



Literature Review on the Prevalence of Vision Impairment and Age-Related Eye Diseases

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Abstract. This article presents a literature review addressing the prevalence of vision impairment and age-related eye diseases in Indonesia. While not specifying a particular year, the primary focus of this research is to provide a comprehensive understanding of ophthalmic epidemiology in Indonesia. The analysis encompasses risk factors associated with vision impairment, including age, gender, family history, lifestyle, biological factors, and environmental exposures within the Indonesian context. The study delves into posterior segment eye diseases, including age-related macular degeneration and diabetic retinopathy, which stand as the leading causes of irreversible vision impairment among the elderly population in Indonesia. Critical aspects highlighted include challenges in public awareness and limitations in accessing age-related eye care. Various obstacles, such as the aging population and unequal access to care across different regions, are identified. While offering valuable insights, this article underscores the need for further research in Indonesia to aid in policymaking and more effective preventive efforts concerning vision impairment.

Keywords: Vision Impairment, Age-Related Eye Diseases, Epidemiology, Public Health.

1 Introduction

Indonesia, as the fourth most populous country in the world, had a population of approximately 255.4 million in 2015. The demographic and geographic challenges are particularly significant. More than 11% of the population is aged 50 years and above, and around 57% live on Java Island. With 17,504 islands, transport and access to healthcare is a challenge, especially in remote areas such as Nusa Tenggara, Maluku, and Riau Islands [1]. The country is divided into three types of regions based on health access: non-remote, remote, and islands. Remote areas face difficulties in health service provision due to limited human resources and infrastructure, while archipelagic areas, which consist of many small islands, pose the greatest challenge with very limited or no resources. Barriers to access to health services persist in some areas, even in Java. These disparities highlight the complexity of health service delivery across Indonesia's various geographic and demographic landscapes.

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The prevalence of visual impairment in Indonesia was obtained according to the Rapid Assessment of Avoidable Blindness (RAAB) survey in 15 provinces during the period 2014-2016. The RAAB method is recommended by WHO through the Global Action Plan (GAP) 2014-2019 to collect data on blindness and visual impairment in the population aged 50 years and over. The survey was conducted by the Indonesian Ministry of Health, through the Agency for Health Research and Development, Republic of Indonesia. The survey results show that the prevalence of blindness in the population over 50 years of age in Indonesia ranges from 1.7% to 4.4%, with an average prevalence of blindness of 3.0%. These data provide important insights for further understanding and development of eye health policy in Indonesia [1].

The prevalence of visual impairment (VI) [2], [3] and age-related eye diseases has become a critical public health concern globally, with particular significance in countries undergoing demographic change, such as Indonesia. Visual impairment not only affects individuals' quality of life but also poses significant economic and health challenges to society. Understanding the epidemiological landscape of VI and age-related eye diseases is key to formulating effective public health policies and targeted interventions. In the context of Indonesia, a country characterized by a diverse population and rapidly ageing demographics, there is an increasingly urgent need to comprehensively explore the prevalence of and factors associated with VI and age-related eye diseases [4], [5]. Although the impact of these conditions on the elderly population has been recognized, there is a lack of literature that synthesizes existing knowledge and provides a deeper understanding of the epidemiological landscape [6], [7], [8]. This article conducts a literature review to fill this gap and provide insight into the current state of the prevalence of VI and age-related eye diseases in Indonesia. By scrutinizing relevant studies, the study aims to provide an understanding of the key risk factors, demographic variations, and challenges faced in awareness and access to eye care. The findings presented in this review are essential to provide a basis for public health strategies, facilitate evidence-based decision-making, and encourage further research initiatives aimed at reducing the impact of visual impairment and age-related eye diseases in Indonesia.

2 Methods

In utilizing a literature approach [9], this study aims to investigate the prevalence of visual impairment and its associated factors in Indonesia. The key variables examined include the prevalence of visual impairment, related co-factors, geographical distribution, and preventive efforts. A comprehensive literature search was conducted across various academic databases, online libraries, and reliable sources using pertinent keywords such as prevalence of visual impairment in Indonesia [2], [3] and eye health risk factors [10], [11], [12]. The selection of literature sources was based on sustainability and credibility, employing relevant inclusion and exclusion criteria. Data extracted from selected literature encompassed RAAB survey results, prevalence of visual impairment, and identified risk factors. A systematic analysis and synthesis of the litera-

ture were performed, comparing findings from different sources to create a comprehensive understanding. The outcomes of this literature analysis will be presented in the research report, providing conclusions that contribute to a deeper understanding of eye health in Indonesia. Furthermore, regular evaluation and updates of the literature will be conducted to ensure the study incorporates the most recent and relevant information regarding the prevalence of visual impairment in Indonesia.

3 Results and Discussion

Indonesia, as the fourth most populous country in the world, faces significant demographic and geographic challenges. One striking aspect is that more than 11% of the population is aged 50 years and above, with approximately 57% living in Java. The existence of 17,504 islands in Indonesia causes difficulties in transport and access to healthcare, especially in remote areas such as Nusa Tenggara, Maluku, and Riau Islands [1] refer Roadmap for Visual Impairment Mitigation in Indonesia 2017-2030. The division into three categories of health access underscores the complexity of health service provision in different regions. To address the demographic and geo-graphic challenges in Indonesia, several important steps can be taken. Firstly, it is necessary to improve access to health [13], especially in remote areas such as Nusa Tenggara, Maluku, and Riau Islands, through strengthening health infrastructure to improve accessibility of health services [14], [15]. Secondly, the development of local health workers [12], [16] is important by encouraging the training and placement of more health workers in areas that have limited human resources in the health sector.

