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Screening Cataract and Other Visual Impairment by PELITA Cadre to Build Vision Center in Lima Puluh Kota Regency

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ABSTRACT

Eye diseases, particularly cataracts, are the leading cause of blindness worldwide. This community service program by the Department of Ophthalmology, Faculty of Medicine, Andalas University, was conducted at the Pangkalan Public Health Center, Lima Puluh Kota Regency, by empowering PELITA (Posyandu) cadres in early detection of cataracts. Methods included counseling, training, and eye examination simulations for 40 cadres, followed by community screening using visual acuity and anterior segment examinations. Evaluation was carried out with pre- and post-tests, satisfaction surveys, and follow-up on patients referred for surgery. The average cadre score improved from 68 (pre-test) to 74.5 (post-test), indicating increased knowledge. A total of 71 patients were screened, including 40 cataract and 8 pterygium cases; 26 cataract and 4 pterygium patients subsequently underwent surgery. Cadres reported high satisfaction with the training and expressed readiness to continue participation. This program demonstrates that cadre training is effective in improving early detection of cataracts and other visual impairments, and provides a foundation for establishing a Vision Center in Lima Puluh Kota.

Keywords: prevention, prospective couples, religious affair office, sexually transmitted infections

INTRODUCTION

Cataracts are lens opacities of the eye that cause blurred vision, cloudiness, and double vision. Cataracts are the leading cause of preventable blindness in the world (Kementerian Kesehatan RI, 2022a). Cataracts cause the clear lens of the eye to become cloudy, and this condition prevents light from entering the eye optimally, thus impairing the eye's ability to focus the images it sees (Tsai et al., 2021).

Cataract blindness is not just an eye health issue, but also affects various aspects of daily life. Individuals who experience visual impairment due to cataracts will have difficulty in carrying out daily activities, such as reading, writing, driving, or even performing simple household tasks. The psychological impact cannot be ignored either, as losing the ability to see clearly can cause a significant reduction in quality of life, and can even lead to feelings of isolation and depression (Dinas Kesehatan Provinsi Nusa Tenggara Barat, 2021a; Kementerian Kesehatan RI, 2022b).

Based on the results of the Rapid Assessment of Avoidable Blindness (RAAB) survey in Indonesia, around 8 million people over the age of 50 experience visual impairment, of which 1.6 million experience blindness, while 6.4 million others experience moderate to severe visual impairment (Dinas Kesehatan Provinsi Nusa Tenggara Barat, 2021b). The leading cause of visual impairment and blindness in this population was unoperated cataracts (81.2%), and if all cataract-related blindness cases were treated, 80% of blindness could be prevented (Kementerian Kesehatan RI, 2018; Omas et al., 2020). Based on the population data of West Sumatra in 2022, which reached 5,640,629 people. The World Health Organization (WHO) sets the threshold for blindness as visual acuity less than 3/60 (World Health Organization, 2019). The total population of West Sumatra over the age of 50 is 846,094 people. Of this number, around 15% or the equivalent of 25,383 people experience blindness, of which 80% or around 20,306 people are caused by cataracts. Taking into account the incidence factor, the number of additional cataract blindness cases per year reaches around 4,061 people (Halim, 2020; Kementerian Kesehatan RI, 2020).

A study revealed that the accuracy of early cataract detection by primary health care workers in Sleman was still low, at only 43.3%, resulting in a considerable number of misdiagnoses (Widyandana, Prayogo, & Suhardjo, 2020). This finding highlights the importance of strengthening the capacity of primary health care workers through continuous training and reinforcing referral systems. Improved skills in early detection are crucial to reducing the burden of cataract-related blindness and supporting the achievement of national programs for visual impairment control.

Primary health care services are the first line in dealing with and identifying cataract cases; therefore, adequate knowledge in this field is essential, along with specific skills needed for examination. The definitive treatment of cataract is surgical and typically requires referral to ophthalmology departments (Almansour et al., 2021; Jacob et al., 2023; Widyandana et al., 2020). Public awareness also remains limited in distinguishing cataracts from other ocular conditions, as well as in understanding that surgery is the only definitive treatment (Alswaina & Alayed, 2025).

