The Role of Healthy Vision in Educational Performance Among Secondary School Students in Federal Capital Territory (FCT) Abuja, Nigeria

Oluwatoyosi Ayobami Adekeye[1,2], Feyishike Toyin Adekanye[3]

[1] Medela Healthcare Initiative, 28 Anon Plaza, Abuja, Nigeria
[2] Bingham University Abuja-Keffi Rd, 961105, New Karu, Nasarawa State Nigeria
[3] Pan-Africare Abuja Nigeria, Sangha Street, Off Mississippi Street, Federal Capital Territory, Area: Maitama, Abuja, Nigeria

Corresponding Author: Oluwatoyosi Ayobami Adekeye

ABSTRACT

BACKGROUND: Approximately, eighty percent of the global burden of blindness occurs in developing countries. One in three of such cases affect children, are preventable, or treatable, mostly, using corrective lenses. Visual impairments can affect the development of a child, including their educational performance, social development and personal confidence. This study aims to determine the role of healthy vision in Educational Performance among secondary school students.

METHODS: This cross-sectional study consisted of qualitative data gathering conducted in Secondary Schools in the Federal Capital Territory (FCT) Abuja, Nigeria. It involved two focus group meetings and four semi-structured key informant interviews. This process was guided by a question guide, thematic content analyses was conducted, and subtle themes emerged.

RESULTS: The emergent themes were: "Knowledge on healthy vision" "Attitude towards maintaining healthy vision", and "Behaviors that promote healthy vision." Each theme consisted of a few sub-themes which further enriched the study results.

CONCLUSION: This study concludes that healthy vision promotes academic performance of secondary school students in Federal Capital Territory Abuja. Nigeria. Recommendations for future research, practice and policy were subsequently suggested.

Keywords: Healthy Vision, Educational Performance, Secondary School Students, Federal Capital Territory, Knowledge on healthy vision

INTRODUCTION

Visual perception is the ability to interpret information from the effects of visible light reaching the eye(1) vision is significant sense that allows for processing and storage of the information for future use. It is the sense that aids the identification of characters that facilitates integration with other sense(2). For secondary school students, visual health goes beyond the ability to visualize the board, it plays an important role in educational performance.(3) As students' progress academically, there is an increased demand on their vision. These demands may include learning from the board, the use of technology such as computers, and more advanced reading. When vision is sub-par, the educational environment could easily become difficult to navigate, hindering educational success (3).

Globally, visual impaired affects an estimated 2.2. billion people; the majority of who are from low- and mid-income countries(4). Visual impairment often begins at an earlier age but may go

unnoticed for a while, as the child attempts to cope with the condition. In the United States, one in five pre-schoolers has a visual impairment, with one in four requiring corrective lenses prior to school enrolment(3).

Approximately, eight percent (80%) of the global burden of blindness occurs in developing countries(5). Where one in three of such cases are preventable or treatable, mostly by the use of corrective lenses(6). Despite the high numbers of individuals affected by visual impairments, only about 800 million persons have access to eye examination and affordable correction, of which, only a third are children(5). It is worthy to note that visual impairments can affect the development of a child, including their educational performance, social development and personal confidence, which may extend into adulthood(3).

Previous studies have established significant links between visual performance and reading performance, where it was noted that healthy vision was predictive of successful reading achievement in children(7). The study also observed that the growth of the child was accompanied by worsening educational success since reading tasks progressively become more complex while print size decrease with age. While the role of healthy vision in educational performance is a well- debated topic, several studies have concluded that certain demographic risk factor impact educational performance such as socio- economic status, ethnicity, and previous educational background(8-10).

However, the impact of healthy vision in educational success has not been widely documented, but, Maples in his 2003 study concluded that "visual factors were significantly better predictors of academic success than either race or socioeconomic status" (11). Inference from a similar study also suggested that participants with visual impairment showed less proficiency in reading, and such, were less successful educationally than those with healthy vision(12).

In Nigeria, persons eighteen years and younger constitute about forty-five percent of the entire population, with about twenty percent of them aged 10-18 years(5). In 2010 4,448,100 students enrolled into 7,104 secondary schools in Nigeria (13). Records show that those in the final year who participated in the West African Examination Council (WAEC) tests, a test that qualifies students for university, performed poorly(13). The reasons for poor performance are not well understood but may not be unrelated to healthy vision in part. Other attempts to delineate the causes of poor performance in WAEC also failed to consider visual impairment as a barrier to academic success. Suggestions were made to Nigerian government by Ogu in 2016 to review the National Policy on Education but failed to mention the need for healthy vision(14).

In the Federal Capital Territory, Abuja in 2016, approximately 400,000 students aged 10- 17 years were enrolled in secondary schools(15). Yet, there are no records of visual testing to ascertain healthy vision among these students, even though several studies have established the role of healthy vision to educational performance(7, 16-20) Several others also advocated for the inclusion of healthy vision as a core competence to boost educational performance(21) but none of these recommendations have been implemented.

Hence, it has been ascertained that impairment of vision significantly affects the academic performance in children(22), may lead to academic failure(23), and impact activities of everyday life(1). It is imperative that empirical evidence that elicits the importance of visual testing and healthy vision as it relates to educational performance in secondary schools in the FCT be conducted to provide answers to the following

The overall aim of this study is to determine the role of healthy vision in Educational Performance among secondary school students in the Federal Capital Territory (FCT) Abuja, Nigeria.

