Jurnal Keperawatan Indonesia, 2025, 28 (2), 95–106
DOI: 10.7454/jki.v28i2.1437
Received April 2024; Accepted April 2025

pISSN 1410-4490; eISSN 2354-9203

Determinants Influencing the Readiness of Non-Medical Hospital Personnel to Perform Basic Life Support

Elin Hidayat[1*], Suaib[1], I Made Rio Dwijayanto[1], Nur Aviva Pemasi[1], Ilne Ai Purana Adel[2]

1. Professional Nurse Education Program, Faculty of Health, Universitas Widya Nusantara, Palu 94148, Indonesia
2. Psychology Master Program, Faculty of Psychology Education, Universitas Negeri Malang, Malang 65145, Indonesia

*E-mail: elin.hidayat50@gmail.com

Abstract

All healthcare personnel, including both medical and non-medical staff within hospitals, are expected to possess the capability to administer Basic Life Support (BLS) in order to provide immediate assistance during emergencies. However, many non-medical hospital staff remain unprepared to perform BLS due to a lack of knowledge, willingness, and confidence. This study aims to identify the factors affecting the preparedness of non-medical hospital staff in carrying out BLS at Undata Hospital, a healthcare facility in Central Sulawesi. This research employed quantitative design with a cross-sectional approach. The sample comprised 103 non-medical respondents selected through total sampling. Data were collected through structured interviews and self-administered questionnaires. The variables measured in this study include behavioral beliefs, normative beliefs, control beliefs, intention, and BLS readiness. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicated that behavioral beliefs significantly influenced intention (p = 0.040), while normative beliefs did not (p = 0.128). Control beliefs showed no significant influence on intention (p = 0.058), whereas intention had a significant effect on BLS readiness (p = 0.046). The study concludes that behavioral beliefs influence intention, which in turn significantly affects BLS readiness.

Keywords: basic life support, behavioral beliefs, control beliefs, intention, normative beliefs, non-medical personnel

Abstrak

Determinan yang Memengaruhi Kesiapan Tenaga Nonmedis dalam Melaksanakan Bantuan Hidup Dasar di Lingkungan Rumah Sakit. *Seluruh petugas rumah sakit, baik medis maupun nonmedis, diharapkan memiliki kemampuan untuk melakukan Bantuan Hidup Dasar (BHD) guna memberikan pertolongan segera kepada pasien dalam situasi gawat darurat. Permasalahan yang terjadi saat ini adalah masih banyak tenaga nonmedis di rumah sakit yang belum siap melaksanakan BHD dalam kondisi darurat karena keterbatasan pengetahuan, kurangnya kemauan, serta rendahnya rasa percaya diri. Penelitian ini bertujuan untuk mengetahui faktor-faktor yang memengaruhi kesiapan petugas nonmedis rumah sakit dalam pelaksanaan BHD di Rumah Sakit Undata, Provinsi Sulawesi Tengah. Penelitian ini merupakan studi kuantitatif dengan desain potong lintang. Sampel terdiri atas 103 responden nonmedis yang dipilih menggunakan teknik total sampling. Pengumpulan data dilakukan melalui wawancara terstruktur dan pengisian kuesioner berupa daftar pertanyaan yang dijawab langsung oleh responden. Determinan yang diukur meliputi* behavioral beliefs, normative beliefs, control beliefs, intention, *dan kesiapan melakukan BHD. Analisis data menggunakan* Partial Least Squares Structural Equation Modeling (PLS-SEM). *Hasil penelitian menunjukkan bahwa* behavioral beliefs *berpengaruh signifikan terhadap* intention *(p = 0,040),* normative beliefs *tidak berpengaruh signifikan terhadap* intention *(p = 0,128),* control beliefs *berpengaruh signifikan terhadap* intention *(p = 0,058), dan* intention *berpengaruh signifikan terhadap kesiapan melakukan BHD (p = 0,046). Disimpulkan bahwa faktor-faktor yang memengaruhi* intention *adalah* behavioral beliefs *dan* control beliefs*, sedangkan* intention *memengaruhi kesiapan petugas nonmedis dalam melakukan BHD.*

Kata Kunci: *bantuan hidup dasar, keyakinan kontrol, keyakinan normatif, keyakinan perilaku, niat, petugas nonmedis*

Introduction

Basic Life Support (BLS) should be a skill possessed by all healthcare facility workers, including both medical and non-medical personnel. This is essential given that emergency situa-

tions can occur unpredictably and in any location (Olasveengen et al., 2021). The preparedness of non-medical personnel to perform BLS remains a critical concern that may contribute to increased mortality from sudden cardiac arrest (Alsabri et al., 2024). Numerous cases have shown that victims often do not receive timely and effective initial assistance due to a lack of skill and confidence among non-medical staff (Amoako-Mensah et al., 2023).

