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IMPLEMENTATION OF COMMUNITY-BASED EYE HEALTH POLICY THROUGH GLAUCOMA EDUCATION AMONG THE SEMA'AN AL-QUR'AN GROUP

Muhamad Sahli [1*], Ali Mu'tafi [2]
[1] Faculty of Health Sciences,
[2] Faculty of Tarbiyah and Educational Sciences,
Universitas Sains Al-Qur'an
Jl. K.H. Hasyim Asy`ari Km. 3 Kalibeber, Kec. Mojotengah, Kabupaten Wonosobo, Jawa Tengah 56351, Indonesia
Email: msahli@unsiq.ac.id

Abstract

Glaucoma is one of the leading causes of irreversible blindness worldwide and remains a major public health problem, particularly among the elderly population. Its slow and often asymptomatic progression in the early stages results in late diagnosis, emphasizing the importance of preventive and early detection strategies. This community service activity aimed to improve knowledge and understanding of glaucoma among members of the Sema'an Al-Qur'an group in Sindupaten Village, Kertek District, Wonosobo, through a community-based health promotion approach. The intervention consisted of interactive health education sessions, discussions, question-and-answer activities, and the use of educational media, including PowerPoint presentations, leaflets, and posters. Knowledge levels were assessed using pre-test and post-test questionnaires administered to 10 participants, most of whom were elderly. The results demonstrated a significant increase in the mean knowledge score from 78 in the pre-test to 98 in the post-test, with the minimum score improving from 40 to 80. Furthermore, 90% of participants achieved a very good level of knowledge after the intervention. These findings indicate that community-based health education is effective in enhancing glaucoma-related health literacy. This program supports the implementation of eye health policies by strengthening promotive and preventive efforts at the primary healthcare level, thereby contributing to early detection and reducing the risk of permanent blindness due to glaucoma.
Keywords: Glaucoma, Health Education, Community Service, Elderly, Health Policy

INTRODUCTION

Glaucoma is one of the leading causes of irreversible blindness worldwide and represents a significant public health problem. This disease is characterized by progressive optic nerve damage, which is generally associated with elevated intraocular pressure (IOP), although in some cases it may occur despite normal intraocular pressure. Such damage leads to gradual constriction of the visual field and becomes permanent if not detected and managed at an early stage (GBD 2021 Blindness Collaborators, 2023).

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Globally, glaucoma ranks among the top causes of permanent blindness. The prevalence of primary open-angle glaucoma is estimated to exceed 2% of the world's population and continues to increase in line with population aging and demographic structural changes. In Indonesia, the prevalence of glaucoma is estimated at approximately 0.46%; however, this figure is believed to be underreported due to limited routine screening and low public awareness of eye health, particularly among the elderly population (Ministry of Health of the Republic of Indonesia, 2023; WHO, 2023).

Glaucoma is a progressive optic neuropathy involving the interaction of multiple risk factors, including advanced age, elevated intraocular pressure, family history, myopia, and systemic diseases such as hypertension and diabetes mellitus. Epidemiologically, the global prevalence of glaucoma among individuals aged 40–80 years is estimated at around 3.5%, with the number of cases projected to increase from 76 million in 2020 to more than 110 million by 2040 as a result of global population aging (Tham et al., 2023; Allison et al., 2024).

In Indonesia, glaucoma remains a major eye health concern. According to data from the Ministry of Health of the Republic of Indonesia, the prevalence of glaucoma is estimated at approximately 0.46% of the total population, equivalent to 4–5 cases per 1,000 individuals, and the incidence is expected to increase with population aging. National reports also indicate that glaucoma cases are more frequently reported among women than men, with risk factors including advanced age, family history, and systemic diseases such as diabetes mellitus and hypertension (Ministry of Health of the Republic of Indonesia, 2024).

The impact of glaucoma is not limited to visual impairment but also significantly affects patients' quality of life. Visual disturbances caused by glaucoma may lead to limitations in daily activities, increased risk of falls, psychological distress, and reduced independence. Furthermore, the need for long-term therapy and continuous clinical monitoring makes glaucoma a substantial economic burden for individuals, families, and healthcare systems (WHO, 2023).

