

THE ROLE OF EYE HEALTH EDUCATION IN IMPROVING AWARENESS OF CHILDREN'S VISION IMPAIRMENT PREVENTION

Sri Wahyu Budoyo Kusumo*, Ardhitya Furqon Wicaksono, Arraywed Yudita Wibowo

*corresponding author: kusumowahyu95@gmail.com

Akademi Optometri Yogyakarta

Info Artikel

| Submitted: 8 April 2026

| Revised: 23 April 2026

| Accepted: 27 April 2026

How to cite: Sri Wahyu Budoyo Kusumo, "The Role Of Eye Health Education In Improving Awareness Of Children's Vision Impairment Prevention", *Medical : Jurnal Kesehatan Dan Kedokteran*, Vol. 3 No. 1, Januari-Juni, 2026, hlm. 56-66.

ABSTRACT

Visual impairment among elementary school children is a public health concern that significantly affects academic performance, cognitive development, and overall quality of life. Limited awareness and knowledge of eye health, along with inadequate early detection, contribute to the high prevalence of untreated visual problems in children. This study aimed to analyze the role of eye health education in increasing awareness of visual impairment prevention among elementary school students. A descriptive qualitative design with a case study approach was employed in a school-based eye health education program. Data were collected through direct observation, in-depth interviews with students and teachers, documentation review, and analysis of vision screening reports. Thematic analysis was conducted by linking field findings with health promotion theories. The results indicate that structured, contextual, and participatory eye health education effectively improves students' knowledge of eye health, fosters positive attitudes, increases awareness of vision screening, and encourages preventive behaviors such as consistent use of corrective eyewear and controlled screen time. This study concludes that eye health education plays a strategic role as a promotive and preventive intervention in reducing the risk of visual impairment among children and should be sustainably integrated into school health programs.

Keywords: eye health education; preventive awareness; childhood visual impairment; vision screening

INTRODUCTION

Visual impairment in children is a global health problem that remains a serious challenge, especially in developing countries. The World Health Organization (WHO) reports that approximately 19 million children worldwide experience visual impairment, and most of these cases are preventable or correctable through early detection and appropriate intervention (WHO, 2023). Refractive errors such as myopia, hyperopia, and astigmatism are the leading causes of visual impairment in school-age children.

Eye health plays a crucial role in children's learning. According to Gordon and Kline (2022), more than 80% of the information children receive at school is acquired through sight. Undetected visual impairment can cause reading difficulties, decreased concentration, and impact academic achievement and self-confidence. Unfortunately, many cases of visual



impairment in children go undetected due to a lack of awareness among parents and teachers and limited access to eye health services.

Eye health education is an effective promotive and preventive strategy to raise public awareness of the importance of visual health. Notoatmodjo (2021) stated that health education aims to improve individuals' knowledge, attitudes, and behaviors so they can maintain and improve their health independently. In the context of children's eye health, early education provided in the school environment has great potential to shape sustainable healthy lifestyles.

The increase in digital device use among school-age children over the past decade is a phenomenon that cannot be ignored. Prolonged exposure to digital screens, unergonomic viewing distances, and a lack of outdoor activity contribute to the rise in cases of myopia in children (Holden et al., 2021). National data shows that the prevalence of refractive errors in school-age children in Indonesia remains quite high, and most have not been optimally corrected.

Table 1.
The Phenomenon of Visual Impairment in School-Age Children

Phenomenon	Impact	Source
Excessive use of digital devices	Increased risk of myopia	Holden et al., 2021
Limited vision screening in schools	Delayed detection of visual impairment	WHO, 2023
Low level of eye health education	Unhealthy visual behavior	Notoatmodjo, 2021

Source: Primary Data, 2026

Most previous research has focused on the prevalence of visual impairment and clinical risk factors in children. However, there is limited research that comprehensively examines the role of eye health education as a promotive intervention in increasing awareness of visual impairment prevention in children, particularly in the context of elementary schools in Indonesia.

The novelty of this research lies in the integration of a school-based eye health education approach with an analysis of awareness of visual impairment prevention in children, which is examined holistically through the perspectives of health promotion and community optometry practice.

