

Knowledge of routine eye examination in children and associated factors: A parents' perspective

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Abstract

Background: Routine eye examinations form part of the scope of the health care plan for children to prevent avoidable causes of blindness. This study assessed parents' knowledge of routine eye exam in school children in Evbuomore community and how this affects access to eye examinations.

Methods: This was a descriptive cross-sectional study. Multi-stage sampling technique was employed in the selection of 380 participants in Evbomore community in Edo State. Statistical significance was set at $p < 0.05$.

Results: A total of 308 parents with a mean age of 37.4 ± 6.1 years participated in this survey. There was poor awareness 46.3% and knowledge 57.9% of routine eye examination in children. Religion ($p=0.02$), skill level ($p < 0.01$), level of education and monthly income ($p < 0.01$) positively influenced knowledge.

Conclusion: The knowledge of parents regarding routine eye examination in children was poor. Increasing household income, socio-economic status and higher skill levels were significant determinants of good knowledge. These factors can be harnessed by stakeholders in the planning and implementation of health education programs for parents in order to improve knowledge of routine eye examination in children.

Connaissance de l'examen oculaire de routine chez les enfants et des facteurs associés : le point de vue des parents

Résumé

Contexte de l'étude : Les examens oculaires de routine font partie du plan de soins de santé destinés aux enfants afin de prévenir les causes évitables de cécité. Cette étude a évalué les connaissances des parents sur l'examen de la vue de routine chez les écoliers de la communauté d'Evbuomore et la manière dont cela affecte l'accès aux examens de la vue.

Méthode de l'étude : Il s'agissait d'une étude transversale descriptive. Une technique d'échantillonnage à plusieurs étapes a été utilisée pour la sélection de 380 participants dans la communauté d'Evbomore dans l'État d'Edo. La signification statistique a été fixée à $p < 0,05$.

Résultat de l'étude: Au total, 308 parents d'un âge moyen de $37,4 \pm 6,1$ ans ont participé à cette enquête. Il y avait une mauvaise connaissance 46,3 % et une connaissance faible de 57,9 % de l'examen de la vue de routine chez les enfants. La religion ($p=0,02$), le niveau de compétence ($p < 0,01$), le niveau d'éducation et le revenu mensuel ($p < 0,01$) ont influencé positivement les connaissances.

Conclusion : Les connaissances des parents concernant l'examen de la vue de routine chez les enfants étaient médiocres. L'augmentation du revenu du ménage, le statut socio-économique et les niveaux de compétence plus élevés étaient des déterminants importants d'une bonne connaissance. Ces facteurs peuvent être exploités par les parties prenantes dans la planification et la mise en œuvre de programmes d'éducation sanitaire destinés aux parents afin d'améliorer les connaissances sur l'examen de la vue de routine chez les enfants.

Mots-clés : Routine, examens de la vue, cécité

INTRODUCTION

Childhood blindness accounts for 3.2% of global blindness (1). The World Health Organization prioritizes childhood blindness because most causes in children are avoidable and 60% of children who go blind from disease die within a year (2-4). Visual problems in children are of public health significance because they can lead to problems that affect growth, academic achievement, interpersonal relationships, and self-confidence (5). For school-aged children without a need for vision correction, the American Optometrist Association suggests an eye examination every two years while those requiring glasses or contact lenses should undergo annual examinations, or as advised by their Optometrist (6).

Loss of vision in children can be prevented with screening measures for early detection of eye disorders. In developed countries, children are required to undergo eye examination at birth and at six months. Afterwards, a comprehensive eye examination is necessary at the preschool age and frequently during the school age (7). Early detection and prompt treatment of ocular disorders is important to avoid lifelong visual impairment. Thus, the World Health Organization (WHO) recommends vision screening as a cost-effective way of identifying children who would benefit from further vision care.

