

Awareness and Knowledge of Preschool Vision Screening among Teachers and Eye Care Providers in a sub-urban Municipality in Ghana

Mohammed Abdul-Kabir*, Derrick Owusu Ansah and Irene Nkasa-Kyeremateng

Department of Optometry and Visual Science, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

*Corresponding Author: Mohammed Abdul-Kabir, Department of Optometry and Visual Science, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

Received: August 03, 2017; Published: August 14, 2017

Abstract

Purpose: To evaluate the level of awareness and knowledge of preschool vision screening (PVS) among teachers and eye care providers in the New Juaben municipal, Ghana.

Methods: This was a cross-sectional study. Stratified random sampling was used to select the preschools. All teachers in selected preschools were included in study. Convenience sampling was done to recruit eye care personnel for study. Detailed interview-guided questionnaires were used to elicit responses from the participants in this study. Completed data was entered in Microsoft Excel 2010 and Statistical Package for Social Sciences version 16 and analyzed. Statistical significance was set at $p < 0.05$.

Results: A total of 145 teachers were involved in this study. 90% of which were women and 10% men. 60% of the teachers had handled preschool children for more than 5 years. Out of the 145 teachers, a total of 96 were not aware of preschool vision screening and over 50% also had no idea whether PVS was important or not. The associations of observation of unusual visual characteristics in preschoolers with the gender of teachers and the period of handling preschoolers were found to be significant; with a p value of 0.01 and 0.02 respectively. All the eye care providers had knowledge of PVS but 53.3% of them had never initiated any form of awareness creation to the general public.

Conclusion: There is low awareness and knowledge of preschool vision screening and its benefits in Ghana. This suggests that programs to increase awareness should be encouraged and made popular through all available media platforms. Further research should also be done to examine other socio economic factors that may affect preschool vision screening.

Keywords: Preschool vision screening; Awareness; Knowledge; Ghana

Introduction

Screening has been defined as ‘the systematic application of a test or inquiry, to identify individuals at sufficient risk of a specific disorder to warrant further investigation or direct preventive action, among persons who have not sought medical attention on account of symptoms of that disorder’[1].

Preschool vision screening(PVS) is vital because early detection and intervention serve best when given at an early age for children, especially for conditions such as amblyopia, strabismus, refractive errors and other ocular abnormalities [2]. Failure to detect visual impairment early may have a permanent effect on long term visual outcomes, academic achievements, and self-esteem of the children [3].Vision screening programs can be an effective method of reducing ocular morbidities by detecting it before symptoms exacerbate. Hence, the lack of awareness and knowledge of preschool vision screening and its benefits might result in high rates of visual impairment in children.

VISION 2020- The Right to Sight program launched by the World Health Organization included “Control of Childhood Blindness” among its priority programs because most of the causes of childhood blindness are treatable or avoidable [4-5]. In spite of recommendations by organizations including World Health Organization, the American Academy of Family Physicians, the American Academy of Pediatrics and Bright Futures [6-8], preschool vision screening is often omitted at the well child checkup [9-10].

In 2010, there was an estimation of about 1.26 million blind children globally, with majority of them living in the poorest countries of Asia and Africa [11]. Studies report that childhood blindness is rapidly increasing in Africa [12] with amblyopia, refractive error and strabismus among the main causes of vision impairment in children [5,13].

The rate of PVS in Ghana is at the lowest but there is limited data to explain why it is so. In Ghana, little is known on the level of awareness of PVS, barriers to PVS and knowledge of caregivers on child eye health in general. This study was conducted to evaluate the level of awareness and knowledge of Preschool vision screening among teachers and eye care providers in the New Juaben municipality, Ghana. The results from this study will be useful in designing effective and well-organized intervention strategies to improve preschool vision screening and also help develop a conceptual framework to understand factors associated with PVS uptake.

Methods

Study Design and Sampling

This was a cross-sectional study carried out among preschool teachers and eye care personnel in the New Juaben municipality. Stratified random sampling was used to select the 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 subgroups 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 the teachers in the selected schools were included in the study, unless they were absent during handing of questionnaires. A convenient sampling technique was employed to pick the eye care personnel consisting ophthalmologists, optometrists and ophthalmic nurses in the municipality.

