

EFFECTIVENESS OF PEER-BASED HEALTH EDUCATION WITH AUDIO-VISUAL MEDIA IN ENHANCING EMERGENCY TRIAGE COMPETENCE

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ABSTRACT

Background: Emergency conditions necessitate prompt and appropriate management to mitigate the risks of disability and mortality. A fundamental component of emergency care is triage, which serves to prioritise patient treatment based on the severity of their condition and guide the necessary clinical interventions. This study aimed to assess the effectiveness of peer-led health education supported by audio-visual media in improving students' comprehension of emergency triage procedures.

Methods: A quasi-experimental study with a non-equivalent control group pretest-posttest design was implemented. The research population comprised second-semester nursing students from STIKES Hutama Abdi Husada Tulungagung. A purposive sampling method was used to select 41 participants. The educational intervention was delivered through peer-led sessions and supplemented with audio-visual media. Data were gathered using a validated structured questionnaire and analysed employing the Wilcoxon signed-rank test and the Mann-Whitney U test.

Results: Analysis using the Wilcoxon signed-rank test yielded a statistically significant result ($p = 0.000$) in both intervention groups, demonstrating that the health education provided had a meaningful impact on students' understanding of emergency triage. Furthermore, the Mann-Whitney U test indicated a mean rank of 35.43 for participants in the peer education group and 47.57 for those in the audio-visual group, with a significance level of $p = 0.019$.

Conclusion: The findings confirm that both peer-led and audio-visual-based health education methods are effective in increasing nursing students' knowledge of emergency triage. Nevertheless, the audio-visual approach demonstrated superior outcomes and is, therefore, recommended as the preferred strategy for enhancing triage competency in educational settings.

Keywords: audiovisual, emergency triage, health education, peer education

INTRODUCTION

Emergencies are medical conditions that require rapid and appropriate treatment to prevent disability and death. One important aspect of emergency management is triage, which is the process of sorting patients considering the severity of the condition to determine the priority of medical treatment (Fatriani, F., Masfuri, M., & Waluyo, 2020). Effective triage implementation can expedite medical actions and improve patient safety outcomes (American College of Emergency Physicians (ACEP), 2020).

However, in the field, errors in the application of triage are still common. A report states

that errors in triage in the Emergency Department (ED) can cause delays in service and increase patient mortality rates (Purwacaraka, M., Erwansyah, R. A., Hidayat, S. A., 2024). This error is often caused by limited information during the initial evaluation, especially in elderly patients who show different physiological responses. Furthermore, studies have demonstrated a strong correlation between successful nursing action management in the ED and accurate triage. This means that errors in triage not only lead to delays in care but also reduce the success of emergency care (Sari, D. P., & Lestari, 2024).

To improve accuracy and speed in the triage process, more innovative and effective education methods are needed. One promising approach is peer education, which is a peer-to-peer learning process. The peer education approach increases the effectiveness of knowledge transfer due to the social and emotional closeness between teachers and participants (Prastiwi, 2019).

Few studies have explicitly evaluated the efficacy of peer teaching and audio-visual media in the context of emergency triage training for nursing students, even though these two methods have been independently studied in various health education settings. This study presents a novel approach by using objective learning outcome measures to directly compare the effectiveness of both methods within the same intervention framework.

In addition to methods, learning media also play an important role. The utilisation of audio-visual media is considered capable of enriching the learning experience, increasing understanding, and accelerating the process of receiving information (Dityawardani, R. A., Ekaprasetia, F., & Darotin, 2023). The theory of multimedia learning states that the combination of text, sound and images can increase learners' knowledge retention by up to 30% compared to using conventional lecture methods only. (Islamy, Aesthetica, Tunjung, Fitriani, 2022).

In light of this context, the purpose of this study is to assess how well health education utilising the peer education approach with the aid of audio-visual materials can enhance comprehension of emergency triage. It is anticipated that the study's findings will be used as a foundation for creating more potent emergency health education initiatives.

RESEARCH METHOD

This study used a non-equivalent control group design (pretest-posttest) prior to administration. It is quantitative in nature and uses a quasi-experimental methodology. Prior to the delivery of health education, a pretest was administered to the Peer Education and Audio-Visual Media groups to gauge their respective levels of readiness. The Peer Education and Audio Visual Media groups are given a Posttest to determine the group's level of readiness after being given health education (Amruddin et al., 2022).

Forty-one undergraduate students enrolled at STIKES Hutama Abdi Husada Tulungagung's second semester who satisfied the research inclusion requirements made up the study's sample. In January 2025, this study was carried out. Physically healthy individuals who have never been taught emergency triage can follow the study through to its conclusion and are willing and agreeable to participate in research, which are the study's inclusion requirements. Respondents who are absent or ill throughout the study are excluded from this research. Evaluation sheets and questionnaire instruments were used in the data collection process. This study's data type is primary data.

