



*Full Length Research Paper*

## Prevalence and distribution of the use of medicated glasses and refractive errors among Nigerian youths in a tertiary institution in Rivers State Nigeria

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### Abstract

The use of medicated glasses as visual aids was associated with the elderly, but in recent times the population of younger people using medicated glasses is alarming. Academic excellence is dependent on a number of factors of which clear comfortable binocular vision is dominant. Genetic, cultural and environmental factors play key roles in the prevalence and distribution of refractive errors. This study estimated the prevalence and distribution of the use of medicated glasses and refractive errors among students of Madonna University Nigeria, Elele campus, Rivers state. One thousand (1000) questionnaires were randomly distributed to 3<sup>rd</sup> year undergraduate students in various departments in the college of medicine, including Anatomy, Physiology, Medicallab. Science, Optometry, Public health, and Pharmacy. 852 (85.2%) of the questionnaires were retrieved and analyzed using simple percentages. Data collected included information on age, sex, state of origin, place of residence and presence of refractive errors. Our results reveal that North-west region had the highest prevalence of the use of medicated glasses among youths at 61.29%. This is followed by south-west (55.67%), south-south (36.27%), south-east (31.67%), north-central (19.67%) and north-east (15.79%). On the average, the prevalence of the use of medicated glasses is 41.20% in the Southern part and 32.25% in the Northern part of Nigeria. The incidence of refractive errors also followed the same trend with North-west having (93.55%), South-west (50.51%), South-south (32.88%), South-east (27.67%), North central (18.03%) and North-east (15.79%). The highest occurring refractive error among the six geopolitical regions of Nigeria is myopia (54%), followed by hyperopia (21.01%), astigmatism (15.30%) and presbyopia (9.46%). This work represents the first attempt at having a comprehensive outlook at the statistics of the use of medicated glasses among Nigerian youths as well as the incidence of refractive errors among Nigerian youths.

**Keywords:** Refractive errors, Spectacles, Medicated glasses, Madonna University.

### INTRODUCTION

The rate at which young people use medicated glasses today is alarming. It is a pointer to the possibility of rising incidence of refractive errors among Nigerian youths. This study provides data as to the frequency of the use of medicated glasses and the incidence of refractive errors among Nigerian youths.

People use glasses for corrective and cosmetic purposes. Recent studies done among children and young adults shows that refractive error has been the

most prevalent ocular morbidity despite being to a very large extent correctable (Vinay and Shruthi, 2016, Prakash et al., 2015). Refractive errors vary over age, gender, race and ethnicity, level of education, social class and degree of urbanization (Prema 2011).

Reports show that 2.3 billion people worldwide have refractive errors, out of which about 500 million people mostly in developing countries have no access to proper checkup and correction. This has resulted in either

**Table 1:** Incidence of use of medicated glasses across the regions of Nigeria

Region	Total Respondents	Number using medicated glasses	Percentage
North West	31	19	61.29%
South West	97	54	55.67%
South South	295	107	36.27%
South East	300	95	31.67%
North Central	122	24	19.67%
North East	19	3	15.79%

North-west and south-west had the highest incidences with 61.29% and 55.67% respectively. South east and south south play a middle position, having 31.67% and 36.27% respectively while the least incidences occur in the North central and East.

blindness or impaired vision, mostly (Holden et al., 2000). In Pakistan, 11.4% of the blindness is due to uncorrected refractive errors (National Committee for Prevention of Blindness, Ministry of Health 1994-98; P. 24). Studies indicate that refractive errors are mainly caused by genetic factors, others suggest an interplay between genetics and environmental factors (Feldkamper and Schaeffel, 2003). Apart from a positive history of wearing glasses in the family, environmental factors may include close work or near activity such as prolonged study hours, watching computers / television etc (Zadnik 1997, Saw et al., 2002). Myopia, the most studied refractive error is emerging as a global health problem, due to the costs associated with correction, and its associated pathology such as retinal tears, retinal detachments, and macular degeneration (Curtin, 1985). The prevalence of myopia varies in different parts of the world, being more prevalent in industrialized countries and cities compared to rural areas (Uzma et al., 2009). Other studies have found an association between socioeconomic status, education, academic achievement, and myopia (Teasdale and Goldschmidt, 1988; Rosner and Belkin, 1987, Parssinen, 1987).

In the US, the prevalence of myopia for people between the ages of 12 and 54, surged from 25% in the early 1970's to 42% by 2000 (Saw et al., 2002). In Taiwan and Singapore, myopia is found in approximately 30% of all children 6 and 7 years old, and increases to 80% in young adults (Saw, et al., 2002). The rapid increase in the prevalence of myopia strongly suggests that environmental factors are having a considerable influence on the development of myopia not explainable by the genetic model (Saw et al., 1996; Mutti et al., 1996).

