

Prevalence of Refractive Errors and Intention to Use Prescription Glasses Regularly Among Secondary School Students in Ogijo Community, Ogun State, Nigeria

Oghosa W. Osayamwen¹, Ademola Amosu²

¹ Department of Public Health, Babcock University, Ilishan Remo, Nigeria

² Department of Public Health, Babcock University, Ilishan Remo, Nigeria

Corresponding author: Oghosa Wisdom Osayamwen | Email: oghosawisdom@yahoo.com | Phone+2347031153844

Abstract

Purpose: This study was conducted to assess the prevalence of refractive error among secondary school students, as well as their intention to use prescription glasses regularly.

Methods: This was a cross-sectional school-based study with a qualitative component. A total of 359 secondary students aged 11-22years, were selected by multistage sampling method from seven schools in Ogijo community, Ogun state, Nigeria. Of the 359 students, 353(98.3%) were examined. The examination included Visual acuity measurement, ocular motility tests, retinoscopy & autorefractometry under cycloplegia, and anterior & posterior segment examination. The data collected were analysed using the statistical package for social sciences (SPSS).

Results: The prevalence of refractive error was 11.6%, and of the 41 participants who had refractive error, 65.9% were females while 34.1% were males. Myopia was at 5.1%, while hyperopia and astigmatism were 3.7% and 2.8% respectively. Participants had adequate information ($\bar{x}=16.08$ SD ± 2.29) regarding refractive error and the use of prescription glasses, but revealed a lack of motivation towards prescription glasses use ($\bar{x}=15.8$ SD ± 4.2). Overall, participants expressed good intention to regular prescription glasses use ($\bar{x}=12.89$ SD ± 3.8).

Conclusion: Refractive error among secondary students of Ogijo community, Ogun state, Nigeria is relatively high. The students expressed good intention to use prescription glasses regularly if given, but on certain conditions. A comprehensive school health program that incorporates school eye health promotion should be practiced effectively to address the misconceptions regarding the use of prescription glasses among the teachers, parents and students.

Keywords: Refractive errors, Adolescents, School health, community health, Health promotion.

Introduction

Uncorrected refractive error is now well-recognized as a major public health issue worldwide, causing various degrees of visual impairment and even blindness. In children and adolescents, visual impairment can have

huge negative impacts on their health, education, and prospects. Current estimations show that there are 1.26 million children who are blind and 19 million children, between the ages 5-15years who are visually impaired, of which 12 million are due to uncorrected refractive error

globally.¹ A little above 90% of people with uncorrected refractive error, worldwide, live in rural and low-middle income countries like Nigeria.² This is even more compounded by the shortage of eye care practitioners in rural areas, especially in sub-Saharan Africa.³ In Africa, many studies have highlighted refractive error as a significant cause of visual impairment especially among school children and adolescents.^{4,5,6,7,8,9,10,11}

In Nigeria, studies have also been done on the prevalence of refractive error and visual impairment of school children, adolescent and youths between the ages of 5 to 21 years, with a prevalence rate of between 2.2% to 58% and they have all indicated the need for vision screening of children whilst at school for early detection of visual defects.^{12,13,14,15,16,17,18,19} These studies and many others in Nigeria have focused on the prevalence of refractive errors among children and adolescents, but only a few, appears to have been done on factors and barriers associated with prescription glasses use among children and adolescents. It is not enough to carry out visual screening programs for refractive errors and prescribe glasses, because some studies have shown that some individuals especially children and adolescents do not wear glasses at all or regularly after they have been prescribed.^{20,21,22,23,24,25,26} Bullying, ridicule, and peer victimization among children and adolescents have

been identified as barriers to compliance of prescription glasses use, and refractive services uptake.²⁶ In another study, it was suggested that providing attractive and durable prescription glasses will improve compliance by children.²⁷ Furthermore, a study carried out in Oaxaca, Mexico, among school children aged 5-18 years, all of whom had received free prescription glasses through a local program, had poor compliance to prescription glasses wear.²⁰

Ogijo community was selected for this study because of the low or inadequate practice of school health program, screening tests for disabilities and periodic medical examination of staff and pupils in schools located in Sagamu local government area.²⁸ It appears that no study may have been done on the intention of secondary school students in Nigeria to use prescription glasses regularly, using the information, motivation and behavioral skill model in combination with the theory of reasoned action as a guiding conceptual framework. (Figure 1)

Therefore, this study is aimed at determining the prevalence of refractive errors, and the key factors that drives the intention to use prescription glasses regularly among secondary school students in Ogijo community, Ogun-state, Nigeria.