Participants in this study took a pretest before receiving therapy utilising two distinct approaches: audio-visual media and peer education. Each counselling session was thirty minutes. The same questionnaire was used for a posttest following the intervention. A constructed questionnaire with 20 multiple-choice questions intended to gauge students' comprehension of emergency triage served as the research tool. Important facets of triage, such as its definition, guiding principles, categorisation, and use in emergency situations,

were covered in the questions. Editing, coding, scoring, tabulating, and cleaning were all used to process the data.

The Wilcoxon signed-rank test was used to compare the pretest and posttest outcomes within each group. Meanwhile, the Mann-Whitney U test was used to compare posttest findings between the two intervention groups (peer education versus audiovisual media).

The rejection of H_0 and acceptance of H_1 if the findings show a p value < 0.05 indicates that there is a difference in the effectiveness of health education peer education approaches with an audio-visual medium on emergency triage.

RESULTS

The data obtained from the research are shown below:

The following table shows the gender distribution of respondents in both the peer education and audio-visual groups.

Table 1. Gender Distribution of Respondents

Gender	Peer Education	Audio-Visual
Male	12 (30%)	13 (33%)
Female	29 (70%)	26 (67%)
Total	41 (100%)	41 (100%)

More than 68% of responders in both groups were female, making them the majority.

The following table presents the mean scores of respondents' understanding before and after the health education intervention.

Table 2. Mean Scores of Pretest and Posttest in Each Group

Method	Pretest Mean $\pm$ SD	Posttest Mean $\pm$ SD
Peer Education	78	89
Audio-Visual	78	94

The mean posttest scores increased for both approaches, but the audio-visual group outperformed the peer education group in terms of progress. To determine whether there was a significant difference between pretest and posttest scores within each group, a Wilcoxon Signed-Rank Test was conducted.

Table 3. Wilcoxon Test Result for Pretest and Posttest Scores

Method	p-value
Peer Education	0,000
Audio-Visual	0,000

The results indicate that both peer education and audio-visual methods significantly improved students' understanding of emergency triage ($p < 0.05$). Based on posttest results, the efficacy of the two techniques was compared using the Mann-Whitney test.

Table 4. Mann-Whitney Test Result Between Methods

Method	Mean Rank	p-value
Peer Education	35,43	0,019
Audio-Visual	47,57	0,019

The audio-visual method showed a significantly higher mean rank compared to the peer education method ($p < 0.05$), indicating greater effectiveness in improving student understanding.

DISCUSSION

The findings of this study demonstrate that both peer-based and audio-visual health education modalities greatly increased nursing students' understanding of emergency triage. The audio-visual approach, however, produced larger gains, which is in line with mounting data supporting multimedia-enhanced education.

Meta-analytic data support this, demonstrating that video-based health education has moderate to large benefits on nursing domain knowledge and skill acquisition (Morgado et al. 2024). Similar findings with the other research, it is stated that multimedia training improved triage knowledge more than lecture and pamphlet techniques ($p < 0,5$) (Hosseini et al., 2022). The comparative design of this study directly fills a significant research gap: there aren't many within-subject comparisons of peer education and audio-visual techniques in nursing students' triage training. Previous research often evaluates a single technique (Zagalioti et al., 2025) or distinct methods of simulation and media (Javadi, Gheshlaghi, and Bijani, 2023). Role-playing techniques have been successful in improving nursing students' KTAS competencies (Seo and Lim, 2024), whereas simulation-based triage training has demonstrated efficacy in decision-making and anxiety reduction (Kavakli and Konukbay 2024). The similarities between these interactive, sensory-rich modalities and audio-visual learning support the latter's involvement in increased engagement and comprehension.

There were differences in cognitive characteristics between men and women, but in this study, both experienced an increase in understanding, even though the number of female respondents was greater (Adiastuty, N., Waluya, S. B., Junaedi, I., Masrukan, & Putri, 2022).

The results of the quantitative data analysis using the Wilcoxon statistical test indicate that when comparing the significance value α (0.05), the p-value obtained from the questionnaire responses before and after health counselling was 0.000. Consequently, it may be said that H1 is approved and Ho is denied, suggesting that offering health counselling has an effect. This is in line with research which states that exposure to mass media information contributes to increasing the level of public knowledge (Astari, R., & Fitriyani, 2019). Overall, peer-based health education and media exposure were effective in improving students' knowledge of emergency triage.

In 2025, STIKES Hutama Abdi Husada's second-semester students received health counselling using the peer education method to better understand emergency triage. With the use of SPSS software, the findings of the quantitative data analysis using the Wilcoxon statistical test show that, when comparing the significance value α (0.05), the questionnaire values before and after health counselling had a P value of 0.000. Thus, H1 is accepted and Ho is denied, suggesting that the usage of audiovisual techniques for health counselling affects second-semester students at STIKES Hutama Abdi Husada's comprehension of emergency triage in 2025.

