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Original Research Article

DIFFERENCES IN THE EFFECTIVENESS OF THE DIRECT DEMONSTRATION METHOD AND VIDEO SCREENING OF FIRST AID IN TRAFFIC ACCIDENTS ON THE INCREASE IN KNOWLEDGE OF SENIOR HIGH SCHOOL STUDENTS

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Abstract

Background: Traffic accidents are unpredictable collisions among vehicles that might lead to casualties. Injuries due to traffic accidents have killed at least 1.2 million lives per year. Fatalities are high as first aid is not properly administered, causing to higher mortality rate.

Objectives: This research compared the effectiveness between the use of live demonstration and videos on high school students' first aid knowledge.

Methods: The research was conducted in the form of a comparative study with a cross sectional approach, for three months, starting from March to June 2019 in Senior High School 1 Rendang Karangasem Bali. The sample taken as many as 150 people as respondents who were divided into 2 groups, namely group 1 attended counseling which featured live demonstrations, while group 2 attended counseling where video was used as a medium. The instrument used was a questionnaire modified by researchers from Gorucu-Coskuner, H., Atik, E., & Taner, T. (2020) with 24 question items with yes and no answers. The validity test was carried out using the Pearson product-moment bivariate correlation technique where these results indicate that the value of "r count" (0.873)> "r table (0.227) means that the questionnaire is valid. Reliability test using alpha technique (Cronbach's) obtained r count (0.919)> "r alpha" (0.227) then the questionnaire was declared fit for use. Furthermore, bivariate analysis was carried out by comparing the knowledge of the two groups using the Mann-Whitney analysis.

Results: A meaningful difference was found between the use of live demonstration and videos at $P < \alpha = 0.05$ and p = 0,000. The mean score of the pretest done in group 2 was 96.70, while the one of the groups 1 was 48.30 which scores increased in the posttest to 105.39 and 39.61.

Conclusion: Therefore, the use of video media has been found more effective than the use of live demonstrations in improving students' first aid knowledge. Based on this finding, it is considered necessary to create more tutorial videos to improve first aid knowledge of the community especially students.

Keywords: *Counseling, Demonstration, Video, First Aid, Traffic Accident.*

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INTRODUCTION

Indonesia is a developing country that has a total population of 270,054,853 million people, making it the fourth largest country in the world. The large population makes Indonesia a dense and busy country with high population mobility. This condition also makes transportation become very important. Vehicles that are under the standardized condition often cause traffic accidents. Traffic accidents in this country have killed at least 1.2 million people each year, in which 3,242 people died from accidents every day on the road. Moreover, it is estimated that 70% of traffic accidents involve students (WHO, 2007).

WHO estimated 70% of traffic accidents involve students(WHO, 2007). A research conducted in Vancouver, British Colombia (Canada) showed that accident rate around school environment around reached 1.8, per 100 children, and accidents resulted in severe injuries including bleeding, sprains, fractures (broken bones), and head injuries in 0.09 of 100 children. In addition, another research stated that 26.4% of injuries sustained by high school students occurred on highways, 23.1% occurred at school, 28.6% due to sports activities, and 22% occurred at home (Pratiwi, 2011). The data released by the Asian Development Bank, traffic accidents in Indonesia caused 37,000 casualties in 2005 and 48,400 in 2010 (Profil Kesehatan, 2017).

Traffic accidents are the number eight cause of death in Indonesia. Data from the Indonesian Police Traffic Corps states that every year there are 28,000-38,000 people who die from traffic accidents in Indonesia. That number makes Indonesia ranked first in the country with the highest ratio of deaths from traffic accidents in the world (Kompas, 2017).

In 2018 there was an accident with 261 fatalities. The number of victims seriously injured/ hospitalized due to transportation accidents 190 people. Bali is classified as an area with heavy traffic which has a high incidence of traffic accidents. The number of seriously injured victims in Bali reached 14 victims in 2016 and 5 people died in Bali (Profil Kesehatan, 2017).

