



The effect of health education on adolescent girls' knowledge of cyberbullying: A study at Palangka Raya Christian Middle School

Nia Pristina¹, Berliana Cahyani Putri², Meilitha Carolina³

^{1,2,3}Undergraduate Nursing Study Program, STIKES Eka Harap, Kalimantan Tengah, Indonesia

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ABSTRACT

Cyberbullying can be defined as a form of bullying that utilizes digital technology to intentionally and repeatedly harm others. One effective effort to prevent cyberbullying is through health education, which aims to increase adolescents' awareness and understanding of this issue. Early prevention plays a critical role in helping teenagers recognize, identify, and respond to cyberbullying behavior. Improved knowledge can enhance adolescents' concern for their safety both in school and in their surrounding environments. This study aimed to examine the effect of health education on the knowledge of female students about cyberbullying at Palangka Raya Christian Middle School. The research employed a pre-experimental design with a one-group pre-test and post-test approach. A total of 31 female students were selected using total sampling. The results showed a significant increase in students' knowledge after receiving health education. The Wilcoxon signed-rank test indicated a statistically significant difference, with a p-value of 0.000 ($p < 0.05$). In conclusion, the study demonstrates that health education has a significant effect on increasing the knowledge of teenage girls about cyberbullying. Preventive strategies such as providing relevant health education can be effective in reducing cyberbullying behavior and fostering a generation of digitally responsible and healthy adolescents.

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Corresponding Author:

Nia Pristina,
Undergraduate Nursing Study Program,
STIKES Eka Harap,
Jl. Beliang No.110, Palangka, Kec. Jekan Raya, Kota Palangka Raya, Kalimantan Tengah, 74874, Indonesia
Email: niapristina1@gmail.com

1. Introduction

Cyberbullying, derived from the words *cyber* (internet) and *bullying*, refers to the use of digital technologies to deliberately and repeatedly harm others (Kowalski, 2018). Yulieta et al., (2021) As internet access continues to grow globally, cyberbullying has emerged as a serious issue affecting both youth and adults. According to the Pew Research Center, nearly 40% of Americans have experienced cyberbullying, with 11.5% admitting to being perpetrators. Moreover, 62% of respondents viewed cyberbullying as a serious problem, and 58% of adult internet users reported having encountered such behavior (Duggan, 2022).

In Indonesia, the issue is no less alarming. A report by UNICEF (2021) revealed that between 41% and 50% of adolescents aged 13–15 have been exposed to cyberbullying on social media (Psychology et al., 2023). Data from the Central Statistics Agency of Central Kalimantan indicate that 1.8% of the population, especially adolescents, have been victims of cyberbullying. Locally, the Department of

Communication, Informatics, Statistics, and Cryptography of Palangka Raya City reported in 2024 that 37% of junior high school students had been involved in cyberbullying—either as victims or perpetrators. Cyberbullying can lead to serious psychological consequences, including depression, social withdrawal, diminished self-esteem, and even suicidal ideation (Adityatama et al., 2022; Karisma et al., 2023). Several contributing factors include anonymity, emotional distress, peer influence, and a lack of understanding about the consequences of such actions (Junalia & Malkis, 2022). These impacts highlight the urgent need for early intervention, especially through structured psychoeducation efforts targeted at adolescents (Wulandari & Oktariani, 2022). Preventive measures, such as promoting digital literacy and emotional regulation, are essential to equip young people with the knowledge and attitudes needed to recognize, prevent, and respond to cyberbullying (Kumala & Sukmawati, 2020). Early prevention can enhance adolescents' ability to recognize, identify, and develop awareness of cyberbullying behaviors. Improved knowledge can also increase adolescents' concern for their safety within the school and surrounding environment (Wulan et al., 2022).

