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Research Article

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# Action Research on Improving Students Suturing Skill: The Case of 4th Year Vet Students

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***Abstract***

*Suturing is an essential surgical skill for veterinary students, requiring both proficiency and confidence for clinical practice. This action research aims to enhance the suturing skills of 4th-year veterinary students at Mekelle University. The study employed instructional videos and hands-on practice on suture boards over eight weeks. Data were collected through pre- and post-practice surveys and measurements of suturing proficiency, including edge approximation, knotting, and closure time. Results demonstrated significant improvement in students' confidence, competency, and technical skills after the intervention ($p < 0.01$). The findings underscore the importance of consistent, practical training in developing critical surgical competencies among veterinary students.*

**Keywords:** Veterinary Education, Suturing Skills Hands-on Practice, Clinical Skills Training, Veterinary Students, Surgical Proficiency, Suturing Techniques, Veterinary Surgery, Action Research, Skill Development.

## Introduction

According to studies, suturing is a surgical procedure that involves closing a wound. This study reported that veterinary students acquired suturing skills through observation and then performing surgical procedures themselves. The report also stated that having the ability to suture is a crucial skill for many vet doctors and hence, vet students need to be taught well during the veterinary school [1].

Based on reports, basic suturing skill is important for veterinary students prior to entering clinical practice [2]. In this report, instructional videos explaining suturing followed by hands-on practice using a suture practice board were provided for the students to enhance the proficiency in suturing.

Based on investigation, veterinary educators commonly begin teaching suturing skills to veterinary students outside of the operating room, often in the clinical skills laboratory using cadavers [3].

According to explanation, veterinary graduates are expected to be competent in basic suturing skills upon entering the workforce [4].

## Statement of the Problem

As proficiency in suturing is essential for maintaining the post-surgical function of the tissue as well as improving appearance of the healed wound, effective instruction in suturing techniques outside of the operating room requires access to practical tools designed for educational consistency and adequate repetition.

We observed that the 4th year veterinary students often unprepared to perform suturing in clinical practice. This could be due to lack of confidence, little knowledge and skill towards the suturing technique. Hence, action research is designed to enhance the proficiency of students in suturing, and to prepare students to perform suturing in clinical practice.

## Objective

• To improve the suturing skill of 4th year veterinary students

## Materials and Methods

**Study Area**
This action research was conducted for two months from the beginning of May to the end of June, 2024, in College of Veterinary Science, Mekelle University.

**Study Population/Participants**
4th year veterinary students with prior little knowledge of general surgery but experiences inadequate suturing skills, were the target population in this action research.

**Study Design and Improvement Techniques**
A prospective study design was employed for this action research. Providing instructional videos explaining suturing is the beginning technique that was employed to the students. Following the video explanation, hands-on practice was provided for the students to improve the proficiency of students in suturing. Hands-on practice was carried out on suture practice board. Suture practice board was made on wood and cloth. Hands on practice on suture practice board were provided to the students 2 hrs. once a week for eight (8) weeks. The suturing skill of the students was assessed before and after hands on practice.

**Questionnaire Survey**
An organized semi-structured questionnaire was employed for assessment of students' level of confidence, competency for suturing, experience of anxiety and preparation for suturing. Questionnaires were prepared and checked for clarity of the questions prior the interview. Prior the interview, respondents (the students) were briefed to the objective of the action research. Following that, the actual questions and questionnaires were presented.

**Suturing Measurements**
The measurements taken during the evaluation of the students' proficiency in suturing were:

**Approximation of Edges:** skin edges having greater than 1.5-2 mm space diameter, 1-1.5 mm space diameter and less than 1 mm space diameter considered as fair, good and excellent approximation of skin, respectively.

**Knotting:** single knotting without reversing, single knotting with reversing and double knotting with reversing considered as fair, good and excellent knotting, respectively.

Total time taken for suturing/closure: the time take for closure of the 15 cm length incision taken greater than 30 minutes, from 16-30 minutes and less than 15 minutes considered as fair, good and excellent closure time, respectively.

**Sample Size and Sampling Method**
The total number of 4th year veterinary students (N=17) were used for the study and a convenient sampling method was employed during the intervention.

**Data Collection**
Both Qualitative data (from the hands-on practice) and quantitative data (from the questionnaire survey) were collected on students suturing skills.

