



THE DEMOGRAPHIC PROFILE AND TASK PERFORMANCE OF LOW VISION LEARNERS ATTENDING INCLUSIVE SCHOOLS IN KAKAMEGA COUNTY, KENYA

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Abstract:

Background: Task performance of the low vision learners is a key factor in influencing their comfort while at school and possibly cubing the increasing school dropouts in these schools. **Purpose:** This study aimed at investigating the task performance of low vision learners attending inclusive schools in Kakamega County. **Setting:** The study was conducted in public primary inclusive schools which hosts low vision learners in Kakamega County, Kenya. **Methods:** A census survey identified 21 low vision learners attending 11 primary public inclusive schools in Kakamega County. Out of the 21 low vision learners who were selected, 19 (90.5%) were assessed. The participants were guided to respond to a functional vision questionnaire, the LV Prasad Functional Vision Questionnaire, which was meant to elicit their ease of performing activities of daily living. Data was entered into SPSS version 25 software and analyzed using descriptive statistics. Data was summarized and presented using tables. **Results:** There were 13 (68.4%) males and 6 (31.6%) females who participated in this study. Participants were aged between 10 and 21 years old. The mean age was 14 while the modal age was 13 years. The highest number of low vision learners, six (31.6%), were in grade eight while the lowest number recorded, one each (5.3%), were in grades two and three. There was poor performance in the activities of daily living among the participants, which majorly included difficulty in participation in sports and games (78.9%), reading (89.5%) and orientation and mobility (57.9%). The findings enabled the study to determine the status of day-to-day task -performance at school. **Conclusion:** Most low vision learners attending inclusive schools have difficulty in performance of activities of daily living hence the need to device ways of addressing their visual demands in an inclusive school set-up.

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1. Introduction

Low vision lowers the quality of life of the affected individual; the more severe the impairment, the lower the quality of life.¹ Low vision patients tend to suffer a lot of depression.² This in turn causes poor functionality on reading rehabilitation.³ Furthermore, visual impairment has an economic impact on the lives of the affected individuals, their families and society at large.⁴ Low vision not only affects the family in terms of their role towards the affected person but also their psychological state of mind where they have to adjust their lives to fit to the responsibilities of taking care of a low vision family member.⁵ These studies justified the need for an inclusive learning system where social and psychological aspects of life can be taken care of, and this is what the government of Kenya is advocating for.

Previous studies had highlighted the difficulties encountered by low vision persons when attempting to perform various activities of daily living. Previously, some challenges had been identified as hindering the participation of children with disabilities in sports and these included: negative attitudes of the society towards disabilities, unwillingness of the disabled children to participate in sports and lack of skilled instructors.⁶ Lack of awareness is a key barrier to the provision and uptake of low vision services.⁷

Children with better visual acuity express better motor skills than those with low vision.⁸ It has also been established that poor visual acuity affects task performance.⁹ A previous study highlighted that performance of visually impaired learners is specific to the nature of tasks that they are assigned to do.¹⁰ Many low vision patients who have central vision deficits are flexible enough to adjust to eccentric fixation after undergoing training.¹¹ On the contrary, another study reported that deficits in the visual fields result in limitations in performing certain activities of daily living like mobility, reading and writing.¹² Some aspects of vision like contrast sensitivity and fixation instability significantly affect reading performance.¹³ Low vision causes poor functionality on reading rehabilitation.¹⁴

While many factors were identified as hindering placement of disabled learners including visually impaired learners into mainstream schools, the visual performance aspect of it had been underexplored. More emphasis had been placed on assessing the psycho-social aspects of life. Most of the causes of dropouts mentioned included: stigmatization, inappropriate curricula, poorly equipped institutions of learning and insufficiently trained teachers. It was then very important to exhaustively explore the ability of visually impaired learners to perform activities of daily living with more gravity before looking at other challenges aforementioned.

2. Methods

2.1 Study Design

This study employed a school-based observational cross-sectional study design.

2.2 Study Population

All the low vision learners in inclusive schools in Kakamega County, aged 10 to 21 years, formed the study population for this research (visual acuity of less than 6/18 in the better eye up to 3/60 or a visual field of less than 10 degrees from the point of fixation after best correction). Learners with multiple disabilities were excluded from the study. This is because some disabilities like autism affect the learners' cognitive reasoning and independent response and could affect how they respond to the Functional Vision Assessment Questionnaire. Low vision learners below 10 years were also excluded from this study because they would not be able to respond effectively to the questionnaire. Furthermore, learners whose parents didn't give their assent or consent and learners with incomplete questionnaires were excluded from this study.