Key contributing factors include the lack of continuous training, limited exposure to real-life simulations, and the absence of mandatory BLS competency policies within healthcare institutions. Additionally, fear of making mistakes and the lack of adequate supporting facilities further inhibit non-medical personnel from responding effectively to emergencies. Without immediate intervention, these issues may lead to a rise in preventable deaths that could other-wise be mitigated through timely and effective BLS (Mekonnen & Muhye, 2020).

Preliminary observations and interviews with non-medical personnel at Undata Hospital in Palu revealed a low level of preparedness in administering BLS during emergency situations. This is particularly alarming given that the hospital recorded 140 cases of cardiac arrest in 2023, none of which resulted in successful resuscitation. Furthermore, several cardiac arrest incidents that occurred outside care units went undocumented, with patients failing to receive timely BLS due to delays in its administration. As the primary referral hospital in Central Sulawesi, Undata Hospital plays a crucial role in emergency care. Therefore, delays in initial BLS—especially by non-medical personnel, who are often the first responders—can significantly impact patient survival outcomes.

According to the World Health Organization (WHO), cardiac arrest is among the medical emergencies with the highest mortality rates (Nowbar et al., 2019). In Indonesia, the annual incidence of emergency department visits is approximately 10,000 cases. The significant occurrence of cases involving cardiac arrest patients necessitates emergency services to spend considerable time on the initial management of first aid at the scene (Maulidah, 2019). Of these, around 350,000 adults experience out-of-hospital cardiac arrest. However, fewer than 40% receive cardiopulmonary resuscitation (CPR) from bystanders, and less than 12% are defibrillated with an Automated External Defibrillators (AED) before emergency medical services arrive (Albargi, 2023).

Based on the 2018 Basic Health Research (*Riset Kesehatan Dasar* [Riskesdas]), the national prevalence of heart disease in Indonesia stood at 1.5%, with the highest rates found in North Kalimantan (2.2%), Yogyakarta (2.0%), and Gorontalo (2.0%). In addition, eight other provinces exceeded the national average, including Aceh (1.6%), West Sumatra (1.6%), DKI Jakarta (1.9%), West Java (1.6%), Central Java (1.6%), East Kalimantan (1.9%), North Sulawesi (1.8%), and Central Sulawesi (1.9%) (Adisasmito et al., 2020).

Interviews conducted at the research site revealed that non-medical personnel were inadequately prepared to perform BLS, primarily due to limited knowledge and lack of training, as well as fear of failure. The absence of training, skills, and clear intention—coupled with misconceptions about BLS—contributes to reduced life-saving potential for cardiac arrest patients (Nyirenda et al., 2020).

Many non-medical staff members are hesitant to perform BLS due to insufficient knowledge, fear, and limited access to necessary facilities (Qian et al., 2021). A lack of training and understanding of BLS procedures often leads to uncertainty in performing them correctly. Additionally, fear of worsening the victim's condition or facing legal repercussions deters many from taking action (Mekonnen & Muhye, 2020). Low confidence in managing emergencies further affects their readiness to respond. Limited access to essential equipment—such as AEDs in public areas—also discourages non-medical

personnel from providing first aid. Previous studies have shown that BLS training can significantly enhance non-medical personnel's preparedness and confidence. Other influential factors include education level, prior emergency experience, and the existence of legal protections for bystanders (Alsayali et al., 2019).

Thus, it is crucial for personnel to master BLS skills and respond swiftly to cardiac arrest incidents (Husen & Rahman, 2022). This is supported by Riggs et al. (2019), who found that staff readiness—particularly in hospitals—to provide BLS is influenced by prior training, experience, willingness to assist, and a personal drive to develop these capabilities. Based on these findings, this study aims to investigate the factors influencing the readiness of hospital personnel—particularly non-medical staff—in performing BLS.