Data Collection Tool

Interviewer-administered questionnaire was used to obtain information relevant to this study from the participants. This included but was not limited to their responses on the awareness and knowledge of preschool vision screening. The questionnaires were administered in English.

Data Analysis

Microsoft Excel 2010 and the Statistical Package for Social Scientists (SPSS) version 16.2 (SPSS, Inc., Chicago, IL, USA) was used to analyze the data. Descriptive analysis and Chi-squared test were used to test for statistical significance; a *p*-value of < 0.05 was considered to be significant at 95% confidence interval.

Ethical Consideration

Permission was obtained from the ethics committee of the Municipal Education Directorate in New Juaben, as well as all teachers of the selected preschools. An informed consent was also obtained from all the eye care personnel selected for the study.

Results

Table 1 shows the social demographic characteristics of the 145 teachers involved in this study. 90% of the teachers were women and 10% men. The highest form of education attained by majority of teachers was secondary education 70% and 60% had handled preschool children for more than 5years.

Variable		Number	Percentage
Gender	Male	15	10
	Female	130	90
	Total	145	100
Level Of Education	Primary	0	0
	Secondary	102	70.3
	Tertiary	43	29.7
Period Of Handling Preschool Children	0 To 1 Years	10	6.9
	2 To 5 Years	47	32.4
	6 To 10 Years	58	40
	Above 10 Years	30	20.7

Table 1: Social Demographic Profile of Teachers.

Table 2 shows the social demographic characteristics of the 15 eye care personnel involved in this study. 66.7% of them were men and 33.3% women. Majority of the eye health workers were optometrists (66%). 60% of the eye care providers worked in government health facilities.

Variable		Number	Percentage
Gender	Male	10	66.7
	Female	5	33.3
	Total	15	100
Specialty	Ophthalmologist	1	6.6
	Optometrist	10	66.7
	Ophthalmic Nurse	4	26.7
Period Of Practicing	0 To 1 Years	6	40
	2 To 5 Years	3	20
	6 To 10 Years	5	33.3
	Above 1o Years	1	6.7

Health Facility (Type Of Ownership)	Government	9	60
	Private	4	40

Table 2: Social Demographic Profile of Eye Care Providers.

Table 3 shows the distribution of the level of awareness of preschool vision screening among the preschool teachers. Other relevant questions were also asked to obtain an idea of the knowledge they have on preschool vision screening. Majority of the teachers (66.9%) responded that they were not aware of preschool vision screening. Over 50% also had no idea whether PVS was important or not. The associations of observation of unusual visual characteristics with gender of preschool teachers and the period of handling preschoolers were also studied. There were statistically significant associations with a p value of 0.01 and 0.02 respectively.

Variable	Number	Percentage	
Awareness of preschool vision screening	Yes	48	33.1
	No	96	66.9
	Total	145	100
Medium Contributing to Awareness of those who answered Yes	Print Media	10	20.8
	Word of mouth	29	60.4
	Broadcast Media	5	10.4
	Internet	4	8.4
	Total	48	100
		Yes	48
	No	24	16.6
Is Preschool vision screening beneficial?	No idea	73	50.3
	Identify kids with special needs	10	20.8
	Early treatment of eye disorders	29	60.4
Reason for the Benefit of PVS	Detect unknown eye disorders	9	18.8
	Frequent rubbing of eyes	53	39.3
	Squinting	25	18.5
Common unusual visual characteristics observed by teachers	Moving too close to reading materials	40	29.6
	Drifting away of eyes	17	12.6

Table 3: Distribution of the Level of Awareness and Knowledge of Preschool Vision Screening among Preschool Teachers.

Awareness and perception of eye care providers on preschool vision screening was also questioned. All the health personnel were aware of PVS and they all acknowledged it was important. 53.3% of them however had not created awareness or educated people on PVS. The medium used most to educate the public on PVS was broadcast media. Refractive Errors and Allergic Conjunctivitis were identified as the commonest ocular disorders preschoolers presented to the clinics. This is illustrated in Table 4.