Despite the growing prevalence and risks, knowledge and awareness of cyberbullying remain limited among adolescents. A study conducted in March 2025 at a Christian Junior High School in Palangka Raya found that none of the female students surveyed (100%) were familiar with the term *cyberbullying*. Furthermore, the school had not previously implemented counseling or educational programs related to the topic. This finding is consistent with Rahayu et al., (2023), who reported that many adolescents perceive cyberbullying as normal behavior due to their limited understanding of the concept. Alarmingly, Sulastri (2021) found that female adolescents are particularly vulnerable to engaging in cyberbullying behaviors, with 47.10% of the 622 respondents—almost equal to the number of male perpetrators—admitting to having engaged in such acts. Knowledge about the internet and cyberbullying should be possessed by all internet users so that they can avoid engaging in such behavior ((Hasrian Rudi, 2024). However, in reality, not everyone—including adolescents—can distinguish which behaviors constitute cyberbullying and which do not. Some are even unaware of the existence of cyberbullying acts occurring on the internet (Giovanni, 2020).

To address this issue, various institutions have initiated policy measures and awareness campaigns. The Indonesian government has strengthened cyberbullying-related legislation and collaborated with law enforcement agencies to prosecute offenders (Karisma et al., 2023). Local efforts by the Department of Communication and Informatics in Palangka Raya have included socialization initiatives, school counseling, and social media campaigns to promote digital safety.

Healthcare professionals, particularly nurses, also play a crucial role in mitigating the effects of cyberbullying. As part of comprehensive adolescent care, nurses can provide health education focused on mental health awareness, coping strategies, and cyber-ethics (Iftita et al., 2024). Knowledge enhancement has been shown to improve adolescents' understanding of cyberbullying, including its causes, forms, consequences, and prevention strategies (Junalia & Malkis, 2022). Based on knowledge, a person can view situations from various perspectives and determine the most appropriate and wise response (Gusdiansyah, 2023). A well-informed adolescent population is more likely to demonstrate responsible online behavior, contributing to a safer digital environment (Sari & Gusdiansyah, 2019). This study aims to assess the level of knowledge among junior high school students regarding cyberbullying and to identify the need for psychoeducational interventions. The results are expected to contribute to the development of more effective school-based strategies for cyberbullying prevention and mental health promotion among adolescents

2. Methods

This study employed a pre-experimental design using a one-group pre-test and post-test approach. The purpose of this design was to assess changes in knowledge before and after the intervention. The population of this study consisted of female adolescents attending Palangka Raya Christian Middle School. A total of 31 students participated in the study. The sampling technique used was total sampling, in which the entire population that met the inclusion criteria was selected as the research sample.

The inclusion criteria were as follows: (1) students enrolled at Palangka Raya Christian Middle School, (2) students who were present during the data collection process, and (3) students who were

willing to participate and signed the informed consent form. Only respondents who agreed to participate by signing the informed consent form prepared by the researchers were included.

The research procedure began with the administration of a pre-test questionnaire to measure the respondents' knowledge about cyberbullying before the intervention. The researchers explained the purpose of the questionnaire and the procedure for completing it. After the pre-test, a health education intervention was conducted using PowerPoint (PPT) presentations and leaflet media. Following the intervention, participants completed a post-test questionnaire to measure their knowledge after receiving the health education. The statistical analysis in this study was conducted using the Wilcoxon signed-rank test.

3. Results and Discussion

Table 1.
Results of Knowledge Identification Before Health Education was Given

No.	Category	f	%
1	Good	25	81
2	Enough	1	3
3	Not enough	5	16
	Total	68	31

Table 1 presents the findings related to respondents' level of knowledge before receiving health education on cyberbullying at Palangka Raya Christian Middle School. Out of 31 respondents, 25 (81%) demonstrated a good level of knowledge, 5 (16%) had low knowledge, and 1 respondent (3%) had a moderate level of knowledge. These results indicate that the majority of students already possessed a good understanding of cyberbullying prior to the intervention.

