Global Scientific and Academic Research Journal of Economics, Business and Management
ISSN: 2583-5645 (Online)
Frequency: Monthly
Published By GSAR Publishers
Journal Homepage Link- https://gsarpublishers.com/journals-gsarjebm-home/

Evaluating the indirect productivity losses of cataract vision impairment for improved quality of life

By

Ibrahim Kabiru Maji[1], Shuaibu Muhammad[2], Hussaini Dambo[1], Lawali Muhammad[3], Salisu Ibrahim Waziri[4], Muhammad Yusuf[1], Mansur M. Rabiu[5], Harir Adamu Isah[2], Ummukulthum Ibrahim Alkali[2]

[1]Air force Institute of Technology, Kaduna
[2]Nigerian Army University Biu
[3]Specialist Hospital, Gombe
[4]Sa'adu Zungur University, Bauchi
[5]Noor Dubai Foundation, UAE

Article History

Received: 20/08/2025
Accepted: 28/08/2025
Published: 30/08/2025

Vol –4 Issue – 8

PP: -81-84

Abstract

This study examines the indirect productivity losses linked to cataract-related vision impairment in Borno State. Employing a survey-based research design, data were collected through structured electronic questionnaires, administered to respondents selected via a stratified sampling technique across the state's senatorial zones. The results indicate a strong association between the duration of vision impairment and the increasing economic losses, demonstrating that prolonged living with cataracts substantially increases productivity losses for both patients and their caregivers. Furthermore, the analysis reveals notable occupational disparities, with professionals experiencing the highest average losses. These findings highlight the critical need for early diagnosis, timely treatment, and robust policy interventions to mitigate the indirect socio-economic consequences of cataract-induced vision impairment in Borno State.

Keywords: *productivity loss, cataract, vision impairment, sustainability*

Introduction

Cataract is the leading cause of visual impairment and blindness worldwide, posing profound challenges to both quality of life and economic productivity. In Nigeria, it is responsible for over half of all blindness cases, with older adults in both urban and rural communities of Borno State disproportionately affected (Abubakar et al., 2020). The problem is further compounded by limited access to affordable eye care services, persistent security challenges, and socio-economic constraints. Cataract-related vision loss significantly reduces individuals' ability to participate in income-generating activities, particularly within the agrarian and informal sectors, which form the backbone of Borno State's economy. As a result, many affected persons face premature retirement, underemployment, or complete withdrawal from the labor force, thereby worsening household poverty and reinforcing patterns of economic stagnation (Adio&Onua, 2012).

Indirect productivity loss due to cataract vision impairment includes the loss of earnings from reduced workforce participation, the economic burden placed on caregivers, and the cost of social support services. In Borno State, where the labor force relies heavily on physical and visual capacities for agriculture, trade, and manual labor, visual impairment significantly reduces economic output. Often women and children may forgo education or employment to assist affected relatives, leading to broader intergenerational socio-economic consequences (Hodgson & Meiners,1982). Addressing cataract-related vision loss through targeted public health interventions could not only improve individual well-being but also enhance productivity and socio-economic development in the state.

In Borno State, the burden is increased by insecurity, limited access to surgical services, and low awareness of available treatments. An estimated 1.13 million Nigerians are blind, and over 4.25 million suffer moderate to severe visual impairment, with a significant proportion coming from Borno state (Kyari & Dineen, 2004). This vision impairment contributes to substantial indirect productivity losses, especially in low-income, agriculture-dependent state like Borno, where visual function is critical to daily work. Affected individuals are often excluded from the workforce, and caregivers lose productive hours, perpetuating poverty and reducing overall

*Corresponding Author: **Ibrahim Kabiru Maji.**

economic output. Yet, there is a paucity of localized data quantifying this indirect economic burden, which is essential for informed policymaking and targeted interventions.

While several studies have documented the prevalence and causes of cataract-related vision impairment, there remains a critical gap in quantifying its indirect economic impact, particularly in a state like Borno. Most existing research focuses on clinical outcomes or direct healthcare costs, with limited attention given to the broader socio-economic consequences, such as losses of productivity and reduced community participation. This study contributes to the existing body of knowledge by specifically assessing the indirect productivity loss associated with cataract vision impairment in Borno State, by providing survey-based evidence to inform policy decisions and the design of context-sensitive eye health interventions.