METHODS AND MATERIALS

Study Design

This study employed a cross-sectional design that consisted of qualitative data gathering.

On the other hand, its limitation is basically on the reality that cannot be quantified. Other researchers have tagged the limitations of the qualitative method as solely a dynamic of social elements. This method is ambiguous in its natural language. In addition, qualitative methods are most often not extended to larger populations with a similar degree of conviction (24).

Population of the Study

The population of the study includes two secondary schools in Abuja Municipal Area Council of the Federal Capital Territory (FCT) Abuja, which are public schools.

The total population of the two secondary schools which are Model Secondary School Maitama, Abuja and Government Secondary School Wuze Zone 3, Abuja is 2280. (See Table 1)

TABLE 1: SHOWING THE TOTAL POPULATION OF THE TWO TARGET SECONDARY SCHOOLS

S/NO	NAME OF SCHOOLS	NO. OF STUDENTS	NO. OF TEACHERS	NO. OF SCHOOL ADMINISTRATORS	TOTAL
1	Model Secondary School, Maitama	1197	72	18	1287
2	Government Secondary School, Wuse Zone 3	913	65	15	993
	TOTAL	2110	137	33	2280

Source: Federal Capital Territory Secondary Education Board

Ethical Approval

This study was reviewed and approved by the Research Ethics Committee of the University of Roehampton, the Federal Capital Territory Secondary Education Board's Institutional Review Board (FCT-SEBIRB). Ethics application form, ethics risk assessment forms were also completed and submitted to the Chair of Roehampton online research ethics committee. The data were coded with anonymous identification numbers, and names and other personal identifiers were not collected during the study. All information collected were kept and processed as confidential by the researcher.

Participant Recruitment
Inclusion Criteria:

The study included voluntary parents, caregivers, school administrators and teachers who were 18 years and older and were fluent in English language. Basically, it involved interested parents and caregivers who are concerned about their child, children, or wards' performance in the school and who needed to share their experience and also gain additional information on where to receive vision health services.

Exclusive Criteria:

This study excluded out - of – school students, parents, caregivers, teachers, and school administrators who did not volunteer to participate in the study.

Recruitment:

A notice developed by the researcher in collaboration with the school administrators was sent out to teachers, parents, guardians, and other caregivers across both participating schools, informing them of the upcoming research study. A selected school event where most of the target population were expected to be in attendance in each participating school, was chosen as the recruitment venues for persons who met the inclusion criteria and were interested in participating in the study voluntarily to sign up for participation. The selected participants were further given details of when and where the actual study would take place.

TABLE 2: Showing Demographic Distribution of Study Participants

Demographics	Frequency (n)
Gender	
Male	8
Female	12
	20 respondents
Age (Years)	
18-25	0
25-40	6
40+	14
Role	
Parent	6
Teacher	6
Caregiver	3
School Management	4
Guardian	1
Level of Formal Education	
Primary	0
Secondary	1
Higher Level	19

Sampling Technique

The sampling technique employed was the snowball sampling technique. Adi (2020) posited that "snowball sampling or chain-referral sampling is a non-probability sampling technique in which the samples have attributes that are difficult to secure. Hence, this is a sampling technique, in which existing themes provide referrals to recruit samples need for a research study".

Sample Size

The sample size of this study is being influenced by the time frame of the study, research questions, and availability of resources. Hence, as the involvement of parents/guardians/caregivers, teachers and school administrators are voluntary participations, four clusters involving 60 participants will be created hence a simple random selection of 10 parents/guardians/ caregivers and 10 teacher's/school administrators making it 20 participants will be the sample size for the study. This will help to address the challenge of qualitative research time, tapping, retaining attention, willingness to participate and have basic information about the child.

Method

The researchers sought permission from school authorities to speak to willing parents, caregivers, teachers, and school administrators selected at random, during student drop-off, pick-up or at other school extra-curricular activities, for example, sports or social days. Willing participants were scheduled to participate in the review of consent forms prior to participation in the study. They were informed that interpreters would be made available for anyone who needed one. At the completion of the consent review, they were asked if they fully understood the study and their voluntary participation. They were subsequently advised on their right to decline participation at any time during the process, and participants were asked if they had any questions pertaining to the study, the consent, and their participation. After this, an interview session was scheduled based on the availability of the participants.

Measures

Initial informal discussion was held with various stakeholders at both participating schools to help determine the nature and extent of issues around good eye health among students. Through this method, subtle themes emerged that were supported by some of the questions from the approved question guide, which formed the basis of our focus group discussion and semi - structured interviews. This process also yielded valuable information on who to contact as gatekeepers, and subsequent key informant.

Data Collection Tools:

In order to promote quality and objective findings, results should be valid and reliable. Hence, for the qualitative component of the research where a focus group discussion was held, open-ended questions were asked, such that not for any reason will the research imply that the answer is right or wrong. Also, a peer review will support the research appropriateness. These questions were developed by the researcher and has been reviewed by the University supervisor assigned to the researcher.

Sessions:

The focus group session was held in a comfortable meeting room within the school premises, drinking water were served to all participants. The sessions were recorded using an audio recording device to ensure all data were completely captured. Focus group discussion questions were drawn from existing questionnaire, questions that were approved by the research project supervisor and the session facilitated by the researcher, who only asked the open-ended questions and used prompts when necessary.