From a theoretical perspective, knowledge is a critical factor influencing human behavior (overt behavior), as it is developed through the cognitive process that follows sensory input (Bernadetha et al., 2023). According to Bloom's taxonomy, knowledge can be classified into six cognitive levels: knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom, 2007). Various factors contribute to knowledge acquisition, including age, education, occupation, environmental influences, access to information, and sociocultural context. Nursalam (2016) argues that increasing age is associated with greater maturity and cognitive development, enabling individuals to process information more effectively. These findings align with Piaget's cognitive development theory, which asserts that cognitive abilities evolve through stages and become more advanced with age (McLelland, 2024). Nonetheless, cognitive maturity can vary among individuals, meaning that age is only one of many factors influencing knowledge development (Natalia, 2016).

In this study, the majority of respondents who demonstrated good knowledge were 15-year-old female students (46%). This supports previous research by Ningrum & Amna (2020) (2020), who found that most respondents were within the age range of 16 (61.2%) and 17 (29.7%), with a smaller proportion aged 18 (9.15%). As noted by Putri (2018) adolescents within this age group often exhibit emotional instability, which can affect their ability to recognize, avoid, or respond to cyberbullying. Nonetheless, the findings of this study indicate that higher levels of knowledge were predominantly found among older adolescents, consistent with theoretical expectations. Most students demonstrated good knowledge before the intervention likely because of prior exposure to information about cyberbullying through formal education, social media, or peer discussions. As digital natives, adolescents today are generally more familiar with online behavior and its consequences. Additionally, many schools, including Palangka Raya Christian Middle School, may have integrated basic digital literacy or character education into their curricula, which could have contributed to students' awareness of cyberbullying. Furthermore, the cognitive development of adolescents—particularly those aged 15 and above—allows them to understand abstract concepts and social issues more clearly, as supported by Piaget's cognitive development theory. These factors combined may explain the high level of baseline knowledge among respondents.

Table 2.
Results of Knowledge Identification After Health Education was Given

No.	Category	f	%
1	Good	29	94
2	Enough	2	6
3	Not enough	0	0
	Total	31	100

Based on Table 2, the post-intervention assessment of respondents' knowledge levels regarding cyberbullying at Palangka Raya Christian Middle School revealed that out of 31 respondents, 29 (94%) demonstrated a good level of knowledge, while 2 respondents (6%) showed a moderate level of knowledge. No respondents were categorized as having poor knowledge.

Education, in a broad sense, encompasses all planned efforts aimed at influencing individuals, groups, or communities to adopt behaviors desired by educators. This definition implies three essential components: input (learners and educators), process (structured educational interventions), and output (desired behavioral outcomes). Health education, therefore, aims to foster health-promoting behaviors and empower individuals to maintain and improve their health status (Notoatmodjo, 2023). Cyberbullying can be effectively addressed through comprehensive health education. Educational interventions focusing on mental health have been shown to significantly improve adolescents' understanding of cyberbullying, including its definition, causes, forms, impacts, preventive strategies, and appropriate responses (Junalia & Malkis, 2022). Knowledge is a critical determinant in cyberbullying prevention, as adequate knowledge fosters the development of positive attitudes and appropriate behaviors. Thus, knowledge serves as a foundation for moral development and informed decision-making (Gusdiansyah, 2023).

The findings of this study indicate a significant improvement in respondents' knowledge following the provision of health education, aligning well with existing theoretical frameworks. The effectiveness of the intervention can be attributed to the use of clear, straightforward PowerPoint presentations, which employed accessible language and focused content, enhancing comprehension among the target audience. These findings are consistent with previous research by Livana et al., (2020), which demonstrated a statistically significant effect of health education on increasing children's knowledge of cyberbullying. Moreover, the positive outcomes observed in this study may be influenced by age and sources of information. Adolescents aged 12–16 years are in a cognitive developmental phase that enhances their capacity to process and retain new information. As a result, individuals within this age group may be more receptive to educational messages and more likely to integrate new knowledge into their behavior.

