

Improving student health literacy through a health book exhibition at Muhammadiyah junior high school in Kendari

La Ode Liaumin Azim*, Agnes Mersatika Hartoyo

Department of Public Health, Halu Oleo University

Kampus Hijau Bumi Tridharma, Anduonohu, Kec. Kambu, Kota Kendari, Sulawesi Tenggara 93232, Indonesia

*Correspondence author: alymelhamed09@uho.ac.id

Received: 28/11/2025

Revised: 15/12/2025

Accepted: 07/01/2026

Abstract. Health literacy plays an important role in shaping healthy behaviors among adolescents; however, the level of health literacy among junior high school students in Indonesia remains low. Initial assessments at Muhammadiyah Kendari Junior High School indicated that most students (73%) had insufficient knowledge of health information and rarely used health books as learning resources. This study aimed to improve students' health literacy through a health book exhibition intervention conducted as part of community service activities. The study employed a pre-experimental design using a one-group pretest–posttest approach involving 30 students at SMP Muhammadiyah Kendari. The intervention was implemented through a health book exhibition featuring popular health books, educational visual media, and active reading assistance sessions. Health literacy was measured before and after the intervention using a structured measurement instrument. The results indicated a significant increase in students' understanding, with the average post-test score increasing by 43.3% compared with the pre-test score. The paired t-test yielded a p-value of 0.000. The findings suggest that health book exhibitions may be effective as a contextual and easily applicable promotive education strategy in school settings. This approach has the potential to serve as a sustainable health literacy intervention model for junior high schools.

Keywords: Community service, health literacy, adolescents, students, pre-experimental design

Introduction

Improving health literacy among adolescents is crucial for establishing sustainable healthy lifestyles. In Indonesia, health issues among students—such as limited understanding of nutrition, reproductive health, hygiene, and infectious diseases—remain serious concerns that require attention as a population still undergoing development, adolescents are vulnerable to various health problems that may affect their quality of life. Therefore, appropriate and effective health education is needed to shape healthy lifestyle habits from an early age (Anisah et al., 2021).

The 2022–2023 national health literacy survey found that approximately 64% of respondents had inadequate health literacy (Haryanto et al., 2023). As a consequence of low health literacy, adolescents may be more vulnerable to poor health behaviors, including limited knowledge of disease prevention, proper nutrition, personal hygiene, reproductive health, and mental health (Putri et al., 2025).

In addition, studies conducted in Indonesian high schools have reported a significant correlation between health literacy and disease prevention behaviors, particularly for noncommunicable diseases (NCDs). Adolescents with higher levels of health literacy were

reported to be 5.27 times more likely to engage in NCD prevention behaviors than those with lower literacy levels (Roiefah et al., 2021).

Inadequate health literacy is associated with difficulties in understanding written information and problematic communication with health workers. Individuals with low literacy levels tend to make poorer health decisions, including engaging in harmful behaviors, incurring higher healthcare costs, and experiencing poorer health status (Arifah et al., 2022).

Efforts to improve health literacy in schools have not yet been optimal. The junior high school curriculum places limited emphasis on health topics, as these are generally integrated into other subjects without emphasizing health literacy as a practical skill. Teachers face limitations in time, teaching methods, and supporting media to convey health information in an engaging and contextual manner. Schools also lack alternative learning resources that encourage students to read, explore, and discuss health topics independently. This gap may lead students to perceive health primarily as a theoretical concept, without active involvement in the learning process (Kayalkar & Dmello, 2024).

In addition to curriculum limitations, there is a lack of health education resources that are interesting, accessible, and relevant to adolescents' needs. Facilities such as health book fairs are rarely utilized as learning media in schools, particularly in areas such as Kendari. In fact, book fairs can provide visual and popular reading materials appropriate to students' levels of understanding, while also creating interactive learning experiences. The absence of literacy-based interventions outside the formal curriculum may widen the gap between students' needs and available learning strategies (Bambang et al., 2025).

Muhammadiyah Kendari Junior High School holds a strategic position in efforts to improve student health literacy in Kendari City. Although health education has been integrated into the school curriculum, the approach remains conventional and does not provide sufficient opportunities for active student participation. Book-based media have been used as a means of transferring health knowledge and have been shown to improve students' conceptual understanding. However, most existing interventions focus on individual reading activities in the classroom, with limited access to diverse reading materials, facilitator guidance, and engaging visual media support (Jurnal et al., 2025).