Focus Group Meetings

In this qualitative study, focus group discussions were used for data collection. To sufficiently diversify opinions, the researcher ensured that participants consisted of different gender of male and female, ages and roles (Parent, guardian, teacher and key school Management Staff) were recruited using snowball sampling method. Adi (2020) stressed that "snowball sampling or chain-referral sampling is a non-probability sampling technique in which the samples have attributes that are difficult to secure(25). Hence, this is a sampling technique, in which existing themes provide referrals to recruit samples needed for a research study". Thus, this is a purposive non-probability approach that is often used in qualitative research, in which a researcher recruits a few volunteers who, in turn, recruit other volunteers. Principal recruits school compound master to support researcher on participants.

Semi Structured Key Informant Interviews

In addition to the focus group discussion meetings, four semi- structured key informant interview sessions were conducted in person, with individuals identified as primary gatekeepers across both schools. The identification of these persons also referred as gatekeepers were based on either their roles as decision makers within the school system or as advocates for the welfare of students.

Some themes, and questions were pre-specified (see Table 3.), but other topics were allowed to arise during the interviews. These interviews were digitally recorded, transcribed, coded and undertaken by the researcher, which identified all discussions on the pre- specified themes and other themes raised during the interviews. Subsequent analysis included thematically categorizing coded data into themes for reporting.

Data Analysis

Data analysis could be seen as one of the most significant sections of research. Thus, poor analysis gives inaccurate findings while strong analysis provides a wider insightful perceptive. Pokhriyal (2019) argued that "the process in which data is evaluated using either analytical or statistical tools to ascertain useful information and support decision making is data analysis"(26).

Therefore, the qualitative data analysis method used for this study is thematic content analysis. Thematic content analysis can be referred to as the process of gathering themes or patterns in qualitative research (27, 28). This method of data analysis becomes handy as there are various sources to analyze such as interviews, observations from field Focus Group Discussion. This method concentrates more on themes vis- a – vis experience, stories and awareness of the research respondents.

Data recorded were transcribed and coded by the researcher and forwarded to the supervisor for approval. The transcripts were read, notes reviewed, and responses of the participants were compared between researchers and recordings, to document emerging themes

Categories were then established and coded into themes for further analyses and representation.

Challenges:

Challenges encountered in this research ranged from Parents/caregivers not finding time to participate. Key informant's

respondent also had time constraints as appointments were rescheduled more than twice.

Ethical clearance took a longer than expected as it coincided with the Nigerian elections, and subsequently political appointments, promotions, transfers amongst others.

Steps taken to address the challenges were making interviews brief, giving detailed attention to parents/caregivers. Randomly selected parents or caregivers whose children or wards had challenges with their educational performance and needed improvements in their academics.

RESULTS

Two focus groups were conducted consisting of eight participants each. They consisted of twelve females and four males' volunteers. There were four of them in top administrative roles, six of them teachers, and six of them parents, three caregivers and one guardian. Four key informant's respondents who are males were engaged making it twenty participants. All participants were from the two selected secondary schools, Government Secondary School Wuse zone 3 and Model Secondary School Maitama, FCT, Abuja, Nigeria.

All twenty respondents were above the age of 18 years and participated voluntarily, by filling the consent form without any personal contact disclosure.

Data recorded from the focus group meetings and semi - structured key informant interviews were transcribed, the transcripts were read, notes reviewed, and responses of the participants were compared and contrasted between researcher's notes and recordings, to document emerging themes. Using an inductive approach, categories were then established, and coded into themes and sub-themes for further analyses and representation. The data were subsequently forwarded to the supervisor for approval.

Of the analyzed data, eight were male, mostly in the top school management category and were aged 40 years and older, while the remaining were females and were teachers, caregivers, parents and guardian. Of all the respondents, nineteen had a level of education that exceeded the secondary school level, while one had attained secondary school level of education (Table 1).

The data gathered from study were categorized, and the emergent themes and sub themes reported (See Table 3).

THEME 1 - KNOWLEDGE ON HEALTHY VISION

This theme describes the participants understanding of the definition of sight, their ability to reproduce information on healthy vision that reflects reasonable understanding of the concept.

CONCEPT OF VISUAL HEALTH

Participants discussed their understanding of healthy vision and its importance to general wellbeing and academic success. Key informant (K001) They expressed their knowledge on the definition of healthy vision and their perception of healthy vision. One participant defined healthy vision as the *"ability to see everything clearly"*. Focused group participant (A0011), this is in line with the definition proffered by the Cole Eye Institute: Eye Care Center at the Cleveland Clinic where healthy vision is defined as "Vision that is 20/20 or better with or without correction, and the eyes are disease free"(29).

There were participants who were not as verbal with the definitions of visual health or good health, yet, they had a thorough understanding of the concept. "Seeing properly, seeing close or far, been [SP] able to comprehend"- Focus Group Participant. (FG005) Another participant opined "Healthy vision can be seen as the process where people are able to see properly, to identify written or anything that is been presented to them." - Focus Group Participant. (FG008)

TABLE 3. THEMATIC Representation of study result themes and sub-themes.