Methods

This quantitative research used a cross-sectional design and was conducted at Undata Hospital in Central Sulawesi Province. The research was carried out over the course of one month and received ethical approval from the Faculty of Medicine Ethics Committee at Tadulako University, under approval number 6559/UN.28.1.30/KL/2023. The population comprised all non-medical personnel working at Undata Hospital, totaling 103 individuals. The inclusion criteria were: non-medical personnel aged 18 years or older, willingness to participate and provide informed consent, no prior BLS training, and a minimum of six months of work experience. The study employed a total sampling (saturated sampling) technique, meaning all eligible non-medical staff (n = 103) were included in the sample.

The instrument used was a modified version of an existing questionnaire designed to measure the readiness of non-medical personnel in performing BLS. The modifications ensured relevance to the study context and the hospital environment. The instrument included indicators for behavioral beliefs (knowledge and attitudes) (Jarrah et al., 2018), normative beliefs (beliefs and motivation) (Assarroudi et al., 2019), control beliefs (perception and training) (Wahyuningsih, 2019), intention to perform BLS (Setioputro et al., 2023), and readiness to perform BLS (Kose et al., 2019).

Validity testing was conducted using factor analysis, with a cut-off loading factor of ≥ 0.50 for construct validity. Items below this threshold were deemed invalid and excluded. Reliability testing was carried out using Cronbach's Alpha, with a cut-off value of ≥ 0.70, indicating acceptable internal consistency. The validity and reliability results are presented in Table 4 and Table 6.

Data were analyzed using inferential Structural Equation Modeling (SEM) with the licensed SmartPLS 4 application. The independent variables included behavioral beliefs (knowledge and attitude), normative beliefs (beliefs and motivation), control beliefs (perception and training), and intention. The dependent variable was the readiness to perform BLS.

Results

Behavioral beliefs consist of two indicators: knowledge and attitude. As shown in Table 1, 31.3% of respondents demonstrated high knowledge, while 68.7% had moderate knowledge, and none were categorized as having low knowledge. In terms of attitude, only 7.8% of respondents exhibited a high attitude, 23.5% showed a moderate attitude, and the majority—68.7%—displayed a low attitude (Table 1).

The normative belief variable includes the indicators of belief and motivation. Both indicators share the same distribution: 61 (58.8%) of respondents held positive beliefs and were positively motivated, while 61 (41.2%) held negative beliefs and showed low motivation, respectively.

Control beliefs are represented by perception and training. Regarding perception, 72.5% of respon-

Table 1. Descriptive Analysis

Variable	Indicators	Category	n	%
Behavioral Beliefs	Knowledge	High	32	31.3
		Moderate	71	68.7
		Low	0	0
	Attitude	High	8	7.8
		Moderate	24	23.5
		Low	71	68.7
Normative Beliefs	Confidence	Positive	61	58.8
		Negative	42	41.2
	Motivation	Positive	61	58.8
		Negative	42	41.2
Control Beliefs	Perception	Positive	75	72.5
		Negative	28	27.5
	Training	Positive	59	56.8
		Negative	44	43.1
Intention	Intention	High	54	52.9
		Low	49	47.1
BLS Readiness	BLS Readiness	Ready	34	66.6
		Not ready	17	33.3

