

# Simulation and audio-visual learning method for knowledge of cardiac pulmonary resuscitation skills in nursing students



Etlidawati<sup>1\*</sup>, Khusnul Milinia<sup>2</sup>

## ABSTRACT

**Background:** The COVID-19 pandemic has disrupted human activities, one of which is education, which requires a modification of learning. Online-based audio-visual learning methods are needed to deliver material until offline learning is active again so that learning activities can still be carried out. This study aims at a simulation and audio-visual learning method on cardiac, pulmonary resuscitation skills in nursing undergraduate students.

**Methods:** The research uses a descriptive-analytic cross sectional approach. The variables in this study are simulation learning, audio-visual and knowledge of resuscitation. The sample was 83 respondents, and the sampling technique was probability sampling utilizing proportionate stratified random sampling.

**Results:** The results showed that most of the respondents considered both simulation and audio-visual methods learning, 56 respondents (67.5%) and 62 respondents (74.7%), considered 27 respondents (32.5%) and 21 respondents (25.3%) bad. Knowledge of good category skills were 62 respondents (74.7%), and bad were 21 respondents (25.3%). Chi-Square test results obtained  $p\text{-value } 0.025 < \alpha = 0.05$ .

**Conclusions:** There is a significant relationship between learning method simulation and audio-visual methods on the knowledge of cardiac, pulmonary resuscitation laboratory skills in undergraduate nursing students in the COVID-19 pandemic.

**Keywords:** Audiovisual, Cardiac Pulmonary Resuscitation, COVID-19, Simulation.

**Cite This Article:** Etlidawati., Milinia, K. 2021. Simulation and audio-visual learning method for knowledge of cardiac pulmonary resuscitation skills in nursing students. *Bali Medical Journal* 10(3) Special Issue ICONURS: 1023-1028. DOI: 10.15562/bmj.v10i3.2816

<sup>1</sup>Department Nursing Manajement, Faculty of Health Sciences Universitas Muhammadiyah Purwokerto, Purwokerto, Indonesia;  
<sup>2</sup>Student, Faculty of Health Sciences Universitas Muhammadiyah Purwokerto, Purwokerto, Indonesia;

\*Corresponding author:  
Etlidawati;  
Department Nursing Manajemen, Universitas Muhammadiyah Purwokerto, Purwokerto, Indonesia;  
etlidawati@ump.ac.id

Received: 2021-10-22  
Accepted: 2021-12-02  
Published: 2021-12-28

## INTRODUCTION

Through Presidential Decree No. 11 of 2020, the Government of Indonesia has established a Public Health Emergency of Coronavirus Disease 2019 (COVID-19) in Indonesia.<sup>1</sup> Following up on the Presidential Regulation, the Indonesian Ministry of Health appealed to prevent the transmission of COVID-19, namely by physical and social distancing, wearing masks and staying away from crowds.<sup>1</sup> The circular will affect various fields that cause learning to be carried out online, namely learning and working from home.<sup>2</sup> In the realm of education, a new policy was implemented, namely, replacing the traditional learning method with the E-learning technique, replacing the standard face-to-face learning model with online material or laboratory skills.<sup>2,3</sup>

The learning approach for nursing students in Indonesia is theoretical, but laboratory skills are also the primary focus

of nursing student learning.<sup>3</sup> The learning method used simulations in nursing laboratories with various skills taught to minimize and prevent undesirable events by simulating laboratory skills. One of the supports for developing student skills before going to the field or working in health care in nursing practice in the laboratory.<sup>4</sup> However, the COVID-19 disaster in Indonesia was declared an emergency. It has had a tremendous impact on the world of education. Government policies on online learning have forced institutions to modify their learning processes to be virtual or online-based. Institutions must change online learning methods while focusing on students' fulfillment of competency goals, as the primary method, a laboratory simulation, demonstrated. As a result, an online form based on audio-visual or video tutorial procedures for nursing activities according to the competencies assigned to students

during the nursing practicum learning process must be applied.<sup>3,4</sup>

The laboratory learning process can help students develop various talents, including psychomotor abilities (skills), knowledge, and emotional skills (attitudes). Effective laboratory learning will assist students in developing self-confidence and acquiring competency.<sup>5</sup> Laboratory learning (practicum) can help students strengthen theories or knowledge they have already learned, allowing them to develop attitudes, behaviors, knowledge, and fundamental professional abilities in preparation for clinical learning in real-world situations. According to Wirianti's research, there was an effect of the video method on increasing practical skills in the second stage of labor, with a p-value of 0.000.<sup>6</sup>