The injuries from traffic accidents include bruises 49%, abrasions 65.9%, open wounds 26.7%, burns 1.9%, sprained 21%, broken bones 8.5% and broken limbs 1.0%. Physical activities can also cause accidents that are most commonly experienced by male students including bruises, sprains, wounds, bleeding and fractures (broken bones). Injuries to the musculoskeletal system often occur when tendons, muscles, ligaments, skin and bones are involved, causing discomfort (pain) and severe injury that can trigger bleeding. Other impacts include bone deformity, disability and even death(Desiartama & Aryana, 2017). First aid is a crucial initial help to prevent fatalities. The community should have adequate first aid knowledge that they can give first aid properly and correctly (Palang Merah Indonesia, 2008)

The community often have negative perception about first aid as they believe that first aid can only be given by medical personnel. According to a medical personnel in a hospital in Denpasar, most patients were brought to the hospital without being given proper first aid using means of transportation that are improper (Notoatmodjo, 2018). Most people also have weak initiative to help accident victims because they do not have proper first aid ability and they do not want to deal with the police as eye witnesses. This condition causes delays in the provision of medical assistance, leading to higher chance of disability and even mortality of the victims. Therefore the community must grow stronger willingness to learn about first aid that will make them capable of giving first aid for accident victims (Thygerson, Physicians, & Thygerson, 2011)

High school students are part of civilians who need to be educated about first aid. They are good targets for this program as they are active and have high mobility. They also have strong bond with families and peers. Therefore, educating high school students is expected to disseminate the knowledge to broader community including their family and close relatives.

Based on those reasons, the researcher was intrigued to analyze the effectiveness of the use of video media and live demonstrations in educating high school students about first aid.

METHODS

Study Design

This study used comparative study using cross sectional approach.

Setting

This research was conducted for three months, starting from March to June 2019. The research was conducted by the Senior High School 1 Rendang Karangasem Bali.

Research Subject

The population in this study were all 240 students of SMA Negeri 1 Rendang Karangasem, of which 150 respondents were selected with inclusion criteria 1. Students for the first time participating in first aid training activities in traffic accidents, 2. Students who participate in full training activities, and 3. Students who are willing to become research respondents by signing an informed consent. The exclusion criteria in this study were 1. Students who left the training venue 2. Students who refused to become research respondents. 150 students were selected and then divided into 2 groups, namely 75 people who participated in training with the direct demonstration method and 75 people participated in training activities using the video training method.

Instruments

The instrument used was a modified questionnaire by researchers from Gorucu-Coskuner, H., Atik, E., & Taner, T. (2020). The validity test was carried out using the Pearson bivariate correlation technique (Pearson product-moment) with a confidence level of 95 % (5% significance = 0.05). The results of the validation test "r count" are then compared with the value of "r table", where the results show that the value of "r count" (0.873)> "r table (0.227) means that the questionnaire is valid for use.

The reliability test in this study used SPSS with alpha technique (Cronbach's). The instrument is said to be reliable if "r alpha"> 0.6. Alpha test results (Cronbach's) obtained 0.919, so the questionnaire is declared reable for use.

Data Analysis

Research data were analyzed using a univariate analysis in which each variable was described based on the the lowest score, the highest core and the mean score. Furthermore, bivariate analysis was performed to compare the pre-test and post-test scores of each group using mann-whitney test.

Ethical Consideration

This research has completed the ethical eligibility permission from the ethics committee of the Udayana University with ID number 455/UN14.2.2.VII.14/LP/2019 which states that this research is ethical and is allowed to continue the research by collecting research data.

RESULTS

The results of the data analysis are presented as follows:

Table 1 The Results of Univariate Analysis.

Group	Minimum Score		Maximum Score		Mean	
	Pre	Post	pre	Post	Pre	post
Video	29	67	96	100	70.73	85.22
Demonstration	13	30	71	88	49.86	62.97

The mean score obtained by group 1 in the pre-test score was 70.73 and 85.22 in the post score. Whereas, group 2 obtained a mean score of 49.86 in the pre-test and 62.97 in the post-test.