Therefore, through this community service program carried out by the Department of Ophthalmology of M. Djamil Hospital in Pangkalan Public Health Center (Puskesmas), Lima Puluh Kota Regency, we hope it can make a real contribution in reducing the rate of blindness due to cataracts. By involving posyandu (Pos Pelayanan Terpadu – Integrated Service Post) cadres to achieve effective and sustainable targets. The implementation of this community service was carried out in several stages. First, a survey of the location at the Puskesmas (Pusat Kesehatan Masyarakat – Public Health Center) of Lima Puluh Kota Regency. Second, workshop with posyandu cadres. Third, cataract examinations with posyandu cadres, followed by cataract surgery by an ophthalmology resident. Fourth, evaluate activities from the perspective of partners and internally.

METHOD

This was a Community Service activity of the Ophthalmology Department, Faculty of Medicine, Andalas University, which was located at the Pangkalan Public Health Center, Lima Puluh Kota Regency. The participants are Posyandu cadres from Pangkalan Subdistrict Public Health Center and Kapur IX Subdistrict Public Health Center. This community service was an effort to increase public awareness about cataracts, early symptoms, and the importance of routine screening. Through a structured counseling campaign, the community understood how important early detection is in preventing

blindness due to cataracts. This was achieved by empowering posyandu cadres to conduct cataract screening (Dinas Kesehatan Provinsi Nusa Tenggara Barat, 2021a; Pradhan, 2021).

The Vision Center is an integrated eye health service in health care facilities at the primary care level. The Vision Center is intended to increase access to eye health services and coverage of detection and early intervention of visual impairment due to cataracts (Dinas Kesehatan Provinsi Nusa Tenggara Barat, 2021a; Pradhan, 2021).

As an effort to overcome visual impairment due to cataracts, this community service carried out several stages:

1. Survey the location of implementation of activities at the Puskesmas of Lima Puluh Kota Regency and coordinate with the Head of the Lima Puluh Kota Regency Health Office.
2. Once the time and place of the activity were determined, we planned to:
 - a. Counseling on early detection of cataracts by ophthalmologists to Puskesmas cadres. This was conducted in the form of interactive lectures and discussions, supported by visual aids and case examples to ensure cadres understood the symptoms, risk factors, and referral pathways.
 - b. Cadre training and eye examination simulation for cataract screening were conducted using a workshop model. Forty posyandu cadres participated, selected by the Puskesmas to represent each village. The training materials included visual acuity testing with a Snellen chart and anterior segment examination techniques. Methods applied were interactive lectures, hands-on practice, and role-play, followed by small group sessions under the direct supervision of ophthalmology residents. Skills were assessed through direct observation and post-test evaluations, while prizes were provided as motivation for high-performing participants.
3. Cataract patients who are screened will be referred to an advanced health facility for cataract surgery, or if the number of patients is large enough, a mass cataract surgery community service can be held at the site.
4. Evaluation: evaluations are performed every month. Cadres' knowledge was assessed using pre- and post-tests through a Google form, while their skills were monitored by reviewing logbooks in which cadres recorded the number and type of patients screened during Posyandu activities. Patient outcomes, such as the number of referrals and surgeries performed, were also included as part of the evaluation.
5. Reporting: reporting will be carried out from the beginning of the activity and publication in the newspaper.
6. Efforts to establish a Project Vision Center with the aim of empowering Posyandu cadres in early detection of cataract in the Puskesmas working area on a regular basis (Figure 1)