In young children hyperopia and astigmatism may be found to be higher than myopia (Jimenez et al, 2012, Krishnamurthy et al., 2014).

## METHODS

This study was carried out among 2<sup>nd</sup> year students of Madonna University Nigeria, Elele campus. This population was chosen to ensure that whatever visual problems seen were not acquired within the period as a student but was already present before the individual came into the school. This was also ensured further by using only respondents who have used medicated glasses for at least five years. Meaning that usage must have commenced before studentship. One thousand (1000) questionnaires were randomly distributed to undergraduate students in various departments in the college of medicine, including Anatomy, Physiology, Medical laboratory Science, Optometry, Public health, and Pharmacy. Also, our distribution of students according to the states of Nigeria is based on residency, not place of origin.

As such, this work leans more towards environmental rather than genetic causes. Future analysis will consider the genetic factors. 930 of these questionnaires were retrieved (93%). Out of that number, 864 (86.4%) met with the conditions stated above and were used for the study. The remaining 66 were discarded. Data were analyzed using simple percentages. Data collected included information on age, sex, state of origin, place of residence with duration and presence of refractive errors.

## RESULTS

Table 2 shows the incidence of use of refractive North-west and south-west had the highest incidences of refractive errors with 61.29% and 50.51% respectively. North east and North central had the least incidences with 15.79% and 18.03% respectively. From table 3, myopia had the highest occurrence with 54.21% of all

**Table 2:** Incidence of use of Refractive errors across the regions of Nigeria

Region	Total Respondents	Number using medicated glasses	Percentage
North West	31	19	61.29%
South West	97	49	50.51%
South South	295	97	32.88%
South East	300	83	27.67%
North Central	122	22	18.03%
North East	19	3	15.79%

**Table 3:** Distribution of refractive error cases

S/N	Refractive Error	Number	Percentage
1	Myopia	148	54.21 %
2	Hypermetropia	77	28.21 %
3	Presbyopia	5	1.83 %
4	Astigmatism	43	15.75 %
	Total	273	100 %

**Table 4:** Distribution of Refractive errors across the regions of Nigeria

Region	Myopia		Hypermetropia		Presbyopia		Astigmatism	
	N	%	N	%	N	%	N	%
South east	47	31.76	21	27.27	1	20.00	11	25.58
South south	52	35.13	33	42.86	0	0.00	9	20.93
South west	27	18.24	7	9.09	2	40.00	11	25.58
North east	3	2.03	0	0.00	0	0.00	0	0.00
North central	11	7.43	9	11.69	1	20.00	5	11.63
North west	8	5.41	7	9.09	1	20.00	7	16.28
<b>Total</b>	<b>148</b>	<b>100</b>	<b>77</b>	<b>100</b>	<b>5</b>	<b>100</b>	<b>43</b>	<b>100</b>

cases, followed by hypermetropia (28.21%), Astigmatism (15.75%) and presbyopia (1.83%).

Table 4 shows the distribution of refractive errors across the 6 geopolitical zones of the country. Myopia was highest in south south and least in North east. South east and South west had high values. Hypermetropia was

also highest in South south, followed by South east and North central. It was lowest South west and North West.

Table 5 shows the frequency of myopia according to individual states of Nigeria. This frequency however only represents a direct numerical counting, comparing a state with the total number of cases. So as expected, states in

**Table 5:** Distribution of Myopia according to states in Nigeria

S/N	State	Number	Percentage	S/N	State	Number	Percentage
1	Rivers	27	18.12 %	11	Ondo	3	2.01%
2	Lagos	22	14.80 %	12	Osun	2	1.34 %
3	Delta	21	14.10 %	13	Bauchi	2	1.34 %
4	Anambra	15	10.10 %	14	Kano	2	1.34 %
5	Imo	12	8.05 %	15	Ebonyi	1	0.67 %
6	Enugu	11	7.38 %	16	Oyo	1	0.67 %
7	Abia	9	6.04 %	17	Borno	1	0.67 %
8	FCT	8	5.37 %	18	Kogi	1	0.67 %
9	Cross River	5	3.36 %	19	Sokoto	1	0.67 %
10	Kadunna	4	2.68 %	20	Katsina	1	0.67 %
					<b>Total</b>	149	100%