Cardiopulmonary resuscitation skills are the knowledge of skills in this study. According to statistics, 5 million

individuals worldwide experience cardiac arrest every year, with only 7% surviving.<sup>7</sup> The American Heart Association proposes a strategy that entails expanding the role of each community through training or other means to reduce the risk of cardiac arrest.<sup>7</sup> According to WHO data from 2018, 17.5 million people died from cardiovascular disease, accounting for 31% of the 56.5 million deaths worldwide caused by coronary heart disease.<sup>7</sup> Nurses have a vital role in enhancing knowledge because of the high death rate associated with cardiac arrest. As a result, both health personnel and laypeople who are provided training in handling cardiac arrest patients must have a thorough understanding of the abilities required to handle cardiac arrest patients. To avoid troubles, students and nurses in health services must have skills that meet the competency standards for cardiopulmonary resuscitation.

According to the results of interviews with students of the Health Science Faculty of UMP, 80% of students said they had little trouble understanding the material presented using online-based audio-visuals, particularly in practical theory.<sup>2</sup> Siti Munawaroh (2019) obtained a p-value of 0.000 (<0.05) in her study on the effectiveness of audio-visual (video) media to improve physical examination skills in nursing undergraduate students. The conclusion can be drawn that there is a considerable difference in physical examination abilities before being shown in a movie. After the presentation of a film, it is found that the audio-visual method used in this study is effective in the learning of laboratory skills.

Meanwhile, according to Farah Ulfa Lisa's (2016) research using experimental methods of control group design with

T-test results, it shows that the treatment group's knowledge increased from 76.7 to 86.7, while the control group's ability rose from 66.7 to 80 with a significant difference ( $p=0.001$ ).<sup>8</sup> The treatment group improved their skills from 50.8 to 90, while the control group improved from 48.6 to 75.5, with a statistically significant difference ( $p<0.001$ ). As a result, students in the video media group had more knowledge and abilities about shoulder dystocia than those in the control group.<sup>8</sup>

Although the learning process is carried out online, nursing students are expected to have critical thoughts, plans, and decisions, including laboratory practice that can be delivered and carried out through audio-visual.<sup>6</sup> Students bear a significant amount of accountability for all nursing actions performed on patients. Because online learning through audio-visual provides an overview without any genuine satisfaction with the tools, government policy with e-learning will make it harder to hone or train students' skills in the laboratory. The atmosphere of the environment in the setting should be as realistic as possible as if nursing actions were just being performed in a healthcare facility. Based on the description above, the researcher aimed to investigate whether or not there is a relationship between simulation and audio-visual learning methods on cardiopulmonary resuscitation skills among nursing undergraduate students in the COVID-19 pandemic.

## METHOD

This study is a descriptive-analytic with cross sectional design. The variables studied were simulation learning,

audio-visual learning and knowledge of cardiopulmonary resuscitation. The inclusion criteria of this study are willing to be a respondent who has attended emergency subject. Exclusion criteria have never participated in the issue for an emergency. According to the inclusion and exclusion criteria, proportionate stratified random sampling was used with a sample size of 83 respondents. This study was carried out at the Faculty of Health Science of the Universitas Muhammadiyah Purwokerto. The chi-square test was used to analyze the research data statistically.

## RESULT

The results of this study are displayed in the form of a frequency distribution table as follows.

Based on the table above, it is known that the simulation learning method is effective with a good level of knowledge, namely 46 respondents (55.4%). The audio-visual learning method is also effective with a good level of expertise, namely 52 respondents (62.7%)

### The Relationship between Learning Simulation Methods and Knowledge of Cardiopulmonary Resuscitation Skills among Undergraduate Nursing Students in the COVID-19 Pandemic

Based on the table, it is known that most of the respondents or 46 people (74.2%), consider the simulation method to be effective and have good knowledge of skills, namely 16 people (25.8%) considered the simulation method to be bad with a good understanding of skills. Statistical test results show a p-value of 0.025, meaning  $H_0$  is rejected and  $H_a$  is accepted.