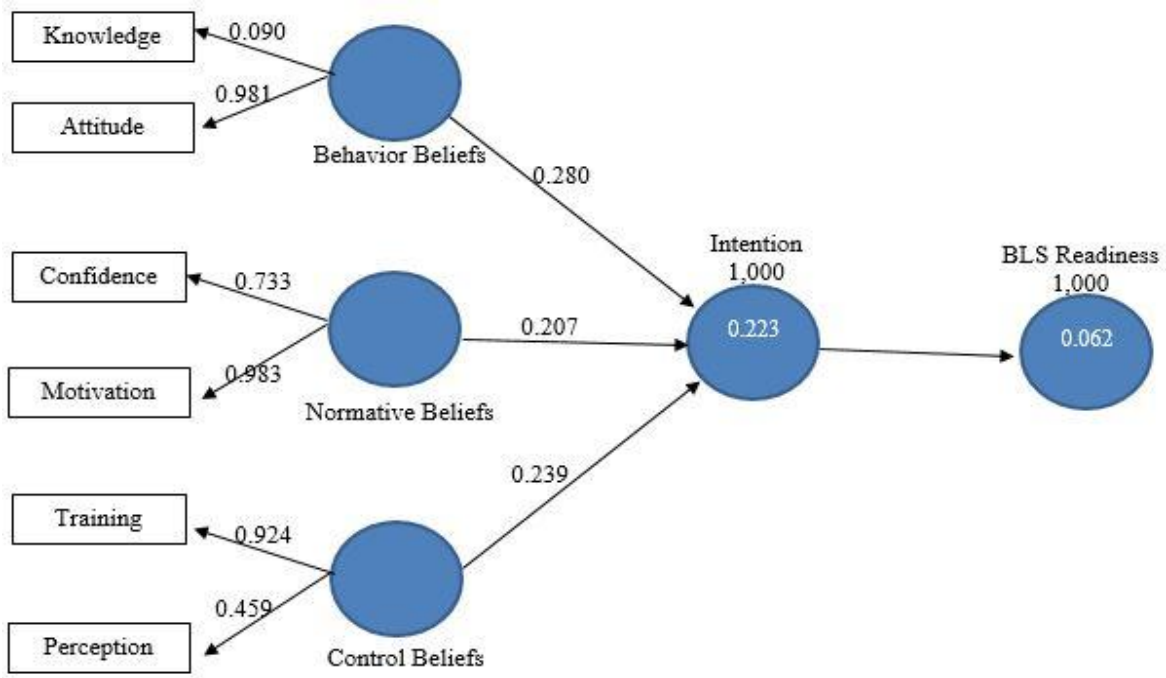

Figure 1. Outer Model Constructs of Factors Influencing the Readiness of Hospital Staff in Implementing BLS at Undata Hospital, Central Sulawesi Province

dents had a positive perception, while 27.5% had a negative perception. In terms of training, 56.8% reported a positive training experience, whereas 43.1% indicated a negative training experience.

The intention to perform BLS was categorized as either high or low. A total of 54 respondents (52.9%) demonstrated high intention, while 49 respondents (47.1%) were categorized as having low intention. Finally, BLS readiness was

grouped into two categories: ready and not ready. Of the total respondents, 66.6% were considered ready to perform BLS, while 33.3% were not ready.

Outer Model Evaluation. The outer model evaluation serves to assess the validity and reliability of constructs, particularly focusing on construct validity and construct reliability. The structure of the outer model is illustrated in Figure 1.

Convergent Validity Test. The convergent validity of each construct is evaluated using loading factor values. An indicator is considered to meet convergent validity if its loading factor exceeds 0.5. The initial test results are presented in Table 2.

Based on the data in Table 2, most indicators achieved the required loading factor threshold of > 0.5. However, the knowledge and perception indicators recorded loading factors below 0.5. As a result, these two indicators were deemed insignificant in measuring the personal factor variables and were therefore excluded from the model.

Following the removal of invalid indicators, the recalculated loading factors in Table 3 confirm that all remaining indicators have values above 0.5, indicating acceptable convergent validity. Thus, each retained indicator is valid in representing its respective construct.

The reduction results also highlight the most influential indicators for each variable. For the behavioral beliefs variable, the attitude indicator makes the strongest contribution. Within the normative beliefs construct, both belief and motivation indicators hold the greatest significance. The most influential indicator in the control beliefs variable is training, while for the intention variable, the intention indicator itself contributes the most.

Discriminant Validity Test. Discriminant validity was assessed using the cross-loading values. This evaluation involved comparing the cross-loading of each indicator on its corresponding construct with its correlations to other constructs. An indicator is considered valid if its loading on the intended construct is higher than its loadings on other constructs. The results of the cross-loading analysis are presented in Table 4.

As shown in Table 4, the loading values (in bold) of each indicator are higher on their respective constructs than on others. Therefore, it can be concluded that the indicators demonstrate adequate discriminant validity, effecttively distinguishing between different latent variables.

