

Comparison of self-efficacy in cardiopulmonary resuscitation position by a single rescue: over-the-head or lateral position?

Wirmando Wirmando¹, Mery Sambo¹, Yunita Gabriela Madu¹, Nikodemus Sili Beda¹,
Yunita Carolina Satti¹, Sheryn Sheryn¹, Tiara Ayu Batara¹, Lindri Bunga²

¹Department of Nursing, Sekolah Tinggi Ilmu Kesehatan Stella Maris, Makassar, Indonesia

²Eka Hospital BSD, Tangerang, Indonesia

Article Info

Article history:

Received Jul 24, 2023

Revised Nov 3, 2023

Accepted Nov 14, 2023

Keywords:

Bag-valve-mask

Cardiopulmonary resuscitation

Lateral position

Over-the-head position

Self-efficacy

ABSTRACT

Self-efficacy can speed up and improve quality of cardiopulmonary resuscitation (CPR), but it will be difficult to achieve if using a bag-valve-mask (BVM) by a single rescue. This study aimed to compare the differences of self-efficacy when performing CPR in the lateral and over-the-head (OTH) positions using a BVM device in a single rescue. A quasi-experimental with a post-test-only group design approach. This study involved 100 respondents divided into two groups, namely 50 respondents in the lateral position and 50 in the OTH position. Respondents' self-efficacy was assessed using the resuscitation self-efficacy scale (RSES). The statistical test used was Mann-Whitney. The results of this study showed that the OTH group had a higher level of self-efficacy, 46 (92%), than the lateral group, 40 (80%). In addition, the results of the Mann-Whitney statistical test also obtained p -value=0.000 (α =0.05) and mean rank value (OTH=63.30, lateral=37.70), indicating that there was a difference in self-efficacy between the OTH and lateral positions, with the OTH group having higher self-efficacy compared to the lateral group. Therefore, if CPR is performed by a single rescue with a BVM device, it can be performed with the OTH position.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Corresponding Author:

Wirmando Wirmando

Nursing Department, Sekolah Tinggi Ilmu Kesehatan Stella Maris

Jl. Maipa No. 19, Makassar, South Sulawesi, Indonesia

Email: wirmando29@gmail.com

1. INTRODUCTION

Cardiac arrest (CA) is a condition that can suddenly the ejection of the heart fraction suddenly and is one of the highest causes of death in the world. Previous retrospective studies showed that mortality of CA patients was 67% in adults and 5% in children [1], [2]. The prevalence affects approximately 200,000 adults in the United States each year, with barely 20% surviving. While in Europe there are about 84 instances of CA per 10,000 population [3]. Some cases show that the cause of death of CA patients are response time and length of time it takes for patients to arrive at the hospital and receive immediate medical attention. In addition, the initial management of cardiopulmonary resuscitation (CPR) also affects the survival and mortality of CA patients [4], [5]. In many cases, CA patients do not receive CPR as first aid from the layman. This is influenced by a lack of knowledge, CPR skills, and responsiveness in calling for emergency help [6].

Quality of CPR is key to improving CA patient survival and restoring spontaneous circulation [7]. The correct skill in performing CPR is to provide chest compressions with adequate speed and depth, ensure complete chest recoil after each compression, minimize interruptions and avoid excessive ventilation [8]. Skills in performing CPR are influenced by motor abilities and self-efficacy of the rescuer. Nurses who tend

to be first responders must be proficient and skilled in performing CPR because significant nurses spend majority of their time with patients and are often the first to realize when someone experiences cardiac arrest in the hospital [9], [10]. Similarly, nursing students must have knowledge of CPR and high self-efficacy in order to strengthen their skills in performing CPR in the future [11], [12]. Self-efficacy refers to a person's self-confidence in his ability to perform an action [13]. While resuscitation self-efficacy is defined as an assessment of a person's ability to organize and carry out a series of procedures in CPR [14], [15]. Several previous studies have shown that nursing students who perform chest compressions correctly tend to have higher self-efficacy compared to students who are less skilled in performing CPR. In addition, high self-efficacy will affect response time, timeliness and quality of CPR [16], [17].