**Table 1.** Learning simulation and audio-visual methods on skill knowledge in nursing students.

Method	Knowledge				Total	
	Good		Poor		n	%
	n	%	n	%		
Simulation						
Effective	46	55.4	10	12	56	67.5
Less effective	16	19.3	11	13.3	27	32.5
Audio-visual						
Effective	52	62.7	10	12	62	74.7
Less effective	10	12	11	13.3	21	25.3
Total	62	74.7	22	25.3	83	100

**Table 2. The relationship between simulation method learning and knowledge of cardiopulmonary resuscitation skills among undergraduate nursing students in the COVID-19 pandemic.**

Simulation method	Skill knowledge				P-value
	Good		Poor		
	N	%	N	%	
Effective	46	74.2	10	47.6	0.025
Less effective	16	25.8	11	52.4	
Total	62	100	21	100	

**Table 3. The relationship between audio-visual method learning and knowledge of cardiopulmonary resuscitation laboratory skills among undergraduate nursing students in the COVID-19 pandemic.**

Audiovisual Method	Skill knowledge				Pvalue
	Good		Poor		
	N	%	N	%	
Effective	52	83.9	10	47.6	0.001
Less effective	10	16.1	11	52.4	
Total	62	100	21	100	

### Relationship between Audiovisual Method Learning and Knowledge of Cardiopulmonary Resuscitation Skills among Undergraduate Nursing Students in the COVID-19 Pandemic

Based on the table above, it is known that most of the respondents who consider the audio-visual method to be effective have good knowledge of skills, namely 52 people (83.9%). The respondents who thought the audio-visual process bad frequently had poor skill knowledge, consisting of 11 people (52.4%). The results of the statistical test show p-value are 0.001, which means that  $H_0$  is rejected and  $H_a$  is accepted.

## DISCUSSION

### Laboratory Simulation Learning Method

The study results show that the respondents consider learning with the simulation method to be effective. So that student who feels this effective simulation will make learning methods can be used properly. According to theory Huda (2014), simulation imitates something real and its surroundings (state of affairs).<sup>9</sup> The majority of students agreed with the cardiopulmonary resuscitation simulation, according to the findings of this study. Students can directly feel and experience the process of implementing cardiac

resuscitation techniques by engaging in the simulation. Simulation is a method of studying or predicting something that has not yet happened by simulating or modeling the system under study and then doing numerical experiments on a computer. The simulation learning approach can be effectively used to help in the learning process.<sup>9</sup>

Alwan Wijaya (2019) conducted a similar study about the simulation method hands only on the knowledge of cardiopulmonary resuscitation for students at SMA N 3 Mataram using a quantitative research method with a pre-experimental design sample of 50 respondents after performing a CPR simulation.<sup>10</sup> There were 36 students in the good category, accounting for 72% of the respondents.<sup>10</sup> This study follows the study by Hudzaifah, which employed a quantitative design method in the form of cross-sectional design.<sup>4</sup> In the basic life support simulation, this study found great satisfaction and confidence in the technique.<sup>4</sup> This research was also supported by Warouw et al., who discuss the simulation of the knowledge of the bandage splint first aid fractures long bone with pre-experimental design in 16 respondents showed after a given simulation knowledge levels are in a good category is 16 respondents with a percentage 100%.<sup>11</sup> After a given

simulation, 16 respondents with a rate of 100 percent showed their better knowledge level or in a good category.<sup>11</sup>