Globally, about 70 million blind person years are caused by childhood blindness; there are about 1.5 million blind children worldwide, and this number appears to be growing (8). Approximately 500,000 children become blind every year—one every minute—and about half of them die within one or two years of becoming blind (8). Approximately one third of the total economic cost of blindness is thought to be due to childhood blindness. Routine eye examinations form part of the scope of the preventive health care plan for children. It is linked to the achievement of the Sustainable Development Goals, especially Goals 1, 3, 4, 5, 8 and 10 (9). Parents have a role to play in ensuring the child's optimal eye health and prevention of blindness. This study will provide information on the knowledge of parents regarding childhood routine eye examination and the findings from this study will provide a basis for the design of appropriate intervention measures by relevant stakeholders. The objective of this study was to assess parents/guardians' knowledge of routine eye examination among school children in Evbommore community, Edo State.

MATERIALS AND METHODS

Study area

Evbuommore community is located in the Ovia-North East Local Government Area (LGA) of the State. Ovia-North East is one of the 18 Local Government Areas within Edo State, with its headquarters located in the town of Okada. Ovia-North East LGA is bounded to the North by Ondo State, to the East by Uhumwode, Egor, Oredo, and Ikpoba Okha Local Government Areas, to the South by the Benin River, and to the West by Ovia South-West Local Government Area. It has an area of 2,301 km² and an estimated population of 587,661 using a population projection of 2.8% per annum. Majority of the residents are traders and Christians make up a large fraction of the population, and the main languages are Benin, English, and pidgin (10).

Study design, Study population, sample size determination, ethical consideration

A descriptive cross-sectional study design was used for this study. The study population were parents and guardians who had school aged children (6-12 years) in Evbuommore Community, Benin City. Respondents who were ill were excluded from the study. The minimum sample size was calculated with the Cochran formula for single proportion using prevalence of 18.2% (proportion of respondents with good knowledge of common eye diseases from a previous study carried out in 2021 in Madinah, Saudi Arabia) (11). The study was conducted from January to December 2023. Ethical approval was obtained from the Health Research Ethics Committee of the University of Benin Teaching Hospital (ADME 22/A/VOL.VII/148316591). Community entry was done and consent to conduct the study was obtained from the Community leaders. Written informed consent was obtained from the respondents. Confidentiality of information obtained was ensured.

Sampling technique

A multi-stage sampling technique was used for this study. Ovia North East Local Government Area (LGA) was selected from the 18 Local Government Areas in Edo State using simple random sampling method by balloting. There are 13 political wards in Ovia North East LGA, Oluku ward was selected using simple random sampling technique by balloting. Oluku ward has 11 communities, simple random technique by balloting was used to select Evbommore community. Evbommore community was divided into two clusters A and B using the

Ohenhen road that runs from the Benin-Lagos Express way through to the boundary road that separates Evbomore Community from Ekosodin Community. Cluster B was selected using simple random sampling technique by balloting. The respondents were recruited into the study until the sample size was obtained.

Tool for data collection, measurement of outcome variables and data analysis

A pretested structured interviewer-administered questionnaire was used for data collection. The key research questions were: what is the level of knowledge of respondents regarding routine eye examinations in children? What are the factors that affect the knowledge of respondents? The outcome variables were the proportion of respondents who had good knowledge of routine eye examinations in children and the identification of the determinants of knowledge among the respondents. Correct responses regarding knowledge of routine eye examinations were given a score of one (1) while incorrect responses were scored zero (0). These scores were computed and converted to percentage. The scores were converted to percentages such that scores between 0 – 49.9% was regarded as poor knowledge of routine eye examination and respondents with scores of 50% and above were categorized as good knowledge. The filled questionnaires were screened for completeness and accuracy of information. Data coding and cleaning were done. Occupation of respondents was grouped using the modified International Classification into skill levels 0-4 (24). Skill level 0 includes Students, Housewives, Retired and Unemployed individuals, skill level 1 includes Farmers, Cleaners, Bricklayer and Carpenters, skill level 2 includes Butchers, Bus drivers, Secretaries, Tailors, Shop sales assistants, Police officers, Hairstylist, Electricians and Motor vehicle mechanics, skill level 3 includes Shop manager, Laboratory technicians and Commercial sales representatives while skill level 4 includes Engineers, Secondary school teachers, Pharmacists, Musicians, Nurses, Computer system analysts.

Data were entered and analyzed with IBM SPSS version 25.0 software. Test of association was done using Chi squared test and Fisher's exact test. A p -value < 0.05 was considered statistically significant. Results were presented using prose, frequency tables and figures.