Based on American Heart Association (AHA) guidelines in 2015, the lateral position during CPR is used during CPR, which means compression is carried out in the patient's lateral while ventilation is carried out above the patient's head [18]. This however, will be difficult to achieve if performed by a single rescuee using a bag-valve mask (BVM) device. The rescuer will have difficulty, fatigue, and discomfort in moving from compression to ventilation, thus reducing the quality of CPR. Some previous studies suggested that if a single rescuee was performed, then the over-the-head (OTH) position could be an alternative choice [19]–[21]. The OTH position performed in CPR done by a single rescuee using a bag-valve mask is considered to increase rescuer comfort which has an impact on CPR quality, especially in terms of speed and chest complete recoil indicators. When the rescuer feels comfortable in performing CPR, it will affect psychological conditions that have an impact on increasing rescuee self-efficacy [22]. Therefore, the objective of this study was to compare different self-efficacy nursing students in CPR position, particularly between OTH and lateral positions performed by a single rescuee with a BVM device.

2. METHOD

This study is a quasi-experimental with a post-test only group design approach, which is a type of research that compares two different groups to see the comparison of respondents' self-efficacy in performing CPR with OTH position and lateral position [23]. This research was carried out in the laboratory room of Stella Maris Makassar College from January to February 2023. The study was conducted on 596 students majoring nursing of The Stella Maris Makassar College. Respondents selected using purposive sampling techniques also called judgment sampling, namely the selection of respondents was done deliberately because of the knowledge and experience they have, so that this is considered suitable for researchers to be applied in this study [24]. Criteria of respondents in this study were required to have passed the emergency nursing subject or have performed CPR practice in the laboratory. The number of samples is determined by the Slovin formula [25], as:

$$n = \frac{N}{1 + N(e)^2}$$

Note:

n=Minimum sample measure

N=Population measure

e=Error rate

Calculation sample using Slovin formula at an error rate 10% (0.1), the formulation is:

$$\begin{aligned} n &= \frac{N}{1 + N(e)^2} \\ n &= \frac{596}{1 + 596(0.1)^2} \\ n &= \frac{596}{1 + 5.96} \\ n &= \frac{596}{6.96} \\ n &= 86 \end{aligned}$$

By using Slovin formula, the number of samples in this study was a minimum of 86, but to avoid lack of data, researchers rounded the samples to 100 students.

Before collecting data, researchers provided material and simulations related to CPR with OTH position and lateral position through power point presentation media, and simulations were carried out on CPR mannequin type Resusci Anne® SkillReporter™. The material and simulation were carried out by researchers who had worked in the emergency department for ten years and had a Master of Nursing with specialty in Emergency Nursing. In addition, the researcher was a Basic Trauma and Cardiac Life Support (BTCLS) instructor. Based on this experience and educational background, it is considered appropriate to provide material and simulations about CPR.

After providing material and simulation, respondents were then divided into two groups, 50 had CPR with the lateral positions as shown in Figure 1 and 50 had CPR with the OTH positions as presented in Figure 2.

Each respondent was asked to perform CPR for at least 2 minutes according to their group. The lateral position, which is compressed, is carried out next to the patient and ventilation is carried out above the patient's head. The OTH position, in contrast, is performed above the patient's head, for compression and ventilation.

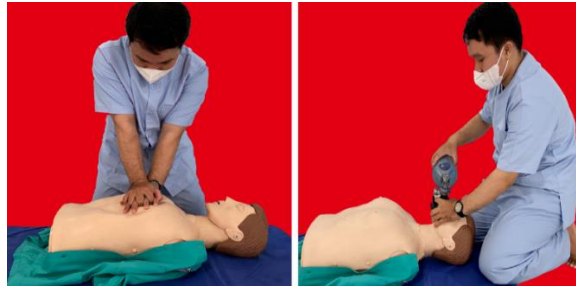


Figure 1. CPR lateral position by a single rescue with a BVM device (compression is carried out in the patient's laterals, while ventilation is carried out above the patient's head). Own material



Figure 2. CPR over-the-head (OTH) position by a single rescue with a BVM device (compression and ventilation are carried out above the patient's head). Own material

