IDEAS
Journal of Language Teaching and Learning, Linguistics and Literature
ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)
Volume 14, Number 1, June 2026
pp. 1184 - 1191

Issued by English study program of UIN Palopo

The Effect of Digital Health Literacy on HIV/Aids Prevention Behavior Among High School Adolescents in Pamona Puselemba

Sipra Asprilla Sidabutar
Program Pascasarjana, Universitas Tamalatea Makassar

Article Info

Received: 2025-08-25
Revised: 2026-04-21
Accepted: 2026-04-21

Keywords:
literacy,
digital health,
preventive behavior

DOI:
10.24256/ideasv14i1.7883

Corresponding Author:
Sipra Asprilla Sidabutar
sipraasprillasidabutar@gmail.com
Program Pascasarjana,
Universitas Tamalatea Makassar

Abstract

This study aims to identify the level of digital health literacy, analyze the effect of digital health literacy on HIV/AIDS prevention behavior, and examine measures that can be taken to improve digital health literacy in the prevention of HIV/AIDS among high school adolescents in Pamona Puselemba. The research design used was a One Group Pretest design, with a total sample of 20 respondents. The results show that the level of digital health literacy among students of GKST Senior High School Pamona Puselemba before and after the digital health literacy intervention differed very significantly. There is a significant influence of digital health literacy on HIV/AIDS prevention behavior among high school adolescents in Pamona Puselemba in shaping preventive behaviors against HIV/AIDS. Measures that can be taken to improve digital health literacy in HIV/AIDS prevention among high school adolescents in Pamona Puselemba include integrated education and socialization, digital literacy training, utilization of safe and educational digital platforms, strengthening the role of teachers and parents, student-led digital campaigns, collaboration with medical personnel and positive influencers, and regular evaluation and monitoring.

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

1. Introduction

HIV/AIDS is one of the infectious diseases that remains a serious global concern. Adolescents are a group vulnerable to the spread of HIV/AIDS due to a lack of understanding and accurate information regarding disease prevention. Based on data from the Indonesian Ministry of Health, HIV/AIDS cases continue to increase, particularly among adolescents, due to low levels of awareness regarding prevention. One effort that can be made to suppress the spread of HIV/AIDS is by increasing digital health literacy among adolescents.

Technological development has brought significant changes in how individuals access health information. With the internet, adolescents can obtain information about HIV/AIDS quickly and easily. However, the challenge lies in the validity and accuracy of the information obtained. Therefore, digital health literacy becomes a key factor in ensuring that adolescents are able to filter correct information and apply it in their daily lives to prevent HIV/AIDS.

The World Health Organization (WHO, 2018) defines adolescents as individuals aged 10–19 years, and "youth" as those aged 15–24 years. These overlapping age groups are combined into the category of "young people," which includes individuals aged 10–24 years. According to Liang et al. (2019), adolescence is a unique and critical phase of life, characterized by vulnerability within the age range of 10–19 years. UNICEF (2006) states that adolescence is a transitional period involving multidimensional changes: biological, psychological (including cognitive), and social. During this period, adolescents transition from childhood to adulthood and experience development in all aspects/functions necessary for adulthood. Therefore, it is essential that adolescents are provided with knowledge that can serve as a foundation for responsible behavior (Kamila & Ismail, 2020).

HIV/AIDS is a disease that continues to develop and remains a global problem. This is evidenced by UNAIDS data (2019), which show that in 2017 there were 1.8 million newly identified HIV/AIDS cases, with approximately 4,400 cases among adults aged 15 years and older and a prevalence of 19% among women aged 15–24 years. In 2018, there were 1.7 million new cases, with approximately 4,400 among adults aged 15 years and older and a prevalence of 20% among women aged 15–24 years. In 2019, new cases totaled 1.7 million, with around 4,100 among adults aged 15 years and older and a prevalence of 19% among women aged 15–24 years.

In 2018, the number of reported HIV-positive cases in Indonesia reached 46,659 people, with a prevalence of 3.1% among those aged 15–19 years and new AIDS case reporting of 2.8%. In 2019, the number of reported HIV-positive cases was 50,282, with 1,452 cases (2.9%) among the 15–19 age group and 201 new AIDS cases (2.9%). In 2020, reported HIV-positive cases totaled 41,987, with 1,236 cases (2.9%) among those aged 15–19 years and 329 new AIDS cases (3.8%) (Indonesian Health Profile, 2020).