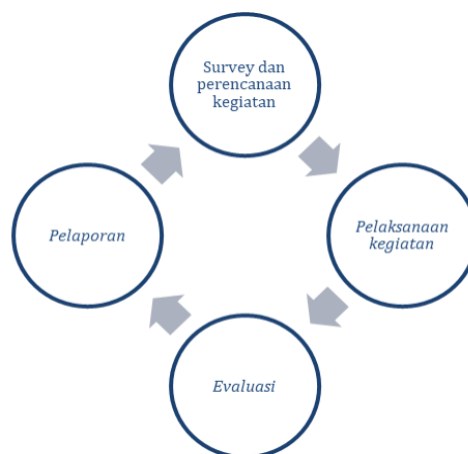


Figure 1. Diagram of the Implementation of the community service “Screening for cataracts and other visual impairments by PELITA cadres (Petugas Lihat Mata) efforts to establish a vision center in Lima Puluh Kota District”

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1. Counseling and training on early detection of cataract by ophthalmologists to posyandu cadres in the working areas of Pangkalan Public Health Center and Kapur IX Public Health Center, which was attended by 40 posyandu cadres. These posyandu cadres were selected by the Puskesmas so that there was representation from each Nagari/Village. This activity began with a pre-test before counseling and training (simulation).
2. Furthermore, eye examination simulations and discussions were held. Cadres were taught how to screen patients for cataracts and early detection of other visual disorders. The training material was how to conduct a visual acuity examination, an anterior segment examination, and a lens examination to determine whether there is a cataract or not. At the end of the training, cadres' knowledge was evaluated using a structured post-test consisting of 10 multiple-choice questions covering cataract risk factors, prevention, and visual acuity examination procedures. The test was administered through a Google Form and scored automatically, with results compared to the pre-test to assess improvement. Prizes were awarded to the cadres with the highest post-test scores as motivation for active participation. (Figure 2)





Figure 2. (a) Visitation to the Lima Puluh Kota District Health Office, (b) PELITA activities at Pangkalan Public Health Center, (c) Eye examination training to health center cadres, (d) Snellen chart for visual acuity examination, (e) Visual acuity examination

Table 1. Training pre-test and post-test score results

No.	Item	Pre-test	Post-test
1.	Minimum score	40	60
2.	Maximum score	86	100
	Average	68	74,5

The cadres' knowledge was assessed through pre-test and post-test assessments. The questions were multiple choice questions covering knowledge regarding blindness and cataracts. The assessment also assessed the cadres' knowledge of risks, prevention, treatment, and steps to be chosen by cadres if there is a decrease in visual acuity in patients. This evaluation was conducted using a Google form that was filled in for 10 minutes each before and after the material was given. The evaluation of cadres' knowledge was conducted using a structured pre-test and post-test administered via Google Forms. Each test consisted of 10 multiple-choice questions covering cataract etiology, symptoms, prevention, and referral procedures. The test was given before and after the training session, with 10 minutes allocated for completion. Scores were automatically calculated, and changes between pre-test and post-test results were analyzed to measure knowledge improvement.

Based on Table 1, it can be seen that the average cadre score in the pre-test was 68, and the average post-test score was 74.5.