- Chandna A, Gilbert C. When Your Eye Patient Is a Child. *Comm Eye Health* 2010; 23: 1-3.
- Naidoo KS, Jaggemath J. Uncorrected Refractive Errors. *Indian J Ophthalmol*. 2012; 60: 432-7.
- International Agency for the Prevention of Blindness (IAPB). IAPB Policy Paper: Addressing the Eye Health Workforce Crisis in Sub-Saharan Africa: Business as Usual is Not an Option; October 2014. Available at: <https://www.iapb.org/wp-content/uploads/Addressing-the-Eye-Health-Workforce-Crisis-in-Sub-Saharan-Africa.pdf>. Accessed May 17, 2020.
- Ayed T, Sokkah M, Charfi O, El Matri L. Epidemiological Study of Refractive Errors in School Children in Socioeconomically Deprived Regions in Tunisia. *J Fr Ophthalmol*. 2002; 25: 712-7
- Naidoo KS, Raghunandan A, Mashige K, Govender P, Holden B, Pokharel G, Ellwein L. Refractive Error and Visual Impairment in African Children in South Africa. *Invest Ophthalmol Vis Sci*. 2003; 44:3764-3770
- Kingo A, Ndawi B. Prevalence and Causes of Low Vision Among School Children in Kibaha District, Tanzania. *Tanzania Journal of Health Research*. 2009; 11: 111-115
- Ovenseri-Ogbomo G, Omuemu V. Prevalence of Refractive Error Among School Children in The Cape Coast Municipality, Ghana. *Clinical Optometry*. 2010; 2:59-66.
- Kumah B, Ebri A, Abdul-Kabir M, Ahmed A, Koomson N, Aikins S, Aikins A, Amedo A, Lartey S, Naidoo KS. Vision in Private School Children in Ghana. *Optom Vis Sci*. 2013; 90:1456-1461.
- Jafer K, Abomesh G. Prevalence of Refractive Error and Visual Impairment Among Rural School-Age Children of Goro District, Gurage Zone, Ethiopia. *Ethiop J Health Sci*. 2014 24:353-358.
- Gamal A, Ahmed A, Yehia E, Rania A, Asmaa M. Prevalence of visual impairment and refractive errors in children in South Sinai, Egypt. *Ophthalmic Epidemiol*. 2015; 22:246-252.
- Semanyenzi S, Karimurio J, Nzayirambaho M. Prevalence and Pattern of Refractive Errors in High Schools of Nyarugenge District. *Rwandan Med J*. 2015; 723:81-83.
- Nkanga D, Dolin P. School Vision Screening Program in Enugu, Nigeria: Assessment of Referral Criteria for Error of Refraction. *Niger J Ophthalmol*. 1997; 5:34-40
- Balogun B. Vision Screening Among Primary School Children in Mainland Local Govt. Area of Lagos State (Dissertation). National Postgraduate Medical College in Ophthalmology. 1999; 39-42.
- Faderin M, Ajaiyeoba A. Refractive Errors in Primary School Children in Nigeria. *Niger J Ophthalmol*. 2011; 9:10-14.
- Ahuama C, Atowa C. Distribution of Refractive Errors Among School Children in Abia State of Nigeria. *J Nig Optom Assoc*. 2004; 11:25-28.
- Opubiri I, Adedayo A, Megbalayin E. Refractive Error Pattern of Children in South-South Nigeria: A Tertiary Hospital Study. *Sky J Med Sci*. 2013; 3:10-14.
- Balarabe H, Adamu I, Abubakar A. Vision Screening to Detect Refractive Errors in Three Selected Secondary Schools in Birnin Kebbi, North-West, Nigeria. *Sahel Med J*. 2015; 18:61-65.
- Ngozika E. Khathutshelo M. Refractive Error and Visual Impairment in Primary School Children in Onitsha, Anambra State, Nigeria. *African Vision and Eye Health* 2018; 77: a455.
- Alabi A, Aribaba O, Alabi AO, Ilo O, Onakoya A, Akinsola F. Visual impairment and ocular morbidities among schoolchildren in Southwest, Nigeria. *Nigerian Postgraduate Medical journal*. 2018; 25: 166-171
- Holguin A, Congdon N, Patel N, Ratcliffe A, Esteso P, Flores S, Gilbert D, Rito M, Munoz B. Factors Associated with Spectacle-Wear Compliance in School-Aged Mexican Children. *Investigative Ophthalmology & Visual Science*. 2006; 47: 925-928.
- Odedra N, Wedner S, Shigongo Z, Nyalali K, Gilbert C. Barriers to Spectacle Use in Tanzania Secondary Students. *Ophthalmic Epidemiology*. 2008; 15:410-417.
- Liping L, Yue S, Xiaojian L, Bei L, Kai C, Dennis L, Mingzhi Z, Mingwei Z, Yunfei W, Abhishek S, Nathan C. Spectacle Acceptance Among Secondary School Students in Rural China: The Xichang Paediatric Refractive Error Study (X-PRES)-Report 5. *Investigative Ophthalmology & Visual Science*. 2008; 49: 2895-2902.
- Adeoti C. Beliefs and Attitude Towards Spectacles. *Niger J Clin Pract*. 2009; 12:359-61
- Omalase C, Mahmood A. Factors Associated with Non-Compliance with Spectacle Wear in An Adult Nigerian Population. *African Journal of Biomedical Research*. 2009; 12:43-46
- Megbalayin E. Refractive errors: Current Thinking. *Wudpecker J Med Sci*. 2013; 2:21-5.
- Thompson S, Naidoo KS, Gonzalez-Alvarez C, Harris G, Chinanayi F, Loughman J. Barriers to Use of Refractive services in Mozambique. *Optometry and Vision Science*. 2015; 92: 59-69.
- Pavithra M, Hamsa L, Madhukumar S. Factors Associated with Spectacle-Wear Compliance Among School Children Of 7-15 Years in South India. *International Journal of Medicine and Public Health*. 2014; 4: 146-150.
- Oyinlade O, Ogunkunle O, Olanrewaju D. An Evaluation of School Health Services in Sagamu, Nigeria. *Nigerian Journal of Clinical Practice*. 2014; 17: 336-342

Methods

Study area

The study was carried out in Ogijo, a community located in the southern part of Sagamu local government area, Ogun State, Nigeria. Its geographical coordinates are 6° 42' 0" North, 3° 31' 0" East. Ogijo is between Sagamu local government and Ikorodu local government, sharing boundaries with Lagos State. The community is a place of residence to many of the workers from the over populous Lagos. It is a potential industrial powerhouse with companies in the manufacturing, hospitality, education and SMEs contributing to the internally generated revenues of the State.