Variable		Number	Percentage
Awareness of preschool vision screening	Yes	15	100
	No	0	0
	Total	15	100
Is Preschool vision screening beneficial?	Yes	15	100
	No	0	0
Have you created awareness for PVS Creation	Yes	7	46.7
	No	8	53.3
Medium used to create awareness of PVS	Internet	1	14.3
	Broadcast media	4	57.1
	Print Media	2	28.6
Common Ocular disorders identified by eye care providers in preschoolers	Amblyopia	2	12.5
	Refractive Error	5	31.3
	Strabismus	3	18.8
	Allergic conjunctivitis	5	31.3
	Ocular injury	1	6.1

Table 4: Awareness and Perception of Preschool Vision Screening among Eye Care Providers.

Discussion

There is an estimation of about 1.26 million blind children globally, with majority of them living in the poorest countries of Asia and Africa [11,14]. Majority of the causes of childhood blindness are avoidable [15]. The number of expected blind years in children is higher than that of adults therefore childhood blindness needs to be a top priority in eye care policy making. The reports above confirm the burden of childhood blindness in resource-poor countries. It is therefore important every child receives a comprehensive eye examination.

Preschool vision screening is effective in detecting children with visual defects such as amblyopia, refractive errors and strabismus [16,17]. In the USA, vision screening for school children is extensive. The American Association for Pediatric Ophthalmology and Strabismus (AAPOS) encourages screening programs for visual impairment in children with subsequent referral to eye care professionals trained to care for eye problems in children. It advocates the education of volunteer lay persons and auxiliary medical personnel to perform vision screening [18]. This is quite the opposite in Ghana and other low-income countries.

Results from this study showed that the level of awareness of preschool vision screening was low among the teachers. 66.9% of the teachers had no idea what PVS was. This contrasts with the findings of a study in Iran where kindergarten teachers showed high awareness of PVS [19]. Most of the teachers who were aware of PVS cited word of mouth as the means through which they came to know about PVS. All the eye care providers involved in the study however were aware of PVS and thought it was important but over 50% of them had not created any form of awareness to the general public. This may be due to a number of reasons such as nonchalance, the cost involved in organizing vision screening in schools, lack of interest from the school authorities and parents, limited eye care providers in the municipal [3,20]. Our data suggest further research should be done to identify barriers that may cause low creation of awareness of PVS by the eye care personnel. The teachers reported they had observed one or more symptoms of visual problems in the preschoolers, out of which “frequent rubbing of eyes and moving reading material too close to eyes” were seen most. The number of years of handling preschoolers and being able to identify common signs of visual problems was statistically significant (p = 0.02). The longer the years of handling kids, the easier it was to identify the signs. This could be the result of their previous experiences with

Citation: Mohammed Abdul-Kabir, *et al.* “Awareness and Knowledge of Preschool Vision Screening among Teachers and Eye Care Providers in a sub-urban Municipality in Ghana”. *Ophthalmology and Vision Science* 1.2 (2017): 99-107.

children with some form of visual impairment who had associated learning difficulty. Also the results showed that female teachers were more observant than their male colleagues. This was statistically significant ($p = 0.01$).

The practitioners in this study were questioned about the common ocular disorders among preschoolers they encountered often in their practice. Refractive error and allergic conjunctivitis were the most prevalent followed by strabismus and amblyopia with ocular injury being the least seen. This result was consistent with a public health intervention study done in Oman [21]. The common ocular conditions identified among preschool children in this study are similar to previous studies [22,23].

Conclusion

Our study results inferred that the level of awareness of preschool vision screening (PVS) among teachers is very low. This contrasted the results among practitioners involved the study where all them were aware of PVS and its benefits. However majority of the practitioners had not made any effort to inform the general public about PVS. Although the results of this study cannot be generalized, it may provide a useful framework for future studies examining awareness and be helpful for comparison of awareness between different social backgrounds and access to eye health promotion in the whole country. The study results also encourage health professionals to engage in more awareness programs. Awareness programs should be incorporated into school vision-screening programs and commercialized through all available media platforms. Although there are large gaps in literature concerning preschool vision screening in Ghana, ignorance remains a major problem at all levels so improvements in the distribution of information and education are necessary.