With a p-value of 0.000 ($< \alpha$ 0.05) from the Wilcoxon test using SPSS, H0 is rejected and H1 is accepted. This indicates that second-semester students' comprehension of emergency triage is significantly impacted by health counselling delivered through peer education techniques aided by audiovisual aids. Peer education is effective because communication between adolescents is more comfortable, increases involvement, and forms positive attitudes related to health (Fauzi, 2018). Peer education is effective because it involves adolescents as educators and participants (Astari, R., & Fitriyani, 2019). In

addition, Audio-visual media can accelerate understanding of health material because information is received through the senses of sight and hearing simultaneously (Notoatmodjo, 2018).

Considering the results of the research and theory, the use of peer education methods and audio-visual media proved effective in improving understanding of emergency triage, because it offers a relaxed, interesting, and easy-to-understand discussion atmosphere.

To ascertain the relative efficacy of using audiovisual and peer education techniques. The mean rank for the peer education approach was 35.43 based on the results of the Mann-Whitney test, and the mean rank for the audiovisual method was 47.57 based on the same test results. These findings indicate that the mean rank of the audiovisual method is higher than that of the peer education method. It is evident from the results of the Mann-Whitney test that the significance value is 0.019. Therefore, it can be concluded that H1 is accepted and Ho is rejected, indicating that peer education using audiovisual materials about emergency triage is an effective health education strategy.

When comparing the efficacy of peer education and audiovisual methods, the results of the Mann-Whitney test reveal that the audiovisual method's Mean Rank value (47,57) is higher than that of peer education (35,43), suggesting that audiovisual media is more effective.

The Peer Education method is effective in improving emergency triage knowledge because emotional closeness between peers facilitates communication and understanding of information (Astari, R., & Fitriyani, 2019). Meanwhile, the counselling method with Audio Visual media is considered more effective because it involves the senses of hearing and vision simultaneously, thus enriching the absorption of information by students (Hasanah, 2020).

The Audio-Visual approach, on the other hand, is thought to be more successful in improving understanding of emergency triage since it simultaneously stimulates the visual and aural senses, which improves motivation, attention, and the ability to process complex information. Few studies have explicitly evaluated the relative effectiveness of peer education and audio-visual approaches within a single intervention framework aimed at increasing nursing students' comprehension of triage. Peer education and audio-visual methods have been studied separately in the health education literature. A homogeneous group of students' pre- and post-test learning outcomes from both approaches are objectively compared in this study to close that gap. Its comparative design, which compares peer-based learning with audio-visual education under identical circumstances, is innovative.

This strategy is supported by recent research that discovered that multimedia-based triage training greatly improved nurses' triage knowledge compared to booklet and in-person approaches (Hosseini et al, 2022). Simulation-based training, an immersive type of audio-visual learning, was shown to significantly improve triage decision-making accuracy and decrease anxiety in nursing students ($p < 0.05$) (Kavakli and Konukbay, 2024). Furthermore, non-traditional teaching techniques, including audiovisual, simulation, and blended learning, are consistently more effective than traditional lecture-based methods in improving triage knowledge, competence, and decision-making (Oh and Jung, 2024). This study provides an evidence-based methodology that academic institutions and health educators may use to increase the efficacy of triage instruction by incorporating peer education and audio-visual materials and monitoring results with validated surveys.

According to the theory and research findings, the researcher came to the conclusion that the Peer Education approach works well because it fosters informal and open peer counselling. However, because the Audio-Visual method uses many senses to enhance

attention and comprehension of the topic, it is thought to be much more successful in boosting understanding of emergency triage.

CONCLUSION

Considering the results of the study, it can be concluded that both health counselling methods, namely Peer Education and Audio Visual, have a significant effect on improving adolescents' understanding of emergency triage. Considering the Mann-Whitney statistical test, the Audio-Visual method showed a higher Mean Rank value (47.57) compared to the Peer Education method (35.43), indicating that audio-visual media is more effective in improving students' understanding. Overall, this study indicates that both methods are effective, but the use of audio-visual media has a greater impact in improving students' knowledge and understanding, especially in the context of emergency triage education, because it is able to arouse curiosity and increase the absorption of information.

RECOMMENDATIONS

It is advised that educators and medical professionals think about using audio-visual materials in health education courses, especially when teaching time-sensitive and complicated subjects like emergency triage. Learning outcomes may also be improved by integrating interactive peer conversations with audio-visual aids. It is recommended that future studies examine the long-term impacts of various teaching strategies and how they are used in various contexts.

ACKNOWLEDGMENTS

The researchers would like to sincerely thank the STIKES Utama Abdi Husada Tulungagung second-semester nursing students for their assistance and involvement in this study. Additionally, gratitude is given to the administrative and academic personnel who made this research possible.

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