

(STUDENTS' KNOWLEDGE LEVEL OF BASIC LIFE SUPPORT (BLS) IN SCHOOLS KARTIKA 1-2 PRIVATE SENIOR HIGH SCHOOL MEDAN)

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ABSTRACT

Basic Life Support (BLS) is a crucial first aid measure in emergencies such as cardiac arrest and respiratory arrest. Lack of public knowledge, particularly among students, regarding basic life support (BLS) can result in delayed treatment, which can endanger the victim's safety. This study aims to determine the level of student knowledge about basic life support (BLS) at Kartika 1-2 Private High School in Medan in 2026. The research used a descriptive method with a univariate approach. The population was all 48 ninth-grade science students, using a total sampling technique. Data collection was conducted using a questionnaire containing 20 multiple-choice questions. Data were analyzed descriptively in the form of frequency distributions and percentages. The results of the study showed that of the 48 respondents, the majority (28 respondents) had a good level of knowledge, 58.3% (28 respondents), a fair level of knowledge (12 respondents) (25.0%), and a poor level (8 respondents) (16.7%). This indicates that the majority of students already have a good understanding of basic life support (BLS), although some still need to improve their knowledge. The conclusion of this study is that students' knowledge of basic life support (BLS) at Kartika 1-2 Private High School in Medan is considered good. It is recommended that educational institutions and healthcare professionals regularly improve basic life support (BLS) education and training to enhance student preparedness in emergency situations.

Keywords: Basic Life Support (BLS), Knowledge, Students.

Introduction

Knowledge is an important factor in shaping an individual's attitude, as good knowledge can lead to positive behavior. One of the essential skills in emergency situations is Basic Life Support (BLS). BLS should be introduced to young people, especially high school students, so that they can apply these skills and educate others. Emergency conditions are life-threatening situations that require immediate action to prevent disability and death (Aisyah et al., 2022).

Cardiac arrest requires immediate treatment because it can cause severe brain damage (Ministry of Health, 2022). Since cardiac arrest can occur suddenly and

anywhere, knowledge and skills in BLS are crucial. BLS is a lifesaving skill used to maintain airway patency and circulation without specialized equipment. However, many members of the public, including high school students, still lack adequate knowledge of BLS. According to Primadi et al. (2021), high school students are an important resource in health promotion and are at an appropriate age to learn and perform BLS in emergency situations.

According to the World Health Organization (WHO, 2020), heart disease and stroke are projected to remain the leading causes of death and disability worldwide, with annual deaths expected to exceed 24 million by 2030. In the United States, out-of-hospital cardiac arrest is a major cause of adult mortality, with approximately 350,000 cases reported in 2015,

while only 40% of victims received immediate assistance.

In Indonesia, the Ministry of Health (Kemenkes RI, 2022) reported 4,402,205 emergency department visits in 2017.

Furthermore, Riskesdas (2018) reported a heart disease prevalence of 1.5%, while Primadi et al. (2021) stated that heart disease accounted for 11,592,990 cases, making it one of the most common diseases in Indonesia. Fradella Wati and Lovia (2022) estimated that approximately 10,000 Indonesians experience cardiac arrest each year. In Medan, the Medan Health Office (2024) recorded 1,647 heart disease cases as of July 2024.

Basic Life Support (BLS) is considered a fundamental lifesaving competency involving the assessment of pulse and breathing, followed by Cardiopulmonary Resuscitation (CPR) until medical assistance arrives (Gadar Medik Indonesia, 2023). According to Ningsih and Atmaja (2019), rescuers must ensure scene safety, assess the victim's responsiveness, call for emergency assistance, and provide chest compressions and rescue breaths when necessary.

Several studies have shown that high school students' knowledge of BLS remains low (Alfaridzi & Suparti, 2023; Putra et al., 2023). Therefore, BLS education is needed to improve students' knowledge and first-aid skills. Sekar et al. (2022) emphasized that schools are the most effective setting for delivering BLS education.

The primary goal of BLS is to maintain blood circulation and oxygen delivery to body tissues through emergency ventilation and mechanical chest compressions (Nopitasari et al., 2021). BLS can be taught to anyone and should be mastered by every adult (Frame, 2010). Early BLS education for students is important because they are future community members who may encounter emergency situations requiring immediate first aid (Thygerson, 2009).

Previous research by Prayitno, Puspitasari, and Setiawan (2020) demonstrated a significant increase in knowledge after health education, with average scores improving from 47.20 to 66.53. Similarly, Wanda Aurelia et al. (2023) found that students' knowledge levels increased after receiving health education.