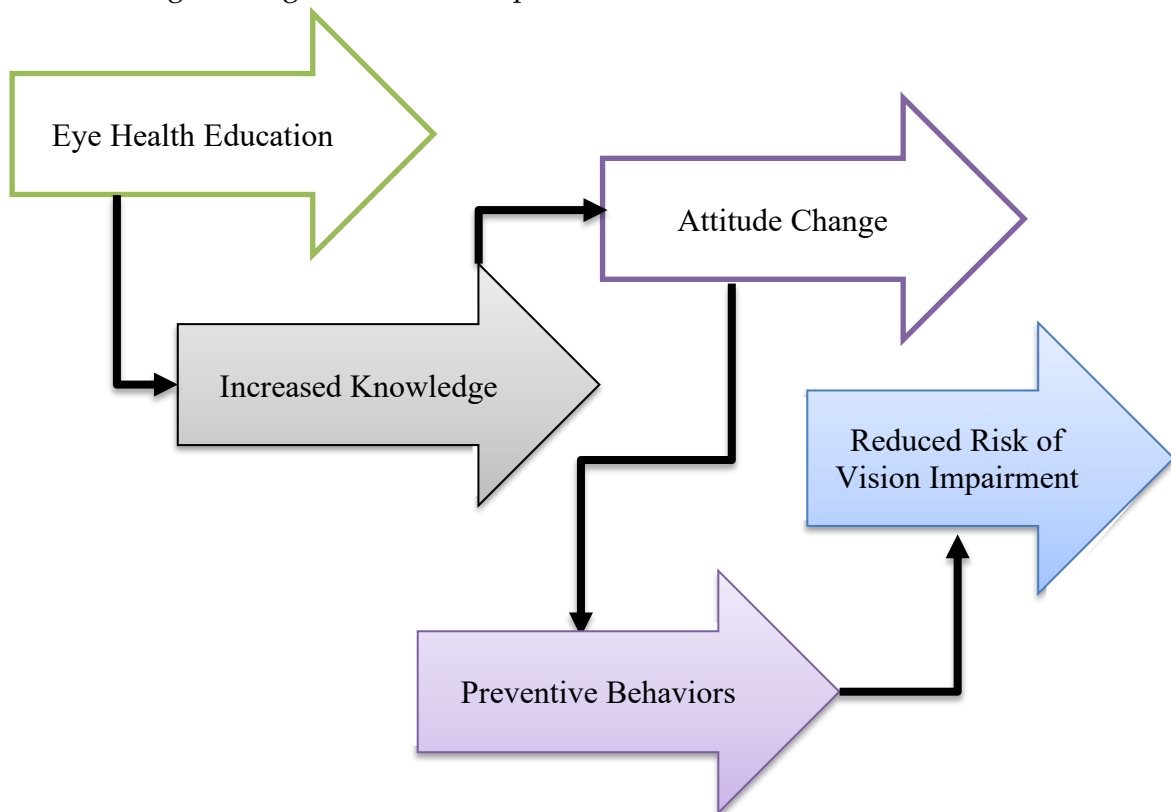
The Health Belief Model (HBM) theory explains that individual awareness of disease risks and the benefits of preventive measures significantly influence health behaviors (Rosenstock et al., 2019). Eye health education acts as a cognitive stimulus that increases perceptions of vulnerability and the benefits of preventing visual impairment in children. Based on the above background, the research questions are as follows:

1. What is the role of eye health education in increasing awareness of visual impairment prevention in children?
2. What factors support the effectiveness of eye health education in the school environment?

Based on the problem formulation above, the research objectives are as follows:

To analyze the role of eye health education in increasing awareness of preventing visual impairment in elementary school-aged children.

The following is a diagram of the conceptual framework used in this research:



Eye health education → increased knowledge → attitude change → preventive behavior
→ reduced risk of vision impairment.