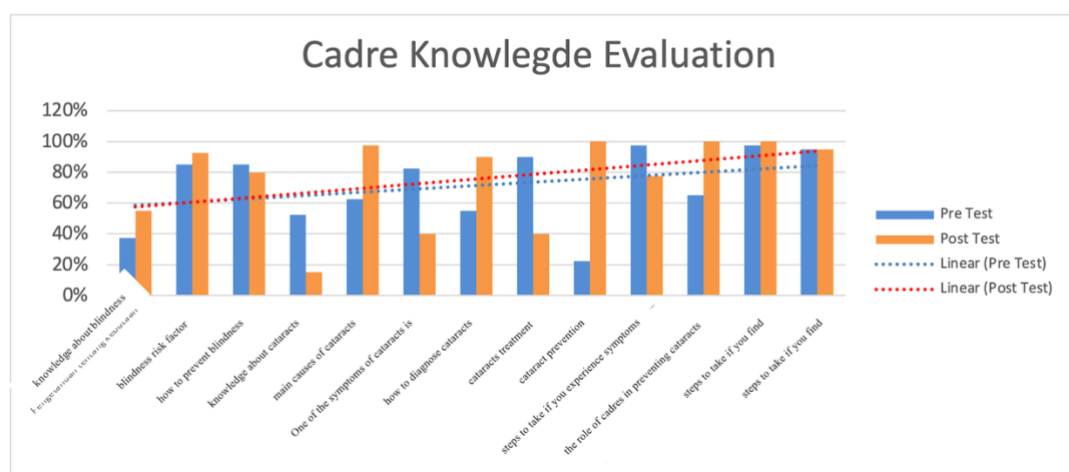


Figure 3. Cadre knowledge evaluation diagram

Based on Figure 3, it is known that of the 40 cadres who participated in the PELITA training, there was an increase in knowledge regarding blindness and cataracts. The highest points were obtained on questions about cataract prevention, the role of cadres in preventing cataracts, and steps to be taken when finding cataract patients, 100% of whom answered correctly.

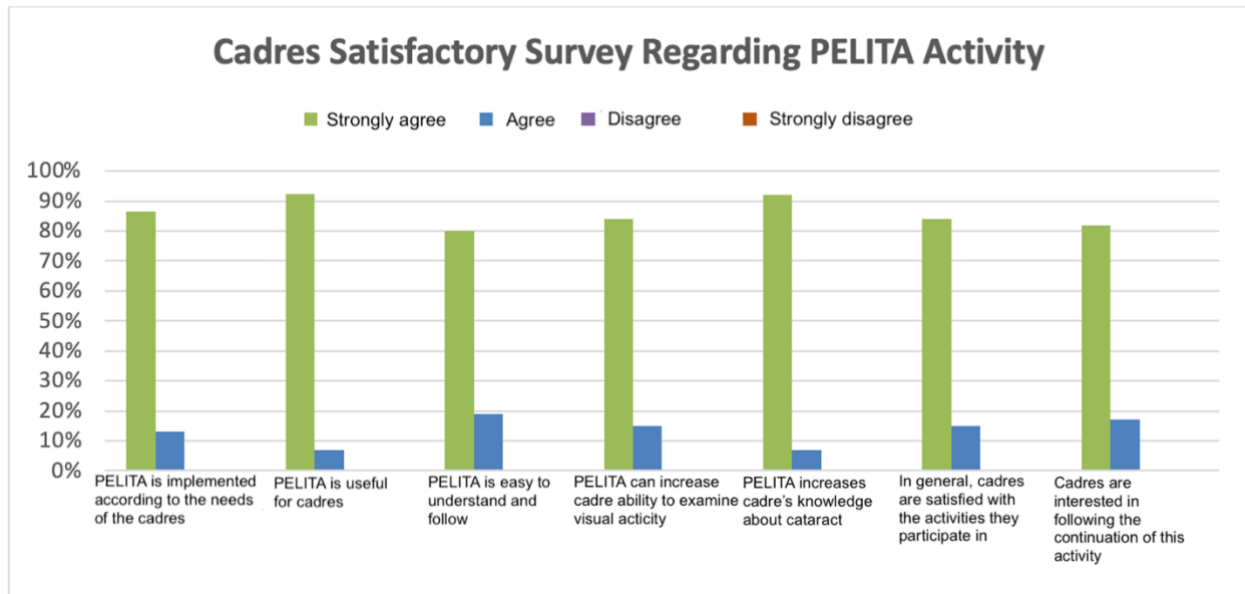


Figure 4. Results of cadre satisfactory survey on PELITA activity

In addition to assessing cadres' knowledge of blindness and cataracts, a PELITA activity satisfaction questionnaire was also completed. This questionnaire consisted of seven questions related to a satisfaction survey of 40 health center staff members. In general, cadres were very satisfied with the training. According to the survey results, 87% of cadres strongly agreed that PELITA was carried out according to their needs, and 13% agreed. As many as 92% of cadres strongly agreed that PELITA training was useful for cadres, and 8% agreed. Furthermore, 80% of cadres strongly agreed that PELITA training was easy to understand and follow, and 20% agreed. Of the 40 cadres who participated in PELITA activities, 84% of participants strongly agreed that PELITA training could increase their ability to conduct visual acuity examination, while the other 16% agreed. Most cadres strongly agreed (92%) that the training increased their knowledge about cataracts, while 8% agreed. Regarding cadre satisfaction with the training, 84% of cadres were very satisfied, and an additional 15% were satisfied. In the last question, 82% of cadres strongly agreed to participate in further training activities, and 17% agreed. No cadres disagreed or strongly disagreed with any of the satisfactory survey questions. (Figure 4)