A preliminary survey conducted at SMA Swasta Kartika 1-2 Medan found that all 48 eleventh-grade science students had never received BLS education or training. Based on these findings, the researcher was interested in conducting a study entitled "The Level of Students' Knowledge About Basic Life Support (BLS) at SMA Swasta Kartika 1-2 Medan in 2026."

Research Method

This study employed a descriptive research design, aimed at objectively describing and measuring students' level of knowledge regarding Basic Life Support (BLS) without providing any intervention to the respondents. The collected data were presented in numerical form and analyzed using descriptive statistics.

The study was conducted at SMA Swasta Kartika 1-2 Medan from December 2025 to May 2026. The population consisted of 48 eleventh-grade science students (Grade XI IPA). According to Djarwanto (1994) cited in Iskandar (2020), a population includes all individuals or subjects relevant to the research problem. The sampling technique used was total sampling (Sugiyono, 2018), meaning that all 48 students were included as research respondents.

The inclusion criteria were students of Grade XI IPA who were willing to participate, signed the informed consent form, and were present during data collection. The exclusion criteria included students who refused to participate or were absent during the study.

This study used a single (univariate) variable, namely students' level of knowledge regarding Basic Life Support (BLS). Data collection consisted of primary and secondary data. Primary data were obtained through a questionnaire containing 20 multiple-choice questions, with a score of 5 for each correct answer and 0 for each incorrect answer. Secondary data were obtained from school records and field survey results.

Data collection procedures included obtaining permission from the school, explaining the study objectives to respondents, distributing questionnaires, collecting completed questionnaires, and conducting data editing. The research instrument was a questionnaire developed by Rahmatullah (2020) consisting of 20 multiple-choice questions related to BLS knowledge.

According to Nursalam (2020), an operational definition is based on observable

characteristics that allow variables to be measured consistently. In this study, knowledge was measured using a questionnaire covering four aspects of BLS:

1. Definition of *Basic Life Support* (BLS)
2. Purpose of *Basic Life Support* (BLS)
3. Indications for Basic Life Support (BLS)

4. Procedures for *Basic Life Support* (BLS)

The scoring system categorized knowledge levels as follows:

1. Good: 15–20 correct answers (76–100%)
2. Fair: 8–14 correct answers (56–75%)
3. Poor: 1–7 correct answers ($\leq 55\%$)

The total score ranged from 0 to 100, with higher scores indicating better knowledge. The questionnaire was considered reliable if it produced consistent results when used repeatedly to measure the same object (Rahmatullah, 2020).

Data processing followed the procedures described by Nur & Sahiru (2024), including:

1. Editing – checking and correcting collected data.
2. Scoring – assigning scores of 5 for correct answers and 0 for incorrect answers.
3. Coding – converting responses into numerical codes.
4. Transferring – entering data into a computer database.
5. Tabulating – organizing data into frequency distribution tables using manual methods and SPSS.
6. Saving – storing processed data for analysis.

Result

The study was conducted at SMA Swasta Kartika 1-2 Medan, a private senior high school located in Medan, North Sumatra, under the Kartika Jaya Foundation. The school occupies an area of approximately 8,778 m² and is situated in the Helvetia area of Medan. The study involved 48 Grade XI Science (IPA) students.

Respondent Characteristics

1. Age:

Of the 48 respondents, 26 students (54.2%) were 16 years old, while 22 students (45.8%) were 17 years old.

2. Gender:

26 respondents (54.2%) were male and

22 respondents (45.8%) were female.

3. Religion

The majority of respondents were Muslim (40 students; 83.3%), while 4 students (8.3%) were Protestant Christians and 4 students (8.3%) were Catholic Christians.

Students' Knowledge of *Basic Life Support* (BLS) the distribution of students' knowledge levels regarding Basic Life Support (BLS) was as follows:

1. Good: 28 respondents (58.3%)
2. Fair: 12 respondents (25.0%)
3. Poor: 8 respondents (16.7%)

The findings indicate that the majority of students had a good level of knowledge about Basic Life Support (BLS).

Students categorized as having good knowledge correctly answered 15–20 questions, those with fair knowledge answered 8–14 questions, and those with poor knowledge answered 1–7 questions on the questionnaire.

Discussion

1. Age Characteristics

The study involved 48 respondents, consisting of 26 students aged 16 years (54.2%) and 22 students aged 17 years (45.8%). According to Rahma (2021), age influences an individual's level of knowledge, as increasing age is associated with better understanding. Similarly, Putri and Siregar (2022) reported that adolescents aged 16–17 years possess more mature cognitive abilities in understanding health information. Wijaya (2023) emphasized that age distribution significantly affects knowledge levels due to differences in learning experiences. This finding is supported by Lestari (2024) and Andini (2025), who stated that age plays an important role in shaping adolescents' health knowledge and behavior.