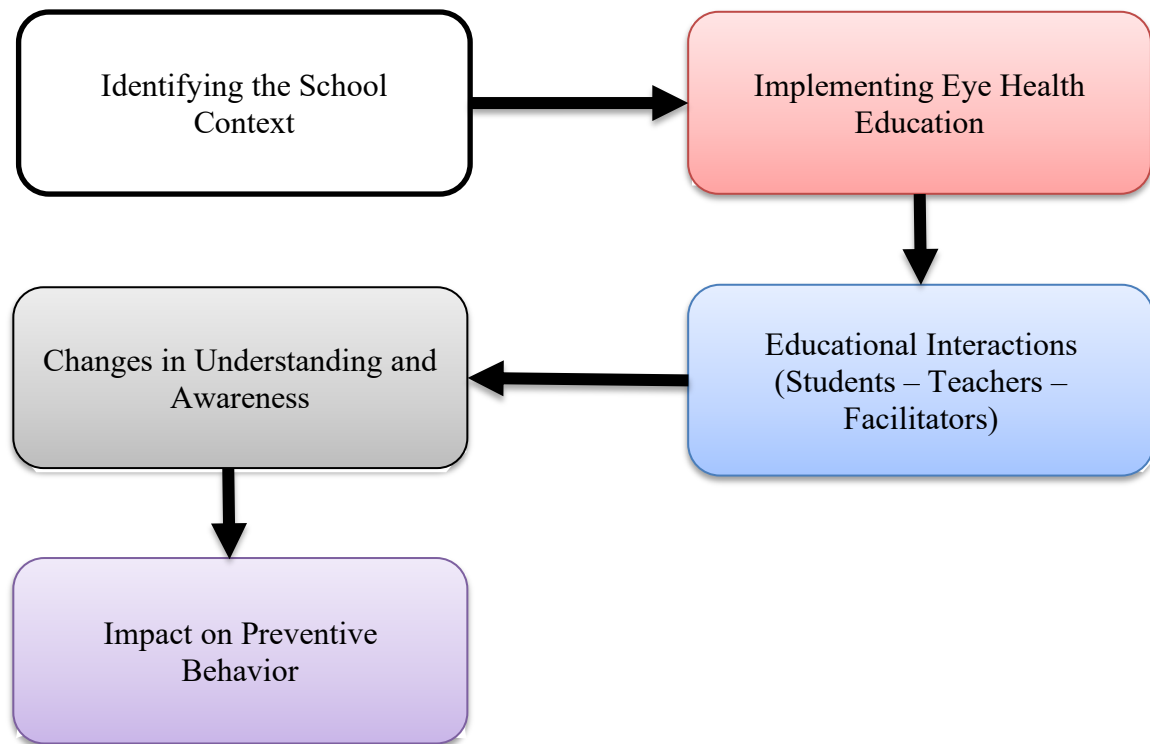
Source: Primary Data, 2026

Figure 1. Research Conceptual Framework

RESEARCH METHODS

This research used a descriptive qualitative design with a case study approach, aiming to gain an in-depth understanding of the process, context, and impact of implementing eye health education on increasing awareness of vision impairment prevention in elementary school-aged children. A qualitative approach was chosen because the phenomenon being studied is complex, contextual, and related to the behavior and perceptions of the research subjects, thus not being fully reduced to statistics alone.

The case study approach allows researchers to explore an eye health education program holistically, including the dynamics of interactions between students, teachers, and the program implementation team. This design is relevant for examining health promotion practices in school settings because it provides space to understand the meaning, experiences, and changes in awareness that occur in the research subjects.



Identification of the school context → Implementation of eye health education → Educational interaction (students–teachers–facilitators) → Changes in understanding and awareness → Impact on preventive behavior.

Source: Primary Data, 2026

Figure 2. Qualitative Case Study Research Design Flow

The research was conducted in several elementary schools supported by the eye health program in Piyungan District, Bantul Regency, Yogyakarta Special Region. This area was selected because it is an area with active implementation of school-based eye health education programs and has social and educational characteristics representative for child health promotion studies. The research was conducted from September to December 2025, coinciding with the implementation of the eye health education and screening program.

The following are the data sources for this study:

1. Elementary school students in grades IV–VI, as the primary recipients of eye health education.
2. Classroom teachers and school health teachers, who served as educational facilitators and facilitators.
3. The eye health program implementation team, consisting of optometrists and health educators.

All participants participated voluntarily with written informed consent from the school and parents/guardians. The selection of grades IV–VI was based on the children's cognitive abilities in receiving and understanding health education materials.

The research instruments were developed to gather in-depth and comprehensive data, including:

1. Semi-structured interview guidelines to explore students' and teachers' perceptions, experiences, and understanding regarding eye health education.
2. Observation sheets to record the education process, student participation, and educational interactions in the classroom.
3. Activity documentation, in the form of photographs, educational materials, and program implementation reports.