One of the main challenges in glaucoma control is the disease's slow progression and often asymptomatic nature in its early stages. As a result, many patients are diagnosed at advanced stages, limiting opportunities to preserve visual function. This phenomenon has led to glaucoma being widely known as the *silent thief of sight*, particularly in developing countries where access to eye care services is limited and public health literacy remains low (WHO, 2023).

From a health policy perspective, the high rate of delayed glaucoma diagnosis highlights the urgent need to strengthen community-based promotive and preventive strategies. Healthcare professionals, particularly nurses, play a strategic role in health education, early detection of risk factors, and improving patient adherence to therapy. Therefore, scientific studies on glaucoma are essential as a basis for formulating eye health policies oriented toward blindness prevention and strengthening primary healthcare services (Ministry of Health of the Republic of Indonesia, 2023).

The Sema'an Al-Qur'an Group in Sindupaten Village, Kertek Subdistrict, Wonosobo Regency, represents a potential socio-religious platform for health education due to its regular meetings and strong social cohesion. Most of its members are elderly women, who belong to a high-risk group for glaucoma. A study by Octavia (2024) reported that 79.3% of glaucoma patients were aged 50–60 years, with the majority being female (53.4%), indicating that

educational interventions targeting this group are strategically important for promotive and preventive efforts.

This community service activity aimed to improve the knowledge and understanding of Sema'an Al-Qur'an group members regarding glaucoma, including its definition, risk factors, signs and symptoms, prevention, and appropriate management. This initiative is expected to promote early detection and better health-seeking behavior as part of the implementation of community-based health policies.

METHODS

The community service activity was conducted on Tuesday, December 2, 2025, at the residence of one of the members of the Sema'an Al-Qur'an Group in Sindupaten Village, Kertek Subdistrict, Wonosobo Regency. The target participants consisted of 10 group members, the majority of whom were elderly.

The methods employed included health education through interactive lectures, discussions and question-and-answer sessions, the use of educational media such as PowerPoint presentations, leaflets, and posters, as well as knowledge evaluation using pre-test and post-test questionnaires. The activity stages comprised preparation, implementation, and evaluation. Pre-test and post-test data were analyzed descriptively to assess changes in participants' knowledge levels.

RESULTS

Prior to the implementation of the community service activity, official permission was obtained from the leadership of the Faculty of Health Sciences (FIKES) UNSIQ Wonosobo and the management of the Sema'an Al-Qur'an Group in Sindupaten Village, Kertek Subdistrict, Wonosobo Regency. Following approval, the community service team coordinated with the group to determine the time, location, and date of implementation.

The glaucoma health education activity was attended by 10 members of the Sema'an Al-Qur'an Group, who demonstrated a high level of enthusiasm throughout the program. The primary objective of this community service initiative was to enhance participants' knowledge of glaucoma.

Pre-tests and post-tests were administered before and after the health education session. In addition, discussion and question-and-answer sessions were conducted following the educational intervention. Technically, after participants gathered, the event was opened by a master of ceremonies, followed by an opening speech from the community service team leader. Participants then completed a pre-test consisting of five true–false questions related to glaucoma knowledge. This was followed by the delivery of educational material covering the definition, signs and symptoms, causes, prevention, and dietary factors related to glaucoma. Subsequently, a discussion and question-and-answer session was held, after which participants completed a post-test consisting of the same five true–false questions. The pre-test and post-test results were analyzed to formulate recommendations for future interventions.

Figure 1. Group photo of facilitators and participants

Table 1. Mean Pre-Test and Post-Test Scores

Score	Pre-Test	Post-Test
Mean	78	98
Minimum	40	80
Maximum	100	100

Table 1. illustrates the comparison of mean scores between the pre-test and post-test. The average pre-test score was 78, while the post-test mean score increased to 98. The minimum score also increased from 40 in the pre-test to 80 in the post-test. The maximum score in both tests was 100, indicating that some participants may have previously been exposed to information about glaucoma prior to the health education session. Overall, the results demonstrate a significant improvement in knowledge following the educational intervention.