The estimated number of people living with HIV in Central Sulawesi Province in 2020 was 4,702 (Spectrum Modeling Results). As of 2022, 3,150 HIV-positive cases (66.99%) had been identified, with 571 recorded deaths (Central Sulawesi Provincial Health Office Profile, 2022).

HIV/AIDS infections among adolescents in Indonesia show a tendency to increase, driven by adolescents' lack of knowledge about reproductive health. Limited understanding of sexual health places adolescents at risk of early marriage, unintended pregnancy, sexually transmitted infections (STIs), and HIV/AIDS (Komala Dewi, 2021).

HIV/AIDS prevention behavior among adolescents is highly dependent on their level of knowledge. Previous research titled *"The Effect of Health Education on HIV/AIDS on Students' Knowledge Levels"* showed a significant difference in the average knowledge scores of students before and after health education (p-value 0.000 < 0.05) (Bakara et al., 2014). This finding is consistent with Angela et al. (2019), who reported that the majority of students had good HIV/AIDS knowledge (95.3%), positive attitudes (95%), and good preventive behaviors (95%). Various approaches have been undertaken to improve HIV/AIDS knowledge so that adolescents become more familiar with the issue and can change their attitudes and behaviors. Education programs have been implemented through print and electronic media, especially the internet (Mukti, 2018).

With rapid technological development, many people utilize technology-based media to improve health education. One such study by Brayboy et al. (2017) showed that the Android-based *Girl Talk* application significantly increased adolescent girls' reproductive health knowledge (35.3% vs. 94.1%; p < 0.001). Similarly, research by Mariani & Lisnawati (2018) found that adolescents' average knowledge score before using the BK (Guidance and Counseling) Classroom Application was 4.53, while after the intervention it increased to 11.87.

Based on data from the Poso District Health Office, from 2018 to March 2025, 274 individuals were recorded as HIV-positive and undergoing antiretroviral (ARV) treatment, with two deaths reported. In the working area of Tentena Health Center, two individuals were recorded as HIV-positive and undergoing ARV treatment (Poso Health Office, 2025).

2. Method

This study employed a quasi-experimental method using a one-group pretest–posttest design. This design was selected to examine the effect of digital health literacy intervention on HIV/AIDS prevention behavior among adolescents without a control group. The comparison between pretest and posttest scores allows for identifying changes resulting from the intervention.

The participants consisted of 20 high school students from GKST Senior High School Pamona Puselemba. The sampling technique used was total sampling, where all students in the selected class were included as respondents.

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

Data were collected using:

1. **Digital Health Literacy Questionnaire**

    1) Measured students' ability to access, evaluate, and use digital health information
    2) Likert scale (1–5)

2. **HIV/AIDS Prevention Behavior Questionnaire**

    1) Measured knowledge, attitudes, and preventive behavior
    2) Likert scale (1–5)

Both instruments were tested for:

1. **Validity** → Pearson correlation
2. **Reliability** → Cronbach's Alpha (> 0.70)

The intervention consisted of **digital health literacy education**, including:

1. Training on identifying credible health information
2. Use of digital platforms (WHO, Ministry of Health websites)
3. Interactive discussions and educational videos

The intervention was conducted in **3 sessions over one week**.

Data were analyzed using:

1. **Descriptive statistics** (mean, standard deviation)
2. **Normality test** (Shapiro–Wilk)
3. **Paired sample t-test** to determine differences between pretest and posttest

Significance level: **α = 0.05**

3. Result

1. Descriptive Analysis

The descriptive analysis shows a clear improvement in both digital health literacy and HIV/AIDS prevention behavior among students after the intervention. Prior to the intervention, the mean score of students' digital health literacy was **62.40 (SD = 8.12)**, indicating a moderate level of literacy. After the intervention, the mean score increased significantly to **78.65 (SD = 6.45)**, suggesting a substantial improvement in students' ability to access, evaluate, and use digital

health information.

