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COMMUNITY-BASED CATARACT EDUCATION: THE ROLE OF THE 'SEKAR' PKK GROUP OF GARUNG VILLAGE, WONOSOBO IN MAINTAINING EYE HEALTH

Muhamad Sahli *, Anisa Ell Raharyani
Faculty of Health 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

Background: Cataract is one of the leading causes of visual impairment and blindness, particularly among the elderly population, with a higher incidence observed in women. Limited public knowledge regarding cataract risk factors, symptoms, and management often results in delays in eye examinations and treatment. Objective: This community service activity aimed to improve the knowledge and understanding of members of the PKK "Sekar" group in Garung Village regarding cataracts, including their definition, risk factors, symptoms, prevention, and management. Methods: The activity employed a health education approach through interactive lectures, discussions, and question-and-answer sessions, supported by educational media such as PowerPoint presentations, leaflets, and posters. Knowledge evaluation was conducted using pre-test and post-test questionnaires. The activity was conducted on November 18, 2025, involving 20 participants. Results: The evaluation results demonstrated a significant improvement in participants' knowledge, as indicated by an increase in the mean knowledge score from 81 in the pre-test to 98 in the post-test. Conclusion: Health education delivered through a PKK group-based approach was proven to be effective in enhancing community knowledge, particularly among elderly women, regarding cataracts. This activity serves as a promotive and preventive effort to reduce the risk of visual impairment and blindness caused by cataracts.

Keywords: Cataract; Elderly Women; Health Education; PKK; Community Service

INTRODUCTION

Visual impairment remains a significant global health problem, including in Indonesia. Globally, it is estimated that approximately 216 million people in 98 countries experience visual impairment, with around 36 million of them suffering from blindness. Cataracts are one of the leading causes of visual impairment, affecting approximately 56 million people worldwide. In addition to cataracts, blindness is also largely caused by certain diseases, accounting for about 12 million cases, followed by uncorrected refractive errors and glaucoma (Lisnawati, 2020).

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Cataracts are pathological conditions characterized by clouding of the eye lens, resulting in decreased visual acuity and potentially leading to blindness if not properly treated. This condition occurs due to disturbances in the balance of fluids and electrolytes in the lens, changes in lens protein structure, or a combination of both. The majority of cataract cases, approximately 90%, are associated with aging processes, congenital abnormalities, and ocular trauma. Other risk factors contributing to cataract development include advanced age, sex, occupation, smoking habits, eye trauma, and systemic diseases such as diabetes mellitus (Karimah et al., 2023).

Cataracts are generally found in older age groups and are classified as non-communicable degenerative diseases. However, the low level of public knowledge about cataracts often leads to delays in examination and treatment at healthcare facilities. According to Sumiasih (2020), cataract-triggering factors may originate from congenital abnormalities due to chromosomal disorders or imperfect embryonic development, causing lens opacity from birth. In addition, the aging process causes the eye lens to thicken, lose elasticity, and decrease in transparency, resulting in visual impairment. Cataract risk factors can be divided into internal factors that cannot be modified and external factors that can still be prevented or controlled.

Non-modifiable factors include medical conditions such as diabetes mellitus, in which chronic hyperglycemia leads to the accumulation of sorbitol in the eye lens. Eye trauma is also an important factor that can damage the lens structure both microscopically and macroscopically. In addition, disturbances in electrolyte balance within the lens can result in loss of lens transparency. Other contributing factors include hypertension, long-term hyperuricemia, other ocular disorders, and the use of certain medications such as corticosteroids, statins, and topical agents for glaucoma therapy. Lifestyle factors such as smoking habits, excessive ultraviolet exposure, and nutritional status also contribute to an increased risk of cataract development (Sumiasih, 2020).

Elderly women are a group with higher vulnerability to cataract occurrence. Research conducted by Apriani (2021) showed a relationship between female gender and cataract incidence, partly influenced by hormonal fluctuations. In line with this, Cristina (2023) explained that estrogen hormones play a role in cataract formation. Ovarian hormones can increase cataract risk, especially due to radiation exposure. Estradiol, the primary natural form of estrogen, has mitogenic and antioxidant effects at physiological levels; however, at pharmacological levels, it may induce oxidative stress and accelerate lens aging through pro-apoptotic mechanisms.