THEMES		
KNOWLEDGE ON HEALTHY VISION [Understands the definition of sight (reproduces information on the topic/reflects understanding of the topic/question]	**ATTITUDE TOWARDS MAINTAINING HEALTHY VISION** [Positive/reinforcing attitude toward eye safety]	**BEHAVIOURS THAT PROMOTE HEALTHY VISION** [Positive practices that improve/protect eyesight]
SUB THEMES		
CONCEPT OF VISUAL HEALTH [Understands the public health concept of visual health]	**SUBCONSCIOUS ATTITUDE TOWARD PROMOTING VISUAL HEALTH** [Subconscious feelings and thoughts aimed at promoting and protecting visual health]	**DETECTING VISUAL HEALTH ISSUES THROUGH ACADEMIC ASSESSMENT** [Ability to identify symptoms of poor visual health through academic performance]
MAINTAINING VISUAL HEALTH [Understands the necessity of maintaining visual health and all that it entails]	**CONSCIOUS THOUGHTS AND FEELINGS TOWARDS PROMOTING AND PROTECTING EYE HEALTH** [Feeling the conscious need to protect and promote visual health]	**EXPERIENTIAL VISUAL HEALTH ADVOCACY AND AWARENESS CREATION WITHIN TARGET POPULATION** [Practical ways in which awareness and advocacy for visual health is conducted]
VISUAL HEALTH AS A FOUNDATION TO EDUCATIONAL ACHIEVEMENT [Understands the relationship between healthy vision and educational performance]	**MOTIVATION TOWARD SEEKING VISUAL HEALTH SERVICES** [Identifies factors that led to actively seeking eye health]	**VISUAL HEALTHCARE UTILIZATION** [The ways, when, and how visual health is utilized]
VISUAL HEALTH AS A COMPONENT OF OVERALL HEALTH [Understands the role of visual health to overall health]		**DEVELOPMENT OF POLICIES AND PRACTICE GUIDELINES THAT INFLUENCE VISUAL HEALTH IN TARGET POPULATION**

MAINTAINING VISUAL HEALTH

Participants were able to discuss the types of foods that promote or maintain healthy vision with ~~particular~~ reference to locally available foodstuff. They were knowledgeable about certain vitamins and how those vitamins impact health, they were also able to discuss in-depth which vitamins were bountiful in specific fruits and how they impact vision. A male participant mentioned the importance of foods that contained carotene and its value to vision - "to maintain good vision, it is important to eat foods that contain carotene". Focus Group Participant (A004) Several studies have shown the effects of vitamins and *β*-carotene to healthy ocular vision. Rasmussen and Johnson (2013) reported the benefits of vitamins C, E, and *β*-carotene to the eyes. It was unclear from the discussions had if any of the participants were aware of any particular types of food that constitute the local staple diet and was deleterious to visual health. For example, a staple diet in Nigeria is "Garri" a product of processed cassava. If improperly consumed, particularly, in large quantities, the cyanide contained therein has a deleterious effect on vision (30).

VISUAL HEALTH AS A FOUNDATION TO EDUCATIONAL ACHIEVEMENT

Generally, there was a sense of understanding among the participants in this study that visual health played a significant role in the development of writing and reading skills which are fundamental to the educational development and achievement. Most of the examples provided during the focus group meetings and semi-structured key informant interviews were around the difficulties persons with visual impairment faced when reading text from books, boards or computer/cell phone screens. Computer Vision Syndrome is a disease associated with the prolong exposure to the computer or any screen. Key informant (K004). It was also clear that participants understood the relationship between reading and the ability to write. They were also able to use that as a rationale to suspect visual impairments in students prompting requests for visual assessment (4)*″*. …….. Healthy vision is part of the factors that contribute to

academic performance. Because if you don't see, it will be difficult for you to see what is written on the board and also to write except you have an aid like glasses, medicated the glasses". Key Informant. (K004)

THEME 2 - ATTITUDE TOWARDS MAINTAINING HEALTHY VISION

This theme reflects the positive or reinforcing attitudes toward eye safety by the target population.

SUBCONSCIOUS ATTITUDE TOWARD PROMOTING VISUAL HEALTH

This subtheme reflects attitudes that were considered positive yet occurred without prior thought or considerations. These include general eye care, feeling there is an issue whenever there was conjunctival redness, unusual eye discharge or itch. It also included the thoughts of visiting an eye specialist whenever a feeling of inability to read text that they could previously read occurred. A study participant mentioned that though she is unaware of any health complication that has been documented, she still stays a safe distance from screens. "Don't sit close to the TV. There should be a distance from where you are sitting and the TV and don't look at the sun directly"- Focus Group Discussant. (A003) "Avoid putting sharp objects into the eyes"
Focus Group Participant(A001).
This finding is in concordance with other studies such as research conducted by Khandekar and Al-Harby, 2008, where majority of the respondents reported a positive attitude towards the use of preventive eye health and the promotion of same (31).

CONSCIOUS THOUGHTS AND FEELINGS TOWARDS PROMOTING AND PROTECTING EYE HEALTH

Participants had a positive attitude toward maintaining healthy vision as they expressed overall interest in participating in activities that are associated with healthy vision. They shared examples of certain

attitudes that they perceived as beneficial to visual health". ……you can as well also walk into any hospital to find out how healthy your vision is, just like checking status of your body like you want to know your HIV status, ……don't wait until when a doctor says that you have an issue with your eyes or don't wait until when you have a strain in your eyes or you are feeling discomfort with your eyes before you go for test"- Focus Group Participant. This is similar to documented evidence on the prevalence of health seeking behaviors for visual health (32).