Methods

The target population for this study consisted of individuals in Borno State experiencing visual impairment caused by cataracts, a condition that predominantly affects persons aged 40 years and above. Participants were identified through multiple sources, including patients receiving care at state-owned eye clinics and medical centers, referrals from community leaders, as well as individuals previously diagnosed and undergoing follow-up treatment for cataract-related vision losses. Data were collected using a structured electronic questionnaire, which was first translated into the local language and subsequently back-translated to ensure linguistic accuracy and conceptual consistency. The instrument was then digitized and deployed via Kobo Collect software on Android devices, enabling real-time monitoring, improved accuracy, and efficient coordination of the field data collection process.

The study adopted the sampling methodology of Taryam et al. (2020), selecting approximately 25% of the visually impaired population in the state. The sampling process was stratified according to the state's administrative senatorial zones. A cluster random sampling technique was employed. This method involved grouping the population into distinct clusters and randomly selecting participants from each zone. The collected data were analyzed using both descriptive and inferential statistical methods. Descriptive statistics included measures of central tendency and dispersion, while inferential statistics, specifically the chi-square test, were used to examine relationships between variables and assess their statistical significance.

Results and discussions

Demographic information

To assess the indirect productivity losses associated with cataract-related vision impairment in Borno State, demographic characteristics of the surveyed participants are presented in Figures 1 and 2. A total of approximately 1,200 structured questionnaires were administered to individuals with vision impairment across the state. Of these, 1,161 were successfully retrieved, validated, and coded for analysis, representing a high response rate and ensuring robust data for the study.

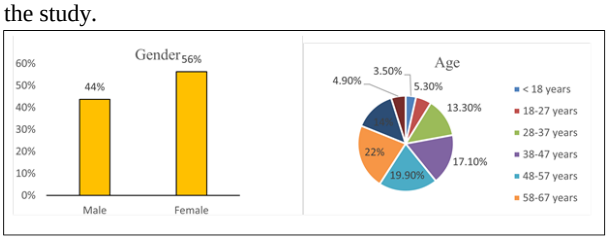

Figure 1. Gender and age distribution of respondents

The analysis of Figure 1 reveals that a greater proportion of cataract-related vision-impaired participants were female (56.3%), compared to males (43.7%), highlighting the gendered nature of vision impairment and aligning with the inclusive findings of Rabiu et al. (2023). Age-wise, the highest concentration of affected individuals (22%) were between 58 and 67 years, followed closely by those aged 48–57 (19.9%) and 38–47 (17.1%), indicating that cataracts predominantly affect individuals above 40 years. This trend supports findings by Bello et al. (2024), who also observed a higher prevalence among individuals in their fifties and sixties.

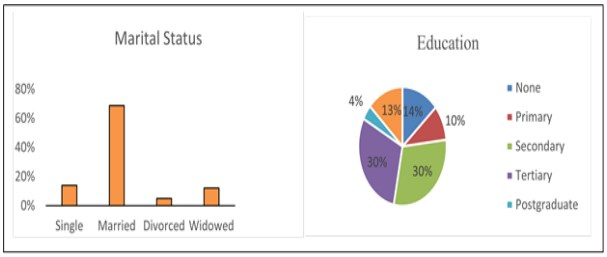

Figure 2. Marital status and education of respondents

Moreover, marital status education on Figure 2 showed that a majority (68.7%) of the participants were married while most respondents had formal education, with 30.0% having secondary and 29.5% having tertiary qualifications, suggesting a greater awareness and willingness to seek corrective measures, contrasting with Rabiu et al. (2023), who reported lower educational attainment among cataract patients. Occupationally, civil servants (22.3%) and farmers (17.7%) were the most represented groups, followed by traders, housewives, and the unemployed/retired. This distribution reflects the impact of cataract across various socio-economic sectors in the state.

Productivity losses

Furthermore, to examine whether cataract vision impairment has an impact on indirect productivity cost, Table 1 presents the hypothesis test using Chi-square. The indirect productivity cost was measured by man-hours lost in each visit to see the eye doctor ability to participate in labor force versus number of years with vision impairment

*Corresponding Author: **Ibrahim Kabiru Maji.**

Table 1. Result of indirect productivity loss

		Hours loss in visits to see the eye Doctor Versus Number of years with impairment						Total	Test Statistics	
		< 1 Hour	2-3Hours	3-4 Hours	4-5 Hours	>5 Hours	–		χ^2	P-value
No. of years with impairment	<5	113	271	181	95	26	–	686	32.54	0.0380
	6-10	49	126	92	45	17	–	329		
	11-15	9	14	19	6	7	–	55		
	16-20	13	11	17	5	6	–	52		
	>20	7	19	6	3	3	–	38		
Total		191	441	316	154	59	–	1161		
		Ability to participate in the labor force Versus Number of years with impairment						Total	Test Statistics	
		–	–	NO	–	YES	–		χ^2	P-value
No. of Years with Impairment	<5	–	–	316	–	686	–	686	18.13	0.0030
	6-10	–	–	114	–	215	–	329		
	11-15	–	–	15	–	40	–	55		
	16-20	–	–	19	–	33	–	52		
	>20	–	–	15	–	23	–	38		
Total		–	–	479	–	682	–	1161		