**Data Analysis**
The collected data was organized and entered to MS sheet and was analyzed using analysis of variance (ANOVA) using the statistical analyses SPSS statistical program version 25.0. Chi-square tests were used to compare the level of confidence, competency and suturing skills pre- and post- hands on practice. P <0.01 was considered as statistically significant improvement in suturing proficiency.

## Results and Discussion

**Pre- Practice Questionnaire Survey**
From the total of students (N=17) involved in the questionnaire survey, about 13(76%), replied as disagree for preparation for suturing, most of the students strongly agree that still need practice/help for suturing and experiencing anxiety during suturing. On the other hand, most students strongly disagree for their confidence and competence for suturing during suturing. Here below is the pre-practice response of the students (Figure 1).

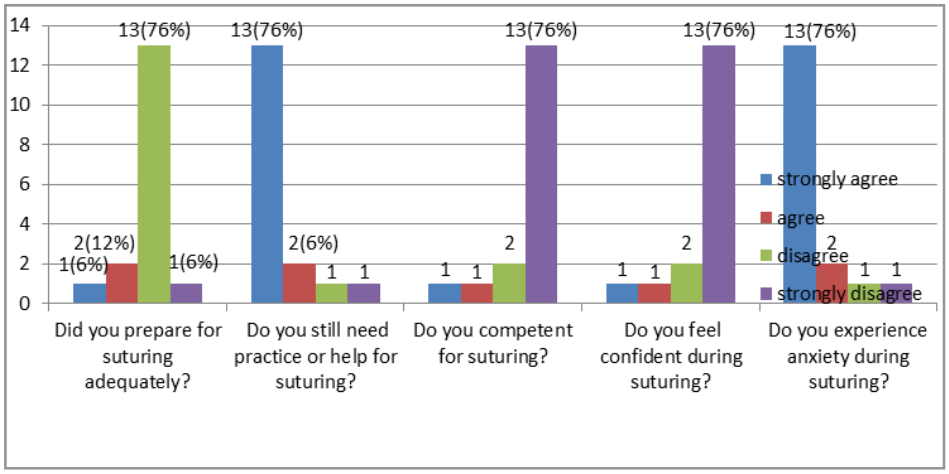


**Figure 1:** Results from Pre- Practice Surveys

**Post-Practice Questionnaire Survey**
After 8 weeks of hands on practice, the questionnaire survey also collected to address the change in level of confidence, competency and experience of anxiety after the hand on practice. About 15(88%) of the participants strongly agree that they are competent and have confidence during suturing. On the other side, most of the participants strongly disagree that they did not need practice/help for suturing and did not experience anxiety during suturing.

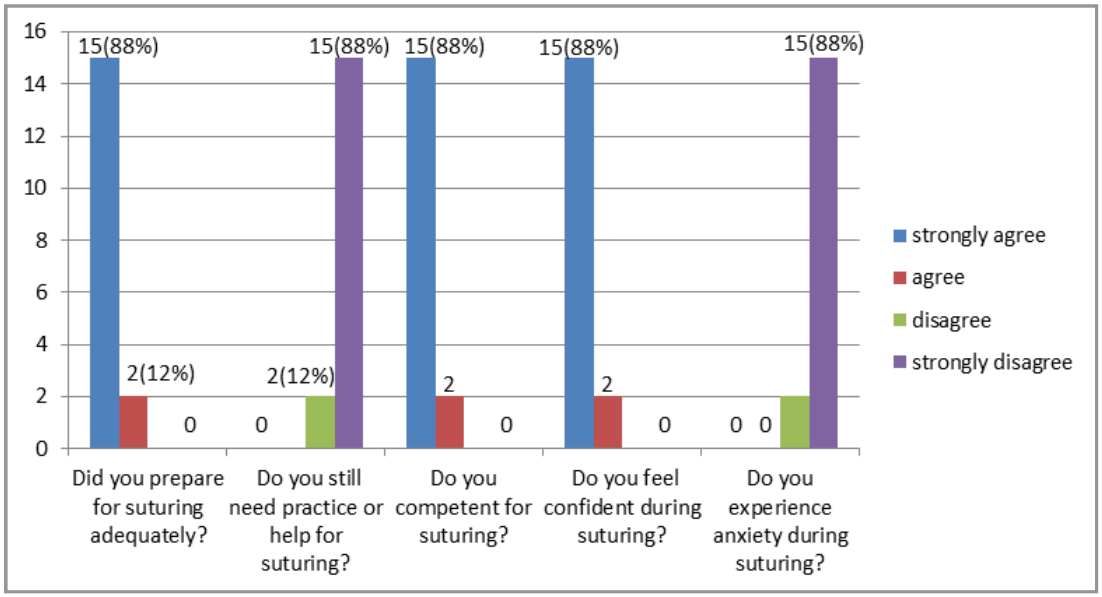


**Figure 2:** Results from Post-Practice Surveys

After 8 weeks hands on practice, students were significantly improved (X2 =8.33, P=0.004) their confidence and competency during suturing.