Health book fairs offer an alternative approach by combining direct access to various health reading resources, student interaction with materials, and facilitator guidance within a school environment. However, empirical evidence regarding the effectiveness of participatory, fair-based health literacy interventions remains limited, particularly in Eastern Indonesia. Existing literature tends to focus on the use of books as passive learning media, without evaluating the impact of exhibition-based approaches that integrate interactive and contextual learning experiences (Pertiwi et al., 2024).

Low initial health literacy, curriculum limitations, and a lack of innovative health learning resources indicate a gap between students' needs and available learning approaches. Therefore, a contextual, easy-to-implement, and school-relevant literacy-based intervention is needed. This study examines health book exhibitions as an educational intervention to improve the health literacy of students at Muhammadiyah Kendari Junior High School, as well as a community service model with the potential to be replicated in other junior high schools.

Methods

This study employed a pre-experimental design with a one-group pretest–posttest approach to assess the effectiveness of health book exhibitions in improving students' health

literacy. The study was conducted at SMP Muhammadiyah Kendari in March–April 2025 as part of community service activities integrated with research. The research population consisted of all 32 students at SMP Muhammadiyah Kendari, with a sample of 30 students. Two students were not included in the sample because they were absent during the study and were therefore classified as dropouts.

Data collection was conducted by measuring health literacy before and after the intervention using a questionnaire consisting of 30 multiple-choice items that had been tested for validity and reliability. The validity test was conducted at SMP 2 Kendari and yielded a validity value of 0.000 and a reliability coefficient (Cronbach's alpha) of 0.874. The instrument measured three dimensions of health literacy: the ability to access, understand, and use health information. The health book exhibition intervention involved providing various popular health books appropriate for students' age, educational visual media, as well as active reading assistance and brief discussions to support students' understanding of the reading materials.

Data analysis was conducted in several stages. Univariate analysis was used to describe respondents' characteristics and the distribution of health literacy scores before and after the intervention. Subsequently, bivariate analysis was conducted to assess differences in health literacy scores before and after the intervention. The paired t-test was used if the data were normally distributed, whereas the Wilcoxon test was applied if the data were not normally distributed. All analyses were performed at a 95% significance level using SPSS version 26.0.

The first stage involved identifying health topics that were relevant to students' needs, such as reproductive health, balanced nutrition, mental health, and prevention of infectious diseases. Once these topics were determined, materials appropriate to students' age and needs were selected and compiled, ensuring that the books were easy to understand and featured attractive illustrations.

Next, preparations were made for a health book exhibition in a strategic location that was easily accessible to all students. The exhibition was arranged using stands or exhibition tables displaying various types of health books that students could borrow or read directly. The books were selected based on the accuracy of their content and the diversity of topics relevant to students' health education needs. Counseling and assistance were also provided during the exhibition, during which interns offered additional explanations about the books on display, answered students' questions, and facilitated discussions on relevant health issues.

Additionally, to enhance students' understanding, educational health videos were screened using laptops and LCD projectors for group viewing. This approach was adopted to integrate audio and visual media, thereby facilitating students' comprehension of the presented material, particularly health-related content.

This method aimed to provide students with direct experience in obtaining health information in an engaging manner. In addition, this activity emphasized students' active participation in understanding the importance of health literacy in their daily lives. After the book exhibition, an evaluation was conducted using a quiz or short survey to measure students' knowledge and understanding of the material presented. Thus, this community service activity not only improved health literacy but also fostered students' awareness of the importance of maintaining their health.

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Result and Discussion

The first stage involved analyzing student needs through focus group discussions (FGDs) with school representatives, namely the principal and teachers. This process aimed to observe and identify issues at SMP Muhammadiyah Kendari, particularly those related to student health literacy. During the identification stage, the interns noted that students at SMP Muhammadiyah Kendari required education on several health issues, particularly reproductive health, infectious diseases, prevention of substance abuse among adolescents, and mental health. These data were obtained through interviews with teachers and the principal, who reported limited student understanding of reproductive health, self-care, and substance abuse prevention. After identifying these issues, the community service team and the school jointly formulated exhibition themes aligned with the problems identified during the FGDs. The selected themes addressed topics relevant and important to adolescents, including balanced nutrition, prevention of infectious diseases, reproductive health, and mental health.



