Knowledge, attitude and practice of eye diseases in children among paediatricians in Kenya

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ABSTRACT

Objective: To assess knowledge, attitude and practice of childhood eye diseases among paediatricians working in Kenya.

Methods: The study was carried out among paediatricians working in the various hospitals and clinics in Kenya. A semi structured questionnaire was distributed to consenting paediatricians for completion. Dependent variables were knowledge attitude and practice. Independent variables were age, sex, duration and type of practice. The data was analyzed using STATA. Level of knowledge was grouped according to Bloom's original cut-off points into good (>80%), moderate (60-80%) and poor (< 60%).

Results: Out of the 125 paediatricians who responded, 69.6% had a level of knowledge classifiable as poor, 28.0% moderate and 2.4% good. The mean score of participants in this study was 58.20%. However participants showed varied levels of knowledge in different subject matters. Sixty nine point six per cent of paediatricians carry out eye examination in children, though this varied with each participant doing only the test they are familiar with. Their referral of children with eye diseases to an ophthalmologist was found to be generally appropriate. The attitudes of participants in the various subject areas raised were positive. Ninety nine point two per cent of participants agreed that eye examination by paediatricians could help with early referral of retinoblastoma.

Conclusion: The participants had poor level of knowledge of childhood eye diseases. However their attitude and practice was generally positive. Their knowledge could be boosted with regular continuous medical education on eye diseases.

INTRODUCTION

Childhood blindness is the second largest cause of blind person years after cataracts, accounting for about 70 million blind person year's globally[1]. It poses educational, occupational and social challenges with affected children being at higher risk of behavioral, psychological and emotional difficulties, impaired self esteem and poorer social intergration[2].

It is estimated that, in almost half of the 1.4 million children who are blind today[3], the underlying cause could have been prevented, or the eye condition treated to preserve vision or restore sight[4], thus emphasizing the critical role of early diagnosis and appropriate treatment in preventing childhood blindness, a role that should involve primary care physicians including paediatricians.

However literature review reveals only one published study[5] on knowledge attitude and practice among paediatricians of childhood ocular diseases. A few others have focused mainly on ROP[6] and preschool vision screening practices[7-10].

A study of 140 paediatricians done in Brazil by Michel *et al*[5] on what paediatricians know about childhood ocular illnesses revealed that 28(20%) of respondents did not know the best age to start treatment of a child with visual impairment. Seventy four (53%) knew the correct time of ophthalmologic evaluation in retinopathy of prematurity. In the same study 88(63%) could not remember that retinoblastoma and retinopathy of prematurity are causes of leucocoria while, 14 (10%) did not know that retinoblastoma is malignant. A further 73(52%) did not know that the classic symptom triad of congenital glaucoma is photophobia; lacrimation and blepharospasm while 21(15%) of respondents did not know the proper management of children with strabismus. Another study done by Sathjamohanraj *et al*[6]on awareness of retinopathy of prematurity among paediatricians in a tier two city of South India showed that 54(65.1%) of paediatricians were aware of ROP. Thirty-three respondents (39.8%) answered that ROP is preventable and only 43 (51.8%) paediatricians were sure that ROP is treatable. The study also revealed that paediatricians in private hospitals were more aware of ROP compared to their counterparts in government ($P = 0.006$).

Elsewhere a survey carried out in the state of Illinois USA by John and Sharon on compliance with requirement of vision screening by paediatricians showed that 60% of paediatricians tested visual acuity in children aged 5 years and above, while half of this group tested children 2 to 4 years old. The most common reasons for not testing visual acuity were inadequate time (42%), children too young (18%), or that screening would be done at school (18%)[7]. These results suggest that many Illinois paediatricians do not perform vision screening of preschool children, though screening does occur at other sites.

Another survey on preschool vision screening in paediatric practice was conducted by Alex *et al*[8] where

a sample of paediatricians was surveyed to evaluate preschool vision screening practices in the U.S. The rate of acuity screening for 3-year-old children was low (35%), but increased for 4 year olds (73%) and 5 year olds (66%). Few paediatricians used photo screening or auto refraction (8%). In this study the common barriers to vision screening cited were that screening is too time-consuming and children are uncooperative (49%). In the same survey few paediatricians (3%) reported that screening is unnecessary because vision problems would be identified elsewhere (e.g., by the family)[8].

In the U.K. a survey of paediatricians' practice and training in routine infant eye examination was done by Jungo *et al*[9]. Overall 248 (71%) of all responding paediatricians (57% of paediatric consultants, 81% of hospital paediatric registrars and CMOs considered they would benefit from further training by an ophthalmologist[9].