Study design

The study was a descriptive cross-sectional school-based study with a qualitative component.

Study population

The study population consisted of male and female secondary school students, aged between 11 to 22 years in Ogijo community.

Sample size

Sample size was calculated using the Cochran formula.¹⁸

$$n = \frac{Z^2(pq)}{e^2}$$

Where n = Sample size, Z = 1.96 the standard normal deviation which corresponds to the 95% confidence level, p = The previous estimates of the prevalence of refractive error among children and adolescents in Nigeria is between 2.2% to 58%.^{14,15,16,17,19} The prevalence rate used in this study was derived from the average of 2.2% to 58% which is equal to 30.1%. q = 1-P which is probability of the event not occurring 1-P = 1- 0.3 = 0.7, and e = 0.05 which is the desired level of precision. The minimum sample size was calculated to be 323 and increased by 10% to 359 to accommodate

for anticipated absenteeism and non-participation. Only registered students who were granted informed consent by their parents were included while those who were not selected through the sampling process or refused to participate were excluded.

Sampling procedure

A multistage sampling method was used to select school children in the study population. Stratified sampling method was used to divide the secondary schools in Ogijo community into two groups; private and public schools. Even distribution of participants among the selected schools was ensured by the use of proportionate sampling method and participants from each school and class, were eventually selected by systematic random sampling technique.

Pre-test

The instrument (questionnaire) was pretested using a sample of 10 percent of the sample size, from a similar study population but not the actual study population. Findings from the pre-test was used to scrutinize and reset the items of the instrument for necessary adjustments before the main administration of the instrument to the target population. The Cronbach's Alpha coefficient analysis was used to test internal consistency of instrument to confirm its reliability. A reliability coefficient of 0.944 was obtained.

Instruments for data collection procedure

Data was collected using a pre-tested semi-structured questionnaire and by observation involving the use of standardized ophthalmic instruments such as Snellen's charts, Ophthalmoscopes, penlights, trial frames and trial lenses, auto-refractor and a hand-held retinoscope. Other materials for data collection are record sheets, meter rule, occluders and pinhole. Refractive Error in School Children Protocol and Manual of Procedures²⁹ was used as a guide to carry out the visual assessments.

29. Resnikoff S. Protocol and manual of procedures: Assessment of the prevalence of visual impairment attributable to refractive error or other causes in school children. Geneva: World Health Organisation. 2007.

Data collection/Clinical examination

The eye examination phase was done after the administration of the questionnaire, it was to ensure that the respondents participated in the questionnaire administration phase. It was done in a well illuminated space. The process began with the registration of the respondents, done by a trained research assistant. Medical history, family history and other medical information that were necessary were taken by the optometrist. Participants' visual acuity were assessed using a Snellen's chart for far and near, while the participants were seated. For distant Visual acuity, the Snellen's chart was placed 6m away from the participants, while the near chart was held at a comfortable working distance (33cm) of the participants during the near visual acuity measurement. Vision was checked at the 6/9 line. If the student correctly read the 6/9 line, a 2 D (dioptre) sphere lens was used to re-test vision using the 6/24 line. A participant who failed the 6/9 line or passed the 6/24 line was included for the full eye examination.³⁰ Ocular deviations were evaluated with cover test at both distance and near. Anterior segment was examined by an optometrist using a pen torch and for participants who had VA of 6/12 or less in one eye, ophthalmoscopy was done to rule out other causes of Visual impairment asides URE. Assessment of the refractive status of the participants who fell under the category for full eye examination, was done by first carrying out cycloplegic refraction. Cycloplegic drops were used. Two drops of 1% cyclopentolate eye drops was used for cycloplegic refraction. Cycloplegia was considered complete if the pupil dilated to 6 mm or greater and a light reflex was absent. Cycloplegic refraction was carried out first using a streak retinoscope (keeler retinoscope) in a semi-dark room at a distance of 75 cm or a +1.50 D lens in the trial frame and then with an auto-refractor (RM 9000 custom) according to the manufacturer's instructions. The auto-refractor was calibrated daily for the five-day period of the program. Using the objective refraction measurement as the starting point, best corrected VA

with subjective refraction was determined using the trial frame. Refractive error was assigned as the cause of VI if acuity improves to 6/9 or better with subjective refractive correction with or without pinhole.

Criteria for diagnosis

Visual Impairment: Uncorrected VA of 6/12 or worse is regarded as an Uncorrected Refractive Error.