MOTIVATION TOWARD SEEKING VISUAL HEALTH SERVICES

Participants discussed their motivation to maintain healthy vision. They explored the factors that motivated them and the consequences of such motivation. Improving the patient-doctor (ophthalmologist) relationship and appropriate public health messages that are tailored to the providing information on preventive eye care services are documented factors that motivate people to see visual health services (33).

Participants' motivation often led them to take steps towards maintaining healthy vision. Some of these steps include improved healthy eating, visual checkup at the ophthalmologists, avoiding activities that could predispose to penetrating eye injuries or situations that are harmful to the eyes such as sitting too close to the TV, staring at the sun, or spending long hours on computers or mobile phones. Accidents that involve the eyes. "Don't sit close to the TV. There should be a distance from where you are sitting and the TV and don't look at the sun directly" - Focus group meeting participant.(A003) Refractive errors and low vision are common vision impairments that may occur in children (34). Several studies have shown that even though there are cost-effective methods of correcting refractive errors, they still constitute a large percentage of visual impairment and have a

major impact on economic development, education and quality of life (34).

THEME 3 - BEHAVIORS THAT PROMOTE HEALTHY VISION

This theme explored positive practices within the target population that improve visual health and those that protect eyesight.

DETECTING VISUAL HEALTH ISSUES THROUGH ACADEMIC ASSESSMENT

Behavioral changes that positively improve eye health were discussed in detail by the participants. During the meeting, they expressed the need to be more proactive in the assessment of students, particularly, when a student is noticed to be struggling academically, or when they have to sit at the front of the class to see the board clearly. There are active steps that could be taken to promote eye health based on the advancement of medical health and technology. "When I checked my daughter's notes, I discovered that she's missing out some letters, I then asked her, why are you missing out some letters? She told me that, she could not see very well. That her teacher in school placed her behind the class. I said okay, I'll come to your school, when I went to her school I discovered that, where she was placed is very far from the board, so I complained to the teacher. Afterwards the teacher brought her to the front and ever since then she has been writing very well" – Key informant Participant.(A002) This is similar to results obtained from studies conducted on school-age children that reflected positive outcomes on detecting visual health issues in children using local educational context, and other sensitivity measures (35, 36).

EXPERIENTIAL VISUAL HEALTH ADVOCACY AND AWARENESS CREATION WITHIN TARGET POPULATION

Several studies have shown the need for tailored advocacy and broad awareness campaigns aimed toward promoting visual health. These studies have employed several approaches including direct health education and awareness provision, advocacy aimed at policy makers, and multi-sectoral partnerships directed at promoting eye health and preventing visual issues (37-39). Most participants shared their experiences with advocacy and awareness creation citing examples of how they could improve their eye health and prevent eye injuries. "As a teacher, I will create awareness by calling the students together and tell them the importance of good eyesight and how they should keep their eyes okay. Without contamination, then I would also tell them the advantages and disadvantages of keeping their eyes in good condition and also, I'll tell them the type of diet they should take in other to maintain good eyesight"- Focus Group Participant. (FG005)

VISUAL HEALTHCARE UTILIZATION

Participants eagerly shared about their visual healthcare utilization, particularly, how frequently they visited their eye doctors, their favorite centers, and the most proximal centers for convenience. Some of the eye centers mentioned include: Kings Care Hospital, (FG001) Smiley eye (FG002) Doctors on Call, (FG004) Tobet Hospital (FG005) and Wuse General Hospital. (FG007)

DEVELOPMENT OF POLICIES AND PRACTICE GUIDELINES THAT INFLUENCE VISUAL HEALTH IN TARGET POPULATION

Participants expressed the need to sensitize the students through awareness campaigns during morning assemblies, through school journals, and at other school events. They emphasized the need for the screening of students' vision as a requirement for admission. A participant mentioned that - "During admission processes (sp) they should ensure that students eye sights are properly screened that is one way". (K004)

To encourage policies that will improve vision health and promote health promotion, significant strides in cross-sector collaboration across diverse stakeholders engages with population health is needed (40). The behaviors that encourage healthy vision should be promoted by local, state and national levels by developing and implementing action plans that may complement already existing plans and individual efforts (41).

These could be put in place to promote eye health among populations, particularly underserved and at-risk populations, by educating them on the need to seek and have access to appropriate, and effective eye care services (42). Individuals and communities can also be motivated to develop social and built environments that will ensure healthy eye behaviors (42).

While gathering data from respondents, the researcher noted gaps in knowledge about proximal eye clinics where respondents could seek eye care and subsequently addressed this issue by sharing a list of proximal eye centers to the selected schools in order to promote, redirect and foster the need to access a better eye care as necessary Most times referrals of such, of nonmedical referrals is to enhance standard of living, eye care, reduce risk and also to promote self-education. According to Alison Leary a professor of healthcare and workforce modelling at London South Bank University as cited by Collins (2019) reduction in referrals from some non-medical personnel is mostly heard very often with trusts giving a verity of reasons.

It was established that the researcher had no commitment to the health centers and not liable to the standards received in health centers when or if accessed.