### Learning Using Audio-visual Methods

In this study, it is considered effective learning the audio-visual method. Audio-visual technology in learning is quite useful, especially during the COVID-19 pandemic.<sup>12</sup> Face-to-face learning has been halted due to the rapid spread of the Coronavirus, which may be easily transferred through numerous mediums such as droplets and touch. The audio-visual method involves electronic media such as television, film, and video, which provide a stimulus to sight and hearing characterized by a dynamic visual presentation of the information supplied and designed and prepared in advance so that the audio-visual method at the time is effective.<sup>12</sup> This application uses zoom and other features that are easily available to everyone. This research is in line with Friska et al., with a pre-experimental study with a one-group pre-post test design with a sample of 65 respondents.<sup>6</sup> The other research also conducted pre-experimental research in 2017 with a selection of 34 respondents using one group pre-posttest design. This study with 24 respondents generated a percentage of 78.5% in the good category.<sup>13</sup>

### Knowledge of Cardiopulmonary Resuscitation Skills

In this study, the respondent's knowledge about cardiopulmonary resuscitation was good. The average respondent's knowledge about cardiac resuscitation is new. It is because respondents have received learning about it. Moreover, the education level of the respondents, on average, is almost all highly educated. According to Budiman (2013), the higher a person's education level, the easier it is to receive information, resulting in more knowledge.<sup>14</sup> Information obtained through formal and non-formal education can have a short-term effect, resulting in changes or increases in knowledge. The availability of new information about anything creates a new cognitive foundation for knowledge formation.<sup>14</sup> Inside and outside the hospital, the treatment of emergency victims, is based

on the same principle: preserving the victim's life as quickly and accurately as possible. Victims found in hospitals are usually dealt with directly by a medical team who knows how to deal with them, whereas victims found in the field frequently go unnoticed.<sup>15</sup>

Cardiopulmonary resuscitation skills are frequently taught to non-healthcare workers so that afterward, ordinary people can conduct adequate first aid before healthcare workers arrive to help. This research is in line with Susi (2016), about the knowledge of basic life support in the administrative city of South Jakarta with quantitative methods. The results showed that, in general, the level of community knowledge about cardiopulmonary resuscitation was good (52.8%).<sup>16</sup> Lestari et al. conducted a sample of 207 students with pre-experimental research with a one-group pre-post test design. After completing health education using the audio-visual method, 179 students were found to have good knowledge levels, with a rate of 86.5%.<sup>17</sup>

### **The Relationships between Simulation Method and Knowledge of Cardiopulmonary Resuscitation Skills among Undergraduate Nursing Students in the COVID-19 Pandemic**

The study results showed a relationship between learning the simulation method and cardiopulmonary resuscitation skills in undergraduate students during the COVID-19 pandemic. These students had previously received lessons in courses in the emergency department.<sup>4</sup> So that students understand more about resuscitation even though when the questionnaire is distributed, students are not allowed to see books or notes. There is a significant relationship between the simulation method and knowledge of skills triggered by the purpose of the simulation itself.<sup>17</sup> According to Nana's (2013) theory, training certain skills professionally and for everyday life by involving students in studying almost similar situations could increase learning activity.<sup>18</sup> Students are actively encouraged to comprehend the information provided using real-life occurrences in a simulation process. To put it another way, the

simulation approach, which comes in various shapes and sizes, has its own set of advantages.<sup>18</sup> The teaching and learning process can apply the level of knowledge from knowing to analyzing, which is to describe and analyze all information with conditions met in the field so that the knowledge stage to the synthesis stage progressively begins to form.<sup>12</sup>

Iffah et al. used a quantitative method with a pre-experimental design with a one-group pre-test-post-test design approach at Universitas Muhammadiyah Purwokerto to examine the effect of first aid simulations on knowledge and skills in dealing with ankle sprain injuries in Taekwondo members.<sup>19</sup> With the accidental sampling technique, the population and sample in this study totaled 37 respondents. It was found that there are differences in respondents' knowledge and skills before and after health education and first aid simulations.<sup>19</sup>

This study is in line with Runi et al., which used a quantitative pre-experimental pre-posttest one-group design to increase BHD knowledge and skills. This study found that the increasing lay people's knowledge and skills on BHD resulted in a p-value of 0.0001.<sup>20</sup> This study is in line with Warouw et al., this study used a quantitative approach using a one-group pre-post-pretest pre-experimental design.<sup>11</sup> The findings revealed that health education and simulation affected the understanding of first aid splints for bone fractures. Another study found significant differences in children's mitigation ability before and after the simulation.<sup>21</sup>