Myopia: Refractive error of at least -0.50 D,

Hyperopia: Refractive error of at least $+2.00$ D or more

Astigmatism: -0.75 D or more

Data management and analysis

Serial numbers were written on copies of the questionnaire for easy identification and recall of any instrument with problems. Data collected from the eye examination was documented on the recording sheet of the questionnaire. Afterwards, all data from the questionnaire survey and clinical examination were coded and entered into the computer using SPSS (Statistical Package for Social Sciences) version 25.0. Data analysis was done using descriptive statistics, frequencies, percentages, Pearson's correlation statistics was employed to test for relationship between level of information and intention to use prescription glasses regularly among the students, and multiple regression was used to determine among the variables of personal characteristics, level of information and motivational beliefs, which bests predict the intention to use prescription glasses regularly among the study population.

Ethical considerations

Ethical approval was sought for and granted by Babcock University Health Research Ethical Committee (BUHREC). Before commencement of the field work, permission was sought for and granted by the schools through their respective principals. Signed consent letters were obtained from their parents to permit the use of cycloplegic eye drops for full eye examination.

30. Ebri E, Govender P, Naidoo KS. Prevalence of Vision Impairment and Refractive Error in School Learners in Calabar, Nigeria. African Vision Eye Health. 2019; 78: a487.

Results

Demographics of participants

Of the 359 participants, aged between 11 to 22years old, 115(32%) were male, while 244(68%) were females. Of the 359, 212(59.1%) were between the ages 15 and 18. The mean age was 17.2 SD±3.3. One hundred and fourteen (31.8%) of the respondents have family members who wear prescription glasses, while 245(68.2%) do not have any family members who wear glasses. All 359 (100%) participants recruited, participated in the questionnaire administration phase of the research.

Visual acuity

Of the 359 recruited, 353 participated in the study (98.3% participation rate), 2 students were absent and 4 students declined. Uncorrected V.A of 6/9 or better in the better eye was found in 312 (88.4%) students. There were 41 students (11.6%) who had uncorrected V.A of 6/12 or worse in the better eye and 22 (6.2%) were on prescription glasses. Of the 41 students, 33 students (80.5%) had their vision improved to $\geq 6/9$ in the better eye after refraction and 8 students (19.5%) had best corrected V.A of 6/12 or worse in the better eye. (Table 1) (Figure 2)

Refractive error

Subjective findings following cycloplegic autorefraction were used to determine the total number of students having refractive error. The total number of students who were found to have significant refractive error was 41 (11.6%). Myopia was found to be the predominant type of refractive error with a prevalence of 5.1%, followed by hyperopia 3.7% and astigmatism 2.8%. There were more female (3.9%) than male (1.5%) participants with myopia, while hyperopia was found to be more in male (1.98%) participants compared to female participants (1.7%). Astigmatism was found to be more in female (2.3%) participants compared to male participants (0.6%). Hyperopia from +2D to 3D decreased with increasing age and was highest among 11-14years old. Myopia from $\geq -0.50D$ to $-4.50D$ increased with

increasing age and was highest among students aged 19 to 22years. Significant astigmatism in either eye was present in 10(2.83%) students. (Table 2)

Information

Of the total respondents, 310(86.4%) believed that refractive error is a condition that causes poor vision and that prescription glasses is a method of correcting it. On the average, they disagree that Refractive error can be cured permanently by taking certain drugs or traditional herbs. It was revealed that, on the average, the respondents are of the view that uncorrected refracted error can impart negatively on a student's academics and future prospects. On the average, the participants had good information about refractive errors and the use of prescription glasses ($\bar{x} = 16.08$ SD±2.29). (Table 3)

Motivation

In the Attitudinal beliefs towards prescription glasses use, the respondents feel wearing of prescription glasses should be done once in a while so that one will not depend on it throughout life (mean= 0.59; SD±0.78), feel wearing prescription glasses regularly will worsen one's vision with time (mean= 1.0529; SD ±0.88), feel young people do not need prescription glasses (mean= 1.14; SD±0.87). In subjective norm beliefs associated with prescription glasses use, the respondents are of the view that their parents will approve them wearing prescription glasses regularly (mean= 2.31; SD±0.83), they also think that their teacher will approve of them wearing prescription glasses regularly (mean= 2.14; SD ±0.76), they of the view that that their friends and classmates will tease them if they wore glasses (mean= 1.32; SD ±0.69). (Table 4)

Intention to use prescription glasses

The result shows that on the average the respondents are of the view that they will make an effort to use their prescription glasses regularly when given, if detected that they have refractive error (mean= 2.32; SD± 0.86), they are of the opinion that they will put on prescription glasses regularly if it helps them in their academics

(mean= 2.42; SD ±0.88), they will wear prescription glasses regularly if it makes them look good (mean= 1.82; SD ±1.17), they will wear prescription glasses regularly if their parents approve of it (mean= 2.19; SD±1.02), they are also of the view that they will wear

prescription glasses regularly if it won't cause them any discomfort (Mean= 2.28; SD±0.69) and will use it if approved by their teachers (mean= 1.87; SD±1.02). (Table 5)