4. Vision screening reports to serve as supporting data to understand the context of students' eye health conditions.

Table 2.
Research Instruments and Their Purpose

Instrument	Subject	Purpose
Semi-structured interviews	Teachers & students	To explore understanding and awareness
Observation	Educational process	To assess participation and responses
Documentation	Program records	To strengthen data validity
Vision screening reports	Students	To provide supporting data on visual condition

Source: Primary Data, 2026

The focus of this research is:

1. The process of implementing eye health education in schools.
2. Changes in students' understanding and awareness of preventing visual impairment.
3. The role of teachers and the school environment in supporting the success of eye health education.

The sampling technique used in this study was purposive sampling, which was used to determine the research informants. This technique was chosen because the researchers needed informants who were truly involved in and understood the implementation of the eye health education program. The informant criteria included students who participated in the entire education series, accompanying teachers, and the program implementation team.

Data analysis was conducted using thematic analysis, through the following stages:

1. Data reduction, namely the process of selecting and focusing data from interviews, observations, and documentation.
2. Data presentation, in the form of descriptive narratives, tables, and thematic charts.
3. Conclusion drawing and verification, by identifying patterns, themes, and meanings emerging from the data.

The validity of the research data was maintained through:

1. Source triangulation, by comparing data from students, teachers, and the implementation team.
2. Method triangulation, through interviews, observation, and documentation.
3. Time triangulation, by collecting data at different points during the program.

This research upholds ethical research principles, including confidentiality of participant identity, informed consent, and the principle of non-maleficence, which ensures no negative physical or psychological impact on children. All research procedures were conducted in accordance with ethical principles of educational and health research.

RESULTS

The results of this study were obtained through a series of data collection processes, including direct observation of the implementation of eye health education in the school environment, in-depth interviews with students and teachers, and analysis of documentation and reports of vision screenings conducted before and after the educational activities. A data triangulation approach was used to ensure the validity and consistency of the research findings.

In general, the results indicate that the implementation of eye health education had a positive and meaningful impact on increasing understanding, awareness, and attitudes

towards preventing vision disorders among elementary school students. These changes were evident in both cognitive (knowledge), affective (attitudes and awareness), and initial preventive behaviors.

1. Implementation of Eye Health Education

Eye health education was implemented using a multimodal and participatory approach, designed to suit the age characteristics of elementary school students. Educational methods included:

- a. Interactive lectures, accompanied by simple questions and answers to elicit students' initial understanding.
- b. Use of visual media, such as eye health posters, anatomical images of the eye, and engaging and contextual educational videos.
- c. Direct demonstrations included maintaining proper reading distance, ergonomic reading positions, and eye rest habits (the 20-20-20 rule).
- d. Practice and simulations, where students were actively involved in practicing eye health behaviors in everyday situations.

This approach enabled students not only to passively receive information but also to experience a concrete and applicable learning process, thus facilitating internalization of health messages.

2. Changes in Student Knowledge and Understanding

Observations and interviews showed a significant improvement in students' ability to explain basic eye health concepts. Prior to the education, most students had limited understanding. Eyes were considered healthy as long as they were painless, and visual impairment was often perceived as normal. After the education, students were able to explain the function of the eye simply and coherently, identify risk factors for vision impairment, such as reading too close, inadequate lighting, and excessive device use, and cite simple preventative measures, including maintaining a viewing distance, limiting screen time, and the importance of regular eye examinations. This improvement demonstrated that the education successfully strengthened students' cognitive aspects as a foundation for health behavior change.

3. Increased Awareness and Attitudes for Prevention

In addition to increased knowledge, this study also found changes in students' awareness and attitudes toward eye health. Awareness of the importance of vision screening has significantly increased. This is reflected in:

- a. Students' more cooperative and enthusiastic attitude during eye examinations
- b. Students' increased initiative to report vision complaints, such as tired eyes or blurry chalkboards
- c. Interactions between students, reminding each other to maintain reading and gadget use habits

Teachers confirmed that after the education, students showed greater concern for eye health in their daily learning activities.

4. Compliance with Eyeglass Use

Interviews and observations also showed increased compliance with eyeglass use among students who had been prescribed visual aids. Before the education, some students were reluctant to wear glasses due to:

- a. Discomfort
- b. Concern about social stigma
- c. Lack of understanding of the benefits of glasses

After the education, which emphasized the relationship between eyeglass use, eye health, and academic achievement, students showed a more positive acceptance and used glasses more consistently in the school environment.