Figure 1. Focus Group Discussion between Lecturers, Students, and School Principals



Figure 2. Focus Group Discussion between Lecturers, Students, and Teachers at SMP Muhammadiyah Kendari

Focus group discussions involving lecturers, students, and school officials constituted an important stage in the implementation of this community service activity and research. The first focus group discussion, involving lecturers, students, and the school principal, served as an initial forum to align perceptions regarding student health literacy issues, school needs, and appropriate intervention strategies. Through this discussion, the school conveyed students' actual conditions, limitations in health education within the curriculum, and the lack of interesting and accessible health literacy media. The outcomes of this discussion formed the basis for planning a health book exhibition tailored to the school context and student characteristics.

The subsequent focus group discussion involving lecturers, students, and teachers contributed to the design of technical implementation strategies. Teachers provided input regarding health topics that students often find difficult to understand, appropriate implementation timing, and communication approaches suited to students' developmental levels. This discussion also strengthened collaboration between academics and education practitioners, ensuring that the health book exhibition functioned not merely as an incidental activity but was integrated into school learning activities. Student involvement in the discussion further enriched ideas for presenting materials in a more communicative and participatory manner.

Overall, this series of focus group discussions contributed to improving the quality of the implemented interventions. The two-way dialogue enabled more in-depth problem identification, reduced gaps between school needs and activity design, and increased the school's sense of program ownership. This participatory approach strengthened the implementation of the health book exhibition as a contextual, relevant, and potentially sustainable literacy intervention to support improvements in student health literacy at Muhammadiyah Kendari Junior High School.

The second stage involved preparation, including the selection and procurement of health books appropriate to students' age and level of understanding, ensuring accurate content that was easy to comprehend and appealing to young readers. The books were subsequently grouped by topic to facilitate student access and selection during the exhibition.

Next, the community service team arranged the exhibition space in a strategic and comfortable manner to facilitate students' access to the displayed materials. The book exhibition was held in an open area with a design that allowed direct interaction between students and health books. Each table or exhibition stand was equipped with brief descriptions of the books and topics discussed, along with additional information regarding the importance of each health topic. As part of the preparation, interns received training to provide clear explanations of the displayed books and to respond to students' questions regarding various health issues.

This preparation process also included logistical arrangements, such as providing supporting materials in the form of posters or leaflets introducing health topics, as well as equipment to support exhibition activities, including laptops and projectors. With thorough preparation, the health book exhibition was expected to be implemented effectively and to have a positive impact on improving student health literacy at Muhammadiyah Kendari Junior High School.



Figure 3. Preparation for Selecting Exhibition Books and Leaflets



Figure 4. Book Exhibition



Figure 5. Health Video Screening

The preparation stage for selecting books and health exhibition leaflets, as shown in Figure 3, represents a key component in the success of health literacy interventions. The service and research team selected books and leaflets based on age appropriateness, readability level, topic relevance, and alignment with health issues faced by students. This process ensured that the materials presented were informative, easy to understand, and engaging for students. These preparatory activities indicate that improving health literacy does not depend solely on the availability of reading materials but also requires appropriate content curation to facilitate effective information processing by students.

The screening of health videos, as shown in Figure 5, complemented the book exhibition by strengthening students' understanding. Video media presented health information visually and narratively, thereby assisting students in understanding concepts that were difficult to convey through text alone. Health videos also appeared to increase students' attention and engagement, particularly for topics requiring concrete illustrations, such as clean and healthy living behaviors and basic mental health. The integration of audiovisual media in book exhibitions created a multisensory learning experience that encouraged students to associate textual information with real-life images. These findings suggest that combining printed reading materials with audiovisual media may strengthen the health literacy process and help explain the observed increase in students' knowledge scores following the intervention.

The third stage involved evaluating the effectiveness of the health book exhibition. Overall, the health book exhibition conducted as part of the community service activity at SMP Muhammadiyah Kendari was implemented as planned and received positive responses from students. Based on data from 30 student participants, there was a significant increase in students' understanding of health issues following the exhibition.

