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A Study of the Oculovisual Disorder in Okigwe Correctional Center Immate

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ABSTRACT

Visual health is a crucial yet often neglected component of inmate well-being in correctional facilities, particularly in developing countries where prison healthcare services are under-resourced. This study aimed to assess the prevalence and pattern of oculovisual disorders among inmates of the Okigwe Correctional Center in Imo State, Nigeria. A descriptive cross-sectional study was conducted among 240 inmates selected using a consecutive sampling method. Data were collected through structured interviews and comprehensive ocular examinations, including visual acuity testing, intraocular pressure measurement, ophthalmoscopy, and refraction assessment. Variables such as age, sex, and duration of incarceration were analyzed using SPSS version 25.0. Chi-square tests were employed to determine associations, with p-values < 0.05 considered statistically significant. Out of the 240 inmates examined, the most prevalent oculovisual disorders were presbyopia (27.9%), ametropia (17.9%), and conjunctivitis (10.4%). Cataracts were present in 9.6% of inmates, with a higher prevalence among those aged 60 years and above. Amblyopia and traumatic eye injuries were less common, at 4.6% and 4.2% respectively. A statistically significant association was found between oculovisual disorders and age, sex, and duration of incarceration (p < 0.05). Male inmates exhibited a higher burden of ocular conditions compared to females, and those incarcerated for over 5 years showed increased rates of presbyopia and cataract. The findings highlight a significant burden of preventable and correctable visual impairments among inmates, especially among older individuals and those with prolonged incarceration. Routine eye care services and regular vision screening should be integrated into prison healthcare systems to improve the quality of life and reduce the risk of long-term visual disability among the incarcerated population.

Keywords

Oculovisual Disorder, Amblyopia, Conjunctivitis.

Introduction

The right to health is a fundamental human right, enshrined in various international legal frameworks including the United Nations' Standard Minimum Rules for the Treatment of Prisoners (also known as the Mandela Rules), which emphasize the importance of providing prisoners with health care equivalent to that available in the general community [1]. However, in many developing countries, including Nigeria, prison health services are often neglected, poorly resourced, and inadequately managed. Among the neglected components of prison healthcare is eye care, despite its critical role in overall well-being, functionality, and rehabilitation of inmates. Oculovisual disorders—conditions that impair the normal visual function of the eyes—include a wide range of disorders such as uncorrected refractive errors (ametropia), cataract, presbyopia, conjunctivitis, amblyopia, and trauma-induced ocular injuries. These conditions, though often preventable or treatable, can lead to significant disability if not properly managed. Visual impairment has been associated with reduced quality of life, depression, impaired mobility, and difficulty in carrying out daily activities [2]. In a correctional facility, where the environment is already restrictive and psychologically challenging, visual impairment may further limit inmates' ability to read, participate in vocational training, or engage in recreation,

thereby undermining rehabilitation efforts.

There is growing evidence that the burden of visual impairment is disproportionately high among incarcerated populations. The prevalence of oculovisual disorders among inmates tends to reflect a combination of pre-existing socio-economic disadvantages, poor access to healthcare prior to incarceration, and the deteriorating prison environment itself. A study by Martin et al. revealed that more than 60% of inmates had uncorrected refractive errors, while nearly 20% had undiagnosed or untreated cataracts [3]. These statistics are even more concerning in sub-Saharan Africa, where prison healthcare systems are underfunded, understaffed, and overwhelmed [4].

In Nigeria, the prison system faces multiple challenges that compound the risk of visual health deterioration. Overcrowding, poor sanitation, inadequate nutrition, and minimal access to medical professionals, including ophthalmologists, create conditions that exacerbate the incidence and severity of eye disorders [5]. A study conducted in the South-Western region of Nigeria found a high prevalence of conjunctivitis, pterygium, and presbyopia among inmates, most of whom had no access to vision correction [6]. Additionally, visual screening is rarely a part of routine intake assessments or periodic health checks in most Nigerian correctional centers, allowing preventable visual impairments to persist or worsen.

The situation in Okigwe Correctional Center reflects this national reality. With an aging inmate population and long-term incarceration periods, visual health challenges are common but poorly documented. Local epidemiological data are necessary to guide resource allocation and policy formulation. Without localized studies, prison health interventions risk being misdirected or inadequate. Understanding the pattern, prevalence, and demographic distribution of oculovisual disorders within a specific correctional facility is critical for identifying priority areas for intervention.

Relationship between age, sex, and duration of incarceration and the occurrence of specific oculovisual disorders is a significant aspect worth exploring. Ageing naturally predisposes individuals to cataract and presbyopia due to changes in the lens and accommodative muscles [7]. Younger inmates may be more prone to ocular trauma or amblyopia, particularly if they come from disadvantaged backgrounds where early visual screening was unavailable [8]. Sex differences, though often less emphasized, may reflect varying risk exposures and access to care within the prison setting.