Conceptual Model

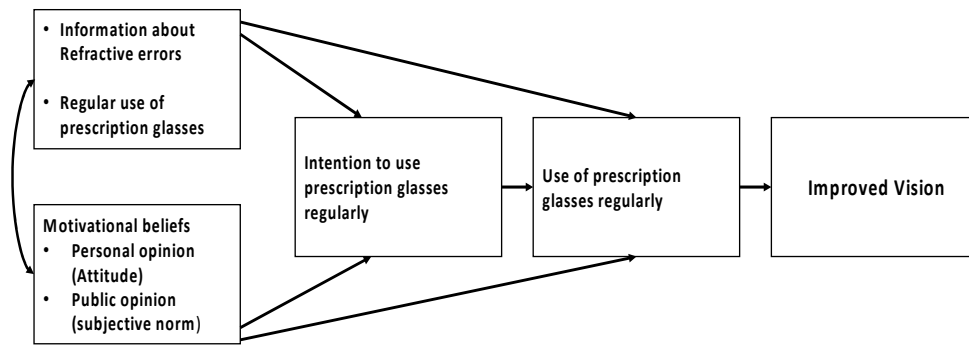


Figure 1: A diagram showing the conceptual model

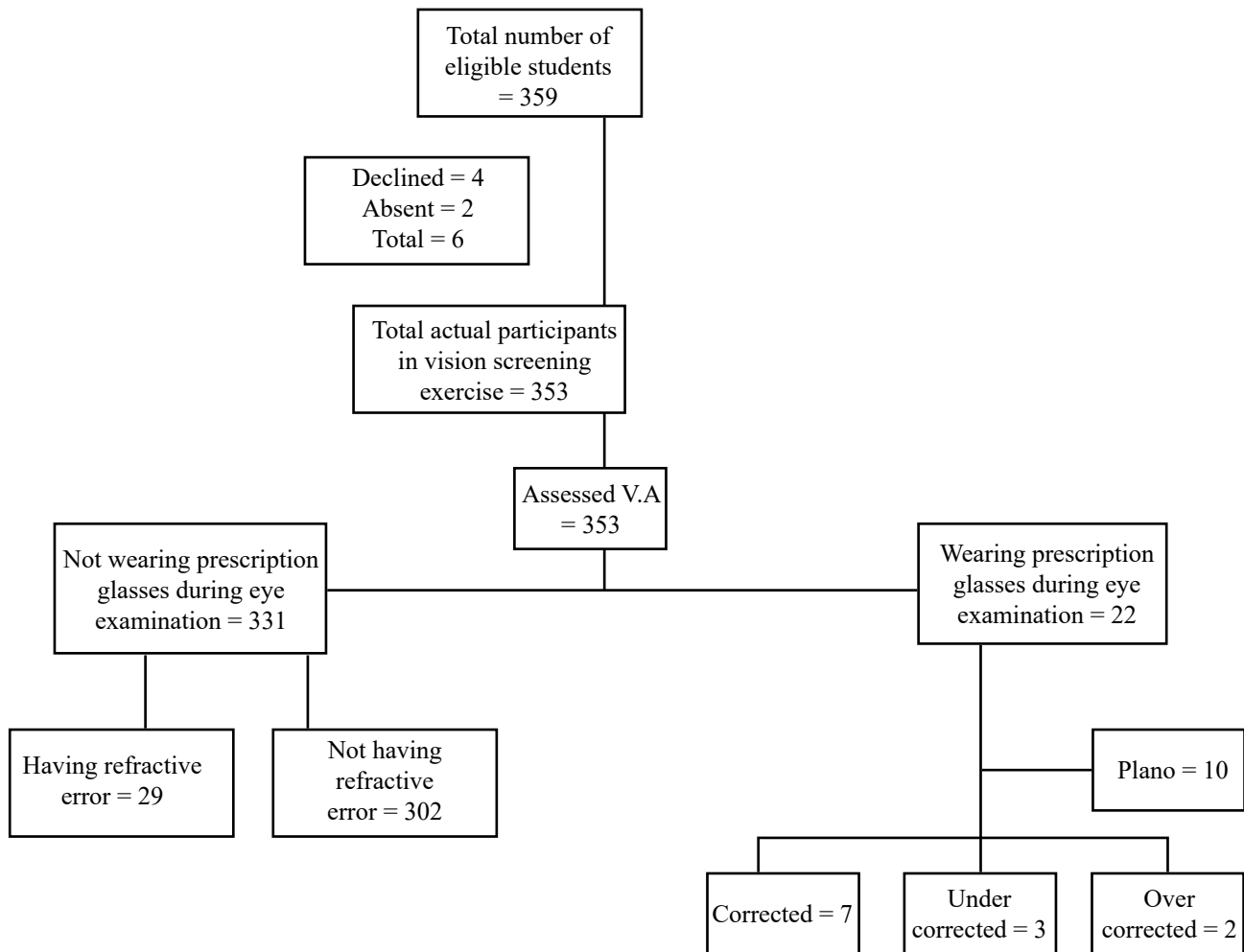


Figure 2: Research procedural flow chart

Table 1: Distribution of uncorrected, presenting, and best corrected V.A among genders.