DISCUSSION

The themes and sub- themes discussed in the results section reflects the reality of healthcare, particularly, eye health, in developing countries. The primary issue noted in this study was lack of screening for visual health even though there was a general understanding of the connection between visual health and educational performance. This is similar to results obtained from several studies globally (43). The respondents which included parents, guardians, teachers and administrative staff, showed a clear understanding of good visual health, particularly, its connection to academic performance, yet, they had not developed any policy to encourage visual screening, nor was there any evident ongoing action to screen students. This reiterates the notion that health education (knowledge) does not always equal health behavior (44).

This study showed the positive attitudes to promoting visual health and preventing eye injury. The school management and teachers were receptive to visual screening, especially cost-effective screening such as school-based screening services (45), even though they were not opposed to clinic-based visual health utilization (46). The impact of poor visual health on academic performance was extensively discussed by participants. These discussions included the various ways that the detection of visual issues were made, both formally, and informally, and these were similar to results from several other studies (43, 47, 48). Despite the positive attitudes toward eye health, there was still a delay in implementation of screening practices to detect visual disorders. These may be due to other factors such as the transformation of positive attitudes to influence health-seeking behaviors, socioeconomic status of the respondents, where they are disproportionately affected by other health issues perceived to be of greater importance than eye health (49). Other factors may be availability of eye specialists, proximity of eye care centers, cost of screening and treating eye health, and finally, trust and confidence in eye health specialists (49).

There were several contributions from participants on behaviors that promote healthy vision. They discussed methods by which eye health could be promoted and eye injuries prevented. This discussion included

dietary factors that promote eye health, similar to previously published studies (50). Respondents suggested several prospective policies and practices around visual health and its inculcation into the target population that could occur, with a high level of projected success. Many of the suggested policies and practices are comparable to already documented and successfully implemented policies, albeit different target populations(51). Health education, awareness, and the development of strong policies, including mandatory visual screening of students on admission into the schools were highly prioritized. This pattern has been noted by other researchers seeking similar research objectives (46, 47).

In concordance with other researchers who have conducted studies that suggest a link between visual health and educational performance, this study results reflects a close, albeit complex direct relationship between visual health and educational performance (11, 52, 53).

CONCLUSION

Although the researcher recognizes the need for more in-depth and larger studies to further support the conclusion, the purpose of this project, which was to examine the relationship between visual health and educational performance among secondary school students in the Federal Capital Territory was achieved. The researcher concludes that school administrators and teachers possess a general idea of the meaning of visual health and how it is related to successful academic progression in their students. They were also able to discuss the concept of computer visual syndrome, and its deleterious effects on visual health. They also recognized the importance of creating innovative ways to address CVS. The study participants were able to identify and relate to the pivotal role that health education awareness creates in relation to healthy vision. They suggested innovative and achievable modalities to perpetuate the awareness of healthy vision using multiple media. Participants were able

to discuss meaningful ways to formalize visual awareness and screening into practical policies that would benefit students.

To this end, the researcher concludes that health vision promotes academic performance of secondary school students in Federal Capital Territory Abuja as some key informant respondents agree that when they change the sitting positions of their students in their classroom, there are significant improvement in the academic performance.

Limitations of the Study

Like all research studies, this study had some limitations (24). Due to ethical and time considerations, the researcher was unable to interview the students who were the direct targeted population as majority are below 18 years of age and may not be able to respond appropriately. Primary information was not harvested as students were not directly involved in the study. Involving the students may have required a longer and more rigorous institutional review. The researcher proposes that in future studies, students should be given a chance to tell their own story, after ethical approval has been sought, consent from parents or caregivers obtained and assent received from interested student participants. Participating students may be requested to write an essay /poem about vision and how it affects their educational performance, or involved in other qualitative research methods (25).

Population and sample size of the study did not adequately represent the number of schools and students in FCT Abuja. Level of knowledge and information were very much alike, results and findings were similar. For future study it is proposed that the government (Federal Ministry of Education should take lead and involve the Ministry of health and other educational agencies which will allow for a larger and more robust study involving several schools with diverse demographics (53).

This topic has not been very well researched, hence, there was a lack of recent

resources, such as literature on the topic (26). This allowed for only limited literature and minimal comparison of findings. A more robust study would inevitably provide more usable information.

RECOMMENDATIONS

Subsequent to the conclusion of this study, the researcher proposed the following recommendations.

RECOMMENDATIONS FOR FUTURE RESEARCH

There should be greater focus on the topic in terms of research, dissemination of information and data collation which will create more opportunity for policy reform in the educational sector in the Federal Capital Territory in particular and Nigeria at Large.

RECOMMENDATIONS FOR FUTURE PRACTICE

Teachers and school administrators should be trained on the basic information on eye care and the use of technology to identify students that are having visual challenges. The national eye health campaign should be ramped up at all levels to aid the creation and sustainability of awareness about healthy vision. This should also include creating awareness on Computer Vision Syndrome (CVS), its prevention, its effects and early diagnosis. Commemoration of the World Sight day should be encouraged similar to the World Malaria Day and The Day of the African Child, to aid awareness creation, redirect attention to visual health and raise research resources for prospective studies.

RECOMMENDATIONS FOR FUTURE POLICY

The Government of Nigeria should be encouraged to develop a data driven policy on visual screening particularly for school age students. Public schools in the FCT, should solicit for school clinics where optical test/ treatment can be carried out

Within the schools, clubs and groups should be formed to promote healthy visions just like the water, sanitation, and hygiene (WASH) clubs formed to promote hand washing practice. Students should also be encouraged to apply for membership for Global initiatives, such as, Seeing is believing, or Our children's vision.