Despite the documented need for prison-based visual health services, there is a dearth of empirical studies focusing on Nigerian prison populations. Most available studies have been regional, hospital-based, or limited in scope. A comprehensive understanding of visual health challenges in correctional settings remains largely unexplored, particularly in the South-East region of Nigeria. This research seeks to bridge that gap by conducting a focused investigation on the prevalence and distribution of oculovisual disorders among inmates in Okigwe Correctional Center, and to examine the relationship between these disorders and sociodemographic variables. This study is both timely and necessary. It is expected to provide baseline data that will inform prison health policy, highlight gaps in eye care provision, and stimulate further research on inmate health. Ultimately, addressing oculovisual disorders within correctional facilities goes beyond improving individual health outcomes; it is about upholding human dignity, ensuring equity in health access, and promoting effective rehabilitation and reintegration into society.

Methodology

This study adopted a cross-sectional descriptive design to evaluate the prevalence and pattern of oculovisual disorders among inmates at the Okigwe Correctional Center. The study population consisted of all consenting inmates residing in the facility at the time of the study. Ethical clearance was obtained from the appropriate ethical review board, and permission was also granted by the Nigerian Correctional Service authorities. Informed consent was obtained from each participant after explaining the purpose and nature of the study.

The inclusion criteria included inmates aged 18 years and above who consented to participate and were available during the study period. Inmates who were critically ill or refused to participate were excluded. A structured interviewer-administered questionnaire was used to collect socio-demographic data, including age, sex, educational status, and duration of incarceration.

Visual acuity was assessed using a Snellen chart at 6 meters in a well-illuminated area. For those who could not read letters, the E-chart or pictorial chart was used, depending on literacy level. Pinhole test was conducted for individuals with visual acuity less than 6/6 to differentiate refractive error from other causes of visual impairment. Refractive errors were defined based on improvement in vision with pinhole or lens correction, following the criteria set by the World Health Organization [9]. Anterior segment examination was performed using a pen torch and magnifying loupe. Fundus examination was conducted using a direct ophthalmoscope in a dimly lit room after pupil dilation with 1% tropicamide where necessary.

Visual impairment was categorized based on the WHO classification: normal vision (6/6–6/18), moderate visual impairment (<6/18–6/60), severe visual impairment (<6/60–3/60), and blindness (<3/60) [10]. Diagnoses of specific oculovisual disorders were made clinically using standard diagnostic criteria. All examinations and diagnoses were made by a licensed optometrist and verified by a consultant ophthalmologist.

Data collected were entered into Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize the data. Chi-square tests and logistic regression analysis were conducted to determine associations between

oculovisual disorders and sociodemographic variables. A p-value of less than 0.05 was considered statistically significant.

Results

Table 1: Demographic Characteristics of the Study Population.

Variables	Total (n=120)	Percent %
Gender		
Female	60	50%
Male	60	50%
Refractive Error		
Astigmatism	40	33%
Hyperopia	40	33%
Myopia	40	33%
Age group		
20 – 24	27	23%
25 – 29	21	18%
30 – 34	17	14%
35 – 39	17	14%
40 – 44	15	12%
45 – 50	23	19%

Table 1 presents the age and sex distribution of 240 inmates in a correctional centre. The age range spans from 28 years to over 70 years, with males comprising a significant majority (88.33%) and females representing only 11.67% of the total inmate population. The highest proportion of inmates falls within the 28–30-year age group, accounting for 31.25% (n=75) of the total. This is followed by the 40–49-year group (23.75%, n=57) and the 30–39-year group (17.08%, n=41). Together, inmates aged 28–49 years represent 72.08% of the population, indicating a predominance of younger to middle-aged adults. Inmates aged 50–59 years make up 15.42% (n=37), while those aged 60–69 and 70 years and above constitute 8.33% (n=20) and 4.17% (n=10) respectively, suggesting a smaller representation of older adults. sex distribution across age groups, males consistently outnumber females in all categories. Notably, there are no female inmates in the 60–69 and 70+ age groups. The sex disparity is most pronounced in the 28–30-year group (66 males vs 9 females), highlighting a youthful male dominance among the inmate population.

The data indicate that oculovisual disorders are more frequently observed among inmates who have been incarcerated for shorter durations, particularly those within the 1 to <12 months category. This group exhibits the highest prevalence of all recorded disorders except cataract, including ametropia (66.67%), conjunctivitis (42.31%), amblyopia (77.78%), trauma (10.00%), and presbyopia (55.22%). As the duration of incarceration increases, there is a general decline in the prevalence of most visual disorders. However, cataract and presbyopia appear to increase notably among inmates with longer stays. For instance, cataract is most common in inmates incarcerated for 108 months and above, accounting for 43.48% of cases. Similarly, presbyopia reaches its peak in the same group, with a prevalence of 31.34%. Some conditions such as amblyopia and ocular trauma are limited to shorter incarceration durations and are absent in the long-term inmate categories. Conjunctivitis shows a more even distribution across different incarceration periods, with a notable peak (19.23%) also observed among those incarcerated for 108 months and above. Despite these trends, the overall statistical analysis indicates that the association between duration of incarceration and prevalence of specific oculovisual

Table 2: Oculovisual Disorder in Correctional Center Immate with Duration of Incaceration.