2.3 Data Collection

The LV Prasad Functional Vision Assessment (FVA) questionnaire was adopted and administered to the learners. The researcher guided the learners on how to complete the questionnaire and allowed them to make their own decisions. Learners gave their responses to questions that addressed the various activities of daily living. These included assessing their ability to perform various fine and gross motor tasks which included reading, sports participation, self-care and orientation and mobility.

2.4 Data Analysis

The data collected for the research was captured into Microsoft Excel, edited, coded and thereafter the cleaned and verified data was transferred into the Statistical Package for the Social Sciences (SPSS) (version 25) software. Dependent and independent variables were derived, and data was analyzed using descriptive and inferential statistics as well as percentages and presented using bar graphs and charts.

2.5 Ethical Considerations

Ethical approval to conduct the research was obtained from the Institutional Review and Ethics Committee (IREC) of Masinde Muliro University of Science and Technology (MMUST/IERC/113/2020). Furthermore, a research permit was obtained from the National Commission of Science and Technology (NACOSTI) (Reference number: 523567). The researcher adhered to all the ethical protocols established by the institution and all data obtained was protected on a password-controlled computer so that only the researcher would have access to it. Data was stored as per the university archiving policy.

3. Results

3.1 Demographic Profile of the Low Vision Learners

There were 12 male (68.4%) and 7 female (31.6%) low vision learners indicating an unequal gender distribution of low vision learners attending Kakamega County inclusive schools. The age of the low vision learners ranged from 10 to 21 years old. The highest number of learners was in the 13 year age group while the mean age was 14.47 years with a standard deviation of 3.04 years. The results showed a normal distribution across age where the least numbers were recorded at the tail ends of 10 years and 21 years of age. The highest number of low vision learners six (31.6%) were in grade eight while the lowest number recorded one each (5.3%) were in grades two and three. All grades from two to eight were represented in this study. The majority of learners (57.9%) were not sure of the duration for which they have been low vision patients while the rest of the learners (42.1%) recorded a period of five to 16 years of visual impairment.

Table 1: The demographics of learners with low vision in inclusive schools

Variables		n = 19	%
Gender	Male	13	68.4
	Female	6	31.6
Age	10	1	5.3
	11	2	10.5
	12	1	5.3
	13	6	31.6
	14	2	10.5
	15	1	5.3
	16	1	5.3
	18	3	15.8
	19	1	5.3
	21	1	5.3
Grade	2	1	5.3
	3	1	5.3
	4	2	10.5
	5	3	15.8
	6	2	10.5
	7	4	21.1
	8	6	31.6
Duration of impairment (years)	11	1	5.3
	13	2	10.5
	14	1	5.3
	15	1	5.3
	16	1	5.3
	5	1	5.3
	6	1	5.3
	Not sure	11	57.9

3.2 The daily task-specific requirements for low vision learners attending inclusive school system in Kakamega County

On the average, most of the low vision learners reported a moderate difficulty in conducting activities of daily living. The mainly affected areas were reading, sports participation and orientation and mobility in which more than half: 89.5%, 78.9% and 57.9% of the learners recorded some form of difficulty respectively.

Table 2: The daily task-specific requirements for low vision learners attending inclusive school system in Kakamega County

Daily Task	Response	n	%
Difficulty walking alone in the corridors	A great deal	1	5.3
	A moderate amount	3	15.8
	Little	7	36.8
	No	8	42.1
Difficulty walking home at night Contrast Sensitivity	A great deal	6	31.6
	A moderate amount	1	5.3
	Little	5	26.3
	No	6	31.6
	Unable to do the activity	1	5.3
Difficulty reading text books at arm length Near Visual Acuity	A great deal	8	42.1
	A moderate amount	4	21.1
	Little	4	21.1
	No	2	10.5
	Yes	1	5.3
Difficulty writing along a straight line Near Visual Acuity Visual Field	A great deal	2	10.5
	Little	6	31.6
	No	10	52.6
	Yes	1	5.3
Difficulty in finding the next line when reading Near Visual Acuity Visual Field	A great deal	2	10.5
	A moderate amount	3	15.8
	Little	5	26.3
	No	9	47.4
Difficulty locating dropped objects in the classroom Stereopsis	A great deal	5	26.3
	A moderate amount	2	10.5
	Little	5	26.3
	No	6	31.6
	Unable to do the activity	1	5.3
Difficulty in threading a needle Near Visual Acuity	a great deal	9	47.4
	A moderate amount	3	15.8
	Little	1	5.3
	N/A	4	21.1
	No	2	10.5
Difficulty in climbing up or down stairs Stereopsis Visual Field	A great deal	4	21.1
	A moderate amount	1	5.3
	Little	4	21.1
	No	10	52.6
Difficulty in lasing shoes Visual Acuity	A great deal	2	10.5
	A moderate amount	1	5.3