V.A category	Uncorrected V.A N (%)		Wearing glasses N (%)		Presenting V.A N (%)		Best corrected V.A N (%)	
	male	female	male	female	male	female	male	female
≥ 6/9 in both eyes	98 (86%)	204 (85.4%)	0(0%)	2(0.8%)	98(85.9%)	206(86.2%)	111(97.3%)	225(94.14%)
≥ 6/9 in one eye	3 (2.6%)	7 (2.9%)	0(0%)	0(0%)	10(8.8%)	18(7.5%)	2(1.8%)	7(2.93%)
≤ 6/12 to 6/18 or better in the better eye	8 (7%)	15 (6.3%)	3(2.6%)	3(1.3%)	5(4.4%)	12(5%)	1(0.9)	6(2.51%)
≤ 6/24 to 6/36 or better in the better eye	5 (4.4%)	11(4.6%)	4(3.5%)	8(3.4%)	1(0.9%)	3(1.3%)	0(0%)	1(0.42%)
≤ 6/60 or worse in the better eye	0 (0%)	2(0.8%)	0(0%)	2(0.8%)	0(0%)	0(0%)	0(0%)	0(0%)
Total	114(100%)	239(100%)	7(6.1%)	15(6.3%)	114(100%)	239(100%)	114(100%)	239(100%)

V. A, Visual acuity; N, Number

Table 2: Prevalence and Distribution of refractive error by type, age and gender

Types of refractive error	11-14years N (%)		15-18years N (%)		19-22years N (%)		Total	
	Male	Female	Male	Female	Male	Female	M	F
Myopia (≤-0.50D to -4.50D)	1(7.5%)	2(7.4%)	1(7.5%)	5(18.5%)	3(21.4%)	6(22.2%)	5	13
Hyperopia (≥+2D to +3D)	3(21.4%)	3(11.1%)	3(21.4%)	1(3.7%)	1(7.5%)	2(7.4%)	7	6
Astigmatism (≥-0.75D to -1.50D) in at least one eye	0(0%)	2(7.4%)	0(0%)	3(11.1%)	2(14.3%)	3(11.1%)	2	8
Total	4	7	4	9	6	11	14(34.1%)	27(65.9%)
Grand total	11		13		17		41 (11.6%)	

M, Male, F, Female, N, Number; %, Percentage

Table 3: Level of Information regarding prescription glasses

S/N	Information (knowledge) regarding refractive error and prescription glasses use	SA	A	D	SD	Mean	SD	AM
1	Refractive error is a vision problem that results from constantly watching the television	161 (44.8)	149 (41.5)	49 (13.6)		.6880	.69928	
2	Uncorrected refractive error can lead to permanent visual impairment	115 (32)	194 (54)	33 (9.2)	17 (4.7)	2.1337	.76513	
3	Refractive error can be cured permanently by taking certain drugs or traditional herbs	49 (13.6)	130 (36.2)	148 (41.2)	32 (8.9)	1.4540	.83731	
4	Uncorrected refracted error can impact negatively on a student's academics and future prospects	180 (50.1)	147 (40.9)	32 (8.9)		2.4123	.64942	
5	Early detection and correction of refractive error can improve vision over time	195 (54.3)	115 (32)	33 (9.2)	16 (4.5)	2.3621	.82713	Mean= 16.0808
6	Prescription glasses can also prevent eye injuries and harmful rays from the sun	259 (72.1)	100 (27.9)			2.7214	.44891	
7	Refractive error is associated with blur vision, eye strain and headaches	146 (40.7)	196 (54.6)	17 (4.7)		2.3593	.57081	SD= 2.29929
8	Refractive error is not always hereditary	64 (17.8)	213 (59.3)	82 (22.8)		1.9499	.63663	

SA, strongly agree, A, Agree, D, Disagree, SD, strongly disagree, SD, Standard Deviation, AM, Average mean

Table 4: Motivational belief regarding prescription glasses

S/N	Attitudinal beliefs towards prescription glasses use	SA	A	D	SD	Mean	SD	AM	GM
1	I feel wearing of prescription glasses should be done once in a while so that one will not depend on it throughout life	210 (58.5)	83 (23.1)	66 (18.4)		.5989	.78077		
2	I feel it is a bad habit not to wear glasses regularly after been prescribed by the doctor	97 (27)	147 (40.9)	83 (23.1)	32 (8.9)	1.8607	.91700		
3	I feel wearing prescription glasses regularly will worsen one's vision with time	114 (31.8)	129 (35.9)	99 (27.6)	17 (4.7)	1.0529	.88437	Mean= 6.5209	Mean= 15.7967
4	I feel young people do not need prescription glasses	82 (22.8)	178 (49.6)	66 (18.4)	33 (9.2)	1.1393	.87331	SD= 3.19462	SD= 4.15958
5	I feel wearing prescription glasses regularly will not make one look good.	130 (36.2)	131 (36.5)	81 (22.6)	2 (2.6)	.9582	.88180		
6	I don't like wearing glasses for no particular reason.	114 (31.8)	163 (45.4)	82 (22.8)		.9109	.73452		
Subjective norm beliefs associated with prescription glasses use									
1	I think my parents will approve of me wearing prescription glasses regularly	179 (49.9)	130 (36.2)	33 (9.2)	17 (4.7)	2.3120	.82736	Mean= 9.2758	
2	I think my teacher will approve of me wearing prescription glasses regularly	131 (36.5)	147 (40.9)	81 (22.6)		2.1393	.75679	SD= 2.27796	
3	My siblings will tease me if I wear prescription glasses regularly	17 (4.7)	97 (27)	147 (40.9)	98(27.3)	1.0919	.85215		
4	My friends and classmates will tease me if I wear prescription glasses regularly	32 (8.9)	195 (54.3)	116 (32.3)	16 (4.5)	1.3231	.69820		
5	My parents do not use prescription glasses, so I don't have to.	80 (22.3)	148 (41.2)	115 (32)	16 (4.5)	1.1866	.82978		
6	My siblings do not use prescription glasses, so I don't have to.	66 (18.4)	195 (54.3)	50 (13.9)	48 (13.4)	1.2228	.90030		