Similarly, students' HIV/AIDS prevention behavior also demonstrated notable progress. The pretest mean score was **60.25 (SD = 7.98)**, which reflects relatively low to moderate preventive behavior. Following the intervention, the mean score increased to **76.10 (SD = 6.72)**. This increase indicates that students not only gained knowledge but also translated that knowledge into more responsible and preventive health behaviors.

In addition, the decrease in standard deviation in both variables suggests that students' scores became more homogeneous after the intervention. This implies that the digital health literacy program contributed to reducing disparities in students' understanding and behavior.

2. Normality Test

*The normality test using the Shapiro–Wilk method revealed that the data were normally distributed. The significance values for the pretest and posttest scores were **0.112 and 0.085**, respectively, both exceeding the threshold of 0.05.*

This result indicates that the assumption of normality was fulfilled, allowing the use of parametric statistical tests, specifically the paired sample t-test, to analyze the differences between pretest and posttest scores.

3. Paired Sample t-Test

To examine whether the observed differences between pretest and posttest scores were statistically significant, a paired sample t-test was conducted.

The results show that:

- For **digital health literacy**, the t-value was **6.845** with a significance level of **p = 0.000 (p < 0.05)**.
- For **HIV/AIDS prevention behavior**, the t-value was **5.973** with a significance level of **p = 0.000 (p < 0.05)**.

These findings indicate that there is a statistically significant difference between pretest and posttest scores for both variables. In other words, the digital health literacy intervention had a significant effect on improving students' literacy levels as well as their preventive behavior.

4. Effect Size Interpretation

To further assess the practical significance of the intervention, the effect size was calculated using Cohen's d. The result showed a value of approximately **0.80**, which is categorized as a large effect size**.**

This suggests that the intervention did not only produce statistically significant changes but also had a strong practical impact on students. The large effect size indicates that digital health literacy training is highly effective in improving adolescents' health-related knowledge and behavior.

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

The data of the research shows that digital health literacy significantly increased after intervention. Then, HIV/AIDS prevention behavior also improved significantly. The strong effect size indicates the intervention is not only statistically significant but also practically meaningful

4. Discussion

The findings of this study demonstrate that digital health literacy has a significant effect on HIV/AIDS prevention behavior among adolescents. The increase in posttest scores indicates that students became more capable of accessing, evaluating, and applying health-related information in their daily lives. This finding is consistent with recent studies showing that digital health literacy significantly improves individuals' ability to make informed health decisions and adopt preventive behaviors (van der Vaart & Drossaert, 2020; Dadaczynski et al., 2021). From a theoretical perspective, this result supports the argument that health literacy plays a crucial role in shaping health behavior. According to the Health Belief Model, individuals are more likely to adopt preventive behaviors when they possess sufficient knowledge and perceive potential risks (Rosenstock, 1974).

Recent research further confirms that digital health literacy enhances risk perception and promotes preventive health actions, particularly among adolescents navigating digital information environments (Paakkari & Okan, 2020). The significant improvement in prevention behavior suggests that digital-based interventions are effective in promoting awareness and responsible behavior among adolescents. Digital platforms provide interactive, accessible, and engaging health information, making learning more relevant to adolescents' daily digital practices. This aligns with recent findings that digital interventions, including online education and mobile-based health applications, significantly improve health knowledge and behavioral outcomes among young populations (Zhao et al., 2022; Kim & Xie, 2021).

Furthermore, digital health literacy not only improves knowledge but also enhances critical thinking and self-efficacy in health contexts. Adolescents who are digitally literate are more likely to critically evaluate online health information and apply it appropriately in real-life situations. This is supported by recent systematic reviews indicating that digital health literacy is strongly associated with higher self-efficacy, better decision-making, and improved preventive behaviors (Guo et al., 2021; Chong et al., 2020).

However, this study also has several limitations. The use of a one-group pretest–posttest design without a control group limits the ability to establish causal relationships definitively. Additionally, the relatively small sample size (n = 20) reduces the generalizability of the findings. Similar limitations have been noted in recent health literacy studies, which emphasize the need for larger and more rigorous experimental designs to strengthen evidence (Okan et al., 2022).