This current finding is in line with the action research conducted by on improving the self-confidence level of veterinary undergraduates and the result reported that the level of confidence was significantly improved (80%) after repeatedly laboratory exercises [5].

This current finding also similar to another action research conducted by on virtual reality training improve veterinary students' first canine surgical performance and the post -practice survey on 24 students reported that about 10 (42%) and 12 (50%) students replied as strongly agree and agree, respectively that they were prepared adequately for surgical practice [3].

On the other hand, post-practice survey reported that about 10 (42%) and 7 (29%) students replied as strongly disagree and disagree, respectively that they were not experience anxiety for surgical practice [6].

Pre -Practice Suturing Measurements

The approximation of edges, knotting and total time taken for closure of the incision were recorded before the hands-on practice.

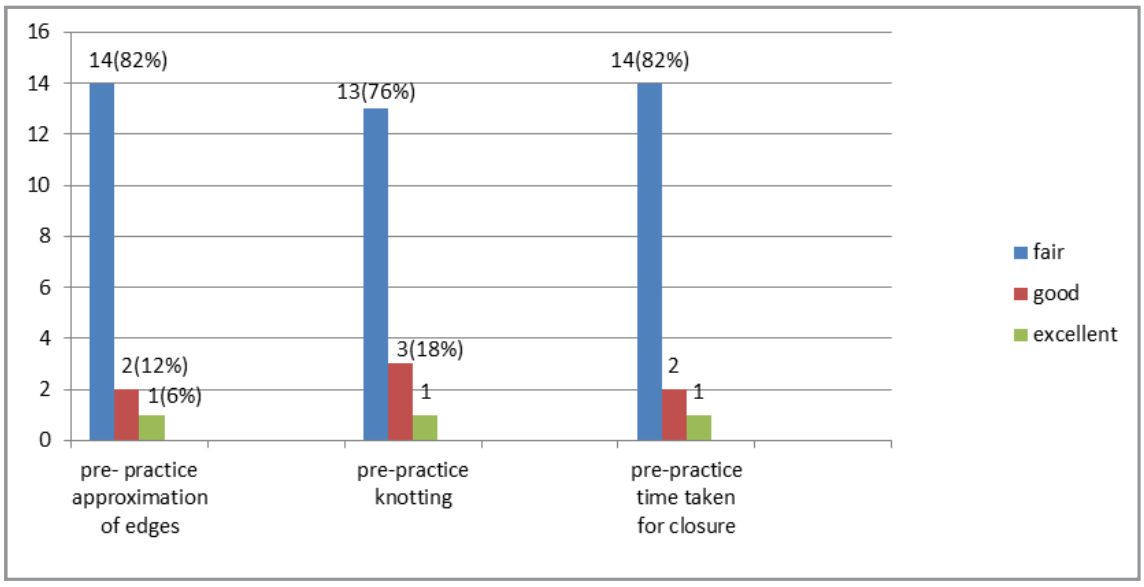


**Figure 3:** Results from Pre- practice Suturing Measurements

**Post -Practice Suturing Measurements**

After 8 weeks of hands on practice, the approximation of edges, knotting and total time taken for the closure of the incision were recorded after the hands-on practices.