RESULTS

A total of 308 parents with a mean age of 37.4 ± 6.1 years participated in this survey. Table 1 shows the socio demographic characteristics of parents of school children in Evbomore community. Over half 220(57.9%) of the respondents were between the ages of 31 - 40 years. More than half 208(54.7%) of respondents were females. Nearly half 154(40.5%) were Benin and 359(94.5%) were Christians. Three hundred and twenty-seven (86.1%) were married, 20(5.3%) were single and 10(2.6%) were cohabiting. Majority of respondents 294(74.6%) had skill level 2, 48(12.2%) had skill level 4 while 3(0.8%) had skill level 3. Almost half 162(42.6%) of the respondents had secondary level of education, 146(38.4%) had tertiary level of education while 17(4.5%) had no formal education.

Table 2 shows the awareness and source of information and on routine eye examination among respondents. Less than half 176(46.3%) of respondents were aware of routine eye examination for children and 89(31.5%) heard about it from family/friends.

Figure 1 shows the definition of eye examination among respondents. Checking for overall ocular health was the most common 168(47.9%) definition of routine eye examination.

Table 3 shows awareness and source of information of routine eye examination of school children among respondents. Almost half 183(48.2%) of the respondents were unaware of the importance of routine eye examinations, and the source of information for 111(44.0%) respondents was from healthcare professionals.

Figure 2 shows the knowledge of common eye symptoms among respondents. Redness was the most common eye symptom 291(30.4%), Itching 273(28.6%), and tearing 149(15.6%)

Table 4 shows the knowledge of caregivers on routine eye examination of school children in Evbuomore community. Majority 365(96.1%) of caregivers noted that there were no eye services offered at their child's school. More than half 269(70.8%) of respondents opined that the appropriate frequency for eye examinations is when a problem arises, 46(12.1%) respondents said that it should be done twice a year and 3(0.8%) respondents said it should be done thrice a year. Only 62(16.3%) of the respondents had concerns over their child's eyes while over three-quarters 318(83.7%) had no concerns at all. More than half 245(64.5%) knew how to access age-appropriate eye

examination for their children while 135(35.5%) did not. The ophthalmologist was most commonly chosen 303(72.8%) as the appropriate personnel to carry out an eye examination for school children, followed by the nurse 91(21.9%) and the paediatrician 7(1.7%). Regarding the composite knowledge score, less than half (42.1%) of respondents had good knowledge of routine eye examination of school children while 57.9% had poor knowledge.

A statistically significant association existed between knowledge of routine eye examination in children and religion (<0.01), skill level (<0.01), monthly income (<0.01), level of education (<0.01) and marriage type (0.013). (Table 5).

DISCUSSION

This study was done to assess the knowledge of parents on routine eye examination in children. The mean age of respondents was 37.4 ±6.1 years. There was poor awareness and knowledge of routine eye examination for children. This could be because respondents may not have considered routine eye examinations necessary, hence, they may not have sought information on the subject. A study on amblyopia and routine eye examinations in children found fair level of awareness in Tabuk, Saudi Arabia (12), while similar level of awareness of eye diseases in children was found in five other regions in Saudi Arabia (13). Poor level of knowledge was also found in previous assessments performed in Jeddah and Riyadh, respectively, on eye diseases in children (14-16). Health education of the public would be beneficial in increasing the level of awareness as well as knowledge of routine eye examination in children to reduce the burden of avoidable blindness in children. The school eye health care component of the school health programme was designed to be integrated through approaches including; health instruction through a comprehensive health education curriculum that focuses on teachers and children, increasing student understanding of health principles and modifying health-related behaviour (17). This is an important way to educate parents on the subject, through the children.