Table 3.
Impact of Eye Health Education on Awareness for Prevention

Aspect	Before Education	After Education
Eye health knowledge	Low	Improved
Awareness of vision screening	Limited	High
Compliance with eyeglass use	Low	Improved

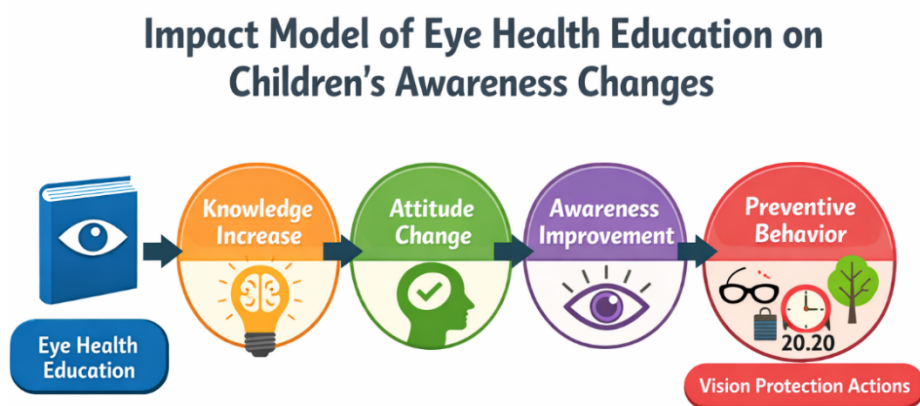
Source: Research Results, 2026

The results in Table 2 indicate positive changes in all observed aspects following the implementation of eye health education. Education contributed to increasing student knowledge, raising awareness of the importance of vision screening, and improving compliance with eyeglass use as a preventative behavior for vision impairment.

5. Eye Health Education Impact Model

Conceptually, the results of this study demonstrate the following change pathway: Eye health education → Increased knowledge → Change in attitude → Increased awareness → Preventive behavior for vision impairment. This pathway illustrates that education not only impacts understanding but also triggers the internalization of health values, leading to preventative behavior.

Furthermore, compliance with eyeglass use among students who had been prescribed visual aids increased. Before the education, some students were reluctant to wear glasses due to social stigma or discomfort. After the education, which emphasized the benefits of glasses for academic achievement and eye health, students demonstrated a more positive acceptance. The following is a conceptual flowchart of the research results, showing the change pathway:



Eye health education → increased knowledge → changed attitudes → increased awareness → behaviors related to preventing vision impairment.

Source: Research Results, 2026

Figure 3. Model of the Impact of Eye Health Education on Changes in Children's Awareness

DISCUSSION

The findings of this study consistently demonstrate that eye health education plays a strategic role in increasing awareness and behaviors related to preventing vision impairment in elementary school-aged children. This improvement is not limited to cognitive aspects but also encompasses changes in attitudes and initial preventative behaviors. This confirms that eye health education is an effective promotive-preventive intervention when implemented in a structured and contextual manner in the school environment.

1. **Eye Health Education as a Determinant of Behavior Change.** The results of this study align with the health promotion theory proposed by Green and Kreuter (2020) within the PRECEDE-PROCEED Model framework, which positions knowledge as a primary prerequisite (predisposing factor) in the process of health behavior change. Increasing students' knowledge about eye function, risk factors for vision impairment, and simple preventive measures forms the foundation for developing positive attitudes toward eye health. In the context of this study, before the educational intervention, most students demonstrated the misperception that visual impairment only needed treatment when it caused significant symptoms. After the education, students understood that prevention and early detection through vision screening are essential for maintaining eye health, even if subjective symptoms had not yet appeared. This indicates a paradigm shift from a curative to a preventive approach.
2. **The Role of Education as an Enabling Factor in the Health Promotion Model:** Within the Health Promotion Model, education serves as an enabling factor that strengthens individuals' capacity to adopt healthy behaviors. The findings of this study indicate that increased student knowledge directly contributed to changes in attitudes and awareness, which were then reflected in behaviors related to preventing vision impairment. These behaviors included maintaining proper reading distance, limiting device use, and increasing awareness of the need for regular eye examinations. These changes demonstrate that eye health education not only improved theoretical understanding but also encouraged students to apply this knowledge in their daily activities at school and at home.
3. **Effectiveness of Contextual and Participatory Educational Methods**
The success of the eye health education in this study was inseparable from the contextual and participatory delivery methods. The use of visual media, live demonstrations, and simulation practices has been shown to improve information absorption in elementary school-aged children. This finding aligns with the Cone of Experience proposed by Dale (2021), which states that learning through direct experience has a higher retention rate than passive learning through lectures alone. A multimodal approach allows students to:
 - a. See (anatomical visualizations and posters),
 - b. Hear (explanations and discussions),
 - c. Do (practice reading distance and eye rest),
 making the learning process more meaningful and memorable. This is particularly relevant in the context of children's health education, which requires a concrete and applicable approach.
4. **The Role of Teachers as Role Models and Agents of Change**
The results of this study also emphasize the importance of teachers as role models and facilitators in the success of eye health education. Teachers not only act as companions during education but also as agents who internalize eye health values into daily learning routines. Teacher involvement strengthens the consistency of