Table 1. The Effect of Book Exhibitions on Improving Health Literacy Among Students at Muhammadiyah Junior High School in Kendari

Level of knowledge	Pre-test	Post-test	Paired t-test (P-value)
Poor	24 (80%)	11 (36.7%)	0.000
Good	6 (20%)	19 (63.3%)	
Total	30 (100%)	30 (100%)	

The results of the knowledge level assessment showed a clear change following the health book exhibition intervention. At the pre-test stage, most students were categorized as having poor knowledge (24 students; 80%), whereas only 6 students (20%) demonstrated good knowledge. After the intervention, this distribution changed substantially. The paired t-test yielded a p-value of 0.000, indicating a statistically significant difference in knowledge levels before and after the health book exhibition intervention.

The 43% increase in students' health literacy following the health book fair may be explained by increased access to health information that had previously been limited. Improved physical access may have encouraged students to open, read, and explore health information more frequently. The book fair also appeared to enhance students' confidence in seeking and understanding health information.

The book fair also appeared to contribute to increased student confidence in seeking and understanding health information. Through reading assistance and direct interaction with the materials, students learned to recognize basic health terms and understand the main messages conveyed in the readings. Successfully understanding the book contents appeared to enhance

students' self-efficacy, defined as the belief in their ability to independently obtain and use health information.

Book fairs may reinforce the student learning process. Unlike conventional classroom learning, book fairs provide a more relaxed learning atmosphere and actively engage students through independent reading, brief discussions, and question-and-answer sessions. This active involvement may help students process information more deeply and meaningfully, thereby improving knowledge retention.

These findings are consistent with previous research, which reported that in the experimental group, prior to counseling, 12 respondents (34.3%) had sufficient knowledge, compared with 23 respondents (65.7%) who had insufficient knowledge. However, following the counseling session, the proportion of respondents with good knowledge increased to 91.4% (Kasmawati, 2024).

Overall, most students demonstrated increased understanding of the importance of healthy eating and mental health maintenance. This improvement was reflected in increased scores on questions related to understanding stress, anxiety, and effective emotion management strategies. In addition, students' interest in reading health-related books increased, despite such materials previously being perceived as uninteresting (Prasanti, 2018).

The observed increase in students' understanding following participation in the health book exhibition suggests that book-based media may be an effective method for improving health literacy among adolescents. This activity appeared to attract students' attention by presenting information that was relevant, engaging, and easy to understand. The book fair not only provided students with direct access to accurate information but also created opportunities for discussion and direct interaction with interns serving as facilitators. Through this approach, students not only gained knowledge but also appeared to feel more involved in the learning process (Faradila et al., 2023).

The noticeable improvement in pre-test and post-test scores indicates that this activity was effective in increasing students' health awareness and understanding. In addition, the book exhibition appeared to have a positive impact on motivating students to continue learning about health. Most students expressed increased interest in independently seeking health information after attending the exhibition (Pratidina et al., 2025).

However, despite the generally satisfactory results, several considerations should be taken into account when implementing similar activities in the future. For example, some students continued to experience difficulty understanding certain concepts, such as mental health and stress management. Therefore, future implementations may consider incorporating additional elements, such as structured group discussions or more interactive educational videos, to facilitate comprehension.

Overall, this study suggests that health book fairs may serve as an effective tool for improving student health literacy, particularly when integrated with interactive activities that promote active participation. In the future, this method may be applied in other schools to expand the scope of health education among adolescents in Indonesia.

Conclusion

The community service activities conducted through a health book exhibition at SMP Muhammadiyah Kendari were associated with improvements in students' health literacy. Based on pre-test and post-test questionnaire evaluations, a significant increase was observed in students' understanding of various health issues, including reproductive health, prevention of

infectious diseases, and mental health. This increase in knowledge suggests that health book exhibitions organized using participatory and community-based approaches may be effective in attracting students' attention and enhancing awareness of the importance of maintaining health.

Although the activity demonstrated positive impacts, it also revealed limitations, particularly in students' understanding of complex health topics. Some students continued to experience difficulty understanding certain concepts, particularly those related to mental health, which require step-by-step explanations, contextual examples, and deeper interaction. This condition indicates that the book exhibition format, which emphasizes independent reading activities, has limitations in conveying abstract and multidimensional material. Without support from more intensive mentoring methods, structured discussions, or audiovisual media, book exhibitions may not be fully capable of bridging students' understanding of complex health issues. For future research, comparative studies are recommended, such as comparing the book exhibition approach with traditional classroom-based health lectures or standalone digital interventions, to more rigorously evaluate its effectiveness as a model.