The results of Riki (2019), the quantitative method pre-experimental pre-post test design, showed a p-value of 0,000 (<0,05), indicating that the simulation method can improve wound treatment knowledge and skills.<sup>22</sup> It can be concluded from the previous description that the researcher concludes that a good understanding of skills about cardiopulmonary resuscitation shows a good understanding of skills. Students who have good enthusiasm and intention to learn will absorb the material well. The use of simulation methods in laboratory practice impacts respondents' knowledge. Laboratory practice is essential for nursing

students to reinforce the theories gained in class. Students simulation is a depiction of events in real cases so that they will be prepared later if they are faced with nursing actions that occur in patients.<sup>22</sup>

### **The Relationship between Audiovisual Method Learning and Knowledge of Cardiopulmonary Resuscitation Skills among Undergraduate Nursing Students in the COVID-19 Pandemic**

The research found a relationship between learning audio-visual methods and knowledge of cardiopulmonary resuscitation skills in undergraduate nursing students in the COVID-19 pandemic. According to Nana's (2013) theory, this significant relationship was proven since audio-visual media increased student knowledge. It stimulated the senses of vision and hearing to obtain information about cardiopulmonary resuscitation.<sup>18</sup> Aeni et al. explain Edgar Dale's pyramid of audio-visual media experience, which can activate the senses of hearing and sight by approximately 75-87% in channeling information to the brain.<sup>23</sup> It is also stated that up to 50% of people learn from what they see and hear and that the audio-visual technique may be used effectively to improve knowledge and understanding of laboratory abilities before offline or face-to-face learning resurfaces in the education system.<sup>23</sup>

The advantages or benefits of the audio-visual method are that audio-visual media can accurately describe a process that can be witnessed repeatedly, allowing students to avoid confusion in understanding step-by-step re-practicing the material given by the lecturer.<sup>24</sup> The findings of this study agree with Turambi et al., who claims that basic life support training improves students' skills with a p-value of 0,000 (<0,05).<sup>25</sup> This demonstrates that basic life support training has a significant result. Each medium utilized to deliver information has a different impact on a person's ability to absorb it.<sup>25</sup> This research is in line with Baiq et al., with a quantitative design pre-experimental one-group pre-posttest analysis. The findings show that basic life support instruction through audio-visual methods affects knowledge and skills.<sup>26</sup>

## RESEARCH LIMITATIONS

In this study, the research did not analyze which data was effective from the two simulations. This research can be used as a basis for further research

## CONCLUSION

There is a relationship between learning using a simulation method and learning using audio-visual methods to knowledge of cardiopulmonary resuscitation skills among undergraduate nursing students in the COVID-19 pandemic.

## CONFLICT OF INTEREST

There is no conflict of interest in this article.

## FUNDING

There is no funding in this article.

## ETHICAL STATEMENT

This research has been licensed by the Health Research Ethics Commission of Universitas Muhammadiyah Purwokerto, with Registration number: KEKP/UMP/09/XII/2020.

## AUTHOR CONTRIBUTION

Etildawati officiates the concept, design, editing, and manuscript review. Khusnul Milinia searches the literature include clinical studies, manuscript preparation, data and statistical analysis.

## ACKNOWLEDGMENTS

First of all, we would like to express our great gratitude to Allah SWT for his mercy and grace in completing the article titled "Simulation and Audiovisual Learning Methods on knowledge of Cardiopulmonary Resuscitation skills in Nursing Undergraduate Students in the COVID-19 Pandemic". We would also like to express our gratitude and appreciation for all parties whose guidance, support and encouragement have been invaluable throughout this article. We also wish to thank the team of the Nursing Department, who has been a great source of support.