Construct Reliability. Construct reliability was assessed using Cronbach's alpha and Composite Reliability (CR) values. A construct is considered reliable if the Cronbach's alpha exceeds

Table 2. Convergent Validity Test of Factors Affecting the Readiness of Hospital Staff in Carrying Out BLS at Undata Hospital, Central Sulawesi

Variable	Indicator	Loading Factor	Cut off	Explanation
Behavioral Beliefs	Knowledge	0.145	0.5	Invalid
	Attitude	0.946	0.5	Valid
Normative Beliefs	Confidence	0.733	0.5	Valid
	Motivation	0.983	0.5	Valid
Control Beliefs	Perception	0.459	0.5	Invalid
	Training	0.924	0.5	Valid
Intention	Intention	1.000	0.5	Valid
BLS Readiness	BLS Readiness	1.000	0.5	Valid

Table 3. Convergent Validity Test After Indicator Reduction for Factors Influencing the Readiness of Hospital Staff in Performing BLS at Undata Hospital, Central Sulawesi

Variable	Indicator	Loading Factor	Cut off	Explanation
Behavioral Beliefs	Attitude	1.000	0.5	Valid
Normative Beliefs	Confidence	0.733	0.5	Valid
	Motivation	0.983	0.5	Valid
Control Beliefs	Training	1.000	0.5	Valid
Intention	Intention	1.000	0.5	Valid
BLS Readiness	BLS Readiness	1.000	0.5	Valid

Table 4. Cross-Loading Values in the Discriminant Validity Test of Factors Influencing Hospital Staff Readiness to Perform BLS at Undata Hospital, Central Sulawesi

Indicator	Behavioral Belief	Normative Belief	Control Belief	Intention	BLS Readiness
Attitude	**1.000**				
Confidence	0.066	**1.000**			
Motivation	0.304	0.289	**1.000**		
Training	-0.190	-0.028	-0.250	**1.000**	
Intention	0.136	0.299	0.299	-0.110	**0.867**

Table 5. Construct Reliability Test of Factors Influencing Hospital Staff Readiness to Perform BLS at Undata Hospital, Central Sulawesi

Variable	Cronbach Alpha	Composite Reliability
Behavioral Beliefs	1.000	1.000
Normative Beliefs	1.000	1.000
Control Beliefs	1.000	1.000
Intention	1.000	1.000
BLS Readiness	1.810	0.856

0.6 and the Composite Reliability exceeds 0.7. The calculation results are presented in Table 5.

As shown in Table 5, all variables exhibit Cronbach's alpha values above 0.6 and Composite Reliability values above 0.7. These results indicate strong internal consistency among the indicators, confirming that each construct is measured reliably. Therefore, the instrument used in this study is considered dependable for assessing the intended variables.

Hypothesis Testing (Inner Model). The purpose of this test is to evaluate whether exogenous variables have a significant effect on endogenous variables. A relationship is considered significant if the T statistic value is greater than or equal to the T-table value (1.97) or if the P-value is less than 0.05. If these conditions are met, it can be concluded that there is a significant effect of the exogenous variables on the endogenous variables. The test results are presented in Figure 2 and Table 6.

Based on the results in Table 6, the findings are as follows:

The Relationship between Behavioral Beliefs and Intention. The relationship between the behavioral beliefs factor (knowledge and attitudes) and intention to perform BLS was tested. The T statistic value is 2.058, and the P-value is 0.040. Since the P-value is less than 0.05, it can be concluded that there is a significant relationship between behavioral beliefs and intention. Therefore, Hypothesis 1 is supported.