DURATION OF INCACERATION (month)	AMETROPIA N (%)	CONJUNTIVITIS N (%)	CATARACT N (%)	AMBLYOPIA N (%)	TRAUMA N (%)	PRESBYOPIA N (%)
1 to < 12months	28 (66.67)	11 (42.31)	2 (8.70)	7 (77.78)	10 (10.00)	37 (55.22%)
12 to < 24months	1 (2.38)	-	-	-	-	2 (2.99%)
24 to < 36months	1 (2.38)	1 (3.85)	-	-	-	-
36 to < 48months	4 (9.52)	3 (11.54)	3 (13.04)	2 (22.22)	-	5 (7.46%)
48 to < 60months	4 (9.52)	2 (7.69)	2 (8.70)	-	-	4 (5.97%)
60 to < 72months	2 (4.76)	3 (11.54)	-	-	-	4 (5.97%)
72 t0 < 84months	-	1 (3.85)	2 (8.70)	-	-	6 (8.97%)
84 to < 96months	2 (4.76)	-	4 (17.39)	-	-	5 (7.46%)
96 to < 108	-	-	-	-	-	4 (5.97%)
108 and above	-	5 (19.23)	10 (43.48)	-	-	21 (31.34%)
Total	42	26	23	9	10	67

P > 0.05

Table 3: Age Distribution of Oculovisual Disorder in Correctional Center Inmates.

AGE (yrs)	AMETROPIA N (%)	CONJUNTIVITIES N (%)	CATARACT N (%)	AMBLYOPIA N (%)	TRAUMA N (%)	PRESBYOPIA N (%)
28 to 39	10 (25.00%)	-	-	7 (63.64)	9 (75.00)	-
40 to 49	12 (30.00)	1 (4.17)	2 (7.14)	3 (27.27)	3 (25.00)	7 (7.61)
50 to 59	4 (10.00)	4 (16.67)	5 (17.86)	1 (9.09)	-	18 (19.57)
60 to 69	8 (20.00)	7 (29.17)	15 (83.57)	-	-	39 (42.39)
70 & ab	6 (15.00)	12 (50.00)	6 (21.43)	-	-	28 (30.43)
Total	**40**	**24**	**28**	**11**	**12**	**92**

P<0.05

disorders is not statistically significant (P > 0.05).

Table 3 highlights the distribution of various oculovisual disorders among correctional center inmates across different age groups, ranging from 28 years to 70 years and above. The disorders assessed include ametropia, conjunctivitis, cataract, amblyopia, trauma-related vision loss, and presbyopia. The table provides valuable insights into how the prevalence of each disorder correlates with the inmates' ages. Ametropia appears across all age groups but is most frequent among individuals aged 40 to 49 years (30.00%), followed closely by the 28 to 39 age group (25.00%). This suggests that refractive errors affect inmates in early and middle adulthood, possibly due to pre-existing conditions prior to incarceration. Conjunctivitis increases steadily with age and peaks in the oldest group (70 years and above) at 50.00%, followed by the 60 to 69 age group at 29.17%. This pattern could be attributed to decreased immunity, poorer hygiene, or chronic exposure to environmental irritants among older inmates. Cataract prevalence rises dramatically with age, with the highest concentration (83.57%) found among inmates aged 60 to 69 years. This trend is expected, as cataracts are predominantly age-related. Even inmates aged 70 and above also show a relatively high rate (21.43%), reinforcing the impact of aging on lens opacity. Amblyopia is more prominent in younger inmates, especially those aged 28 to 39 years, who represent 63.64% of the cases. This condition is often developmental and typically manifests early in life. Its occurrence in this age bracket suggests these cases are longstanding and may have been untreated before incarceration. Trauma-related visual disorders are primarily found in younger inmates, particularly those aged 28 to 39 years (75.00%), and to a lesser extent among those aged 40 to 49 years (25.00%). This could reflect higher levels of physical conflict or accidents among younger, more active inmates. Presbyopia, as expected, increases with age and is most prevalent in inmates aged 60 to 69 (42.39%) and 70 and above (30.43%). These findings align with the natural aging process of the eye, where near vision begins to decline typically after the age of 40.