SA, strongly agree, A, Agree, D, Disagree, SD, strongly disagree, SD, Standard Deviation, AM, Average mean, GM, Group mean

Table 5: Intention to use prescription glasses

S/N	STATEMENT	SA	A	D	SD	Mean	SD	AM
1	If detected that I have refractive error, I will make an effort to use my prescription glasses regularly when given.	179 (49.9)	148 (41.2)	32 (8.9)		2.3203	.86870	
2	I will put on prescription glasses regularly if it improves my vision and helps me in my academics.	214 (59.6)	113 (31.5)	32 (8.9)		2.4178	.88331	
3	I will wear prescription glasses regularly if it makes me look good.	131 (36.5)	114 (31.8)	32 (8.9)	82 (22.8)	1.8189	1.15699	Mean= 12.8914
4	I will wear prescription glasses regularly if my parents approve of it.	180 (50.1)	115 (32)	16 (4.5)	48 (13.4)	2.1894	1.02363	SD= 3.81952
5	I will wear prescription glasses regularly if it won't cause me any discomfort.	132 (36.8)	211 (58.8)		16 (4.5)	2.2786	.68533	
6	I will use prescription glasses if approved by my teachers.	115 (32)	130 (36.2)	65 (18.1)	49 (13.6)	1.8663	1.01605	

SA, strongly agree, A, Agree, D, Disagree, S.D, strongly disagree, S.D, Standard Deviation, AM, Average mean

Discussion

The findings of the study showed that the prevalence of refractive error was 11.6%, which is higher than other studies reported in different geopolitical zones of Nigeria, 7.3% in south-west, Lagos,¹⁴ 9.7% in south-east, Anambra,¹⁸ 7.2% & 7.3% in south-south, Cross-River state,^{30,31} 6.9% in north-central, Kwara state,³² and 4.8% in north-west, Kebbi state.¹⁷ However, the prevalence is lower than 58% reported in south-east, Abia state¹⁵ and 22.5% in south-south, Bayelsa state.¹⁶ The study conducted in Bayelsa state was a hospital based study and it is expected to see a majority of participants with eye disorders including refractive error, which may have accounted for the high prevalence rate reported.

In comparison with other studies in Africa, the prevalence of 11.6% reported by this study is lower than the prevalence of 18.9% reported in Rwanda,¹¹ 29.4% reported in Egypt,¹⁰ 25.6% reported in Ghana,⁷ and 57.2% in Tunisia.⁴ But higher than the prevalence of 3.5% reported in Ethiopia,⁹ and 1.4% in South Africa.⁵ Generally, the variations in the prevalence of refractive error reported by these studies, may be due to the difference in methods of the study design used.

In this study, there were more females with refractive errors than males. Of the 41 participants who had refractive error, 65.9 % were females and 34.1% were males. This is similar to the findings reported by some other studies in Nigeria.^{14,16,17,18,31} The prevalence of myopia (5.1%) was found to be the most predominant when compared with hyperopia (3.7%) and astigmatism

(2.8%). Similar findings were reported in studies conducted in Anambra¹⁸ and Abia state¹⁵ south-eastern Nigeria among children aged between 5 to 17 years. This may be due to the high demand placed on the eyes to perform near visual tasks at their young age.¹⁸

The intention to use prescription glasses regularly by students of Ogijo community, Ogun state, Nigeria, is another important component of this study. It is important because many studies have reported poor compliance of prescription glasses use among students,^{21,24,26} this makes efforts of certain school-based vision programs futile in the bid to addressing the problem of refractive error among school children. In this study, the information, motivation and the intention to use prescription glasses regularly were assessed. According to this study, (310)86.4% believe that refractive error is a condition that causes poor vision and prescription glasses are the cheapest and most effective way of correcting refractive error. Overall, the participants had good information regarding refractive errors and the use of prescription glasses. The participants of this study, had better information and knowledge regarding refractive error and the use of prescription glasses, compared to those in study conducted by Ebeigbe, Kio, and Okafor, in 2013.³³ Of the 359 students assessed, 293(81.6%) believe that prescription glasses should be worn once in a while so that one will not depend on it throughout life. Also, 243(67.7%) students feel wearing prescription glasses will worsen one's vision with time, and 260(72.4%) students feel young people do not need prescription

