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Uptake of Pre-School Vision Screening by Caretakers in the New Juaben Municipality, Ghana

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Abstract

Background: Most of a child's early learning comes through vision, making eye health an important aspect of children's development and overall wellbeing. This study sought to determine the level of uptake of preschool vision screening by stakeholders in the New Juaben Municipality in the Eastern Region of Ghana.

Method: Cluster and stratified sampling were done to select preschools. All caretakers in selected preschools were included in study. Convenience sampling was done to recruit eye care personnel for the study. Questionnaire and interview were used to elicit responses from caretakers of preschool children and eye care personnel. Data was entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version 21. Analysis was done at a 95% confidence level.

Results: Results from this study showed that only few (3.4%) of caretakers (teachers and school authorities) ensured that children of preschool age received some form of eye examination. Results also showed a little above 4 out of 5 (88.3%) caretakers, and hence schools, to show low uptake of preschool vision screening. There were significant associations between level of uptake and highest level of education and also with period of handling preschool children. Fourteen (93.3%) of the eye care personnel provided services for preschool children. Factors like awareness, availability, accessibility and affordability of such services influenced the uptake of preschool vision screening.

Conclusion: There is a low uptake (88.3%) of preschool vision screening services in the New Juaben municipality, and this may be attributed to low awareness on this subject.

Keywords: Preschool vision screening; Level of uptake; Caretakers; Eye care personnel; Services; Awareness

Abbreviations: WHO: World Health Organisation; GES: Ghana Education Service

Introduction

Preschool vision screening refers to visual examinations specifically designed for children from the ages of 3 to 5 years. Even though tests performed in this type of screening are similar to those used in adults, they are slightly modified and tailored to suit the needs and nature of these preschool children [1]. Preschool vision screening is necessary for the identification of ocular conditions that may interfere with the development of normal vision, especially at a time when the visual system is highly flexible to treatment through interventions [2].

There has been about a 40% increase in the number of blind children living in sub-Saharan Africa over the last twelve years [3]. However, child eye health is not a priority on the public health agenda of most African countries. The World Health Organization (WHO) estimates that 80% of blindness is preventable but there are more than 400,000 blind children in Africa and many more with visual impairments, most of which could have been prevented [3].

According to Castanes [4], most physical examinations performed for preschool age children do not include vision assessment. As such, only about 21% of preschool children have been found to receive vision screening, leaving approximately 80% never receiving eye examinations. Despite current recommendations for vision screening to be done for children aged three to four years by trained eye personnel, screening for children entering school has also been recommended [5].

This study determines the uptake levels of preschool vision screening by stakeholders in the municipality and the factors that influence their decisions to engage in it. To the authors' best knowledge, this will be one of the very few published data on the level of uptake of preschool vision screening in Ghana. Hence, it will be useful information for the eye care secretariat of Ghana in developing strategies to improve the uptake levels of preschool vision screening.

Methods

A cross sectional study was carried out among caretakers of preschool children and eye care personnel in the New Juaben municipality. Cluster and stratified sampling was done to select preschools. A list of all preschools with their corresponding educational circuits within the New Juaben municipality was obtained from the education branch of the municipal directorate. The ten educational circuits in the municipality were considered as clusters, from which two strata of schools each were created based on their system of ownership; public or private. One school was then randomly picked from each of the twenty strata obtained from the ten educational circuits, such that they represented the population of preschools within the New Juaben municipality appropriately. All caretakers (teachers, head teachers and proprietors) in the selected schools were included in the study, unless they were absent. Eye care personnel in the municipality were selected based on convenience. Questionnaire and interviews were used to elicit responses from the study participants. Data was entered and analyzed using the Statistical Package for the Social Sciences (SPSS) version 21. Analysis was done at a 95% confidence level.

Ethical Approval

Permission was obtained from the head of the Municipal Education Directorate in the New Juaben Municipality, as well as head teachers and proprietors of selected preschools.

Results

Tables 1-6

Table 1: Socio-demographic characteristics of respondent teachers.

Variable	Number of Respondents	Percentage (%)
Sex		
Male	11	9.2
Female	108	90.8
Highest Level of Education		
Primary	8	6.7
Secondary	58	48.7
Tertiary	53	44.5
Period of Handling Preschool Children		
0 - 1 year	27	22.7
2- 5 years	47	39.5
6- 10 years	20	16.8
Above 10 years	25	21.0

Table 2: Socio-demographic characteristics of respondent head teachers and proprietors.