Table 2. Pre-Test Results

Score	Frequency	Percentage (%)	Cumulative Percentage (%)
40	1	10%	10%
60	2	20%	30%
80	4	40%	70%
100	3	30%	100%
Total	**10**	**100%**	

Table 2. shows the frequency distribution of pre-test scores. One participant (10%) obtained a low score (40), two participants (20%) achieved moderate scores (60), four participants (40%) achieved good scores (80), and three participants (30%) achieved very good scores (100). Analysis of pre-test responses revealed that one participant (10%) did not understand that glaucoma is a disease involving optic nerve damage that can cause blindness due to increased intraocular pressure. Two participants (20%) were unaware that blurred vision is a sign of glaucoma, one participant (10%) did not know that diabetes mellitus is a risk factor for glaucoma, and the majority (60%) were unaware that avoiding eye injury can help prevent glaucoma. One participant (10%) did not recognize vegetables such as carrots as beneficial for glaucoma prevention.

Figure 2. Delivery of glaucoma educational material

Table 3. Post-Test Results

Score	Frequency	Percentage (%)	Cumulative Percentage (%)
80	1	10%	10%
100	9	90%	100%
Total	**10**	**100%**	

Table 3. presents the distribution of post-test scores. One participant (10%) achieved a good score (80), while nine participants (90%) achieved very good scores (100). Post-test analysis showed that all participants (100%) understood that glaucoma is a disease involving optic nerve damage that can cause blindness due to increased intraocular pressure, recognized blurred vision as a symptom of glaucoma, identified diabetes mellitus as a risk factor, and understood that vegetables such as carrots are beneficial for glaucoma prevention. Only one participant (10%) remained unaware that avoiding eye injury can help prevent glaucoma.

DISCUSSION

Health Policy Analysis Approach

The improvement in participants' knowledge levels following the educational intervention indicates that community-based promotive interventions are an effective approach to glaucoma control. From a health policy analysis perspective, this activity aligns with the principles of health promotion and primary prevention, which are central to national eye health policies, particularly in strengthening primary healthcare services and enhancing community capacity and self-reliance (Ministry of Health of the Republic of Indonesia, 2023).

Utilizing socio-religious groups as platforms for health education reflects the implementation of community empowerment–based policies that are more effective in reaching high-risk populations, especially the elderly. The role of healthcare professionals, particularly nurses, in delivering health education contributes significantly to improving health literacy and public awareness of the importance of early glaucoma detection, thereby potentially reducing delays in diagnosis (WHO, 2023).

From a health system perspective, the outcomes of this activity suggest that strengthening promotive and preventive policies at the community level can be a cost-effective strategy for reducing the economic burden of glaucoma. Therefore, integrating eye health education programs into primary healthcare services and elderly health programs should be expanded to support national targets for reducing permanent blindness in Indonesia.

Advanced age has long been recognized as a major determinant of increased glaucoma risk. Epidemiological studies by Pan et al. (2023) indicate that aging is closely associated with decreased function of the aqueous humor drainage system, particularly the trabecular meshwork, resulting in suboptimal intraocular fluid outflow. This condition leads to elevated intraocular pressure, which over time can cause progressive optic nerve damage and glaucoma development. These findings are consistent with those of Zhao and Wang (2024), who emphasized the role of age-related structural changes in the eye in glaucoma pathogenesis.

Beyond elevated intraocular pressure, glaucoma incidence among the elderly is also influenced by progressive neurodegenerative processes. Rizk (2024) explained that aging accelerates oxidative stress accumulation and microvascular impairment in the optic nerve, ultimately leading to gradual retinal ganglion cell death. This is supported by the Global Burden of Eye Disease Study by the GBD Collaborators (2024), which reported a significant decline in neural tissue regenerative capacity with advancing age, resulting in faster progression of glaucomatous damage compared to younger populations.