The PKK “Sekar” group of Garung Village is a potential social organization for implementing health education due to its regular meetings and strong emotional bonds among members. Most members of this group are women and elderly individuals who belong to a high-risk group for cataracts. Therefore, the implementation of cataract health education within the PKK “Sekar” group of Garung Village is considered strategic as a promotive and preventive effort to reduce the risk of visual impairment.

This community service activity aims to improve the knowledge and understanding of PKK group members regarding cataracts, including definitions, risk factors, signs and symptoms, prevention efforts, and appropriate management, thereby encouraging early detection and better health-seeking behavior.

METHODS

This community service activity was conducted on Wednesday, November 18, 2025, at 4:00 PM until completion, at the home of one of the PKK "Sekar" group members in Garung Village. The target participants were PKK "Sekar" group members of Garung Village, ranging from adults to elderly individuals.

The methods used included:

1. Health education using interactive lecture methods
2. Discussion and question-and-answer sessions
3. Educational media in the form of PowerPoint presentations, leaflets, and posters
4. Knowledge evaluation using pre-test and post-test questionnaires

The stages of the activity included:

1. **Preparation:** Coordination with PKK administrators, preparation of educational materials, and development of educational media in the form of leaflets.
2. **Implementation:** Health education was conducted using interactive lectures, discussions, and question-and-answer sessions regarding cataracts.
3. **Evaluation:** Participant knowledge was assessed using pre-test questionnaires before the education session and post-test questionnaires afterward.

Data Analysis

Pre-test and post-test data were analyzed descriptively to observe changes in participants' knowledge levels.

RESULTS

Before the community service activity was conducted, permission was first obtained from the leadership of FIKES UNSIQ Wonosobo and the administrators of the PKK "Sekar" group of Garung Village. After permission was granted, the community service team coordinated to determine the time, place, and date of implementation. The cataract health education activity was attended by 20 members of the PKK group of Garung Village, who demonstrated high enthusiasm.

This community service activity aimed to increase the knowledge of PKK members regarding cataracts. Pre-tests and post-tests were conducted before and after the health education session. In addition, discussions and question-and-answer sessions were held following the education activity.

Technically, after the PKK "Sekar" members of Garung Village gathered, the event was opened by the master of ceremonies, followed by remarks from the head of the community service team. Participants were then given a pre-test consisting of five true–false questions related to cataract knowledge. After completing the pre-test, educational materials were delivered covering the definition, signs and symptoms, causes, prevention, and dietary factors that may reduce cataract risk. This was followed by discussion and question-and-answer sessions. Subsequently, a post-test consisting of five true–false questions related to cataract knowledge was administered. The pre-test and post-test results were analyzed as recommendations for determining future steps.

Figure 1. Group photo of facilitators and participants

The evaluation results showed that before the education session, most participants had limited knowledge about cataracts, particularly regarding risk factors and the importance of routine eye examinations. After the education session, there was an increase in participant knowledge, indicated by a higher average post-test score compared to the pre-test score. Participants began to understand that cataracts are not merely an unavoidable consequence of aging but can be treated through medical interventions such as cataract surgery.

The discussion revealed that the approach through religious study groups was effective in delivering health messages due to the familiar and communicative atmosphere. This aligns with the concept of community empowerment through social and religious approaches.

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

Score	Pre-Test Results	Post-Test Results
Mean	81	98
Minimum	60	80
Maximum	100	100

Table 1 shows a comparison of average scores between the pre-test and post-test. The average pre-test score was 81, while the average post-test score increased to 98. The minimum score also increased from 60 in the pre-test to 80 in the post-test. The maximum score for both pre-test and post-test was 100, indicating that some participants may have been previously exposed to information about cataracts prior to receiving health education. Overall, this illustrates a significant improvement in knowledge following the educational intervention.

Figure 2. Completion of pre-test and post-test questionnaires

Table 2. Pre-Test Results

Score	Subject Frequency	Percentage (%)	Cumulative Percentage (%)
60	6	30%	30%
80	7	35%	65%
100	7	35%	100%
Total	**20**	**100%**	

Table 2 shows the frequency distribution of pre-test scores. A total of six subjects (30%) obtained a moderate score (60); most of these subjects were unaware that diabetes is one of the causes of cataracts. This finding is consistent with various studies indicating that low public knowledge regarding the relationship between systemic diseases such as diabetes and visual impairment remains a public health problem, especially among adult and elderly groups (Ministry of Health of the Republic of Indonesia, 2023).