To maintain continuity of this activity, posyandu cadres were asked to complete a logbook in the form of a Google Form for every posyandu activity. This aims to monitor the proficiency of cadres in cataract screening by reviewing their logbooks. After a number of patients were collected by the cadres, the cataract surgery team came to conduct the screening and surgery.

Screening was conducted by the team on November 14, 2024. 71 patients were brought by cadres, including 40 cataract patients and 8 pterygium patients. Cataract patients consisted of 2 juvenile cataracts, 24 immature senile cataracts, 12 mature senile cataracts, and 2 hypermature senile cataracts.

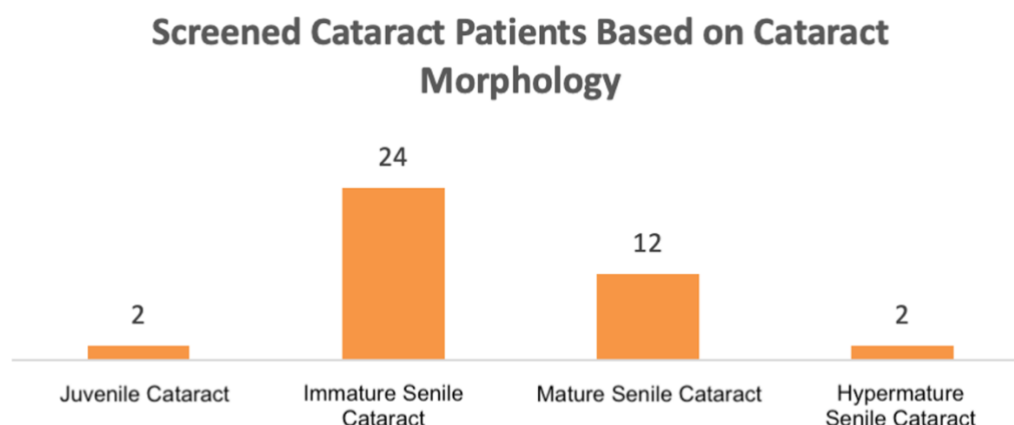


Figure 5. Results of cataract screening by PELITA cadres

Mass cataract surgery was carried out on Saturday, November 16, 2024, on 26 senile cataract patients, and 4 pterygium patients. For the community, this activity was very beneficial because it allows productive age people to work again. Meanwhile, for us, the health worker team, we really feel the role of cadres in making it easier to screen cataract patients in hard-to-reach locations. (Figure 5)

This PELITA cadre training activity is expected to serve as the pilot project for establishing a Vision Center in Lima Puluh Kota Regency. In the initial phase, it is hoped that cadres can detect early cases of cataracts and refractive disorders in patients. Like the Vision Center, which has evolved into a sustainable eye care center in Lombok, West Nusa Tenggara. The Vision Center in Lombok has been widely recognized for its contribution to reducing the number of cases of blindness in the region, with ongoing support from the government and non-governmental organizations. This service also produced a simple Eye Examination Guidebook and a Visual Acuity Examination Video that can be used as a guide by posyandu cadres in the field. To ensure sustainability, cadres will continue to conduct routine visual screenings during monthly Posyandu activities, with the results documented in logbooks and monitored by Puskesmas staff. Periodic refresher training and direct supervision from ophthalmologists or health officers will help maintain the competence of the cadre. Additionally, a referral network among cadres, Puskesmas, and regional hospitals will be strengthened to ensure timely cataract surgeries. The establishment of a Vision Center within the Puskesmas is planned as a permanent hub for early detection, referral, and follow-up. Long-term sustainability will also be supported through stakeholder engagement with the District Health Office and local government to secure ongoing resources.