2. Gender Characteristics

Among the respondents, 26 students (54.2%) were male and 22 students (45.8%) were female. According to Siregar (2021), gender differences may influence health knowledge and attitudes. Nasution and Dewi (2022) found that females tend to be more attentive to health information, whereas males are often more dominant in the number of respondents in school-based studies. Pratama (2023) also noted that gender distribution may affect research outcomes because of biological and psychological differences. Furthermore, Harahap (2024) and Putra (2025) emphasized that gender can influence individuals'

understanding and health-related behaviors.

3. Religious Characteristics

The majority of respondents were Muslim (83.3%), while Protestant Christians (8.3%) and Catholic Christians (8.3%) represented smaller proportions. According to Lubis (2021), religious background can influence an individual's mindset and behavior, including health-related practices. This finding is supported by Simanjuntak (2022), who stated that religious values help shape health attitudes and knowledge. Ginting (2023) explained that religious distribution often reflects the social characteristics of the surrounding community. Additionally, Hutapea (2024) and Samosir (2025) highlighted the important role of religion in promoting healthy lifestyles and increasing health awareness.

4. Students' Knowledge of Basic Life Support (BLS)

The results showed that 28 respondents (58.3%) had good knowledge, 12 respondents (25.0%) had fair knowledge, and 8 respondents (16.7%) had poor knowledge regarding Basic Life Support (BLS). These findings indicate that most students have a good understanding of BLS.

This result is consistent with the findings of Sucipto et al. (2025), who reported that 71% of students had good knowledge and 20% had poor knowledge regarding BLS. Similarly, Rahmi and Sulastri (2020) found that 76.67% of respondents had good knowledge and 23.33% had fair knowledge. Furthermore, Nisrina et al. (2024) reported that 41.7% of respondents had good knowledge and 40.9% had very good knowledge, indicating a generally high level of BLS knowledge among students.

In addition, Prasetyo (2023) demonstrated that practice-based health education, such as BLS training, is more effective than lecture-based methods because it improves both knowledge and practical skills. Sari and Nugroho (2024) stated that students' BLS knowledge is influenced by learning experiences, information sources, and teaching methods. This finding was reinforced by Hidayat (2025), who reported that regular BLS training can improve students' knowledge and readiness to provide first aid in emergency situations.

5. Research Limitations

The main limitation of this study was related to the data collection process.

The respondents' busy schedules may have affected their concentration while completing the questionnaire. To minimize this limitation, the questionnaires were administered during break periods or students' free time to ensure more accurate and optimal responses.

Appreciate (If There Is)

Praise and gratitude are offered to Almighty God for His blessings and grace, which have enabled the author to complete this Scientific Paper. The author would like to express sincere appreciation to the supervisor, the staff and administration of SMA Swasta Kartika 1-2 Medan, beloved parents, family members, friends, and all parties who have provided support, assistance, and motivation throughout the preparation of this Scientific Paper. May all the kindness and support given be rewarded abundantly by Almighty God.

Conclusion and Suggestion

Based on the results of this study, it can be concluded that most students at SMA Swasta Kartika 1-2 Medan have a good level of knowledge regarding Basic Life Support (BLS). Of the 48 respondents, 28 students (58.3%) had good knowledge, 12 students (25.0%) had fair knowledge, and The study successfully achieved its objective of identifying and describing students' knowledge of Basic Life Support (BLS). Therefore, continuous education, training, and awareness programs are still needed to improve students' understanding and preparedness to provide appropriate first aid in emergency situations.

Suggestion:

1. For Researchers: The findings of this study may serve as a reference for future health education programs and research related to Basic Life Support (BLS).
2. For Nursing Practitioners: Nursing professionals are encouraged to provide health education, counseling, and BLS training programs for students and the general public to improve their knowledge and emergency response skills.
3. For Educational Institutions: This study can be used as an additional academic resource and learning reference. Educational institutions are encouraged to support health promotion activities and BLS education programs for students.
4. For the Community: Students and community members with limited knowledge of BLS are encouraged to

participate in health education and training programs conducted by healthcare professionals to improve their understanding and ability to provide first aid during emergencies.