MATERIALS AND METHODS

In this cross sectional study, 148 paediatricians were recruited consecutively between 1st January 2013 to 30th January 2014 after approval was obtained from ethics and review committee of Kenyatta National Hospital and University of Nairobi. All paediatricians in active practice were eligible to participate while those no longer in practice were excluded. Information was gathered using a self administered semi-structured questionnaire delivered by study assistants to the participants. Participation was purely voluntary and the questionnaires were filled after signing consent to participate. All information was treated confidentially and analysis was done using STATA (stataCorp.2013. stata statistical software: Release 13.College station, TX StataCorp LP). Descriptive statistics were used to summarize and describe the data. Stepwise logistic regression was done to assess the relationship between independent variable and knowledge and practice. An alpha level of 0.05 was used for all significant tests.

RESULTS

In this study 165 participants were approached; thirty five declined to participate while 5 were excluded because they are no longer in active practice leaving 125 questionnaires for final analysis. The male: female ratio was 1:1 with a mean age of 43.9 ±10.3 years [95 % CI: 42.0 – 46.0]. Mean duration of practice in years 11.0±9.7 years. Thirty six per cent of participants were purely in private practice. Overall majority of participants (69.6%) had a poor level of knowledge as categorized according to the blooms cut of points (Table 1). Private practice was less likely to be associated with satisfactory level of knowledge compared to public practice (OR 0.35; CI 0.12-0.98; p=0.045) (Table 2).

Table 1: Categorization of participants' knowledge according to bloom's cut off points (N=125)

Variable	n (%)
Poor Knowledge (<60%)	87 (69.60)
Moderate Knowledge (60-80%)	35 (28.0)
Good Knowledge (80-100%)	3 (2.40)

The average score was 54.82% (SD 10.73%

Table 2: Univariate logistic regression assessing the association between satisfactory* knowledge on childhood eye diseases and socio-demographic factors

Factor	Knowledge (N=125)			
	N	n (%)	OR (95% CI)	p-value
Gender				
Female	63	21 (33.33)	1.00	
Male	62	17 (27.42)	0.76 (0.35 – 1.62)	0.473
Age groups (years)				
> 60	10	1 (10.00)	1.00	
30 – 39	50	18 (36.00)	5.06 (0.59 – 43.25)	0.138
40 – 49	34	12 (35.29)	4.91 (0.55 – 43.53)	0.153
50 – 59	31	7 (22.58)	2.63 (0.28 – 24.44)	0.397
Years of practice				
>30	6	1 (16.67)	1.00	
1 – 10	68	24 (35.29)	2.73 (0.30 – 24.71)	0.372
11 – 20	30	10 (33.33)	2.50 (0.26 – 24.38)	0.430
21 – 30	21	3 (14.29)	0.83 (0.07 – 9.86)	0.885
Type of practice				
Public	34	13 (38.24)	1.00	
FBO	9	5 (55.56)	2.02 (0.46 – 8.92)	0.354
Private	45	8 (17.78)	0.35 (0.12 – 0.98)	0.045
Public/ Private	37	12 (32.43)	0.78 (0.29 – 2.06)	0.609

*Satisfactory = Good + Moderate knowledge

When asked about causes of leucocoria 90.6% of participants mentioned retinoblastoma. A further 74.4% mentioned cataracts while another 18.0% mentioned retinopathy of prematurity. In addition when asked about signs of retinoblastoma 86.1% mentioned white reflex; 54.1% mentioned proptosis while squint was cited by 20.5% of participants.

On congenital glaucoma, when asked about the signs and symptoms of the disease the classical symptoms of photophobia, excessive tearing and blepharospasm were mentioned by 18.9%, 18.9% and 8.2% respectively. Eighty seven point nine per cent of participants knew that congenital glaucoma is a treatable condition.

On refractive errors while 98.4% of participants state that children can get refractive errors; only 19.2% knew that the condition can be detected by refraction.72.9% of participants knew the correct definition of a squint and 93.6% stated that the condition is treatable.

On ROP, 33.3% knew it as a condition resulting in proliferation of abnormal retinal vessels in the retina secondary to oxygen exposure while 35.8% simply refer to it as oxygen damage to the retina. The risk factors listed for the disease included prematurity (75.6%); exposure to high concentration of oxygen (75.6%) and low birth weight (22.8%). Sixty two per cent said the condition was treatable while 28.1% said it was not.