**Table 6:** Distribution of Hypermetropia according to states in Nigeria

S/N	State	Number	Percentage	S/N	State	Number	Percentage
1	Rivers	19	24.67 %	10	Kogi	2	2.60 %
2	Delta	8	10.40 %	11	Kano	2	2.60 %
3	Imo	7	9.09 %	12	Cross River	1	1.30 %
4	Anambra	6	7.79 %	13	Sokoto	1	1.30 %
5	Edo	6	7.79 %	14	Plateau	1	1.30 %
6	Lagos	6	7.79 %	15	Kadunna	1	1.30 %
7	FCT	6	7.79 %	16	Niger	1	1.30 %
8	Abia	5	6.49 %	17	Osun	1	1.30 %
9	Enugu	4	5.19 %				
					<b>Total</b>	77	100 %

**Table 7:** Distribution of Presbyopia according to states in Nigeria

S/N	State	Number	Percentage
1	Lagos	2	50 %
2	Anambra	1	25 %
3	FCT	1	25 %
	<b>Total</b>	4	100%

the south will have more frequency than those in the North as the University is located in Rivers state, South south part of the country. Table 6 shows the frequency of hypermetropia by states. As in above, states in the

southern part of the country had the highest frequency by number. Table 7 shows the distribution of presbyopia according to states. Table 8 shows the distribution of Astigmatism according to states in Nigeria.

**Table 8:** Distribution of Astigmatism according to states in Nigeria

S/N	State	Number	Percentage	S/N	State	Number	Percentage
1	Lagos	11	25.58 %	8	Katsina	2	2.33%
2	Imo	7	16.28 %	9	Abia	1	2.33%
3	Delta	6	13.95 %	10	Anambra	1	2.33%
4	FCT	5	11.63 %	11	Osun	1	2.33%
5	Enugu	3	6.98 %	12	Plateau	1	2.33%
6	C. River	2	4.65 %	13	Kadunna	1	2.33%
7	Rivers	2	4.65 %				
					<b>Total</b>	43	100%

## DISCUSSION

Our results reveal that out of the total of 864 respondents used for this study, 302 (37.03%) use medicated glasses and 31.60% (273) had a refractive error. This is similar to the 37.39 % report by Prema 2011 in a study carried out in India. Our results reveal that North-west region had the highest prevalence of the use of medicated glasses among youths at 61.29%. This is followed by south-west (55.67%), south-south (36.27%), south-east (31.67%), north-central (19.67%) and north-east (15.79%).

On the average, the prevalence of the use of medicated glasses is 41.20% in the Southern part and 32.25% in the Northern part of Nigeria. The incidence of refractive errors also followed the same trend with North-west having (61.29 %), South-west (50.51%), South-south (32.88%), South-east (27.67%), North central (18.03%) and North-east (15.79%). The highest occurring refractive error among the six geopolitical regions of Nigeria is myopia (54.21 %), followed by hyperopia (28.21%), astigmatism (15.75%) and presbyopia (1.83%). This is similar to the report of Adeoti and Egbewale, 2008 in a study carried out in Ado ekiti where myopia constituted 39.33%, hypermetropia 23.33% and astigmatism 21.80%. The increasing incidence of refractive errors and consequent use of medicated glasses may be associated with the longer time our youth spend reading books, working on the computer and watch television according to the report of Prema 2011.

This may explain why the incidence was higher in more developed cities and states of the country than the less developed places.

## CONCLUSION

Our results suggests that there is a rise in the incidence of refractive errors among our youths, leading to increase in the use of medicated glasses, a phenomenon that was

more common among the elderly in our society.

## RECOMMENDATION

- We therefore recommend that government and its agencies should pay attention to those environmental factors that predispose our youths to visual impairments.
- This study can be extended to specific regions of the country, especially those with observed high incidence from this study.
- Also, attention should be paid to sexual disparity in the manifestation of these refractive errors.

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**APPENDIX**

**Questionnaire**

This research work is been carried out in Madonna university, Elele campus on Frequency of medicated glasses in Nigeria. Please kindly respond to the questions as genuinely as possible. Be assured that your confidentiality shall be respected. As the information given cannot be traced to you in any way. All information is strictly for research purposes. Thank you for your cooperation.

**Section A:** Personal information (please tick the appropriate box).

1. Sex: M  F
2. Age: 15-20  21-25  26-30  31-35
3. State of origin:
4. Where have you resided for the most part of your life?  
 State  City/ Town
5. For how long have you or did you stay there?

**Section B:**

1. Do you use glasses? Yes  No
2. Are your glasses medicated? Yes  No
3. Please specify the type.
  - A. Myopia (Shortsightedness)
  - B. Hypermetropia (long-sightedness)
  - C. Presbyopia  D. Astigmatism

E. Others (please specify)

4. How long have you used it?

Years

5. How many siblings do you have?

6. How many of them use glasses?