There was good awareness on the importance of routine eye examinations in children with the most popular source of information being health care professionals. This may be because many parents and caregivers would prefer to have healthy children and would be on the look-out for their well-being, seeking

guidance from professionals who would give reliable information to ensure prompt and adequate care where necessary. This was in contrast with the findings of a study conducted in Egypt to assess the level of awareness about children eye diseases and routine eye screening, where the level of awareness was poor (18). Majority of respondents were of the opinion that the appropriate frequency for eye examinations was only when a problem arises in the eyes. This could be attributable to the financial implications and logistics involved in accessing the necessary eye care services. This is similar to the findings of a study done in Benin city, Nigeria on amblyopia and routine eye examinations in children (19). Health education of parents and guardians would help to reduce the knowledge gap on the importance of routine eye examinations to prevent the occurrence of avoidable eye conditions and late presentation due to lack of appropriate information.

Most of the respondents aged over 50 years had good knowledge followed by those aged less than 30 years as against those aged 31 - 40 years who had poor knowledge and this was not statistically significant. This could be because the older age group may have learned from experience, the importance of routine eye examination in prevention and early identification of eye diseases, preservation of vision and overall well-being of children. There also appeared to be an increase in good knowledge of routine eye examination as number of children increased but this was not statistically significant. This was also similar to the findings of a study done in Al-Qunfudah, Saudi-Arabia (20). The older age group >50years had the best knowledge of routine eye examination which was followed by those less than 30years. The older age group may have had good knowledge due to experiences with their children, while the younger age group have more access to the internet and social media for health-related information which may be responsible for their good knowledge on the subject. Findings of a study conducted in India also revealed that the younger age group of parents had better knowledge levels of strabismus in children and had their source of information as the internet in contrast to the older age group (21).

More respondents who were African traditionalists had good knowledge compared with other religions and this was statistically significant. This could be because in our clime, many parents resort to the use of religious and herbal remedies before presentation at a health

facility. Hence, the traditionalists often subvert the function of traditional medical persons and may have had to seek the opinion of qualified professionals and other sources for more information on eye care. The findings of a study conducted in Benin City, Nigeria revealed that many parents tried local remedies before going to the hospital, because the practices had been going on for ages among their forefathers and were deemed effective (19). Health education in places of worship would also help to bridge the knowledge gap of routine eye examinations.

The respondents in the highest skill level had better knowledge compared with the rest and this was statistically significant. There appeared to be an increase in good knowledge as level of education increased and this was also statistically significant. This could be because higher skill level is associated with higher level of education, which also implies more exposure to better information from multiple sources, including health personnel and the internet. This was in tandem with the findings of a study done in Al-Qunfudah, Saudi Arabia (22).

There also appeared to be an increase in knowledge of routine eye examination as income increased and this was statistically significant. This could be because parents/guardians with higher income have more financial reserve for health care and can also take advantage of this to seek health information when necessary. These persons are also more likely to utilize such information especially as it pertains to routine check-ups, eye examinations inclusive. This was in line with the findings of a study conducted in different regions in Saudi Arabia (13). Increasing household income and socio-economic status were significant determinants of good knowledge.

CONCLUSION

The knowledge of parents regarding routine eye examination in children was poor. Increasing household income, socio-economic status and higher skill levels were significant determinants of good knowledge. This implies that improving socio-economic conditions of respondents through skill acquisition and empowerment programmes may cause an increase in knowledge levels of routine eye examination in children, as they will be better able to access credible sources of information. Health education of parents by health care workers will empower them to become proactive participants in the children's vision and well-being. A future area of interest would be

assessment of visual acuity of school children and determinants.

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Conflict of interest: The authors declare no conflict of interest.

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Table 1: Socio-demographic characteristics of respondents

Variable	Frequency(n=380)	Percent
Age (in years)		
< 30	48	12.6
31 - 40	220	57.9
41 - 50	105	27.6
> 50	7	1.8
Mean Age ± S.D = 37.4 ± 6.1		
Sex		
Male	172	45.3
Female	208	54.7
Marital Status		
Married	327	86.1
Single	20	5.3
Separated	13	3.4
Widowed	10	2.6
Cohabiting	10	2.6
Occupation*		
Skill level 0	12	3.2
Skill level 1	35	9.1
Skill level 2	247	65.0
Skill level 3	12	3.2
Skill level 4	74	19.5
Level of Education		
No Formal education	17	4.5
Primary	55	14.5
Secondary	162	42.6
Tertiary	146	38.4
Marriage type (n=350)		
Monogamy	335	95.7
Polygamy	115	4.3
Monthly Income (?)		
< 30,000	43	11.3
30,000 - 60,000	155	40.8
60,000 - 90,000	107	28.2
? 90,000	75	19.7
Socioeconomic Status		
Low	29	7.6
Middle	301	79.2
High	50	13.2