Variable	Number of Respondents	Percentage (%)
Sex		
Male	12	46.2
Female	14	53.8
Highest Level of Education		
Primary	0	0
Secondary	4	15.4
Tertiary	22	84.6
Period of Handling Preschool Children		
0 to 1 year	3	11.5
2 to 5 years	4	15.4
6 to 10 years	5	19.2
Above 10 years	14	53.8

Table 3: Socio-demographic characteristics of respondent eye care personnel.

Variable	Number of Respondents	Percentage (%)
Sex		
Male	10	66.7
Female	5	33.3

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Specialty		
Optometrist	11	73.3
Ophthalmic Nurse	4	26.7
Period of Practicing		
0- 1 year	6	40.0
2- 5 years	3	20.0
6- 10 years	1	6.7
Above 10 years	5	33.3

Table 4: Level of uptake of preschool vision screening.

Variable	Number of Respondents	Percentage (%)
Response to Unusual Visual Characteristics by Caretakers		
Do nothing	4	5.5
Inform parents	58	79.5
Inform head teacher	5	6.8
Refer for eye examination	6	8.2
Requirement for Parents to have their Children's Eyes Screened Before School Enrolment		
Yes	20	13.8
No	121	83.4
Do not know	4	2.8
Conduction of Preschool Vision Screening		
Yes	15	10.3
No	130	89.7
Frequency of Conduction		
Once every term	2	13.3
Once every academic year	7	46.7
Seldom	6	40.0
Contact of Eye Care Personnel by Stakeholders for Preschool Vision Screening		
Yes	3	20.0
No	12	80.0

Table 5: Observation of Unusual Visual Characteristics by Caretakers and association between uptake level and Socio-Demographic Characteristics.

Observation of Unusual Visual Characteristics by Caretakers				
Variable	Number of Respondents		Percentage (%)	
Yes	84		57.9	
No	61		42.1	
Association between Level of Uptake and Socio-Demographic Characteristics				
Response N (%)				p-value
Sex	No	Low	High	
Male	23 (18.0)	0 (0.0)	0 (0.0)	0.16
Female	105 (82.0)	12 (100.0)	5 (100.0)	
Level of Education				
Primary	5 (3.9)	3 (25.0)	0 (0.0)	0.02*
Secondary	56 (43.8)	5 (41.7)	1 (20.0)	
Tertiary	67 952.3)	4 (33.3)	4 (80.0)	
Period of Handling Preschool Children (Years)				

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<1	25 (19.5)	5 (41.7)	0 (0.0)	0.04*
2-5	47 (36.7)	1 (8.3)	3 (60.0)	
6-10	19 (14.8)	5 (41.7)	1 (20.0)	
>10	37 (28.9)	1 (8.3)	1 (20.0)	
Type of School Ownership				
Public	50 (39.1)	5 (41.7)	2 (40.0)	0.98
Private	78 (60.9)	7 (58.3)	3 (60.0)	

*p< 0.05, variables with significant association with uptake of pre-school screening

Table 6: Factors influencing the uptake of preschool vision screening by stakeholders.

Variable	Number of Respondents	Percentage (%)
Reason for Vision Screening Requirement		
On own accord, considered helpful	4	100.0
In response to G.E.S. policy	0	0.0
Reason for No Vision Screening Requirement		
Do not know	8	36.4
Not compulsory	3	13.6
Not necessary	11	50.0
Reason for No Conduction in Schools		
Expensive to conduct	10	7.7
No idea who to contact	47	36.2
Not necessary	2	1.5
Not compulsory	10	7.7
No special reason	4	3.1
Do not know	57	43.8
Awareness of Policy on Vision Screening from G.E.S.		
Yes	7	4.8
No	138	95.2
Caretakers' Belief of Benefit of Child Routine Eye Exam		
Yes	136	93.8
No	9	6.2
Reason For Caretakers' Unbelief of Benefit of Child Routine Eye Exam		
Not necessary because there is no observation of children with eye problems	5	55.6
Would be difficult to get all parents to comply	1	11.1
Not an alarming situation	3	33.3
Caretakers' Exposure to Eye Exam		
Yes	61	51.3
No	58	48.7
Caretakers' Purpose for Seeking Eye Care		
Routine eye examination	22	36.1
Report of an eye problem	39	63.9