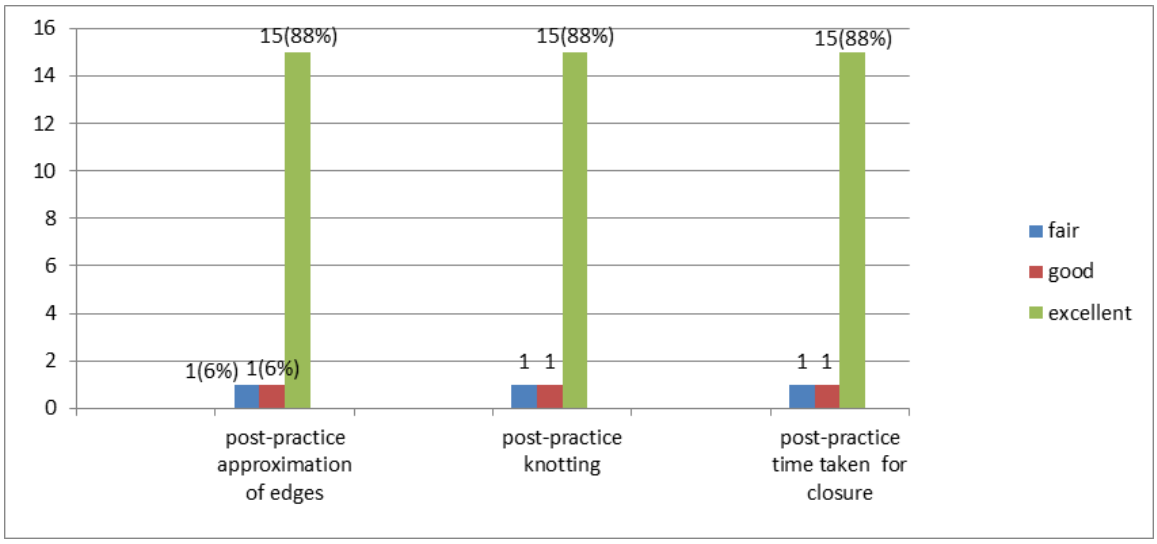


**Figure 4:** Results from Post- practice Suturing Measurements

After 8 weeks hands on practice, students were significantly improved (X2 =8.33, P=0.004) their ability in approximation of edges, knotting and time used for closure of incision during suturing.

This current finding is in line with the action research conducted by Sharadendu and on improving efficiency and safety of suturing and the result showed that the total time take for closure of the incision was excellent (8 minutes) after a frequent hand on practice [7].

This current finding also similar to another action research conducted by on performance and retention of suturing skills also reported that performance and retention of suturing skills of students is significantly improved over extended periods (after 7 weeks) of laboratory practices [8].

**Picture Taken While the Students Perform Incision**

**Picture Taken While the Students Perform Knotting**

**Picture Taken While the Students Perform Suturing**

## Conclusion

Suturing proficiency is essential for maintaining the postsurgical function of the tissue as well as improving appearance of the healed wound, effective instruction in suturing techniques outside of the operating room requires access to practical tools designed for educational consistency and adequate repetition.

This current finding concluded that students suturing skills, on approximation of skin edges. Knotting and time taken for skin closure are significantly improved after 8 weeks of hands on practices.

## References


1. Cai, H., Yew, S., Yap, R., & Seah, S. (2021). The use of different technological methods for teaching basic suturing skills to medical students: A literature review. Education in Surgery Journal, 13(4), 1–18.
2. Swapnil, D., Kacharea, T., Sara, R., Abell, M., Kachare, J., Jhangd, A., Bradon, J., Wilhelmia, M., & Kasdana, L. (2019). Basic suture technique: Instructional videos explaining suturing for medical students in a qualitative study. Annals of Surgery, 48, 122–123.
3. Farrell, R., Gilbert, G., & Betance, L. (2022). Evaluating validity evidence for two assessment instruments developed to assess students' surgical skills in a simulated environment. Veterinary Surgery, 51, 788–800.
4. Julie, A., Robert, S., Gilley, T., Dawn, S., Tiffany, P., & Stacy, J. (2022). Retention of basic surgical skills in veterinary students. Veterinary Surgery, 1–7.
5. Muniandy, R. K., Nyein, K. K., & Maujus, F. (2015). Improving the self-confidence level of veterinary undergraduates using high fidelity simulation. Journal of Veterinary Education, 8.
6. Hunt, J. A., Heydenburg, M., Anderson, S. L., & Thompson, R. R. (2020). Virtual reality training improves veterinary students' first canine surgical performance. Veterinary Surgery, 6.
7. Bali, S., & Singal, R. (2018). Improving efficiency and safety of suturing. Surgical Practice Journal, 11.
8. Emmanuel, T., Nicolaides, M., Theodoulou, I., Yoong, W., Lymperopoulos, N., & Sideris, M. (2021). Performances and retention of suturing skills. Surgical Education Journal, 9.