Acknowledgement

We thank Dr. E. E. Kaitoo, the municipal health directorate of New Juaben and all the administrative staff of the education directorate; we also wish to express our profound gratitude to the proprietors of all selected preschools.

Appendices

Appendix A: Questionnaire for Teachers.

EDUCATIONAL CIRCUIT

TYPE OF SCHOOL OWNERSHIP: Public Private

SEX OF CARETAKER: Male Female

HIGHEST LEVEL OF CARETAKER'S EDUCATION: Primary Secondary Tertiary

1. How long have you been handling children at the preschool level?

0- 1year 2- 5 years 5- 10 years Beyond 10 years

2. Have you ever observed any unusual behaviors or characteristics with respect to vision among children under your care?

Yes No

If no, please skip to question 5.

3. Do they include any of these? Please tick where applicable.

Frequent rubbing of the eyes Squinting Unusual tilting of head/ face turn Drifting away of either of the eyes Moving too close to reading material or board Poor eye contact none of the above

4. How do you respond or react to these unusual behaviors or characteristics?

Do Nothing Inform parents Inform head teacher Refer for eye examination

5 a. Do you think/ believe that children under your care would benefit from routine eye examination by an eye doctor before they start serious academic work?

Yes No

b. If yes, why?

.....

c. If no, why not?
.....

6 a. Have you ever had an eye examination?

Yes No

b. If yes, for what purpose?

Routine eye examination Report an eye problem

7 a. Have you ever heard of vision screening services available for preschool children?

Yes No

b. If yes, from where? (Please skip to question 8 if your answer is no).

Print media e.g. newspapers and magazines Broadcast media e.g. radio and television Internet blogs and websites Word of mouth (colleagues, parents, health practitioners, etc)

8. Is it a requirement in your school for parents to have their children's eyes screened before they are enrolled in your school?

Yes No

9 a. Are routine vision screenings done for preschoolers in your school (by caretakers in the school, health institutions or NGOs)?

Yes No

b. If yes, how often?

Once every term Once every academic year Seldom

c. If no, why not?

Expensive to conduct No idea who to contact Not necessary Not compulsory Do not know

10. Do you know of any policy from the Ghana Education Service requiring preschoolers to have their eyes screened before they officially start school?

Yes No

Appendix B: Questionnaire for Eye Care Personnel.

1. How long have you been practicing?

0-1 year 2- 5 years 6- 10 years above 10 years

2 a. Have you ever organised any outreach in the New Juaben municipality?

Yes No

b. If yes, how often do you do this?

Once every year Twice every year Quarterly Often Seldom

c. If no, why not?
.....

3. What has been your target population for such outreaches? Please tick where applicable.

Schools Religious institutions Corporate organisations/ institutions Community

4. What is the age- range of persons that you attend to during your outreaches? Please tick where applicable.

0- 5 years 6- 18 years 19- 40 years Above 40 years

5. What have been the level of patronage/ uptake of outreaches by your target population so far?

Good Fair Poor

AWARENESS AND AVAILABILITY OF PRESCHOOL VISION SCREENING

6. In your opinion, at what ages should vision screenings be done for the paediatric population?
.....
.....

7 a. Do you consider preschool vision screening as important/ necessary, in your own opinion?

Yes No

8 a. Have you ever been contacted by a school or an organisation to conduct screening for children below the age of 6 years within the municipality?

Yes No

(Please skip to Q9 if your answer is No)

b. If yes, did you honor the invitation?

Yes No

(Please skip to Q9 if your answer is No)

c. What are the common ocular conditions you have observed among this age group?

.....
.....

9a. Do you provide vision screening services for preschoolers at your centre?

Yes No

b. If yes, why?

.....

c. If no, why not?

.....

10 a. Have you ever taken initiative to educate stakeholders (Ghana Education Service, school authorities, parents) on vision screening done for preschool children and its importance?

Yes No

b. If yes, by what means?

Print media e.g. newspapers and magazines Broadcast media e.g. radio and television Internet blogs and websites Word of mouth (colleagues, parents, health practitioners, etc)

c. What has been the general acceptance by stakeholders so far?