When it came to the practice section, only 87(69.6%) admitted doing eye examination in children. Of these 42.5% said they do it as a routine part of every child's examination. Tests done included visual acuity: performed by 42.5% of participants, fundoscopy by 33.3% and pupilary light reflexes by 23.0% among others (Table 3).

Table 3: Practices of eye examination in children

Practice	n (%)
Do you do eye examination in children (n=125)	
Yes	87 (69.60)
No	38 (30.40)
If yes, how often (n=87)	
When caregiver reports child has eye problem	38 (43.68)
As a routine part of every child's examination	37 (42.53)
At every MCH/FP visit	8 (9.20)
Others[1]	4 (4.60)
Which test do you do? (n=87)	
Visual acuity	37 (42.53)
Physical exam using a torchlight	36 (28.80)
Fundoscopy	29 (33.33)
Pupilary light reflexes	20 (22.99)
Eye movement examination	12 (13.79)
Color test	2 (2.30)
Others[2]	6 (6.90)
Why not do examination? (n=38)	
Don't have enough time	15 (39.47)
Don't know how to	12 (31.58)
Children uncooperative	7 (18.42)
No equipment	4 (10.53)

Others[1] include – when I notice child has a problem (2), screening for school enrollment (2)
Others[2] include-cover test (3), visual fields (2) and refraction (1)

Male participants were less likely to do eye examination in children than their female counter parts (OR 0.45; CI 0.21-0.99, p=0.047) (Table 4).

Table 4: Univariate logistic regression assessing the association between the practice of eye examination and socio-demographic factors

Factor	Practice (N=125)			
	N	n (%)	OR (95% CI)	p-value
Gender				
Female	63	49 (77.78)	1.00	
Male	62	38 (61.29)	0.45 (0.21 – 0.99)	0.047
Age groups (years)				
> 60	10	6 (60)	1.00	
30 – 39	50	38 (76)	2.11 (0.51 – 8.75)	0.224
40 – 49	34	22 (64.71)	1.22 (0.29 – 5.20)	0.468
50 – 59	31	21 (67.74)	1.40 (0.32 – 6.10)	0.213
Years of practice				
1 – 10	6	3 (50)	1.00	
11 – 20	68	50 (73.53)	2.78 (0.51 – 15.03)	0.236
21 – 30	30	19 (63.33)	1.73 (0.30 – 10.08)	0.544
>30	21	15 (71.43)	2.5 (0.39 – 16.05)	0.334
Type of practice				
Public	34	28 (82.35)	1.00	
FBO	9	6 (66.67)	0.43 (0.08 – 2.22)	0.312
Private	45	28 (62.22)	0.35 (0.12 – 1.03)	0.056
Public/ Private	37	25 (67.57)	0.45 (0.15 – 1.37)	0.158

Of the 38 who said they did not do eye examination in children, 39.5% stated lack of time as the main impediment. Other barriers mentioned include lack of clinical skill (31.6%); uncooperative child (18.4%) and no equipment (10.5%).

Participants attitudes were varied depending on the subject at hand. Ninety eight point four per cent disagreed with the statement that eye examination in children should only be done when care giver complains hence the need to make this part of routine examination of any child. A similar percentage disagreed that eye examination in children can only be done by an eye care worker as opposed to other health care workers including paediatricians. However, only 70.4% agreed that they adequately inform care givers on the consequences of untreated squints. On spectacle use by children, 20.0% of participants disagreed that children can use spectacles effectively. Finally 60.8% of participants disagreed that their training adequately equips them to diagnose, manage and refer children with eye diseases.

DISCUSSION

Childhood blindness leaves an individual with a lifetime of morbidity. However with timely diagnosis and treatment most of the consequences can be averted. This study sought to assess knowledge, attitude and practice on childhood eye diseases among paediatricians practicing in Kenya to enhance understanding of the role they play in averting childhood blindness.

In this study, the average score on knowledge was 54.8±10.7, while a similar study in Brazil found a score of 58%[5], both of which fall in the category of "poor knowledge" as per blooms cut of points. It's possible that the training of paediatricians in both settings places little emphasis on ophthalmological conditions.

On possible causes of leucocoria, majority (90.6%) of the respondents mentioned retinoblastoma, which is a much higher proportion than the 37% reported by Michel *et al*[5]. This could be attributed to enhanced media campaigns on retinoblastoma in our country and implies more paediatricians were likely to refer affected children for specialist care. Its notable however that the proportion of respondents who mentioned ROP (17.95%) was comparatively lower than those in the Brazil study (37%)[5]. This is possibly because the study in Brazil was done exclusively in a city setting (Porto- Allegre) where the health system could be well developed to support survival of children with ROP and hence practitioners as a whole were more likely to encounter children with this disease. This study was done among paediatricians all over Kenya some of whom were in rural setting; as a result knowledge of ROP in our study was generally poor. For instance only 22.8% mentioned low birth weight as a risk factor for the disease while only 62.8% said it was treatable.