health messages received by students and helps establish a school environment that supports healthy behaviors. These findings align with previous research, which emphasized that child health promotion programs are more effective when integrated into school systems and culture, rather than simply incidental activities.

5. Changes in Compliance and Normalization of Eyeglass Use

Increased compliance with eyeglass use among students requiring visual aids was also a key finding in this study. Education that emphasizes the benefits of eyeglasses for eye health and academic achievement helps reduce social stigma and increases student acceptance of eyeglass use. This suggests that education plays a role in shaping more positive social norms regarding eye health in the school environment.

Theoretically, the findings of this study reinforce the concept that knowledge is an initial determinant of health behavior change, as stated by Green and Kreuter (2020). Practically, these results provide a strong foundation for the development of school-based eye health education programs as part of promotive and preventive efforts. Practical implications of this study include:

1. Integrating eye health education into the School Health Program (UKS)
2. Strengthening collaboration between schools, educators, and community optometry services
3. Developing a sustainable education model involving students, teachers, and parents

Overall, the results of this study indicate that integrated, participatory, and sustainable eye health education in the school environment is an effective strategy for preventing vision impairment in elementary school-aged children. Education not only increases knowledge but also shapes attitudes, awareness, and preventative behaviors that have the potential to have long-term impacts on children's eye health.

These findings reaffirm that increasing eye health knowledge is a key prerequisite for health behavior change, as stated by Green and Kreuter (2020), and serve as an important foundation for the development of policies and practices promoting children's eye health in the future.

CONCLUSION

Based on the research results and discussion, it can be concluded that eye health education plays a crucial and strategic role in raising awareness of vision impairment prevention in elementary school-aged children. Structured, contextual, and participatory eye health education has been shown to increase students' knowledge about eye function, risk factors for vision impairment, and simple and applicable preventive measures.

This increased knowledge directly contributes to changes in students' attitudes and awareness, which in turn encourages the development of vision impairment prevention behaviors, such as maintaining a proper reading distance, limiting device use, compliance with eyeglass use, and increasing awareness of routine vision screenings. Thus, eye health education not only impacts cognitive aspects but also plays a role in developing health behaviors that have the potential to provide long-term benefits for children's eye health.

Overall, the findings of this study confirm that an integrated and sustainable school-based eye health education program is an effective promotive and preventive strategy for reducing the risk of vision impairment in elementary school-aged children and supporting early detection of vision impairment in the school environment.

SUGGESTIONS

Based on these conclusions, several suggestions can be put forward as follows:

1. For Schools

Eye health education needs to be systematically integrated into the School Health Program (UKS) as part of routine health promotion activities. Schools are expected to create a learning environment that supports eye-healthy behaviors by adjusting classroom lighting, reading distances, and encouraging eye rest habits.

2. For Educators (Teachers):
Teachers are expected to play an active role as role models and facilitators in instilling eye health values in students and internalizing eye health education messages in daily learning activities.
3. For Health Workers and Optometrists
Optometrists and eye health workers need to strengthen school-based community optometry services, particularly through regular vision screenings, eye health education, and assistance with the use of visual aids.
4. For Stakeholders and Policymakers
Cross-sector collaboration between education offices, health offices, optometry educational institutions, and health care facilities is needed to support the sustainability of children's eye health education and screening programs.
5. For Future Researchers
Further research is recommended using a quantitative or mixed methods design to measure the long-term impact of eye health education on reducing the prevalence of visual impairment, and to involve parents as a supporting factor in changing children's behavior.