After performing CPR, respondents then filled out the resuscitation self-efficacy scale (RSES) questionnaire developed by Roh *et al.* [26]. The questionnaire consisted of 17 statements using the Likert scale. The RSES questionnaire consisted of four domains, namely recognition, debriefing and recording, responding and rescuing, and reporting. The questionnaire aimed specifically to assess self-efficacy in performing CPR so that it is considered suitable for use as an instrument in this study. The RSES questionnaire had previously been tested for validity and reliability by Feorentina's research in 2020 to 10 nursing students of Universitas Brawijaya Malang who had gone through the emergency nursing subject. Therefore, researchers no longer conduct validity and reliability tests because the characteristics of the samples tested are considered the same in this study. The validity test uses Pearson product moment, while the reliability test uses Cronbach's alpha. The results of all r values are calculated for 17 items > r table so that it is concluded that all questions on the questionnaire are valid. While the reliability test results obtained Cronbach's alpha value of 0.934 which means very strong because it passed the value of 0.80 to 1.00 which means a reliable or consistent RSES questionnaire. The RSES questionnaire used five scales with the lowest scale being least confident (0) and the highest scale being very confident (5). The total score obtained is 68. If the score obtained by respondents is 0-34, it is categorized as low self-efficacy, and if the score obtained is 35-68, it is categorized as high self-efficacy.

The data analysis test used in this study was the Mann-Whitney statistical test with a value of $\alpha=0.05$. The Mann-Whitney statistical test was chosen because it is a test to see the difference between two unpaired groups with categorical data. This research also received ethical approval from the Health Research Ethics Committee Manado Health Polytechnic Ministry of Health with number KEPK.01/07/135/2022.

3. RESULTS AND DISCUSSION

Based on Table 1, the majority of respondents were women 93 (93%) and respondents were man 7 (7%) with mean 1.93 and median 2.00, and the majority were at the age of 21 years 64 (64%) and the minority were age of 23 years 2 (2%) with mean 21.30 and median 21.00. Based on factors that affect self-

efficacy, respondents' characteristics are not included in factors that can affect self-efficacy. Factors that can affect self-efficacy have been controlled such as the role of the trainer and the time span that has been equalized through all respondents getting training together. Then the facility factor that all respondents get the same facilities and also the personal experience factor that all respondents have the same experience of having performed CPR and passed the emergency nursing subject.

Table 1. Characteristics of respondents (n=100)

Characteristics	f	%	Mean	Median	Min-Max	
Gender	Man	7	7			
	Woman	93	93	1.93	2.00	1-2
Age (years)	20	8	8			
	21	64	64			
	22	22	22	21.30	21.00	20-24
	23	2	2			
	24	4	4			

Based on Table 2, the high self-efficacy of the OTH group was 46 (92%), whereas the lateral group was 40 (80%). The low self-efficacy of the OTH group was 4 (8%), whereas the lateral group was 10 (20%). The results of the Mann-Whitney test, p value=0.000 ($\alpha=0.05$), meaning that there was a significant difference in the self-efficacy of the OTH group with the lateral group. In addition, the mean rank value in the OTH group (63.30) is higher than the mean rank value in the lateral group (37.70) which means that the higher mean rank value has higher self-efficacy than the lower mean rank value. The study showed that the group of respondents who performed CPR in the OTH position showed higher self-efficacy compared to those who performed CPR in the lateral position. The group of respondents who performed the OTH position was mostly in the high self-efficacy category of 46 (92%) compared to lateral positions of 40 (80%). Moreover, the low self-efficacy category in the OTH group was 4 (8%), whereas the lateral group was as much as 10 (20%). This is also supported by the results of the Mann-Whitney statistical test, which obtained p value=0.000 ($\alpha=0.05$). In addition, it is also supported by a higher mean rank value in the OTH position group (63.30) than in the lateral position group (37.70), indicating that self-efficacy is higher in the group of respondents who performed CPR in the OTH position.

Table 2. Analysis of differences in self-efficacy of OTH and lateral position

Position	Self-efficacy (Low)		Self-efficacy (High)		Mean Rank	p
	f	%	f	%		
Over-the-head (OTH)	4	8	46	92	63.30	0.000
Lateral	10	20	40	80	37.70	

The success factor in performing CPR is not only from the quality of compression and ventilation but also influenced by the rescuer's self-efficacy. Self-efficacy refers to confidence in one's own abilities; therefore, when performing CPR with low self-efficacy, the rescue may hesitate, which can have an impact on the quality of the compression and ventilation performed [16], [27]. Confidence in the ability possessed when performing CPR consists of recognition skills, able to debrief and record, able to respond and rescue, and able to report the patient's condition [26]. As a result, in order to optimize success and improve the quality of CPR performed, rescuers must have confidence in their abilities or high self-efficacy [11], [16].