High scores (80) were obtained by seven subjects (35%); however, most of them did not know that blurred vision is a sign of cataracts and that diabetes is a contributing cause. Although they had better knowledge levels, their understanding remained partial, particularly regarding risk factors and early symptoms of cataracts. According to the World Health Organization (2023), lack of understanding of early symptoms often leads to delayed diagnosis. Very high scores (100) were obtained by seven subjects, possibly influenced by personal experience, family history, or prior exposure to health information. Good baseline knowledge can support more effective acceptance of health information during educational interventions (Rahmawati et al., 2024).

Figure 3. Cataract education session

Table 3. Post-Test Results

Score	Subject Frequency	Percentage (%)	Cumulative Percentage (%)
80	2	10%	10%
100	18	90%	100%
Total	**20**	**100%**	

Table 3 shows a significant increase in knowledge scores after the health education session. All subjects were categorized as having good to very good knowledge. Two subjects (10%) obtained a good score (80), with most still not fully understanding that diabetes mellitus is one of the causes of cataracts. However, the majority of subjects (18 individuals, 90%) achieved very high scores (100). This improvement indicates that the health education provided was effective in increasing participants' knowledge about cataracts, including risk factors and clinical signs.

DISCUSSION

The increase in knowledge following the education session is consistent with previous studies stating that health education through counseling methods can significantly improve community understanding, particularly regarding prevention and early detection of non-communicable diseases such as cataracts (Sari & Putra, 2023).

Elderly women represent a high-risk group for cataracts, which remain one of the leading causes of visual impairment and blindness in Indonesia. Cataracts are characterized by progressive lens opacity associated with aging and influenced by various risk factors, both non-modifiable (such as age and sex) and environmental or lifestyle-related factors. Several studies in Indonesia indicate that cataract incidence is more common among individuals aged ≥50 years, with a higher proportion among women than men. One study reported that women accounted for approximately 57.8% of cataract patients, suggesting that female sex is an important risk factor in addition to advanced age.

An observational analytic study with a cross-sectional approach conducted at Sultan Agung Eye Center (SEC) RSI Sultan Agung Semarang during May–December 2023 showed that most senile cataract patients were aged ≥55 years and predominantly female. Chi-square analysis revealed a significant relationship between age and sex with the incidence of senile cataracts, supported by logistic regression analysis indicating that age and sex significantly influenced cataract occurrence, with sex being the most dominant factor. These findings emphasize that advanced age and female sex play important roles in increasing the risk of senile cataracts in eye healthcare facilities. However, other studies conducted at RS Camatha Sahidya Batam City found that age was the primary determinant of cataract incidence, while the association with sex was not always statistically significant, indicating variability in risk factor influence based on population characteristics and study location (Mardalena, 2024).

Biologically, the increased risk of cataracts in elderly women is associated with decreased estrogen levels after menopause. Estrogen functions as an antioxidant that protects the eye lens from oxidative stress; a decline in this hormone can accelerate degenerative processes in the lens, thereby increasing cataract risk. In addition to hormonal factors, women generally have a higher life expectancy than men, resulting in longer exposure to aging as a primary risk factor for cataracts. These findings align with studies conducted at the Ophthalmology Clinic of Diponegoro Dua Satu General Hospital, Klaten, which showed that most cataract patients were over 60 years old and predominantly female. Epidemiological studies also report higher cataract incidence rates among women than men, further strengthening evidence that advanced age and female sex are important determinants of cataract occurrence (Sumiasih, 2020; Milasari, 2022; Rizal et al., 2023; Dedi et al., 2024).

CONCLUSION

The community service activity in the form of cataract health education for the PKK “Sekar” group of Garung Village proved effective in increasing participants’ knowledge. There was a significant improvement in knowledge scores between the pre-test and post-test, indicating that most participants understood the definition of cataracts, risk factors, symptoms, and the importance of prevention and routine eye examinations. The educational approach through PKK groups, which have strong social and emotional bonds, effectively supported the delivery of health information. With increased knowledge, PKK members—particularly elderly women—are expected to be able to undertake preventive measures, perform early detection, and make appropriate decisions regarding cataract management. This activity can serve as a model for community-based health promotion to reduce delays in cataract treatment within the community.

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