The tables demonstrates a statistically significant relationship (P < 0.05) between age and the occurrence of oculovisual disorders. Age appears to be a key determinant in the pattern and prevalence of specific eye conditions among the inmate population. Disorders like cataract and presbyopia increase with age, while trauma and amblyopia are more prevalent in younger individuals.

Table 4 illustrates the distribution of various oculovisual disorders among male and female inmates in the correctional center. The conditions evaluated include ametropia, conjunctivitis, cataract, amblyopia, traumatic eye injury, and presbyopia. The data reveals marked disparities in the occurrence of these disorders based on sex.

The prevalence of all recorded oculovisual disorders is significantly higher among male inmates. Ametropia, or refractive error, is predominantly observed in males, accounting for 83.72% of the cases, while females represent only 13.95%. This pattern is similarly reflected in cases of conjunctivitis, with 84.00% of the affected individuals being male and 16.00% female. Cataracts, which are among the leading causes of vision impairment globally, show a pronounced male predominance, representing 92.31% of the cases, compared to only 7.69% in females. This may suggest greater exposure to cataract risk factors among males or potentially lower reporting or detection rates in females. Amblyopia was reported exclusively among male inmates (100%). This could indicate that the condition, typically diagnosed in childhood, remained untreated or unnoticed until incarceration. The absence of amblyopia in females might be due to sample size limitations or differences in early visual health experiences. Trauma-related ocular disorders also follow this trend, with 88.89% of cases occurring in males and 11.11% in females. The higher incidence in males could be associated with a greater likelihood of engaging in physically risky behavior or being involved in altercations within the correctional environment. Presbyopia, a common age-related decline in near vision, is similarly more prevalent among males, accounting for 89.89% of reported cases. Only 10.11% of presbyopia cases occurred among female inmates. The distribution of these disorders indicates a statistically significant relationship (P < 0.05) between sex and the occurrence of oculovisual conditions. The overwhelming predominance of visual disorders in males may reflect a higher representation of male inmates in the population studied or underlying behavioral, environmental, or occupational factors that contribute to ocular health disparities. This analysis underscores the need for targeted ocular health assessments and interventions, particularly for male inmates who appear to bear the greater burden of visual impairment within the correctional facility.

Discussion

This study revealed a high prevalence of oculovisual disorders among inmates at the Okigwe Correctional Center, consistent with findings from similar studies conducted in correctional facilities in Nigeria and other parts of the world [11-13]. The high prevalence observed may be attributed to poor living conditions, limited access to eye care services, and lack of awareness among inmates regarding the importance of ocular health.

Refractive errors were the most common oculovisual disorders identified, similar to findings from studies conducted in other

Table 4: Oculovisual Disorder with Sex of Correctional Inmates.

SEX	AMETROPIA N (%)	CONJUNTIVITIES N (%)	CATARACT N (%)	AMBLYOPIA N (%)	TRUAMATIC N (%)	PRESBYOPIA N (%)
Male	37 (83.72)	21 (84.00)	24 (92.31)	9 (10.00)	8 (88.89)	80 (89.89)
Female	6 (13.95)	4 (16.00)	226 (7.69)	-	1 (11.11)	9 (10.11%)
Total	**43**	**25**	**26**	**9**	**9**	**89**

P<0.05

Nigerian prisons [14,15]. This highlights the need for routine vision screening and provision of corrective lenses in correctional facilities. The presence of uncorrected refractive errors may significantly impact the quality of life and productivity of inmates.

Cataracts were the second most prevalent condition, consistent with the aging population observed among some inmates. This finding aligns with previous reports indicating that age-related ocular conditions are common in prison populations due to the increasing number of elderly inmates [16]. Early detection and surgical intervention are crucial to prevent irreversible visual impairment.

The study also found a significant association between increasing age and the prevalence of oculovisual disorders. Older inmates were more likely to present with conditions such as cataracts, presbyopia, and glaucoma. This is in agreement with existing literature indicating that the risk of visual impairment increases with age [17]. Similarly, a longer duration of incarceration was associated with higher rates of oculovisual disorders, suggesting that prolonged exposure to poor environmental conditions and inadequate healthcare services may contribute to the development or progression of these disorders. Male inmates had a higher prevalence of oculovisual disorders compared to females, although the difference was not statistically significant. This could be due to the higher number of male inmates in the facility and differences in health-seeking behavior between genders, as reported in other studies [18].

The study emphasizes the need for regular eye examinations, improved access to eye care services, and appropriate referrals for inmates in correctional centers. Integrating eye care into the general health services of correctional facilities would contribute significantly to improving the ocular health and overall well-being of inmates.

Conclusion

This study highlights a high burden of oculovisual disorders among correctional center inmates, particularly among older males. Age and duration of incarceration were strongly associated with conditions like cataract and presbyopia. Younger inmates were more prone to refractive errors and trauma-related issues. These findings underscore the urgent need for age- and sex-sensitive eye care services within prison settings.

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