Discussion

Signs listed by the American Public Health Association for parents to look out for which could indicate the presence of a vision problem included child sitting too close to the television or holding a material too close to the eye, tilting of his/her head in order to see in a particular direction, frequent rubbing of the eyes, squinting, extreme sensitivity to light, turning of an eye in or out or short attention span exhibited by the child for his/her age [6]. Results from this study showed that a greater percentage of the caretakers (57.9%) had ever observed or received reports of signs of eye and vision problems among the children they handled or from teachers who directly handled them. There

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were statistically significant associations between observation of signs of eye and vision problems and sex and period of handling preschool children. However, associations between observation of signs of eye and vision problems and highest level of education and type of school of ownership affiliation were found not to be statistically significant (Table 5). This suggests that female caretakers are more observant and likely to detect unusual visual characteristics or behaviours among preschool children. It can be inferred that longer time spent with preschool children makes caretakers more likely to detect these unusual visual behaviours or characteristics among the children.

Castanes [4] reported that only about 21% of preschool children had been found to receive vision screening, leaving approximately 80% never receiving eye examinations. Results from this study show that only few (3.4%) of caretakers (teachers and school authorities) ensured that children of preschool age received some form of eye examination. They further show poor uptake (88.3%), with a fair uptake (8.3%) of preschool vision screening by caretakers. Castanes [4] explained his finding to be the result of exclusion of vision assessment in most physical examinations performed for preschool age. During data collection in schools in the New Juaben Municipality, interactions with caretakers revealed that even though community health nurses frequently visited their schools, much attention was directed at immunization and vaccinations, weight and height assessment, among others, but usually did not include eye examinations. These findings are similar to that mentioned by Bruce & Outhwaite [5] in their study comparing uptake levels of vision screening in preschoolers (67%) and in school setting (97%). Statistically significant associations were found between highest level of education ($p=0.02$) as well as period of handling preschool children ($p=0.04$). However, no statistically significant associations existed between level of uptake and sex ($p=0.16$). This proposes that the higher the level of education of caretakers in a school, the more likely the school is to patronize preschool vision screening services. Also, caretakers who have spent more time taking care of preschool children are more likely to advocate for vision screening services or expose their wards to them.

Factors considered included socio- demographic and personal factors, awareness and knowledge of pediatric eye examination, availability, accessibility and affordability of preschool vision screening services. The highest level of education attained by teachers was secondary education 58 (48.7%), whiles that of head teachers and proprietors was tertiary 22 (84.6 %). Only 25 (21%) of teachers had handled preschool children for more than 10 years whiles it was 14 (53.8%) in the case of head teachers and proprietors. It can be inferred from the study that caretakers who had spent more time teaching and caring for preschool children were more likely to push for vision screening to done for these children. This could be the result of their previous experiences with children with some form of visual impairment who had associated learning difficulty. Caretakers with higher levels of education were found to be better patrons of the service.

Majority (93.8%) of caretakers believed that children would benefit from routine eye examination. For the percentage of caretakers who said vision screening was a requirement for preschool enrolment in their school, all of them (100%) further mentioned that it was because they considered it helpful on their own accord as a school, and not because of a policy from Ghana Education Service (GES). Among those who did not have the requirement for vision screening before enrolment in their school, majority (50%) said it was not necessary whiles 3 (13.6%) said it was because no one had expected it from them (compulsory). However, for caretakers who said there was no conduction of vision screening in their schools, the reason of it not being necessary recorded the least percentage (1.5%) whiles 10 (7.7%) said it was because it was not compulsory.

Conclusion

This study confirmed the likelihood of the presence of eye and visual difficulties in preschool children. The peculiar issue in this case is that children in this age group may be unable to communicate their visual difficulties. Low uptake of preschool vision screening was recorded among preschool caretakers in the New Juaben Municipality. The factors identified to influence uptake of preschool vision screening include awareness, availability, accessibility and affordability of services. Others include socio-demographic factors such as level of education and period of handling preschool children. More awareness programs must be carried out by the municipal health directorate and eye care secretariat among stakeholders (Ghana Education Service, Municipal Education Directorate and caretakers) in order to increase the uptake level of preschool vision screening in Ghana. Its importance must be communicated to the authorities to stimulate policy formulation.

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