This study provides two positions in performed CPR, namely the lateral and the OTH position by a single rescue with a BVM device. The lateral position is a position recommended by AHA in 2015, while the OTH position is a newly developed position [19]–[21]. This study analyzed CPR positions that had higher self-efficacy (lateral and OTH) and found that the OTH position group had higher self-efficacy compared to the lateral position group. Some of the factors that led to higher self-efficacy in the OTH group compared to the lateral group were comfort factors, other people's success factors, verbal persuasion factors, and performance fulfillment factors.

This study found that the OTH position was felt to be more comfortable to do compared to the lateral position. This is due to the difficulty of achieving the lateral position with a single rescue using a BVM device [28]. The group who performed CPR in a lateral position, the rescuer was moved after compressing beside the patient to above the patient's head to ventilate. This causes the rescuer to be exhausted to change positions, which leads to the rescuer feeling uncomfortable [20], [28]. If the rescuers feel uncomfortable, it will reduce their self-efficacy in performing CPR [26]. In addition, moving the position will reduce the compression speed and cause many interruptions. According to AHA [18], one of the

indicators of CPR quality is compression speed (100-120x/minute) and minimizing interruptions (<10 seconds). Therefore, that if CPR is performed by a single rescue with a BVM device in the lateral position, the quality of CPR will be reduced, but if performed with the OTH position, the quality of CPR will be improved because the rescuer does not need to change positions. The OTH position is when by compression and ventilation is done above the patient, allowing the rescuer to not need move the compression position to ventilation, which can reduce the compression speed and cause many interruptions [19], [21]. Therefore, if CPR is performed by a single rescue using a BVM device, the OTH position produces better CPR quality than the lateral position. Furthermore, the OTH position is considered more comfortable than the lateral position, which can increase the rescuer's self-efficacy in performing CPR.

The success factors of others also influence the self-efficacy of the respondents. OTH group respondents had a higher success rate in performing CPR than the lateral position group. As a result of seeing the success of other respondents in performing CPR, other respondents in the OTH group will also be more confident in performing CPR, increasing their self-efficacy. Therefore, if someone sees the success of others in doing an action, then someone will compare himself/herself with people who he/she thinks are equal to him/her so that someone is also sure that he/she will succeed in doing an action just like everyone else does [13], [29]. In addition, if a person is constantly supported by those around him/her and observes the success of others through continuous efforts, it can increase one's confidence in his/her abilities [30].

Verbal persuasion factors can also affect the self-efficacy of respondents. Respondents in the OTH position group stated that it was easier to perform CPR by a single rescue using a BVM device, but respondents in the lateral position group expressed difficulty performing CPR by a single rescue with a BVM device. The statement of respondents in the OTH group who stated that they were able to perform CPR will affect the self-efficacy of other respondents. Respondents will be influenced by positive persuasion from other respondents, thus increasing the confidence and self-efficacy of respondents in the OTH group. On the contrary, lateral group respondents said it was difficult to perform CPR by a single rescue using a BVM device, causing respondents to be affected by these negative persuasions, which would reduce respondents' confidence and self-efficacy. A person's self-efficacy will increase when others say that they can and are able or provide positive persuasion, and vice versa [13], [29]. In addition, the positive persuasion that a person receives from others can not only affect self-efficacy but can also affect one's intelligence [31].

Performance fulfillment factors also affect the self-efficacy respondents' because before performing CPR, respondents were given material and simulations in advance related to OTH and lateral position in CPR. The provision of material and simulations carried out enabled the respondents to understand and feel more confident that they could perform CPR with the OTH position. Comprehension and confidence increased the self-efficacy of the respondents to perform the OTH position. Performance fulfillment can affect a person's actions in doing something. In addition, the material and simulations provided are easy to understand and practice directly by respondents which can increase respondents' self-efficacy [32], [33].

This study discovered that higher self-efficacy was found in the OTH position, but the study did not adequately recommend substituting lateral to OTH position. The OTH position is only used in conditions by a single rescue using a BVM device or in certain conditions such as in narrow room conditions. If done by two rescuers, then the lateral position is the best choice [20], [21]. Therefore, the OTH position can be an option if done by a single rescue using a BVM device because the rescue's self-efficacy is higher than that of the lateral position. The higher the rescuer's self-efficacy, the more confident the rescuer is in his ability to perform CPR, which can improve the quality of CPR performed.