Both the Vision Centre initiative in West Nusa Tenggara and the PELITA cadre program in West Sumatra share the same overarching goal: to reduce preventable blindness from cataracts by strengthening early detection at the primary health care level. Each program recognizes the importance of task-shifting by equipping non-specialist health workers with the skills to screen for cataracts and other visual impairments, thereby expanding access to underserved populations (Dinas Kesehatan Provinsi Nusa Tenggara Barat, 2021a; Kementerian Kesehatan RI, 2022b). Furthermore, both models emphasize the crucial role of capacity building and ongoing training in ensuring sustainability and long-term impact.

Despite these shared objectives, the implementation strategies differ significantly. The NTB Vision Centre program was largely supported by international organizations such as the Fred Hollows Foundation and Seeing is Believing, with emphasis on infrastructure, integration into health centres, and sustainability planning. However, challenges included the affordability of spectacles, limited clinical skills among trained staff, and dependency on

private optical partners (Dinas Kesehatan Provinsi Nusa Tenggara Barat, 2021a; Kementerian Kesehatan RI, 2022b). In contrast, the PELITA program in West Sumatra was a university-led community service initiative that focused on grassroots empowerment. By training posyandu cadres through structured workshops, hands-on simulations, and regular evaluations, the program demonstrated measurable improvements in knowledge and practice, alongside immediate benefits such as patient referrals and surgeries.

A distinguishing feature of PELITA compared to similar community-based eye health initiatives is the integration of digital technology, particularly Google Forms, into both the training evaluation and screening monitoring process. Google Forms structured pre- and post-tests, allowing for automatic scoring and immediate feedback on cadre knowledge improvement. This approach ensured data accuracy and facilitated faster analysis of knowledge gains among cadres.

In addition to knowledge evaluation, Google Forms were also utilized as a digital logbook for cadres during routine Posyandu activities. By recording the number and types of patients screened directly into an online system, cadres' performance could be monitored continuously and transparently, while also providing a reliable database for follow-up cataract referrals and surgeries. The digital logbook will record patient data in real time. Once a sufficient number of patients are identified as having suspected cataracts, a community outreach program providing free cataract surgery will be implemented. Such an approach demonstrates a unique combination of community-based screening, digital health monitoring, and surgical intervention, offering a replicable model for other rural areas with limited access to eye care services. The dual application of Google Forms in this program highlights an innovative and replicable model that combines cadre empowerment with digital monitoring, thereby strengthening sustainability and efficiency in community-based cataract prevention programs.

CONCLUSION

Community service activities by the Department of Ophthalmology, Faculty of Medicine, Andalas University, at the Pangkalan Public Health Center, Lima Puluh Kota Regency, have successfully increased the knowledge and skills of Posyandu cadres in early detection of cataracts and visual impairment. This program includes counseling, examination simulations, and knowledge evaluations, which demonstrate an increase in pre-test to post-test scores, from an average of 68 to 74.5.

The evaluation results indicate that the cadres demonstrated a good understanding of cataract prevention and the necessary steps to take when encountering patients with signs of cataracts, with 100% accuracy in answering the relevant key points. The satisfaction survey revealed that 87-92% of the cadres strongly agreed that the training was relevant, useful, and easy to understand, with no cadres expressing dissatisfaction.

Patients suspected of having cataracts and other eye diseases, such as pterygium, who were referred by cadres, have undergone cataract and pterygium surgery. This has been greatly appreciated by the community in the working area of the Pangkalan Health Center, Lima Puluh Kota Regency.

Overall, the program has proven successful in empowering posyandu cadres, increasing early detection, and potentially reducing the number of cases of cataract blindness in the area. Further training is expected to build on this success and establish a Vision Center, expanding primary eye health services.

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