As shown in Table 1, the results indicate a significant relationship between the indicators of indirect productivity costs and the duration of cataract-related vision impairment. Specifically, variables such as man-hours lost during each hospital visit (significant at the 5% level) and ability to participate in the labor force (significant at the 1% level) were strongly associated with the number of years individuals had lived with the impairment. This suggests that the longer a person suffers from cataract vision impairment, the greater the economic burden in terms of lost productivity. These findings aligned with those of Adio and Onua (2023), who also account for indirect costs in their study. The study also emphasizes that visually impaired individuals often rely on economically active caregivers to accompany them to medical appointments, thereby compounding productivity losses. Furthermore, Bello et al. (2024) found that the amount of income lost per hospital visit varied by occupation, with higher losses recorded among professionals and lower losses among unemployed individuals, reflecting disparities in productivity costs across occupational groups.

Conclusion and implications

The findings of this study clearly demonstrate that cataract-related vision impairment imposes a significant and indirect economic burden, particularly as the duration of impairment lengthens. Strong associations were observed between the number of years lived with the condition and several critical productivity indicators, including the frequency of hospital visits, time lost per visit, and reduced participation in the labor force. These suggest that the longer individuals live with untreated cataracts, the greater the cumulative productivity loss, not only for the patients themselves but also for their caregivers who are often compelled to forgo income-generating opportunities.

In light of these outcomes, the study emphasizes the importance of early detection, timely intervention, and structured support programs, particularly for individuals within the economically active age groups, to reduce prolonged productivity losses. Such interventions could prevent substantial economic leakage and preserve household livelihoods. Furthermore, the observed variations in productivity losses across occupational categories with professionals, traders, and manual laborers experiencing different degrees of impact, suggest the need for inclusive and adaptive health policies. These policies should comprehensively account for the indirect socio-economic consequences of vision impairment in the state.

*Corresponding Author: **Ibrahim Kabiru Maji.**

Acknowledgement: This research is supported by TETFund NRF grant number TETF/ES/DR&D-CE/NRF2023/HSS/SDW/00069/VOL.1.

References

1. Abubakar, T., Imam, A. U., & Hassan, A. (2020). Prevalence and causes of blindness and visual impairment in Nigeria: A systematic review. Nigerian Journal of Clinical Practice, 23(4), 489-496.
2. Adio, A. O., & Onua, A. A. (2012). Economic burden of glaucoma in Rivers State, Nigeria. Clinical Ophthalmology, 6, 2023–2031.
3. Bello, S. U., Eze, U. A., Umar, M. M., Babalola, O. E., & Abdull, M. (2024). Direct non-medical and indirect costs of glaucoma care in a Nigerian Tertiary Eye Clinic. Discover Public Health, 21, 243.
4. Hodgson, T. A., & Meiners, M. R. (1982). Cost-of-Illness Methodology: A Guide to Current Practices and Procedures. Milbank Memorial Fund Quarterly. Health and Society, 60(3), 429-462.
5. Kyari, F., & Dineen, B. (2004). The prevalence and causes of blindness and visual impairment and the barriers to the up-take of eye surgery in Borno state, Nigeria. Investigative Ophthalmology & Visual Science, 45(13), 1065.
6. Rabiu, M. M., Taryam, M. O., Yusuf, M., & Maji, I. K. (2023). The economic impacts of cataract surgery on sustainable vision and quality of life in Katsina state. Health Care Science, 2, 112-119.
7. Rice, D. P. (1967). Estimating the Cost of Illness. American Journal of Public Health and the Nations Health, 57(3), 424-440.
8. Taryam, M. O., Rabiu, M. M., Muhammad, N., Oladigbolu, K., & Abdurrahman, H. (2020). Prevalence and causes of blindness and visual impairment; and cataract surgical services in Katsina state of Nigeria. British Journal of Ophthalmology, 104(6), 752-756.

*Corresponding Author: **Ibrahim Kabiru Maji.**