REFERENCES

1. Kotingo EL, Obodo DU, Iroka FT, Ebeigbe E, Amakiri T. Effects of reduced visual acuity on academic performance among secondary school students in South-South, Nigeria. Int J Sci Res. 2014;3:328-4
2. College of Optometrists in Vision Development. What is vision therapy? 2010 [Available from: https://www.covd.org/page/vision_therapy]
3. American Optometric Association. School performance bridled by poor vision, visual disorders February 27 2018 [Available from: https://www.aoa.org/news/clinical-eye-care/reading-proficiency-and-eye-exams.
4. World Health Organization. Blindness and vision Impairment 14 October 2021. [Available from: https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment]
5. Ubajaka CF, Ebenebe UE, Nwankwo LO, Egenti NB, Adogu PO, Ejiofor BS. Visual Acuity Status amongst Secondary School Students in South East, Nigeria. American journal of medicine and medical sciences. 2016;6(5):152-9.
6. Chuka-Okosa CM. Refractive errors among students of a postprimary institution in a rural community in south-eastern Nigeria. West African journal of medicine. 2005 May 13;24(1):62-5.
7. Kulp MT, Schmidt PP. Visual predictors of reading performance in kindergarten and first grade children. Optometry and vision science: official publication of the American Academy of Optometry. 1996 Apr 1;73(4):255-62.
8. Vaughn W, Maples WC, Hoenes R. The association between vision quality of life

and academics as measured by the College of Optometrists in Vision Development Quality of Life questionnaire. Optometry-Journal of the American Optometric Association. 2006 Mar 1;77(3):116-23.

9. Johnson RA, Nottingham D, Strutton R, Zaba JN. The vision screening of academically and behaviorally at-risk pupils. Journal of Behavioral Optometry. 1996;7:39-42.

10. Zaba JN. Social, emotional, and educational consequences of undetected children's vision problems. Journal of Behavioral Optometry. 2001;12(3):66-70.

11. Maples WC. Visual factors that significantly impact academic performance. Optometry. 2003;74(1):35-49.

12. Goldstand S, Koslowe KC, Parush S. Vision, visual-information processing, and academic performance among seventh-grade schoolchildren: A more significant relationship than we thought?. The American Journal of Occupational Therapy. 2005 Jul;59(4):377-89.

13. World Education News + Reviews. Education System Profiles. Education in Nigeria 2017 [Available from: https://wenr.wes.org/2017/03/education-in-nigeria.

14. Ogu SC. National Policy on Education and Performance of Secondary Schools Students in Nigeria. Capital Journal of Educational Studies (CAJES). 2016;4(1):35-43.

15. Federal Ministry of Education. Nigerian Digest of Education Statistics. Percentage of Schools Enrollment in both public and Private by State, 2014-2016 [Available From:[[https://education.gov.ng/nigeria-digest-of-education-statistics/].

16. Eden GF, Stein JF, Wood MH, Wood FB. Verbal and visual problems in reading disability. Journal of Learning Disabilities. 1995 May;28(5):272-90.

17. Grisham JD, Sheppard MM, Tran WU. Visual symptoms and reading performance. Optometry and Vision Science: Official Publication of the American Academy of Optometry. 1993 May 1;70(5):384-91.

18. Kulp MT, Edwards KE, Mitchell GL. Is visual memory predictive of below-average academic achievement in second through fourth graders?. Optometry and vision science. 2002 Jul 1;79(7):431-4.

19. Kulp MT, Schmidt PP. The relation of clinical saccadic eye movement testing to reading in kindergartners and first graders. Optometry and Vision Science: Official Publication of the American Academy of Optometry. 1997 Jan 1;74(1):37-42.

20. Kulp MT. Relationship between visual motor integration skill and academic performance in kindergarten through third grade. Optometry and vision science. 1999 Mar 1;76(3):159-63.

21. Boden C, Brodeur DA. Visual processing of verbal and nonverbal stimuli in adolescents with reading disabilities. Journal of Learning Disabilities. 1999 Jan;32(1):58-71.

22. Kovarski C, Faucher C, Orssaud C, Carlu C, Portalier S. Effect of Visual Impairments on Academic Performance. Vision Impact Institute. 2015.

23. Hopkins S, Narayanasamy S, Vincent SJ, Sampson GP, Wood JM. Do reduced visual acuity and refractive error affect classroom performance?. Clinical and Experimental Optometry. 2020 May 1;103(3):278-89.

24. Queirós A, Faria D, Almeida F. Strengths and limitations of qualitative and quantitative research methods. European journal of education studies. 2017 Sep 7.

25. Adi B. 2019. QuestionPro. Qualitative Research: Definition, Types, Methods and Examples October 20 2020. Available from: https://www.questionpro.com/blog/qualitative-research-methods.

26. Nechully S, Pokhriyal DS. Choosing grounded theory and frame work analysis as the appropriate qualitative methods for the research. Journal of Management. 2019;6(1).

27. Adekeye O, Kimbrough J, Obafemi B, Strack RW. Health Literacy from the Perspective of African Immigrant Youth and Elderly: A PhotoVoice Project. Journal of health care for the poor and underserved. 2014;25(4):1730-47.