## REFERENCES

1. Kemenkes RI. Profil Kesehatan Indonesia Tahun 2020 [Internet]. 2020. Available from: <https://www.kemkes.go.id/downloads/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-Indonesia-Tahun-2020.pdf>
2. Munawaroh S, Muftiana E, Dwirahayu Y. Hubungan Kebiasaan Makan Pagi (Sarapan) Dengan Status Gizi Anak Usia Sekolah Di SD Muhammadiyah Terpadu Ponorogo. *J Keperawatan Muhammadiyah*. 2020;5(2). Available from: <http://dx.doi.org/10.30651/jkm.v5i2.5817>
3. Marbun P. Disain Pembelajaran Online pada Era dan Pasca Covid-19. *CSRID (Computer Sci Res Its Dev Journal)*. 2021;12(2):129. Available from: <http://dx.doi.org/10.22303/csr.id.12.2.2020.129-142>
4. Fatih H Al, Rahmidar L. Kepuasan dan Kepercayaan Diri Mahasiswa Keperawatan Terhadap Penggunaan Low Fidelity Simulator Dalam Simulasi Bantuan Hidup Dasar. *J Keperawatan BSI*. 2019;7(2 SE-Articles):153–60. Available from: <https://ejurnal.ars.ac.id/index.php/keperawatan/article/view/142>
5. Zainudin M. Efektivitas Pembelajaran Laboratorium berbasis Proyek (PLBP) terhadap Kreativitas Mahasiswa. *JIPM (Jurnal Ilm Pendidik Mat)*. 2016;5(1):33. Available from: <http://dx.doi.org/10.25273/jipm.v5i1.853>
6. Sitorus FE, Girsang R, Zuliawati Z, Nasution W. Pengaruh Pendidikan Kesehatan dengan Metode Audio Visual terhadap Pengetahuan Pertolongan Pertama pada Siswa yang Mengalami Sinkop. *J Keperawatan dan Fisioter*. 2020;2(2):147–52. Available from: <http://dx.doi.org/10.35451/jkf.v2i2.399>
7. American Heart Association. Health Care Research : Coronary Heart Disease. In: *Encyclopedia of Global Health*. SAGE Publications, Inc.; 2015. Available from: <http://dx.doi.org/10.4135/9781412963855.n74>
8. Lisa, Ulvah., Hernowo, Bethy & Anwar R. Pengaruh penggunaan media video pada pembelajaran praktikum terhadap pengetahuan dan keterampilan mahasiswa dalam penanganan distosia bahu di universitas ubudiyah indonesia the effect of using video media in skill laboratory f or student ' s knowledge and. *J Healthc Technol Med*. 2017;2(1):46–58.
9. Huda M. Model-Model Pengajaran dan Pembelajaran. Yogyakarta: Pustaka Pelajar. 2014.
10. Wijaya A. Efek Pembelajaran Metode Simulasi Hands Only CPR Terhadap Pengetahuan Resusitasi Jantung Paru Siswa-Siswi di SMAN 3 Mataram. *J Ilm Ilmu Kesehat*. 2019;5(2):92–8. Available from: <http://id.stikes-mataram.ac.id>
11. Warouw JA. Pengaruh Pendidikan Kesehatan Dan Simulasi Terhadap Pengetahuan Tentang Balut Bidai Pertolongan Pertama Fraktur Tulang Panjang Pada Siswa Kelas X Smk Negeri 6 Manado. *J Keperawatan*. 2018;6(1):1–8.
12. Notoatmodjo S. Promosi Kesehatan dan Perilaku Kesehatan. Penerbit Rineka Cipta. 2012; Available from: <http://r2kn.litbang.kemkes.go.id:8080/handle/123456789/76539>
13. Haryuni S, Sulistyawati W. Perbedaan Efektifitas Metode Pendidikan Kesehatan Basic Life Support (BLS) Audiovisual dengan Demonstrasi terhadap Kemampuan Life Saving pada Mahasiswa Ilmu Keperawatan Fik Universitas Kadiri. *J Nurs Care Biomol*. 2017;2(1):31. Available from: <http://dx.doi.org/10.32700/jnc.v2i1.25>
14. Budiman dan Riyanto. Kuesioner Pengetahuan dan Sikap dalam Penelitian Kesehatan. Jakarta: Salemba Medika. 2013.
15. Kurniasari MD. Efektivitas Media Pembelajaran Video Compact Disk (VCD) terhadap Tingkat Pengetahuan tentang Pertolongan Pertama pada Kecelakaan (P3K) pada Siswa SMP 2 Mejobo Kudus. *Univ Muhammadiyah Surakarta*. 2014;(Vcd):634. Available from: <https://hsgm.saglik.gov.tr/depo/birimler/saglikli-beslenme-hareketli-hayat-db/Yayinlar/kitaplar/diger-kitaplar/TBSA-Beslenme-Yayini.pdf>
16. Erawati S. Tingkat Pengetahuan Masyarakat tentang Bantuan Hidup Dasar (BHD) di Kota Administrasi Jakarta Selatan. Universitas Islam Negeri Syarif Hidayatullah Jakarta. 2015.
17. Darwati L, Setianingsih S. Peningkatan Pengetahuan Orang Awam tentang Penanganan Out of Hospital Cardiac Arrest melalui Aplikasi Resusitasi Jantung Paru pada Smartphone. *J Ilm Permas J Ilm STIKES Kendal*. 2020;10(1 SE-Articles):97–102. Available from: <http://journal.stikeskendal.ac.id/index.php/PSKM/article/view/620>
18. Nana Sudjana. Cara Belajar Siswa Aktif dalam Proses Belajar Mengajar. 2013.
19. Khairunnisa I, Fitriana NF. Pengaruh Penkes Dan Simulasi P3K Terhadap Pengetahuan dan Keterampilan Menangani Cedera Ankle Strain Pada Anggota Taekwondo. *J Keperawatan*. 2020;(September):121–5. Available from:

- <http://journal.um-surabaya.ac.id/index.php/JKM/article/view/5221>
20. Putri R, Safitri F, Munir S, Hermawan A, Endiyono E. Pelatihan Bantuan Hidup Dasar dengan Media Phantom Resusitasi Jantung Paru (PREJARU) Meningkatkan Pengetahuan dan Keterampilan Bantuan Hidup Dasar pada Orang Awam. *J Gawat Darurat*. 2019;1(1 SE-Articles):7–12. Available from: <https://journal.stikeskendal.ac.id/index.php/JGD/article/view/503>
  21. Rinanda S. Pengaruh Metode Simulasi Tanggap Bencana Alam terhadap Kemampuan Mitigasi pada Anak Tunagrahita Ringan di Kelas C/D VI SLB Perwari Padang. *J Ilm Pendidik Khusus*. 2013;2(1):164–73.
  22. Ristanto R. Pengaruh Pendidikan Kesehatan dengan Metode Simulasi terhadap Pengetahuan dan Keterampilan Dokter Kecil pada Penanganan Luka Terbuka. *J Kesehat Mesencephalon*. 2019;5(2):83–7. Available from: <http://dx.doi.org/10.36053/mesencephalon.v5i2.109>
  23. Aeni N, Yuhandini DS. Pengaruh Pendidikan Kesehatan Dengan Media Video Dan Metode Demonstrasi Terhadap Pengetahuan SADARI. *Care J Ilm Ilmu Kesehat*. 2018;6(2):162. Available from: <http://dx.doi.org/10.33366/cr.v6i2.929>
  24. Baharuddin WN. *Teori Belajar dan Pembelajaran*. 2019.
  25. Deitje E.K Turambi, Maykel Kiling DS. Pengaruh Pelatihan Bantuan Hidup Dasar (BHD) terhadap Peningkatan Pengetahuan dan Keterampilan Siswa Kelas XI dan XII SMA Negeri 2 Langowan. *Appl Microbiol Biotechnol*. 2016;6(2):56–62.
  26. Fatmawati BR, Suprayitna M, Prihatin K. Efektifitas Edukasi Basic Life Support dengan Media Audiovisual dan Praktik Terhadap Tingkat Pengetahuan dan Keterampilan Mahasiswa Program Studi Ilmu Keperawatan Jenjang D.III Stikes Yarsi Mataram Tahun 2018. *J Kesehat Qamarul Huda*. 2019;7(1 SE-):6–12. Available from: <https://jkhq.uniqhba.ac.id/index.php/kesehatan/article/view/68>



This work is licensed under a Creative Commons Attribution