References

- Aisyah Aisyah, S., Sulastien, H., Pujiningsih, E., Zulfa Faculty of Health Sciences, E., Nahdlatul Wathan Mataram, U., Kaktus No, J., Mataram, K., Mataram, K., & Tenggara Barat, N. (2022). Introduction to Basic Life Support (BLS) with Cardiopulmonary Resuscitation (CPR) in the General Public. <http://jurnal.globalhealthsciencegroup.com/index.php/JM>
- Fradella Wati, Lovia. The Effect of Cardiopulmonary Resuscitation Simulation on School Students. Soebandi University, Jember. 2022; 1-2
- Frame, Scott B. (2010). PHTLS: Basic and Advanced Prehospital Trauma Life Support
- Hidayat, T. (2025). The effect of periodic BLS training on students' readiness in first aid. *Community Nursing Journal*, 21(1), 15–23.
- Iskandar, A. (2020). Introduction to Statistics. Widina Bhakti Persada Bandung. *Journal of Nursing* Volume 9 Number 1 Year 2025 Pages 67 - 73 *Journal of Nursing Research & Learning in Nursing Science*
- Lestari, S. (2024). Age characteristics of adolescents and their relationship to health behavior. *Journal of Health Promotion*, 18(2), 90–98.
- Ministry of Health of the Republic of Indonesia. (2018). Results of the 2018 Basic Health Research (Riskesdas). Jakarta: Health Research and Development Agency, Ministry of the Republic of Indonesia
- Nasution, R., & Dewi, L. (2022). Gender analysis of high school students' knowledge levels. *Journal of Nursing*, 9(1), 21–29.
- Nopitasari, BL, Wardani, AK, Qiyaam, N., Pradiningsih, A., Andanalusia, M., Rahmawati, C., & Wahid, AR (2021). Basic Life Support Training for Students of the Faculty of Health Sciences, Muhammadiyah University of Mataram. *SELAPARANG Journal of Progressive Community Service*, 5(1), 548. <https://doi.org/10.31764/jpmb.v5i1.6507>
- Nur, MA, & Saihu, M. (2024). Data Processing. *Scientica: Scientific Journal of Science and Technology*, 2 (11), 163–175. Retrieved from <https://jurnal.kolibi.org/index.php/scientica/article/view/2764>
- Nursalam, (2021). *Nursing Research Methodology*, 4th Edition, Practical Edition, South Jakarta: Salemba Medika
- Pratama, Y. (2023). Gender distribution in adolescent health research. *Scientific Journal of Health*, 14(3), 101–108.
- Primadi et al., 2021 *eduhealth journal* volume 16, number 03 2025 doi 10.54209/eduhealth.v16i03 essn 2808-4608 (online) <https://ejournal.seaninstitute.or.id/index.php/health>
- Putra, A., Sari, D. & Pratama, H., 2023. Basic Life Support Training and Its Impact on Adolescent Knowledge in Indonesia. Jakarta: Health Publisher
- Putri, D., & Siregar, M. (2022). The influence of age on health literacy in high school students. *Journal of Nursing Science*, 10(2), 78–85.
- Sari, M., & Nugroho, R. (2024). Factors influencing the level of knowledge of Basic Life Support in adolescents. *Journal of Nursing Science*, 18(2), 70–78.
- Sekar Siwi, A., Eko Kurniawan, W., Imam Hidayat, A., Undergraduate Nursing Study Program, P., Health, F., Harapan Bangsa, U., Nursing, J., & Health Sciences, F. (2022). Providing Education to Improve Students' Knowledge in Implementing Basic Life Support. *Journal of Community Health Development*, 3(2), 29–35. <https://jos.unsoed.ac.id/index.php/jchd>
- Sugiyono. 2018. *Quantitative, Qualitative, and R&D Research Methods*, Alfabeta Publisher, Bandung
- Thygerson, A. (2009). *First Aid: Fifth Edition*. Jakarta : Erlangga Publisher. 143 *Kreative* Vol. 2, No. 4 December 2022 <https://journal.amikveteran.ac.id/index.php/kreatif>

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- Wanda Aurelia, K., Sekar Siwi, A., Suandika, M., Undergraduate Nursing Study Program, P., Health, F., & Harapan Bangsa, U. (2023). Citra Delima : Scientific Journal of Citra Delima
- Bangka Belitung Health College The Effectiveness of Providing Audiovisuals About Basic Life Support (BLS) on the Level of Fishermen's Knowledge in Handling Drowning Victims. January, 6(2), 2023.
- Wijaya, R. (2023). Age distribution and knowledge level of adolescents in secondary schools. Journal of Health Education, 15(1), 33–40.
- World Health Organization (WHO). (2020) Score for health data technical package da world malaria report 2020

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