4. Ayed T, Sokkah M, Charfi O, El Matri L. Epidemiological Study of Refractive Errors in School Children in Socioeconomically Deprived Regions in Tunisia. *J Fr Ophthalmol*. 2002; 25: 712-7
5. Naidoo KS, Raghunandan A, Mashige K, Govender P, Holden B, Pokharel G, Ellwein L. Refractive Error and Visual Impairment in African Children in South Africa. *Invest Ophthalmol Vis Sci*. 2003; 44:3764-3770
7. Ovenseri-Ogbomo G, Omuemu V. Prevalence of Refractive Error Among School Children in The Cape Coast Municipality, Ghana. *Clinical Optometry*. 2010; 2:59-66.
9. Jafer K, Abomesh G. Prevalence of Refractive Error and Visual Impairment Among Rural School-Age Children of Goro District, Gurage Zone, Ethiopia. *Ethiop J Health Sci*. 2014 24:353-358.
10. Gamal A, Ahmed A, Yehia E, Rania A, Asmaa M. Prevalence of visual impairment and refractive errors in children in South Sinai, Egypt. *Ophthalmic Epidemiol*. 2015; 22:246-252.
11. Semanyenzi S, Karimurio J, Nzayirambaho M. Prevalence and Pattern of Refractive Errors in High Schools of Nyarugenge District. *Rwandan Med J*. 2015; 723:81-83.
14. Faderin M, Ajaiyeoba A. Refractive Errors in Primary School Children in Nigeria. *Niger J Ophthalmol*. 2011; 9:10-14.
15. Ahuama C, Atowa C. Distribution of Refractive Errors Among School Children in Abia State of Nigeria. *J Nig Optom Assoc*. 2004; 11:25-28.
16. Opubiri I, Adedayo A, Megbalayin E. Refractive Error Pattern of Children in South-South Nigeria: A Tertiary Hospital Study. *Sky J Med Sci*. 2013; 3:10-14.
17. Balarabe H, Adamu I, Abubakar A. Vision Screening to Detect Refractive Errors in Three Selected Secondary Schools in Birnin Kebbi, North-West, Nigeria. *Sahel Med J*. 2015; 18:61-65.
18. Ngozika E, Khathutshelo M. Refractive Error and Visual Impairment in Primary School Children in Onitsha, Anambra State, Nigeria. *African Vision and Eye Health* 2018; 77: a455.
21. Odedra N, Wedner S, Shigongo Z, Nyalali K, Gilbert C. Barriers to Spectacle Use in Tanzania Secondary Students. *Ophthalmic Epidemiology*. 2008; 15:410-417.
24. Omalase C, Mahmoud A. Factors Associated with Non-Compliance with Spectacle Wear in An Adult Nigerian Population. *African Journal of Biomedical Research*. 2009; 12:43-46
26. Thompson S, Naidoo KS, Gonzalez-Alvarez C, Harris G, Chinanayi F, Loughman J. Barriers to Use of Refractive services in Mozambique. *Optometry and Vision Science*. 2015; 92: 59-69.
30. Ebri E, Govender P, Naidoo KS. Prevalence of Vision Impairment and Refractive Error in School Learners in Calabar, Nigeria. *African Vision Eye Health*. 2019; 78: a487.
31. Ekpenyong B, Naidoo KS, Ndep A, Akpan M, Ekanem E. Prevalence and Determinants of Visual Impairment Amongst School-Aged Children in Southern Nigeria. *Afr Vision Eye Health*. 2020; 79: a534.
32. Ayanniyi A, Mahmoud A, Olatunji F. Causes and Prevalence of Ocular Morbidity Among Primary School Children in Ilorin, Nigeria. *Nigerian Journal of Clinical Practice*. 2010; 13:248-253
33. Ebeigbe J, Kio F, Okafor L. Attitude and Beliefs of Nigerian Undergraduates to Spectacle Wear. *Ghana Medical Journal*. 2013; 47: 70-3

glasses. Overall, the participants attitude to refractive error and prescription glasses use was below average with a mean score of 6.5 on an 18-point rating scale. This is different from the findings of the study conducted in Nairobi, Kenya, where students were found to have a positive attitude towards refractive error and use of prescription glasses.³⁴ Under the subjective norm component, 309(86.1%) students in this study think their parents will approve of them wearing prescription glasses regularly and 278(77.4%) students also think their teachers will approve of them wearing prescription glasses regularly.

On the students' intention to use prescription glasses regularly, 327(91.1%) students, at least agree to use their prescription glasses regularly if it helps them in

their academics. Also, 245(68.3%) students, at least agree to wear a prescription if it improves their vision and helps them in their academics. Over 65% of the students agree to wear prescription glasses regularly if approved by their parents and teachers. Of the total respondents, 95.6% expressed good intention to wear prescription glasses regularly if it won't cause them any discomfort. Overall, the students in this study expressed good intention towards the use of prescription glasses regularly provided the above stated conditions are met. In this study, there was a significant positive relationship between level of information and intention to use prescription glasses regularly among the students ($r=.246$; $p<0.05$). Information was also found to be the best predictor of the intention to use prescription glasses regularly ($b=.429$; $t=6.485$; $P<.05$).

Conclusion

Refractive error among the students of Ogijo community, Ogun state, Nigeria is relatively high. The participants had adequate information regarding refractive error and the use of prescription glasses but showed poor attitude. Overall, their intention to use prescription glasses regularly was encouraging. A comprehensive school health program that incorporates school eye health promotion should be practiced effectively to address the misconceptions regarding the use of prescription glasses among the teachers, parents and students of Ogijo community, Ogun state, Nigeria.

Acknowledgement

The authors will like to use this opportunity to express their profound gratitude to the principals, teachers and students of the schools in Ogijo community that participated in this study.

Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in undertaking this study.

[How to cite this article: Osayamwen OW, Amosu A. Prevalence of Refractive Errors and Intention to Use Prescription Glasses Regularly Among Secondary School Students in Ogijo Community, Ogun State, Nigeria. *Journal of the Nigerian Optometric Association*. 2020;22(1): 4 - 13]

<https://dx.doi.org/10.4314/jnoa.v22i1.3>

34. Nyamai L. Knowledge Attitude and Practice on Refractive Error Among Students Attending Public High Schools in Nairobi County. *Journal of Ophthalmology of Eastern, Central and Southern Africa*. 20: 33-39.