Table 2 Ranks of the Variables

Group		N	Mean Rank	Sum of Ranks
Video	Pre	72	96.70	6962.50
	Post	72	105.39	7588.00
Demonstration	Pre	72	48.30	3477.50
	Post	72	39.61	2852.00

The mean rank of group 1 in the pre-test was 96.70 and 105.39 in the post-test. Whereas, the mean rank of group 2 in the pre-test was 48.30 and 39.61 in the post-test.

Table 3 showed that sig (*p*) 0.000, where $p < \alpha$ 0.05. Therefore, Ho is rejected and Ha is accepted, indicating that there is a difference in the level of knowledge between counseling members taught using video and direct demonstration. The counselling using video method obtained higher pre-test and post-test scores seen from the mean rank results compared to the counseling using direct demonstration method.

Table 3 The Results of Statistic Test.

			PRE-SCORES	POST-SCORES
Mann-Whitney U			849.500	224.000
Z			-6.972	-9.514
Asymp. Sig. (2-tailed)			.000	.000
Monte Carlo Sig. (2-tailed)	Sig.		.000[a]	.000[a]
	95% Confidence Interval	Lower Bound	.000	.000
		Upper Bound	.000	.000
Monte Carlo Sig. (1-tailed)	95% Confidence Interval	Lower Bound	.000	.000
		Upper Bound	.000	.000
	Sig.		.000[a]	.000[a]

DISCUSSION

The results of the research showed that the use of video allowed members to understand the materials more quickly. These phenomena are supported by the theory of Green (Green, 2000). Ones' characteristics are one of the predisposing factors that influence one's behavior. Thus, high school students tend to understand something contextual in faster way. In this modern era, students perceive education using video is more easily accepted than using direct demonstrations.

The consistency of videos also gives an added-value. A video will display something that is repeated consistently (Kon, Botelho, Bridges, & Leung, 2015), which is different from a live demonstration that is sometimes influenced by many factors, making it possible to forget or miss a part - an important part of a first aid procedure during an accident, depending on the knowledge/ expertise of the person demonstrating.

The use of video also allows students to replay it when necessary at any time. Repetition will enhance their understanding than the direct demonstration method that requires respondents to ask for repetition, where it depends on their courage to say ask for it. The research conducted by (Pilieci, Salim, Heffernan, Itani, & Khadaroo, 2018) stated Video education is superior to traditional skill demonstration in providing medical students knowledge.

Direct demonstrations often cause some problems such as difficulty in clearly seeing objects and procedures performed. This problem usually occurs when too many respondents line up to see the procedure being demonstrated directly. Direct demonstration is also influenced by a conducive environment and high concentration both the demonstrators and spectators.

Regarding the comparison of the increase between knowledge and attitude of respondents through video method and direct demonstration, Usman (2005) stated that the success of an education is influenced by the strategy or methods and learning media used in the education process. Therefore, methods and media should be effectively designed.

The term effectiveness refers to the level of success that can be achieved from the objectives of a training program by using the means in the most effective way. In line with this view, Lookwood (1994) stated the effectiveness of a training method is shown by whether maximum results can be achieved using minimum facilities.

It Is obvious that the use of video is more effective in enhancing students' understanding as it is a contextual media for teenagers. The use of video also affected respondents' focus on a material depending on the attractiveness the material. In this case, video makes a perfect media since it is more practical and efficient in terms of time, space, and fund. (Thilakumara, Jayasinghe, Rasnayaka, Jayasinghe, & Abeysundara, 2018) stated the students considered the video as a better teaching tool. That can increase the mean posttest scores on the video demonstration. However, from the students' perspective, the video demonstration and live-video demonstration should be used together to achieve the highest effect (Gorucu-Coskuner, Atik, & Taner, 2020).

The above views are supported by the results of this research. as seen from the pre-test scores, both groups were unable to answer the questions regarding first aid in traffic accidents. If Group 1 obtained a minimum score of 29 and a maximum score of 96 in the pre-test with a mean of 70.73. Meanwhile, group 2 obtained the minimum score of 71 and maximum score of 71 with a mean score of 49.86 in the pre-test. Those scores showed that before the counseling, respondents had received information about first aid in traffic accidents from teachers, mass media or other sources. When they underwent the post-test, there was a striking difference in the scores obtained by those groups. Group 1 obtained a minimum score of 67, a maximum

score of 100 and mean score of 85.22, while group 2 obtained a minimum score of 30, a maximum score of 88 and a mean score of 62.97.