4. CONCLUSION

The results of this study showed that higher self-efficacy was obtained in the group of respondents who performed CPR with OTH position by a single rescue with a BVM device compared to the group of respondents who performed CPR with lateral position. Therefore, if CPR is performed by a single rescue and ventilation using BVM then it is advisable to do it with the OTH position as it will further speed up the decision to perform CPR, increase confidence and improve the quality of CPR performed, but the study did not adequately recommend substituting lateral to OTH position. The OTH position is only used in conditions by a single rescue using a BVM device or in certain conditions such as in narrow room conditions. This study proves the difference in self-efficacy when performing CPR with OTH and lateral positions, so further research is needed to see the difference in the quality of CPR with OTH and lateral positions.

ACKNOWLEDGEMENTS

The researcher would like to thank the Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar for facilitating the implementation of this research with the number 002/STIK-SM/UP2M/I/2023.




REFERENCES

- [1] O. O. Woolcott *et al.*, "Sudden cardiac arrest with shockable rhythm in patients with heart failure," *Heart Rhythm*, vol. 17, no. 10, pp. 1672–1678, 2020, doi: 10.1016/j.hrthm.2020.05.038.
- [2] M. Liu *et al.*, "Mechanical chest compression with LUCAS device does not improve clinical outcome in out-of-hospital cardiac arrest patients," *Medicine*, vol. 98, no. 44, p. e17550, 2019, doi: 10.1097/MD.00000000000017550.
- [3] A. Cheng *et al.*, "Resuscitation education science: educational strategies to improve outcomes from cardiac arrest: a scientific statement from the American Heart Association," *Circulation*, vol. 138, no. 6, pp. e82–e122, 2018, doi: 10.1161/CIR.0000000000000583.
- [4] A. R. M. Alanazy, S. Wark, J. Fraser, and A. Nagle, "Factors impacting patient outcomes associated with use of emergency medical services operating in urban versus rural areas: a systematic review," *International Journal of Environmental Research and Public Health*, vol. 16, no. 10, pp. 1–16, 2019, doi: 10.3390/ijerph16101728.
- [5] J.-H. Yu *et al.*, "Impact of the COVID-19 pandemic on emergency medical service response to out-of-hospital cardiac arrests in Taiwan: a retrospective observational study," *Emergency Medicine Journal*, vol. 38, no. 29, pp. 679–684, 2021, doi: 10.1136/emered-2020-210409.
- [6] R. Greif *et al.*, "Education, implementation, and teams: 2020 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations," *Circulation*, vol. 142, no. 1, pp. S222–S283, Oct. 2020, doi: 10.1161/CIR.0000000000000896.
- [7] J. M. Field *et al.*, "Part 1: Executive summary: 2010 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care," *Circulation*, vol. 120, no. 3, pp. S640–S656, 2010, doi: 10.1161/CIRCULATIONAHA.110.970889.
- [8] R. A. Berg *et al.*, "Part 5: adult basic life support 2010 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care," *Circulation*, vol. 122, no. 3, pp. S685–S705, 2010, doi: 10.1161/CIRCULATIONAHA.110.970939.
- [9] J. I. D. Vlasblom, H. J. M. Pennings, J. van der Pal, and E. A. P. B. Oprins, "Competence retention in safety-critical professions: A systematic literature review," *Educational Research Review*, vol. 30, no. April, p. 100330, 2020, doi: 10.1016/j.edurev.2020.100330.
- [10] K. D. Landin, "Altering cardiopulmonary resuscitation (CPR) education for allied health care providers based on self-reported experiences with recertification," *Industry and Higher Education*, vol. 3, no. 1, pp. 1689–1699, 2021.
- [11] H. Moon and H. S. Hyun, "Nursing students' knowledge, attitude, self-efficacy in blended learning of cardiopulmonary resuscitation: a randomized controlled trial," *BMC Medical Education*, vol. 19, no. 414, pp. 1–8, 2019, doi: <https://doi.org/10.1186/s12909-019-1848-8> (2019).