Table 3.
Results of the Wilcoxon test on the influence of health education to Knowledge Teenage Girls About Cyberbullying Against Students at Palangka Raya Christian Middle School

		Ranks		
		N	Ascension	Sum Of Ranks
Post Test - Pre Test	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	31 ^b	16.00	496.00
	Ties	0 ^c		
	Total	31		

a. Post Test < Pre Test

b. Post Test > Pre Test

c. Post Test = Pre Test

Test Statistics^a

		Post Test - Pre Test
Z		-4.877 ^b
Asymp. Sig. (2-tailed)		.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Table 3 presents the results of the Wilcoxon signed-rank test, which was used to examine the effect of health education on adolescents' knowledge about cyberbullying. The analysis showed no negative ranks ($N = 0$, Mean Rank = .00, Sum of Ranks = .00), while positive ranks were found in 31 respondents (Mean Rank = 16.00, Sum of Ranks = 496.00). The statistical test yielded a significance value of $p = 0.000$, which is less than the standard alpha level of 0.05. Therefore, the alternative hypothesis (H_1) is accepted, indicating that health education had a significant positive effect on the knowledge of female students about cyberbullying at Palangka Raya Christian Middle School.

Health education, in general, is defined as all planned efforts to influence individuals, groups, or communities to perform behaviors desired by the educator education (Notoatmodjo, 2014). According to Hidayat & Nurhayati, (2024), health education is part of a broader health effort (including promotive, preventive, curative, and rehabilitative strategies), with a specific focus on improving healthy lifestyle behaviors. It not only delivers essential information to address participants' problems but also equips them with the necessary skills to manage those problems. Group-based health education is applicable across age groups and educational levels and emphasizes the learning process rather than solely fostering self-awareness, with a cognitive component that outweighs the affective one (Saniscara, 2022). The findings of this study align with several health behavior theories, such as the Health Belief Model, Social Cognitive Theory, and Theory of Planned Behavior, all of which emphasize the crucial role of knowledge in shaping health behavior. Ali, (2019) also argued that effective health education enhances adolescents' understanding, which in turn influences their attitudes and health-related behaviors. Similarly, Bloom (2007) Bloom's taxonomy of learning domains supports this finding by stating that health education can directly increase knowledge, as it targets the cognitive learning domain.

The improvement in students' knowledge after the intervention, as shown by the Wilcoxon test, reinforces the theoretical expectation that educational efforts are effective. Prior to the intervention, some students had only moderate or poor knowledge of cyberbullying. However, post-intervention data indicated that most students achieved a good level of knowledge. This outcome is consistent with the study by Azizah et al., (2024), which demonstrated a significant positive effect of health education on students' knowledge levels. The effectiveness of the intervention may also be attributed to the clear delivery and the use of appropriate educational media, which enhanced students' comprehension and retention of the material. This supports the idea that knowledge includes the recall of specific information that has been taught and understood. Moreover, the findings suggest that age and information sources may play a role in shaping students' knowledge levels. Adolescents aged 12–16 are at a developmental stage where cognitive abilities are improving, making them more receptive to new information. This cognitive readiness likely contributed to the success of the educational intervention in this study.

4. Conclusion

This study concludes that health education has a significant influence on improving the knowledge of adolescent girls regarding cyberbullying at Palangka Raya Christian Middle School. Prior to the intervention, the majority of respondents already possessed a good level of knowledge; however, a small proportion had insufficient or moderate knowledge. After receiving health education, almost all respondents demonstrated improved knowledge, reaching the "good" category. This finding is supported by the Wilcoxon statistical test, which yielded a p -value of 0.000 ($p < 0.05$), indicating a statistically significant difference and leading to the acceptance of the alternative hypothesis (H_1). The improvement in knowledge suggests that health education interventions—when delivered in engaging ways and tailored to the developmental characteristics of adolescents—can be an effective strategy to enhance awareness and understanding of cyberbullying. Therefore, continuous efforts should be made to promote health education through collaboration among healthcare professionals, teachers, and related institutions in order to prevent and reduce cyberbullying among teenagers. This study was

limited by its pre-experimental design and relatively small sample size, which may affect the generalizability of the findings. Future research is recommended to involve larger and more diverse populations, utilize control groups, and explore long-term impacts of educational interventions. Additionally, qualitative approaches could be employed to gain deeper insights into students' experiences and behavioral changes following health education on cyberbullying.

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