Good Fair Poor

References

1. Jepson RG., *et al.* "Increasing informed uptake and non-uptake of screening: evidence from a systematic review". *Health Expectations* 4.2 (2001): 116-126.
2. Webber AL. "Amblyopia treatment: an evidence-based approach to maximising treatment outcome". *Clinical and Experimental Optometry* 90.4 (2007): 250-257.
3. Castanes M. "Major review: The underutilization of vision screening (for amblyopia, optical anomalies and strabismus) among preschool age children". *Binocular vision & strabismus quarterly* 18.4 (2003): 217-232.
4. Resnikoff S., *et al.* "Global data on visual impairment in the year 2002". *Bulletin of the world health organization* 82.11 (2004): 844-851.
5. Gilbert C and A Foster. "Childhood blindness in the context of VISION 2020: the right to sight". *Bulletin of the World Health Organization* 79.3 (2001): 227-232.
6. Pediatrics AAo. "Recommendations for preventive pediatric health care". *Pediatrics* 96.2 (1995): 373-374.
7. Physicians AAoF. "Summary of policy recommendations for periodic health examination". *Leawood, KS: American Academy of Family Physicians* (2002):
8. Hagan JF., *et al.* "Bright Futures: Guidelines, 3/E". *Am Acad Pediatrics* (2007):
9. New TN. "Children's Health Under Medicaid: A National Review of Early and Periodic Screening, Diagnosis and Treatment, 1999-2003". *Journal of the National Medical Association* 98.2 (2006): 296-297.
10. Marsh-Tootle WL., *et al.* "Quantitative pediatric vision screening in primary care settings in Alabama". *Optometry and Vision Science Journal* 85.9 (2008): 849.

Citation: Mohammed Abdul-Kabir., *et al.* "Awareness and Knowledge of Preschool Vision Screening among Teachers and Eye Care Providers in a sub-urban Municipality in Ghana". *Ophthalmology and Vision Science* 1.2 (2017): 99-107.

11. Quinn G and C Gilbert. "Supporting collaborations to prevent blindness in children in resource-poor settings". *Expert Review of Ophthalmology* 6.3 (2011): 287-290.
12. BORREL A., *et al.* "Child Eye Health in Africa".
13. Kemper A., *et al.* "Screening for visual impairment in children younger than age 5 years: a systematic evidence review for the US Preventive Services Task Force". (2004):
14. Lewallen S and P Courtright. "Blindness in Africa: present situation and future needs". *British Journal of Ophthalmology* 85.8 (2001): 897-903.
15. Pizzarello L., *et al.* "VISION 2020: The Right to Sight: a global initiative to eliminate avoidable blindness". *Archives of ophthalmology* 122.4 (2004): 615-620.
16. Wormald R. "Preschool vision screening in Cornwall: performance indicators of community orthoptists". *Archives of disease in childhood* 66.8 (1991): 917-920.
17. Naidoo KS., *et al.* "Refractive error and visual impairment in African children in South Africa". *Investigative ophthalmology & visual science* 44.9 (2003): 3764-3770.
18. Estes R., *et al.* "The American Association for Pediatric Ophthalmology and Strabismus workforce distribution project". *Journal of American Association for Pediatric Ophthalmology and Strabismus* 11.4 (2007): 325-329.
19. Khandekar R., *et al.* "Evaluation of 'vision screening' program for three to six-year-old children in the Republic of Iran". *Indian journal of ophthalmology* 57.6 (2009): 437-442.
20. Ocansey S., *et al.* "Eye care seeking behaviour: a study of the people of Cape Coast Metropolis of Ghana". *Journal of Behavior, Health & Social Issues* 3.2 (2014): 101-106.
21. Khandekar R., *et al.* "Eye and vision defects in under-five-year-old children in Oman: A public health intervention study". *Oman journal of ophthalmology* 3.1 (2010): 13-17.
22. Adhikari S., *et al.* "Screening preschool children for visual disorders: A pilot study". *Optometry & Visual Performance* 1.6 (2013): 202-207.
23. Ciner EB., *et al.* "Vision screening of preschool children: evaluating the past, looking toward the future". *Optometry and Vision Science* 75.8 (1998): 571-584.