REFERENCES

- Burnett, A. M., Walia, S., Lee, A. C., Naidoo, K., & Holden, B. A. (2023). Access to school-based eye health programs in Central Region, Malawi: A qualitative case study. *Health Promotion International*, 38(2). <https://doi.org/10.1093/heapro/daad002>
- Current status of school vision screening—Rationale, models, impact and challenges: A review. (2025). *British Journal of Ophthalmology*, 109(11). <https://doi.org/10.1136/bjo-2024-326726>
- Gordon, M., & Kline, J. (2022). Vision and learning in the classroom: Eye health as a determinant of academic achievement. *Journal of School Health*, 92(6), 382–391. <https://doi.org/10.1111/josh.13176>
- Hadiyati, L., & Witjaksono, A. (2025). Education on the impact of gadget use on eye health and visual acuity screening at SMPN 02 Dawuan Subang. *Jurnal Pengabdian Masyarakat Progresif Humanis Brainstorming*. <https://journal.example.com>
- Health promotion in schools improves eye health literacy in children: Research study. (2018). *International Agency for the Prevention of Blindness (IAPB)*. <https://www.iapb.org>
- Holden, B. A., Fricke, T. R., Wilson, D. A., Jong, M., Naidoo, K. S., Sankaridurg, P., & Resnikoff, S. (2021). Global prevalence of myopia and high myopia and temporal trends from 2000 through 2050. *Ophthalmology*, 128(3), 555–567. <https://doi.org/10.1016/j.ophtha.2020.10.021>
- Husna, H. N., & Widia, C. (2024). Visual acuity screening among elementary school students. *Media Karya Kesehatan*. <https://journal.example.com>
- Jan, C. L., & Congdon, N. (2015). School eye health—Going beyond refractive errors. *Community Eye Health Journal*, 28(89), 14–15. <https://doi.org/10.56920/cehj.586>
- Jan, C. L., Timbo, C. S., & Congdon, N. (2017). Children's myopia: Prevention and the role of school programmes. *Community Eye Health Journal*, 30(98), 37–38. <https://doi.org/10.56920/cehj.386>
- Masooma, S., Shakeel, S., Laiba, A., Altaf, S. C., & Raza, S. Q. (2024). Impact of eye health education on children's perceptions about vision and eye health and

- progression of myopia. *Journal of Population Therapeutics and Clinical Pharmacology*, 31(7), 180–193. <https://doi.org/10.53555/jptcp.v31i7.6853>
- Mayarani, M., Sarifudin, G., Purnamasari, D., Azzahra, F., Habieb, N. M., Al Farisi, S., & Yuliana, R. (2020). Eye health education and early vision screening activities in Rumah Zakat Turangga Bandung. *Abdi Masada*, 1(1), 71–75. <https://doi.org/10.38037/am.v1i1.22>
- Notoatmodjo, S. (2021). *Health education and behavior*. Rineka Cipta.
- Rochmayani, D. S., Cahyaningsih, O., & Budiono, I. (2023). Validity of the eye health literacy measurement instrument for elementary school students. *Journal of Health Education*, 8(2). <https://doi.org/10.15294/jhe.v8i2.60937>
- Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (2019). Social learning theory and the Health Belief Model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior: Theory, research, and practice* (5th ed.). Jossey-Bass.
- School-based eye health interventions for improving eye care and spectacles compliance in children in low- and middle-income countries: A scoping review. (2025). *AJO International*, 2(2), 100126. <https://doi.org/10.1016/j.ajoint.2025.100126>
- Silitonga, S. S., Simanullang, H., Girsang, J., Kaban, K. B., & Nababan, T. (2025). Eye health education and screening for glaucoma and cataracts: Community service study. *Jurnal Pengabdian Masyarakat dan Riset Pendidikan*, 4(2), 11403–11408. <https://doi.org/10.31004/jerkin.v4i2.3512>
- Simanjuntak, R., Padua, S. A., Prihartanto, A., Sutrisman, H., Kusumo, B., Purnamawati, P., & Ramadhona, R. (2025). Integrating eye health into educational curriculum: A systematic review of school-based vision care initiatives. *TOFEDU: The Future of Education Journal*, 4(5), 1081–1089. <https://doi.org/10.61445/tofedu.v4i5.523>
- The effect of an eye health promotion program on the health protective behaviors of primary school students. (2018). *Journal of Ophthalmology*. <https://pubmed.ncbi.nlm.nih.gov>
- World Health Organization, & Brien Holden Vision Institute. (2019). *Vision Atlas*. <https://www.iapb.org/learn/vision-atlas/>
- World Health Organization. (2023). *World report on vision 2023*. <https://www.who.int/publications>