor, and local community hospital for supporting this project and providing training resources.

References:



Results

- Confidence improved significantly pre- to post-intervention, $t(23) = -6.54$, $p < .001$, and was maintained at two weeks, $p = .714$.
- Knowledge improved significantly pre- to post-intervention, $t(23) = -5.44$, $p < .001$, and was maintained at two weeks, $p = .898$.



Discussion

- Results demonstrated statistically significant improvements in student CPR knowledge and confidence after hands-on BLS training.
- Knowledge and confidence gains were maintained at the two-week follow-up, suggesting short term retention.
- The intervention was feasible and low-cost because training occurred during class time and materials were borrowed from a local community hospital.
- Limitations identified in study:
 - Small sample size from one rural hospital
 - No control or comparison group
 - Confidence was self-reported
 - Two-week follow up only measured short-term retention

Conclusions

- A brief, structured BLS training session significantly improved rural high school students' knowledge and confidence, with gains maintained after two weeks.
- Integrating BLS education into rural high school curricula may be a feasible, low-cost strategy to improve emergency preparedness and increase the likelihood of bystander CPR in rural communities.
- Future work should evaluate long-term retention, refresher training, objective CPR skill performance, & expansion to additional rural schools.