- [12] A. Demirtas, G. Guvenc, Ö. Aslan, V. Unver, T. Basak, and C. Kaya, "Effectiveness of simulation-based cardiopulmonary resuscitation training programs on fourth-year nursing students," *Australasian Emergency Care*, vol. 24, no. 1, pp. 4–10, 2021, doi: 10.1016/j.auec.2020.08.005.
- [13] A. Bandura, *Self-efficacy: the exercise of control*. New York: Freeman, 1997.
- [14] R. Dumcke, N. Rahe-Meyer, and C. Wegner, "Self-efficacy and outcome expectancies of secondary school students in performing basic life support," *The Journal of Health, Environment & Education*, vol. 13, no. February, pp. 1–12, 2021, doi: 10.18455/13001.
- [15] M. M. Mendhi, S. Premji, K. B. Cartmell, S. D. Newman, and C. Pope, "Self-efficacy measurement instrument for neonatal resuscitation training: an integrative review," *Nurse Education in Practice*, vol. 43, no. December 2019, p. 102710, 2020, doi: 10.1016/j.nepr.2020.102710.
- [16] M. Riggs, R. Franklin, and L. Saylany, "Associations between cardiopulmonary resuscitation (CPR) knowledge, self-efficacy, training history and willingness to perform CPR and CPR psychomotor skills: a systematic review," *Resuscitation*, vol. 138, no. 2019, pp. 259–272, 2019, doi: 10.1016/j.resuscitation.2019.03.019.
- [17] K. Jang, S. H. Kim, J. Y. Oh, and J. Y. Mun, "Effectiveness of self-re-learning using video recordings of advanced life support on nursing students' knowledge, self-efficacy, and skills performance," *BMC Nursing*, vol. 20, no. 1, pp. 1–10, 2021, doi: 10.1186/s12912-021-00573-8.
- [18] American Heart Association, "High-quality CPR," 2015. [Online]. Available: <https://cpr.heart.org/en/resuscitation-science/high-quality-cpr> (Accessed: Jun 1, 2023).
- [19] E. Nasiri, "A comparison between over-the-head and lateral cardiopulmonary resuscitation with a single rescuer by bag-valve mask," *Saudi Journal of Anaesthesia*, vol. 8, no. 1, pp. 30–37, 2014, doi: 10.4103/1658-354X.125923.
- [20] W. Wirmando *et al.*, "Comparison of cardiopulmonary resuscitation quality performed by a single rescuer with a bag-valve mask device: over-the-head or lateral position?," *Clinical Epidemiology and Global Health*, vol. 20, no. January, p. 101246, 2023, doi: 10.1016/j.cegh.2023.101246.
- [21] M. Ćwiertnia Michałand Kawecki, T. Ilczak, M. Mikulska, M. Dutka, and R. Bobiński, "Comparison of standard and over-the-head method of chest compressions during cardiopulmonary resuscitation - a simulation study," *BMC Emergency Medicine*, vol. 19, no. 1, pp. 1–8, 2019, doi: 10.1186/s12873-019-0292-8.
- [22] M. Hawighorst, M. Schweiker, and A. Wagner, "Thermo-specific self-efficacy (specSE) in relation to perceived comfort and control," *Building and Environment*, vol. 102, no. 2016, pp. 193–206, 2016, doi: 10.1016/j.buildenv.2016.03.014.
- [23] P. Krishnan, "A review of the non-equivalent control group post-test-only design," *Nurse researcher*, vol. 26, no. 2, pp. 37–40, 2019, doi: 10.7748/nr.2018.e1582.
- [24] I. Etikan, S. A. Musa, and R. S. Alkassim, "Comparison of convenience sampling and purposive sampling," *American Journal of Theoretical and Applied Statistics*, vol. 5, no. 1, pp. 1–4, 2016, doi: 10.11648/j.ajtas.2016050111.
- [25] J. J. Tejada, J. Raymond, and B. Punzalan, "On the misuse of Slovin's formula," *The Philippine Statistician*, vol. 61, no. 1, p. 8, 2012.
- [26] Y. S. Roh, S. B. Issenberg, H. S. Chung, and S. S. Kim, "Development and Psychometric Evaluation of the Resuscitation Self-efficacy Scale for Nurses," *Journal of Korean Academy of Nursing*, vol. 42, no. 7, pp. 1079–1086, 2012, doi: 10.4040/jkan.2012.42.7.1079.
- [27] Y. S. Roh and S. B. Issenberg, "Association of cardiopulmonary resuscitation psychomotor skills with knowledge and self-efficacy in nursing students," *International Journal of Nursing Practice*, vol. 20, no. 6, pp. 674–679, 2014, doi: 10.1111/ijn.12212.
- [28] S. Maisch, E. Gamon, A. Ilisch, A. E. Goetz, and G. N. Schmidt, "Comparison of the over-the-head, lateral and alternating positions during cardiopulmonary resuscitation performed by a single rescuer with a bag-valve-mask device," *Emergency Medicine Journal*, vol. 28, pp. 974–978, 2011, doi: 10.1136/emj.2010.098251.