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	Little	3	15.8
	N/A	6	31.6
	No	7	36.8
Difficulty in locating a ball when playing Distance visual acuity	A great deal	3	15.8
	A moderate amount	3	15.8
	Little	7	36.8
	N/A	1	5.3
	No	5	26.3
Difficulty applying paste on toothbrush Stereopsis	A great deal	1	5.3
	A moderate amount	1	5.3
	Little	3	15.8
	N/A	2	10.5
	No	12	63.2
Difficulty in identifying colors Color vision	A great deal	5	26.3
	A moderate amount	2	10.5
	Little	4	21.1
	No	8	42.1
Difficulty participating in games and sports Stereopsis Distance Visual Acuity	A great deal	6	31.6
	A moderate amount	3	15.8
	Little	5	26.3
	No	4	21.1
	Yes	1	5.3

4. Discussion

4.1 Demographics of Low Vision Learners

There were more male than female low vision learners attending inclusive school systems in Kakamega County. This is contrary to a study that was done in Asia, Africa and Latin America which showed that low vision was higher in girls than in boys ¹⁴. This could imply that prevalence of low vision varies from one gender to the other depending on geographical location. There were more low vision learners in grade eight, the highest grade in Kenyan Primary school system, as compared to the lower grades. Studies have not identified the relationship between low vision and grade or level of education. This could probably be attributed to the challenges with inclusive learning in Kenya, which may affect learners in the lower grades more than those in upper grades and probably resulted in school dropouts. The majority of the low vision learners were unaware of when they became visually impaired but 42.1% indicated that they had been impaired for a period of between 5 to 16 years. This corresponds with the findings of (Khan *et al.*, 2005), a study which identified lack of awareness as a barrier to the provision and uptake of low vision services.

4.2 Task Performance of Low Vision Learners while at School

This involved testing the low vision learners' ability to recognize people, orientation and mobility, ability to read at near and at far, writing, self-care and ability to participate in games and sports. The findings of this study showed that on the average, the low vision

learners attending inclusive school system in Kakamega County had a moderate difficulty in conducting most of the activities.

The study found out that most (78.9%) of the learners reported some form of difficulty in participating in games while only 21.1% reported no difficulty in participating in games and sports. Previously, some challenges had been identified as hindering the participation of children with disabilities in sports and these included: negative attitudes of the society towards disabilities, unwillingness of the disabled children to participate in sports and lack of skilled instructors ⁶. Since low vision is a form of disability, these very barriers could be the reason many low vision learners in this study reported some difficulty in participating in sports and games. Furthermore, participation in most of these activities require good stereopsis yet poor stereopsis affects becomes a barrier to participation in most of these activities.¹⁵

Reading is one of the major tasks that learners are engaged in. Out of the low vision learners that participated in this study, 89.5% showed some difficulty in reading whereas only 10.5% had no difficulty reading textbooks at arm length. This huge difficulty in reading is quite consistent with previous studies which found out that low vision causes poor functionality on reading rehabilitation.³ Of these learners, 52.6% reported some form of difficulty finding the next line when reading while 47.4% reported difficulty in reading along a straight line. This agrees with studies that have been done previously which found out that contrast sensitivity and fixation instability significantly affect reading performance.¹³

Regarding orientation and mobility, more than half (57.9%) of the low vision learners reported difficulty, while 42.1% reported no difficulty in walking alone in the corridors. Concerning night vision, 68.4% reported either difficulty or complete inability to walk alone at night while 31.6% reported no difficulty in walking at night. Other activities of daily living that participants reported difficulty in included: cleaning, locating doors of latrines, mopping, playing, running and sweeping. There was a correspondence with a study by Kempen and Ballemans who found out that low vision had an effect on activities of daily living in adults. Findings of this study prove that it is likewise with children.¹⁶

5. Conclusion

Most low vision learners attending inclusive schools have difficulty in performance of activities of daily living hence the need to device ways of addressing their visual demands in an inclusive school set-up. The most affected activities included reading, sporting and orientation. Findings of this study elicited relevant information that will inform policy towards improving the vision-related components and needs that will address the increasing dropout rate of learners with low vision from mainstream schools.

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Competing Interests

The authors declare that there are no personal or financial interests that may have influenced the writing of this article.

Author Contributions

Doctor Teresa Okoth (TO) participated in the supervision of the Master's degree research conducted by Doreen Ashioya as well as the development of the manuscript. DA wrote the manuscript with editorial revisions and technical input and writing from TO.

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Data Availability

The data from this study is readily available for use by other researchers and stakeholders.

Disclaimer

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