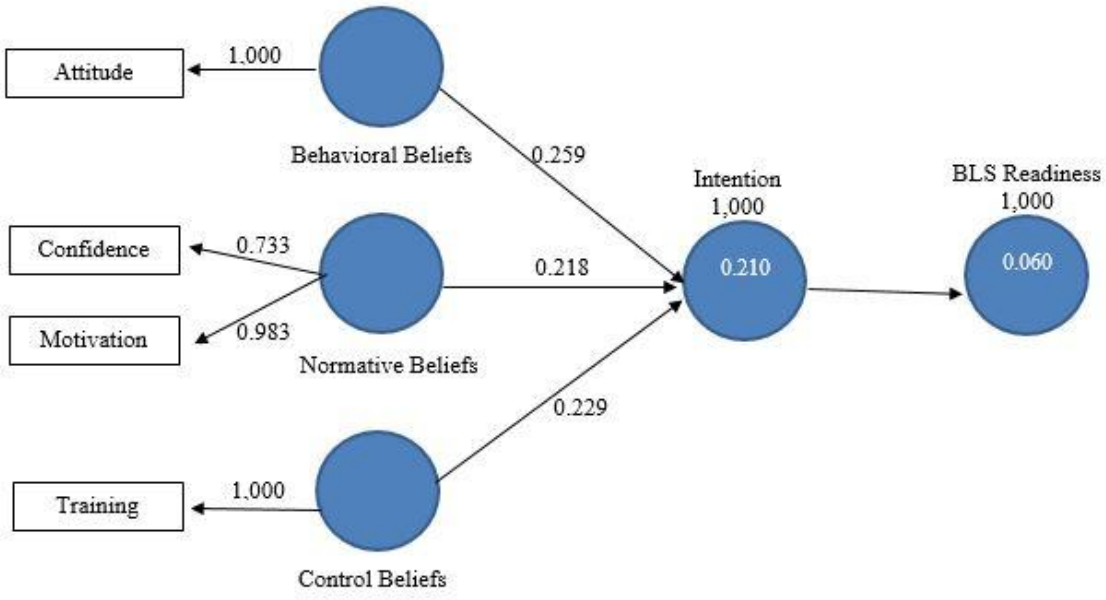

Figure 2. Inner Model Constructs of Factors Influencing the Readiness of Hospital Staff in Implementing BLS at Undata Hospital, Central Sulawesi

Table 6. Hypothesis Testing Results for Factors Influencing the Readiness of Hospital Staff in Performing BLS at Undata Hospital, Central Sulawesi

Relationship	Original Sample (0)	T Statistics (IO/STDEVI)	P Values	Explanation
Behavioral → Beliefs → Intention	0.259	2.058	0.040	Significant
Control Beliefs → Intention	0.229	1.727	0.058	Not Significant
Intention → BLS Readiness	0.250	1.996	0.046	Significant
Normative Beliefs → Intention	0.218	1.523	0.128	Not Significant

The Relationship between Normative Beliefs and Intention. The relationship between normative beliefs (beliefs and motivation) and intention to perform BLS was tested. The T statistic value is 1.523, and the P-value is 0.128. Since the P-value is greater than 0.05, it can be concluded that there is no significant relationship between normative beliefs and intention. Therefore, Hypothesis 2 is not supported.

The Relationship between Control Beliefs and Intention. The relationship between control beliefs (perception and training) and intention to perform BLS was tested. The T statistic value is 1.727, and the P-value is 0.058. Since the P-value is greater than 0.05, it can be concluded that there is no significant relationship between control beliefs and intention. Therefore, Hypothesis 3 is not supported.

The Relationship between Intention and BLS Readiness. The relationship between intention to perform BLS and BLS readiness was tested. The T statistic value is 1.996, and the P-value is 0.046. Since the P-value is less than 0.05, it can be concluded that there is a significant effect of intention on BLS readiness. Therefore, Hypothesis 4 is supported.

Discussion

The Effect of Behavioral Beliefs on Intention. Based on the analysis, it is evident that behavioral beliefs have a significant influence on intention. Behavioral beliefs are indicated by knowledge and attitudes, while intention is ref-

lected through various intention indicators, most of which fall into the high category. Behavioral beliefs—particularly attitudes—play a role in shaping intention, as they are rooted in how individuals view and respond to certain behaviors. If someone holds a favorable attitude toward a behavior, a strong intention to perform that behavior is likely to follow (Badi'ah et al., 2022).

An individual with a positive attitude toward a behavior is also likely to express the intention to engage in that behavior. In this context, improving attitudes toward BLS is expected to foster more positive intentions. Attitudes shape perceptions of specific situations or actions. A positive attitude leads to more optimistic perceptions, which in turn strengthen intention (Ching & Chan, 2020).

This finding aligns with the study by Ulfah (2019), which found that attitude plays a major role in determining intention: the more positive the attitude, the stronger the intention, and vice versa.

The Influence of Normative Beliefs on Intention. The analysis indicates that normative beliefs do not have a significant effect on intention. Normative beliefs are indicated by beliefs and motivation, which represent an individual's perception of expectations from influential people in their life (referents), such as family or peers. While these beliefs and motivations can influence intention, the data in this study suggest that they were insufficient to do so in this context.

According to Zebua (2021), normative beliefs contribute to intention when strong motivations and self-belief are present. However, the assumption in this study is that belief and motivation alone are not enough to drive intention—particularly in the case of non-medical staff, who do not receive regular BLS training like medical personnel. A lack of routine practice and confidence, even in the presence of social motivation, may inhibit the intention to act in emergencies.