The correlation between age and increased glaucoma prevalence has been consistently demonstrated in population-based studies. Kai et al. (2023) reported that glaucoma prevalence increases significantly in individuals over 40 years of age and continues to rise with advancing age, particularly among those aged 50–80 years. These findings are reinforced by cohort data from the Gangnam Eye Study Investigators (2025), which concluded that age is the strongest independent risk factor for glaucoma incidence, regardless of sex or metabolic factors.

Regarding sex differences, research findings remain heterogeneous. Nevertheless, Rizk (2024) emphasized that differences in glaucoma risk between women and men are inseparable from the complex interaction of biological, hormonal, and ocular anatomical factors. A comprehensive study by Zhao et al. (2025) noted that while the prevalence of primary open-angle glaucoma is relatively balanced between sexes, certain glaucoma subtypes exhibit a higher risk among women, particularly in specific age groups.

Hormonal changes, especially declining estrogen levels, represent a key biological mechanism underlying increased glaucoma risk among elderly women. Kai et al. (2023) found that postmenopausal women have a higher risk of glaucoma compared to premenopausal women, suggesting a protective effect of estrogen on intraocular pressure regulation and optic nerve perfusion. These findings are supported by Zhao and Chen (2025), who reported that reduced estrogen levels may disrupt intraocular pressure regulation and decrease optic nerve blood flow, thereby accelerating glaucomatous damage progression.

In addition to hormonal factors, ocular anatomical differences also contribute to sex-based variations in glaucoma risk. According to Rizk (2024) and He et al. (2023), women tend to have narrower anterior chamber angles than men, increasing their susceptibility to primary angle-closure glaucoma (PACG). This condition facilitates drainage angle closure, leading to acute intraocular pressure elevation and more rapid optic nerve damage compared to open-angle glaucoma.

Beyond biological factors, social determinants and healthcare system factors also influence glaucoma incidence and detection among women. The GBD Collaborators (2024) reported that disparities in access to eye care services, frequency of eye examinations, and health awareness contribute to variations in glaucoma diagnosis rates between sexes. Additionally, Rizk (2024) emphasized that delayed diagnosis due to low utilization of routine eye screening may worsen clinical outcomes, particularly among elderly women.

CONCLUSIONS

The community service activity involving glaucoma health education for members of the Sema'an Al-Qur'an Group in Sindupaten Village, Kertek Subdistrict, Wonosobo Regency, was proven to be effective in improving participants' knowledge regarding glaucoma, including its definition, risk factors, signs and symptoms, prevention, and management. This was evidenced by a significant increase in knowledge scores between the pre-test and post-test, both in terms of mean values and knowledge distribution categories.

Community-based educational approaches utilizing socio-religious groups represent a relevant and effective strategy for reaching high-risk populations, particularly elderly women. From a health policy analysis perspective, this activity aligns with promotive and preventive policy directions in non-communicable disease control and supports the strengthening of primary healthcare services. Therefore, similar activities should be conducted continuously and integrated with eye health and elderly health programs to reduce delayed glaucoma diagnosis and prevent permanent blindness in the community.

Policy Recommendations

1. **Strengthening promotive and preventive eye health policies**
   Glaucoma education programs should be systematically integrated into national and regional eye health policies, particularly targeting high-risk groups such as the elderly and women.
2. **Integration of glaucoma education into primary healthcare services**
   Education and risk factor screening for glaucoma should become routine components of services provided at primary healthcare centers, elderly integrated service posts, and community-based health activities.
3. **Optimizing the role of healthcare professionals, particularly nurses**
   Nurses' capacity should be strengthened as eye health educators to support early detection, improve therapy adherence, and promote positive health-seeking behaviors.
4. **Utilization of socio-religious groups as policy intervention platforms**
   Socio-religious groups with strong social cohesion can serve as strategic partners in implementing community empowerment–based health policies.
5. **Development of glaucoma screening policies for the elderly population**
   Local governments should promote periodic glaucoma screening policies for elderly populations as part of efforts to prevent permanent blindness.
6. **Ensuring sustainability of educational programs and policy impact monitoring**
   Continuous eye health education programs, along with monitoring and evaluation

mechanisms, are necessary to assess policy effectiveness in reducing delayed glaucoma diagnosis.

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