Table 2: Awareness and Source of Information on Routine Eye Examination for children among Respondents

Variable	Frequency(n=380)	Percentage
Aware of routine eye examination for children		
Yes	176	46.3
No	204	53.7
Source of information (n=283)*		
Family/Friends	89	31.5
Hospital	84	29.7
TV/Radio	57	20.1
School	34	12.0
Social Media	19	6.7

*Multiple response

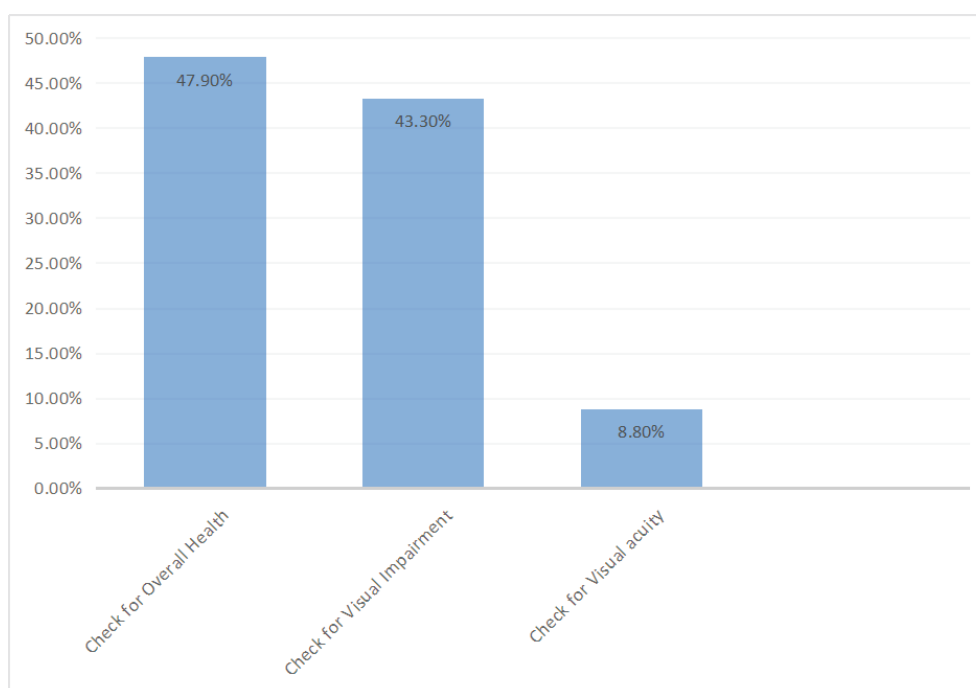


Figure 1: Definition of Routine Eye Examination among Respondents (n=178)

Table 3: Awareness, source of information on the importance of routine eye examination among respondents

Variable	Frequency	Percentage
Awareness of the importance of routine eye examination (n= 380)		
Not Aware	183	48.2
Slightly Aware	53	13.9
Somewhat Aware	80	21.1
Very Aware	41	10.8
Extremely Aware	23	6.1
Source of information on importance of routine eye examination for children (n=252)*		
Healthcare Professionals	111	44.0
Family/Friends	84	33.3
Internet/Websites	37	14.7
Church	12	4.8
Outreach	7	2.8
Work	1	0.4