- [29] L. Lianto, "Self-efficacy: a brief literature review," *Jurnal Manajemen Motivasi*, vol. 15, no. 2, pp. 55–61, 2019, doi: 10.29406/jmm.v15i2.1409.
- [30] I. Hermanto, W. Barlianto, and S. Suryanto, "Analysis of factors affecting self-efficacy of fresh nursing graduates in performing cardiopulmonary resuscitation on cardiac arrest patients in Malang City, Indonesia," *Jurnal Aisyah: Jurnal Ilmu Kesehatan*, vol. 6, no. 4, pp. 639–644, 2021, doi: 10.30604/jika.v6i4.814.
- [31] J. W. Hong, "I was born to love AI: the influence of social status on AI self-efficacy and intentions to use AI," *International Journal of Communication*, vol. 16, no. 2022, pp. 172–191, 2022.
- [32] F. Jaskiewicz, D. Kowalewski, E. Kaniecka, R. Kozłowski, M. Marczak, and D. Timler, "Factors influencing self-confidence and willingness to perform cardiopulmonary resuscitation among working adults—a quasi-experimental study in a training environment," *International Journal of Environmental Research and Public Health*, vol. 19, no. 14, pp. 1–13, 2022, doi: 10.3390/ijerph19148334.
- [33] W. Yoon, Y. S. Ro, and S. il Cho, "A mediation analysis of the effect of practical training on the relationship between demographic factors, and bystanders' self-efficacy in CPR performance," *PLoS ONE*, vol. 14, no. 4, pp. 1–14, 2019, doi: 10.1371/journal.pone.0215432.

BIOGRAPHIES OF AUTHORS






Wirmando Wirmando    is a lecturer at Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar majoring nursing and has an interest in emergency and disaster nursing. Several times has had publications and research on emergencies and disasters. He can be contacted at email: wirmando29@gmail.com.






Mery Sambo    is a lecturer and head of nursing study program at Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar. She is very interested in emergency research, especially emergencies in children. She can be contacted at email: ns.merysambo@yahoo.com.






Yunita Gabriela Madu    is a lecturer at Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar majoring nursing and has an interest in pediatric nursing, especially emergencies in children. Several times has had publications, book and research on emergencies. She can be contacted at email: madujurnal@gmail.com.






Nikodemus Sili Bada    is a lecturer a lecturer at Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar majoring nursing and has an interest in psychiatric nursing, especially emergencies in psychiatric. Several times has had publications, book and research on psychiatric. He can be contacted at email: nikoriantoby89@gmail.com.






Yunita Carolina Satti    is a lecturer at Sekolah Tinggi Ilmu Kesehatan Stella Maris Makassar majoring nursing and has an interest in medical surgical nursing, teaching emergency and critical nursing subject. Several times has had publications, book and research on emergencies. She can be contacted at email: oline.yunita@gmail.com.






Sheryn Sheryn    is a fresh graduate nurse from Stella Maris Makassar College. She was so interested in emergency nursing and her thesis and paper were finally compiled with the theme of emergency. She can be contacted at email: sheryn1307@gmail.com.



Tiara Ayu Batara    is a fresh graduate nurse from Stella Maris Makassar College. She was so interested in emergency nursing and her thesis and paper were finally compiled with the theme of emergency. She can be contacted at email: tiarabatara28@gmail.com.



Lindri Bunga    is a nurse in Eka Hospital BSD Tangerang. She is very interested in emergency nursing and currently interning in the emergency department. She can be contacted at email: lindry17bunga@gmail.com.