28. Maguire M, Delahunt B. Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. 2017. 2017;9(3).

29. Cleveland Clinic. Cole Eye Institute: Eye Care Center. Definition of Healthy Vision Cleveland, OH: Cleveland Clinic 2012 [Available from: https://my.clevelandclinic.org/health/articles/21204-vision]

30. Freeman AG. Optic neuropathy and chronic cyanide intoxication: a review. Journal of

the Royal Society of Medicine. 1988 Feb;81(2):103-6.

31. Khandekar R, Al-Harby S. Knowledge and attitude for eye diseases and satisfaction for services among urban citizens of Oman: A pilot study. Oman Journal of Ophthalmology. 2008 Sep 1;1(1):13.

32. Etim BA, Ibanga AA, Nkanga DG, Agweye CT, Utam UA, Udofia OO. EHR health seeking behavior of patients attending eye clinic in Southern Nigeria. Nigerian Journal of Clinical Practice. 2019 Jul 1;22(7):988-.

33. Alexander RL, Miller NA, Cotch MF, Janiszewski R. Factors that influence the receipt of eye care. American journal of health behavior. 2008 Sep 1;32(5):547-56.

34. World Health Organization. Blindness and vision impairment 2009 [Available from: https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment]

35. National Research Council. Visual impairments: Determining eligibility for social security benefits. National Academies Press; 2002 Aug 17.

36. Latorre-Arteaga S, Gil-González D, Bascarán C, Núñez RH, Morales MD, Orihuela GC. Visual health screening by schoolteachers in remote communities of Peru: implementation research. Bulletin of the World Health Organization. 2016 Sep 1;94(9):652.

37. Morone P, Camacho Cuena E, Kocur I, Banatvala N. Investing in eye health: securing the support of decision-makers.

38. Shrestha GS, Sigdel R, Shrestha JB, Sharma AK, Shrestha R, Mishra SK, Joshi SN. Awareness of eye health and diseases among the population of the hilly region of Nepal. Journal of ophthalmic & vision research. 2018 Oct;13(4):461.

39. Welp A, Woodbury RB, McCoy MA, Teutsch SM, National Academies of Sciences, Engineering, and Medicine. The role of public health and partnerships to promote eye and vision health in communities. InMaking Eye Health a Population Health Imperative: Vision for Tomorrow 2016 Sep 15. National Academies Press (US).

40. Wernham A, Teutsch SM. Health in all policies for big cities. Journal of Public Health Management and Practice. 2015 Jan;21(Suppl 1):S56.

41. Welp A, Woodbury RB, McCoy MA, Teutsch SM, National Academies of Sciences, Engineering, and Medicine. Eye and Vision Health: Recommendations and a Path to Action. InMaking Eye Health a Population Health Imperative: Vision for Tomorrow 2016 Sep 15. National Academies Press (US).

42. Metsing IT, Hansraj R, Jacobs W, Nel EW. Review of school vision screening guidelines. African Vision and Eye Health. 2018 Feb 26;77(1):1-0.

43. Zalta EN. Metaphysics Research Lab. Center for the Study of Language and Information, Stanford University, Stanford, CA. 2015.

44. Lester BA. Comparing the cost-effectiveness of school eye screening versus a primary eye care model to provide refractive error services for children in India. Community Eye Health. 2007 Mar;20(61):15.

45. Burnett AM, Yashadhana A, Lee L, Serova N, Brain D, Naidoo K. Interventions to improve school-based eye-care services in low-and middle-income countries: a systematic review. Bulletin of the World Health Organization. 2018 Oct 1;96(10):682.

46. Reddy PA, Bassett K. Developing better strategies for school eye health screening in India. Community Eye Health. 2017;30(98):29.

47. Sharma A, Li L, Song Y, Choi K, Lam DS, Zhang M, Zheng M, Zhou Z, Liu X, Wu B, Congdon N. Strategies to improve the accuracy of vision measurement by teachers in rural Chinese secondary schoolchildren: Xichang Pediatric Refractive Error Study (X-PRES) report no. 6. Archives of ophthalmology. 2008 Oct 13;126(10):1434-40..

48. Etim BA, Ibanga AA, Nkanga DG, Agweye CT, Utam UA, Udofia OO. EHR health seeking behavior of patients attending eye clinic in Southern Nigeria. Nigerian Journal of Clinical Practice. 2019 Jul 1;22(7):988-.

49. Rasmussen HM, Johnson EJ. Nutrients for the aging eye. Clinical interventions in aging. 2013;8:741.

50. Ogu SC. National Policy on Education and Performance of Secondary Schools Students in Nigeria. Capital Journal of Educational Studies (CAJES). 2016;4(1):35-43.

51. Hopkins S, Narayanasamy S, Vincent SJ, Sampson GP, Wood JM. Do reduced visual acuity and refractive error affect classroom performance?. Clinical and Experimental Optometry. 2020 May 1;103(3):278-89..

52. Dirani M, Zhang X, Goh LK, Young TL, Lee P, Saw SM. The role of vision in academic school performance. Ophthalmic epidemiology. 2010 Feb 1;17(1):18-24.

53. Omair A. Sample size estimation and sampling techniques for selecting a representative sample. Journal of Health specialties. 2014 Oct 1;2(4):142.

******