*Multiple response

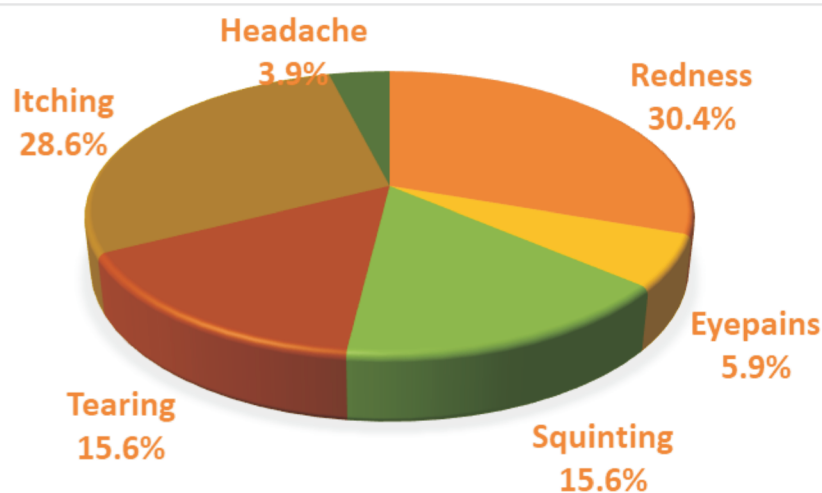


Figure 2: Knowledge of common symptoms of eye problems in children among respondents

Table 4: Knowledge of Routine Eye Examination of School Children among respondents

Variable	Frequency(n=380)	Percent
Availability of Eye Care Services in Child's School		
No	365	96.1
Yes	15	3.9
Appropriate Frequency of Eye Examination		
When a Problem Arises	269	70.8
Once a Year	41	10.8
Twice a Year	46	12.1
Thrice a Year	3	0.8
Four Times a Year	21	5.5
Presence of Concerns over Child's Eyes		
No	318	83.7
Yes	62	16.3
Knowledge of Access to Age-appropriate Eye Examination		
No	135	35.5
Yes	245	64.5
Knowledge of Appropriate Personnel for Eye Examination(n=416)*		
Ophthalmologist	303	72.8
Nurse	91	21.9
Teacher	15	3.6
Paediatrician	7	1.7
Composite knowledge score		
Good Knowledge	160	42.1
Poor Knowledge	220	57.9

*Multiple response

Table 5: Relationship between Socio-demographic Characteristics and Knowledge of Routine Eye Examination among Respondents

Variable	Knowledge of Routine Eye Examination		χ^2	p-value
	Good	Poor		
Age (in years)			Fisher's Exact	
< 30	23(47.9)	25(52.1)	2.124	0.570
31 - 40	87(39.5)	133(60.5)		
41 - 50	46(43.8)	59(56.2)		
> 50	4(57.1)	3(42.9)		
Sex			χ^2	
Male	79(45.9)	93(54.1)	1.886	0.170
Female	81(38.9)	127(61.1)		
Religion			Fisher's Exact	
Christianity	156(43.5)	203(56.5)	7.297	0.020
Islam	2(11.8)	15(88.2)		
African Traditional Religion	2(50.0)	2(50.0)		
Marital status			Fisher's Exact	
Married	140(42.8)	187(57.2)	5.190	0.266
Single	11(55.0)	9(45.0)		
Separated	3(23.1)	10(76.9)		
Widowed	4(40.0)	6(60.0)		
Cohabiting	2(20.0)	8(80.0)		
Occupation			Fisher's Exact	
Skill level 0	5(41.7)	7(58.3)	22.887	<0.01
Skill level 1	15(42.9)	20(57.1)		
Skill level 2	86(34.8)	161(65.2)		
Skill level 3	5(41.7)	7(58.3)		
Skill level 4	49(66.2)	25(33.8)		
Level of Education			Fisher's Exact	
No Formal Education	2(11.8)	15(88.2)	32.415	<0.01
Primary	14(25.5)	41(74.5)		
Secondary	58(35.8)	104(64.2)		
Tertiary	86(58.9)	60(41.1)		
Marrriage Type			Fisher's Exact	
Monogamy	146(43.6)	189(56.4)	8.833	0.013
Polygamy	1(6.7)	14(93.3)		
Number of Children			χ^2	
1 - 4	147(41.1)	211(58.9)	2.764	0.120
> 4	13(59.1)	9(40.9)		
Monthly Income			Fisher's Exact	
< 30,000	6(14.0)	37(86.0)	37.623	<0.01
30,000 - 60,000	52(33.5)	103(66.5)		
60,000 - 90,000	54(50.5)	53(49.5)		
? 90,000	48(64.0)	27(36.0)		