Furthermore, public health [17], [18] promotion campaigns [19], especially in areas with high rates of eye health problems, need to be intensified to increase public awareness of the importance of eye care. Technological approaches [20], such as the implementation of telemedicine, can also be a solution to provide access to remote eye health consultations, overcoming geographical limitations. In addition, health education programs in the community, especially in the over-50 age group, can help increase understanding of the importance of regular eye examinations. Inter-agency collaboration, involving the government, health institutions and the private sector, should be encouraged to identify and address eye health issues in a holistic manner. Up-to-date data collection and further research are also needed to understand risk factors and eye health needs in different regions. In addition, investment in the construction and maintenance of health facilities in remote areas can improve service capacity and the availability of eye diagnostic equipment. Active involvement of local communities [21], [22] in the planning and implementation of eye health programs will ensure sustainability and community acceptance. Finally, regular evaluation of the successful implementation of these measures and policy adjustments based on the evaluation results are needed to ensure the effectiveness and sustainability of these programs.

Global attention to visual impairment (VI) and age-related eye diseases is mirrored in Indonesia [1], especially considering the demographic shifts taking place. The Rapid Assessment of Avoidable Blindness (RAAB) survey conducted in 15 provinces during 2014-2016 revealed the prevalence of blindness among those aged 50 years and above

ranged from 1.7% to 4.4%, with an average of 3.0%. Understanding the epidemiological landscape of VI and age-related eye diseases is essential for formulating effective public health policies and targeted interventions[23], [24], [25]. Alternative solutions to address visual impairment (VI) and age-related eye diseases in Indonesia can be implemented through several strategic measures. Firstly, it is necessary to develop a routine eye examination program especially for the population above 50 years old, with the aim of early detection of visual impairment and age-related eye diseases, enabling earlier intervention. Furthermore, mass eye health education campaigns are important to increase public awareness of eye care and encourage participation in routine eye examinations. Distribution of vitamin A and eye nutritional supplements, especially in areas with high rates of blindness, can be part of a strategy to address nutritional deficiencies that can lead to visual impairment.

Improved access to eye care can be achieved by strengthening health infrastructure in remote areas and providing affordable eye health services. More intensive training for health workers, including community health workers, can improve their capacity to deliver quality eye care and perform early diagnosis. The implementation of eye health technologies, such as retinal imaging and telemedicine, can help support remote diagnosis and consultation, especially in areas that are difficult to access. Inter-agency cooperation, involving government, health institutions and the private sector, as well as continued research, can enrich understanding of the risk factors and progression of age-related eye diseases. Risk factor reduction approaches, including blood sugar and blood pressure control, can be adopted to prevent the contribution of diseases that can lead to visual impairment. Investments in the maintenance and increased availability of eye diagnostic tools, such as tonometer's and autorefractors, are also important to facilitate more accurate diagnosis. Finally, an ongoing monitoring and evaluation program should be implemented to measure the effectiveness of the various interventions and ensure that positive changes continue to occur in addressing visual impairment and age-related eye diseases in Indonesia. With these measures, significant improvements in the eye health of Indonesians can be expected. This study enriches previous literature on eye health service needs among Indigenous Australians, particularly those with diabetes, for eye health service planning[26], and is relevant to eye health service needs in Surabaya and provides recommendations for service development based on community expectations[27].

4 Conclusion

Addressing eye health challenges in Indonesia, particularly those related to visual impairment and age-related eye diseases, requires a holistic approach. The implementation of scientific solutions, such as the development of routine eye examination programs, eye health education campaigns and nutrition distribution, is key to improving access to eye care and reducing risk factors. Increased inter-agency collaboration, training of health workers, and application of eye health technologies in remote areas are essential. Further research is needed to deepen the understanding of risk factors, while

risk factor reduction approaches, increased availability of diagnostic tools, and continuous monitoring are expected to have a positive impact by reducing the prevalence of visual impairment and improving the overall eye health of Indonesians.

To address eye health challenges in Indonesia, recommendations include strengthening routine eye examination programs, eye health education campaigns, and distribution of eye nutrients in high blindness areas. A focus on improving health infrastructure in remote areas such as Nusa Tenggara, Maluku, and Riau Islands is needed to improve the accessibility of eye health services. It is also important to provide continuous training for health workers, including community health workers, while encouraging the adoption of eye health technologies. Co-operation between the government, health institutions and the private sector needs to be enhanced, while further research and in-depth data collection are needed for a better understanding of the risk factors and progression of age-related eye diseases. The adoption of preventive approaches by increasing public awareness of risk factor control, such as blood sugar and blood pressure, also needs to be strengthened. Continuous monitoring and evaluation systems are key to measuring the impact and effectiveness of eye health programs, with the hope of providing overall improvement in eye health in Indonesian communities.

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