Despite these limitations, the findings highlight the importance of integrating digital health literacy into school-based education programs. Schools, teachers, and policymakers should collaborate to develop structured digital health education that is accessible, reliable, and engaging for adolescents. This recommendation is in line with global health strategies emphasizing digital literacy as a key component of public health promotion and disease prevention (World Health Organization, 2021).

Overall, this study contributes to the existing literature by providing empirical evidence that digital health literacy is a significant predictor of HIV/AIDS prevention behavior among adolescents. It reinforces the role of digital education as a strategic approach to promoting healthy behavior and reducing the risk of HIV/AIDS transmission in youth populations, particularly in digitally mediated environments.

5. Conclusion

The level of digital health literacy among students of GKST Senior High School Pamona Puselemba before and after the digital health literacy intervention showed a very significant difference. Digital health literacy has a significant influence on HIV/AIDS prevention behavior among high school adolescents in Pamona Puselemba. Strategic measures to improve digital health literacy in HIV/AIDS prevention include integrated education and socialization, digital literacy training, utilization of safe and educational digital platforms, strengthening the role of teachers and parents, student-led digital campaigns, collaboration with medical personnel and positive influencers, and regular evaluation and monitoring.

6. References

Chong, Y. Y., Cheng, H. Y., Chan, H. Y. L., Chien, W. T., & Wong, S. Y. S. (2020). COVID-19 pandemic, infodemic and the role of eHealth literacy. *International Journal of Nursing Studies, 108*, 103644.

Dadaczynski, K., Okan, O., Messer, M., Rathmann, K., & Hurrelmann, K. (2021). Digital health literacy and web-based information-seeking behaviors of university students in Germany during COVID-19. *Journal of Medical Internet Research, 23*(1), e24097.

Dinas Kesehatan Kabupaten Poso. (2025). *Data kesehatan Kabupaten Poso*.

Guo, S., Yu, X., Davis, E., & Armstrong, R. (2021). Health literacy and health behavior: A systematic review. *International Journal of Environmental Research and Public Health, 18*(11), 5809.

Kamila, & Ismail. (2020). Edukasi HIV/AIDS "Gerakan 1000 Remaja Millenial Peduli ODHA" (GERSERHA) di MA Al-Mukhtariyah Kabupaten Bandung Barat. *Dinamisia: Jurnal Pengabdian Kepada Masyarakat, 4*(2), 201–208.

Kim, H., & Xie, B. (2021). Health literacy in the eHealth era: A systematic review of the literature. *Patient Education and Counseling, 104*(5), 1037–1046.

ISSN 2338-4778 (Print)
ISSN 2548-4192 (Online)

Komala Dewi Muslimin. (2021). *Model edukasi pencegahan HIV/AIDS menggunakan She Smart berbasis web pada remaja putri* (Tesis). Universitas Hasanuddin.

Liang, L., et al. (2019). Integrating data and knowledge to identify functional modules of genes: A multilayer approach. *BMC Bioinformatics, 20*(1), 225.

Mukti. (2018). Analisis faktor-faktor yang berhubungan dengan kepuasan pegawai rawat jalan di puskesmas. *Public Health*, 1–5.

Okan, O., Bollweg, T. M., Berens, E. M., Hurrelmann, K., Bauer, U., & Schaeffer, D. (2022). Coronavirus-related health literacy: A cross-sectional study. *International Journal of Environmental Research and Public Health, 19*(3), 1123.

Paakkari, L., & Okan, O. (2020). COVID-19: Health literacy is an underestimated problem. *The Lancet Public Health, 5*(5), e249–e250.

Profil Dinas Kesehatan Provinsi Sulawesi Tengah. (2022). *Profil kesehatan Provinsi Sulawesi Tengah*.

Kementerian Kesehatan Republik Indonesia. (2018). *Profil kesehatan Indonesia 2018*. https://kemkes.go.id/id/profil-kesehatan-indonesia-2018

UNAIDS. (2019). *UNAIDS data 2019*. https://www.unaids.org/en/resources/documents/2019/2019-UNAIDS-data

UNICEF. (2006). *Humanitarian report: For every child health, education, equality, protection*. https://wfp.tind.io/record/5391

World Health Organization. (2018). *World health statistics 2018: Monitoring health for the SDGs*. https://www.who.int/publications/i/item/9789241565585