The implication of this non-significant result is that external social pressure—such as encouragement from others—is not enough to foster BLS-related intention among non-medical staff. Interventions should not rely solely on social influence but also aim to build internal factors such as confidence, knowledge, and practical skills (Amin & Haswita, 2022).

The Effect of Control Beliefs on Intention. The analysis shows that control beliefs also do not significantly influence the intention to perform BLS. Control beliefs in this study is represented by perception and training. These beliefs affect whether an individual feels capable of performing a behavior, depending on how they perceive the resources or barriers involved (Tversky, 2019).

If individuals perceive that a behavior is easy to perform or that support is available, their intention to act increases. Conversely, if they believe the task is difficult or someone else is more qualified, the intention may not develop (Sánchez-Cañizares et al., 2021). In this study, the lack of significant influence may be due to respondents having inaccurate perceptions or an over-reliance on medical professionals. If they assume help will arrive quickly, they may not feel the need to act themselves.

This suggests that improving perception or offering training alone may not be enough. Future programs should also emphasize personal responsibility and build a sense of urgency. Simulation-based training or empowerment initiatives may strengthen self-efficacy and intention more effectively.

The Effect of Intention on Officer Readiness to Perform BLS. The analysis confirms that intention significantly influences staff readiness to perform BLS. The intention variable is composed of several indicators reflecting commitment to perform BLS-related actions.

Intention is a mental state that embodies a commitment to execute a behavioral action in the

present or future. It signifies a mental state that originates from the planning phase and extends to behavior (Scanlan & Still, 2019). Further, intention is closely linked to behavior, as it is the intention that motivates individuals to engage in behavior. Without a strong intention, individuals may struggle to exhibit positive behavior (Arifin et al., 2022). Positive behavioral outcomes typically stem from strong intentions. As such, the more positive the intention, the more positive the resulting behavior. Intention has a significant influence on behavior in con-ducting BLS because the intention that arises from within a person will identify how strong the individual is in trying to behave (Santi & Indarjo, 2022).

It is assumed that staff with a strong intention to perform BLS are more likely to follow through. Conversely, if the intention is weak or absent, the behavior is unlikely to occur. This finding supports the idea that intention is a key predictor of BLS readiness—consistent with Gieure et al. (2020), who emphasize that good behavior is always preceded by strong intention.

Limitations. Several factors may influence the readiness of non-medical responders that are not directly measurable or were not identified during the study. Variations in experience and educational background among non-medical responders can significantly impact their preparedness to perform BLS, and this study may not have fully captured the effects of these differences.

The findings of this study also carry implications for healthcare services. First, continuous BLS training should be implemented for non-medical staff, with a focus on enhancing their behavioral and control beliefs to improve their preparedness in emergency situations. Second, empowering non-medical staff through practical simulations and confidence-building measures can significantly enhance their readiness to perform BLS, helping them feel more competent when faced with emergencies. Third, fostering an organizational culture that promotes BLS readiness can increase non-medical staff's intention to engage in life-saving actions. Recognition or rewards for active participation may further support this goal. Fourth, regular evaluations should be conducted to monitor staff readiness and ensure the effectiveness of training programs, thereby helping organizations maintain a reliable and responsive emergency team.

Conclusion

Strong behavioral beliefs, such as knowledge and positive attitudes, can foster the intention of non-medical staff to enhance their readiness to perform BLS. Normative beliefs—namely belief and motivation—play a vital role as well. When individuals possess strong internal motivation and belief, their intention to act becomes stronger. Ideally, these positive motivations and beliefs emerge from within and lead to a corresponding positive intention. Control beliefs, including perception and training, also influence the formation of intention.

An individual's perception can either strengthen or weaken their intention, depending on whether the behavior is perceived as beneficial. If the behavior is seen as advantageous, the intention to act will likely increase. Conversely, if the behavior is perceived as irrelevant or unhelpful, intention may weaken. Strong intention ultimately drives readiness and behavior. When non-medical staff have clear and positive intentions, they are more likely to perform BLS effectively. This intention guides their actions, and positive behavior tends to follow. Therefore, fostering intention through enhanced knowledge, attitudes, perception, and motivation is essential for improving readiness and response in emergency situations.

Acknowledgements

We extend our sincere gratitude to all respondents who participated in this study. We also thank Undata Hospital, Central Sulawesi, for their support and willingness to facilitate the research process.

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