Acknowledgements

We would like to express our deepest gratitude to all parties who have supported and participated in this community service activity. In particular, we would like to thank SMP Muhammadiyah Kendari for granting permission and providing facilities to hold this health book exhibition, as well as the students who actively participated in this activity, making it a great success. We would also like to thank the interns who worked enthusiastically in assisting the students and providing interactive health education during the exhibition. We also extend our gratitude to those who provided health books and other supporting materials that were very useful in improving the students' understanding of health

References

- Anisah, N., Sartika, M. and Kurniawan, H. (2021) "The Use of Instagram Social Media in Improving Health Literacy Among Students," *Jurnal Peurawi: Media Kajian Komunikasi Islam*, 4(2), pp. 95–107.
- Arifah, I., Safari, A.L.D. and Fieryanjodi, D. (2022) "Health Literacy and Utilization of Reproductive Health Services Among High School Students," *Indonesian Health Promotion Journal*, 17(2), pp. 79–85. Available at: <https://doi.org/10.14710/jpki.17.2.79-85>.
- Bambang, M. *et al.* (2025) "Enhancing Adolescent Health Literacy Through A Community-Based Educational Intervention: A Pilot Study In A Rural Indonesian Setting," *International Journal of Health and Pharmaceutical*, 5(3), pp. 514–520. Available at: <https://ijhp.net>.
- Faradila, A., Prafitasari, A.N. and Farida, A. (2023) "Improving Health Literacy through Problem-Based Learning with Paired Literacy Techniques in Class XI MIPA 2 at Ambulu State High School," *Jurnal Biologi*, 1(4), pp. 1–10. Available at: <https://doi.org/10.47134/biology.v1i4.1995>.



- Haryanto, A.N., Nina and Ramadhani, N.R. (2023) "Improving Health Policy Literacy in Adolescents to Achieve Health Resilience in Jabodetabek," *Journal of Community Service: Saga Komunitas*, 2(3), pp. 206–211.
- Jurnal, J.: *et al.* (2025) "The Effect of Education Using Pocket Books on Increasing Knowledge About ISPA in Pangkalan Dodek Baru Village," *JUKEJ: Jompa Health Journal*, 4(2), pp. 769–776. Available at: <https://jurnal.jomparnd.com/index.php/jkj>.
- Kasmawati (2024) "The Effect of Counseling on the Level of Knowledge about HIV/AIDS in Class XI Students of Syekh Yusuf Al Makassar Gowa Pharmacy Vocational School," *JURNAL KOLABORATIF SAINS*, 7(2), pp. 952–957. Available at: <https://doi.org/10.56338/jks.v2i1.969>.
- Kayalkar, V.D. and Dmello, M.K. (2024) "Health literacy among rural adolescents in Amravati, Maharashtra: A Community-based cross-sectional study," *Clinical Epidemiology and Global Health*, 26, p. 101532. Available at: <https://doi.org/10.1016/J.CEGH.2024.101532>.
- Pertiwi, L.A. *et al.* (2024) "The Effect of Health Promotion Booklets on Increasing the Knowledge of Caregivers of Schizophrenia Patients," *Jurnal Ilmiah Kesehatan Media Husada*, 13(1), pp. 21–33. Available at: <https://ojs.widyagamahusada.ac.id>.
- Prasanti, D. (2018) "Health Information Literacy as a Prevention Process for Hoax Information in the Use of Traditional Medicine in the Digital Era," *Journal Pekommas*, 3(1), p. 45. Available at: <https://doi.org/10.30818/jpkm.2018.2030105>.
- Pratidina, E. *et al.* (2025) "Improving Public Health Literacy Through Education and Health Checkups in Bandung Regency," *JurnalMedika:Medika*, 4(3), pp. 388–394.
- Putri, C.M.P.M. *et al.* (2025) "Mental Health Literacy and Self-Diagnosis Behavior in Students," *Behavior and Health Promotion: Indonesian Journal of Health Promotion and Behavior*, 6(2), pp. 64–72. Available at: <https://doi.org/10.47034/ppk.v6i2.1090>.
- Roiefah, A.L., Pertiwi, K.D. and Siswanto, Y. (2021) "The Relationship between Health Literacy Levels and NCD Prevention Behavior in Adolescents in Semarang Regency," *Pro Health Scientific Health Journal*, 3(2), pp. 167–178.