Regarding to the results of this research, video has been confirmed more effective to be used in the counseling about first aid in traffic accidents than the use of direct demonstration.

CONCLUSION

The use of video has been considered more effective to be used in providing counseling about first aid than using direct demonstrations.

SUGGESTIONS

Create first aid video tutorials is be necessary to increase public knowledge on this matter, especially students. The use of video also motivates students to have the courage to perform first aid in traffic accident.

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DECLARATION OF CONFLICTING INTEREST

There is no conflict of interest in this research.

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AUTHOR CONTRIBUTION

Yustina Ni Putu Yusniawati: Have the main idea, make a proposal, arrange permission and research ethics, data collection, and data analysis.

I Wayan Agus Maharyawan: Conduct data analysis and make research manuscripts.

Ahmad Robani: Conduct data analysis and make research manuscripts.

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REFERENCES

Desiartama, A., & Aryana, I. G. N. W. (2017). Gambaran Karakteristik Pasien Fraktur Femur Akibat Kecelakaan Lalu Lintas Pada Orang Dewasa Di Rumah Sakit Umum Pusat Sanglah Denpasar Tahun 2013. *E-Jurnal Medika Udayana*, *6*(5).

Gorucu-Coskuner, H., Atik, E., & Taner, T. (2020). Comparison of Live-Video and Video Demonstration Methods in Clinical Orthodontics Education. *Journal of Dental Education*. https://doi.org/10.21815/jde.019.161

Kompas. (2017). Kematian akibat Kecelakaan di Indonesia Tertinggi di Dunia. *Kompas*, p. 1. Retrieved from https://otomotif.kompas.com/read/2017/12/04/100400715/kematian-akibat-kecelakaan-di-indonesia-tertinggi-di-dunia

Kon, H., Botelho, M. G., Bridges, S., & Leung, K. C. M. (2015). The impact of complete denture making instructional videos on self-directed learning of clinical skills. *Journal of Prosthodontic Research*. https://doi.org/10.1016/j.jpor.2015.01.004

Notoatmodjo. (2018). Metodologi Penelitian Kesehatan. Jakarta: Rineka Cipta. *Notoatmodjo, S. (2018). Metodologi Penelitian Kesehatan. Jakarta: Rineka Cipta.*

Organization, W. H. (2007). Risk reduction and emergency preparedness. *WHO Document Production Services, Geneva, Switzerland*.

Palang Merah Indonesia. (2008). *Pertolongan Pertama Palang Merah Remaja Wira* (Pertama; D. Allan Darwis & U. Rina, eds.). jakarta: Palang Merah Indonesia.

Pilieci, S. N., Salim, S. Y., Heffernan, D. S., Itani, K. M. F., & Khadaroo, R. G. (2018). A randomized controlled trial of video education versus skill demonstration: Which is more effective in teaching sterile surgical technique? *Surgical Infections*. https://doi.org/10.1089/sur.2017.231

Pratiwi, I. (2011). Kesiapan Anggota Palang Merah

Remaja (PMR) Dalam Melakukan Pertolongan Pertama kegawatdaruratan di Sekolah. *Yogyakarta: Fakutas Kedokteran UGM. Skripsi*.

Profil Kesehatan 2017. (2012). Data Profile Kesehatan Indonesia 2017. *Ministry of Health Indonesia*. https://doi.org/10.1002/qj

Thilakumara, I. P., Jayasinghe, R. M., Rasnayaka, S. K., Jayasinghe, V. P., & Abeysundara, S. (2018). Effectiveness of Procedural Video Versus Live Demonstrations in Teaching Laboratory Techniques to Dental Students. *Journal of Dental Education*. https://doi.org/10.21815/jde.018.086

Thygerson, A., Physicians, A. C. of E., & Thygerson, S. (2011). *First Aid*. Retrieved from https://books.google.co.id/books?id=Kp1yVNQu5bEC

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