On congenital glaucoma, the classical symptoms triad of photophobia, excess tearing and blepharospasm was reported by less than a fifth of the respondents. This is lower than the findings in the Brazil study where at least 48% of participants mentioned the triad of symptoms[5]. In both cases however awareness of these symptoms remains low and this could be attributed to the relative rarity of this disease (affects 1in 10,000 children worldwide)[11].

On refractive errors even though almost all the respondents (98.4%) knew that children can get refractive errors only a fifth (19.2%) knew how they can be detected. Not knowing how a disease is detected can have significant bearing on the action a doctor takes in so far as referral and subsequent management and follow up is concerned. No published study has evaluated the KAP of paediatricians on refractive errors.

Notably participants demonstrated good awareness about squints. Majority of respondents (93.6%) knew that squints are treatable. This compares with the findings in the Brazil study in which 85% knew the management of squints[5].

Assessment of participants' practices showed a satisfactory level of good practice among participants. 69.6% of participants reported doing eye examination in children. Of these however only 43.5% do it as a routine part of every child's examination, while an equal number only do eye examinations when the care giver reports the child has an eye problem. This is a disturbing finding as most of the common eye diseases are painless and children may not show distress to alert the doctor or the untrained eyes of the guardians.

The most common test reportedly done is visual acuity testing (42.5%) followed by "physical examination using a torch" (28.8%) and fundoscopy (33.3%) among others (Table 3). However these responses could not be duly confirmed as this study did not include an observation schedule and the close ended nature of this particular question meant further clarity as to how these tests were carried out or availability of necessary equipment could not be established. The most common reasons cited by those who reported they don't do eye examination (30.4%) were lack of enough time to do examination (39.5%) and not knowing how to do eye examination (31.6%). In a study done in the US to evaluate screening for preschool children in paediatric practice[9] nearly all paediatricians (97%) reported including at least one component of the eye examination as part of their preschool well-child care. These included the red reflex test (83%), cover test (75%), and corneal light reflex test (77%). The American Association of Paediatricians has issued guidelines which the paediatricians in the US are expected to adhere to. In the same study the most commonly mentioned barrier to vision screenings were that screening is too time consuming and children are not cooperative, a trend that is replicated in our study.

Logistic regression showed that male respondents were less likely to do eye exams than their female counterparts (OR 0.45; CI 0-21-0.99; p<0.047). Similar findings were reported by Terry *et al*[10].

The attitudes of the respondents in this study were generally positive. Majority (98.4%) disagreed with the statement that eye exam should only be done when

care giver complains or that eye exam can only be done by eye care workers. In addition 99.2% agree that eye examination by paediatricians may help early detection of retinoblastoma. This shows the recognition among participants that they have a role in detection of eye problems in children and hence provides a good avenue for plugging the deficiencies in their knowledge and practice.

However even though refractive errors are relatively common, 20% disagree that children can use spectacles effectively. This shows there's still more work to be done to create awareness on refractive errors. Children, their guardians and their teachers need encouragement by health workers to enforce the use of spectacles, hence positive attitudes on the part of practitioners are critical.

Only 60.8% agreed that their training was adequate to diagnose and refer children with eye diseases while only 70.4% agreed they can advice parents on the consequences of squints. These latter statements show the need for an avenue to be created to plug this gap in knowledge. There is no published study on attitudes on childhood eye diseases among paediatricians.

The main limitations of this study included the self administered nature of the questionnaire which meant clarification on some responses could not be ascertained. In addition there are very few published studies with which to compare these findings and finally accessing all the intended respondents was made difficult due to absenteeism from their places of work.

CONCLUSIONS AND RECOMMENDATIONS

Participants generally had poor knowledge of eye diseases in children though this varied widely with lower levels of knowledge on less common illnesses like ROP. However they demonstrated a satisfactory level of good practice and their attitudes were generally positive.

However to aid their level of knowledge an introduction of modules on ophthalmology in their postgraduate training should be considered. In addition their continuous medical education should include topics related to childhood eye diseases. Finally there's a need for similar studies to be done elsewhere both in Africa and the world over to better understand the gaps.

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