

Original Research Article

What do non-ophthalmic health professionals know about retinoblastoma: a survey in Saudi Arabia

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ABSTRACT

Background: The aim of the study is to estimate the level of knowledge about retinoblastoma (Rb) and its determinants among non-ophthalmic health professionals of Qassim region of Saudi Arabia.

Methods: This cross-sectional survey was held in 2016 in primary health centres (PHC) and general hospitals in the study area. In addition to demography like age, gender, education, place of work, participants replied to five questions related to Rb with close-ended questions to respond. They were matched to the expert group's answers to estimate the level of knowledge.

Results: One hundred and fifty-two non-ophthalmic doctors participated in the survey. The excellent grade of knowledge of Rb was in 66 [43.3% (95% confidence interval 35.5-51.3)] of participants. Very poor level of knowledge was noted in 13 [8.6% (95% CI 4.1-13.0)] participants. Male gender ($P = 0.02$) and physician category ($P = 0.02$) were significantly associated with the excellent grade of Rb related knowledge. The participant's response by type of questions varied significantly ($P < 0.001$).

Conclusions: More than half of the non-ophthalmic health professionals had less than desired knowledge about Rb. Health education about Rb to health professionals could be gender sensitive and based on the type of profession. Increasing the awareness about retinoblastoma among non-ophthalmic health professional is important.

Keywords: Amblyopia, Childhood tumour, Health knowledge, Retinoblastoma

INTRODUCTION

In children, retinoblastoma is the most common intraocular tumour, and its incidence was reported as 1 per 15,000 live births.¹ The annual incidence of Rb in Saudi population (7.7/Million) is higher than the global rate. Rb in both eyes is presented late in Saudi patients.^{2,3} Therefore early detection and prompt management of Rb is crucial. New-born eye screening, amblyopia screening and integrating primary eye care (PEC) within Primary Health Care (PHC) are the recommended strategies to address this blinding and fatal condition.⁴⁻⁶ With a marked reduction in the mortality and the need for

removing eye due to improved management modalities, this ocular malignancy in children has a better prognosis.⁷ This is possible if Rb cases are detected and diverted to the ocular oncologists in early stages. The non-ophthalmic health professionals like doctors at PHC, paediatricians, paramedical staff related to child health care are usually the first to come across early cases of Rb. If they do not know about Rb, such cases could reach ophthalmologists in late stages especially in developing countries.

Retinoblastoma is usually suspected by noting strabismus, white pupil or nystagmus in the child. Such

children are either brought by parents or are accidentally detected by paediatricians or nursing staff during their vaccination visits. Level of knowledge about Rb was assessed among midwives of an African country and physician of PHCs of Mexico.^{8,9} Both these studies had reported less than the desired level of knowledge about the condition and its management. To the best of our knowledge, no such research is carried out in Gulf countries including Saudi Arabia.

We present the survey outcomes about Rb knowledge among non-ophthalmic health professionals in a region of central Saudi Arabia.

METHODS

In this cross-sectional survey, 1,724 non-ophthalmic health professionals (2016 statistical book) were our study population. Verbal consent was obtained from all health professionals to participate in the survey. Their identity was kept confidential. No reward or punitive action was carried out based on the study outcomes. Those declining to participate were excluded. We assumed that the rate of good knowledge about Rb would be in 44.2%.⁹ To achieve 95% confidence interval, an acceptable error margin of 10% and clustering effect of 1.5, we needed a randomly selected 135 professionals. To compensate for the incomplete survey, we increased the sample by 10%. Thus, the final sample for this survey was at least 148. One ophthalmologist and five medical graduates were involved in the field part of the study. A pilot was conducted to ensure uniform methodology and data collection among all field staff. The demographic information collected from each participant included age-group, gender, nationality the type of work health professional was performing, nationality and workplace. A question was asked to know if they had interaction in the past with a suspected case of retinoblastoma. To determine the knowledge about retinoblastoma five questions were included in the questionnaire. Each question had four options from which participant was to pick most suitable one to respond. Three

ophthalmologists panel identified correct reply, and participants reply was compared with their answer. If it was correct +2 score was given, if it was wrong -2 score was given. But if participant opted as 'Do not know', -1 score was given. The score for all questions was summed to determine Rb knowledge score of the participant. It was further graded as excellent if a score was '3 and more'. If it was more than '1 to 3', it was considered as good. For a score of '-1 to -2 score', we graded Rb knowledge as poor. For score 'less than -2' was considered as very poor.

The data was collected on a pretested data collection form. Then it was transferred to a spreadsheet of Microsoft XL. The analysis was carried out using SPSS-24, IBM, Chicago, USA. The qualitative data were presented as numbers and percentage proportion. The quantitative variables (after ensuring for its normal distribution) were presented as the mean and standard deviation. To compare the outcomes among subgroups, we calculated Odd's ratio, its 95% confidence intervals and two-sided P-values. In cases of more than two subgroups, we presented Chi-square value, the degree of freedom and P-value. A two-sided P-value of <0.05 was considered as significant.

RESULTS

One hundred fifty-two non-ophthalmic health professionals participated in our survey. Males were 85 (55.9%), and females were 67 (44.1%). Young professionals (<30 years old) comprised of 82 (54%) while the rest 70 (46%) were more than 30 years of age. Saudi professionals were 81 (53.3%), and Non-Saudi professionals were 71 (46.7%). Type of health professionals that participated were physicians at primary health centres were 52 (34.2%), interns 44(28.9%), 1st-year postgraduate medical students 27 (17.8%), 2nd-year postgraduate medical students 23 (15.1%) and six (3.9%) were working in emergency services. Among participants, 97 (63.8%) had interacted with a patient suspected of retinoblastoma during their medical practice.

Table 1: Responses of non-ophthalmic health professionals to a subtype of Rb questions.

Question related to retinoblastoma (Rb)	Correct answer		Incorrect answer		I don't know	
	Number	%	Number	%	Number	%
Definition of Rb	86	56.6	15	9.9	51	33.6
Age when Rb case present	73	48.0	33	21.7	46	30.3
Common presentation of Rb case	105	69.1	24	15.8	23	15.1
Other common presentation of Rb case	61	40.1	28	18.4	63	41.4
Correct action by the health professional	106	69.7	16	10.5	30	19.7

Chi square = 52, degree of freedom = 8 and P<0.001

Among non-ophthalmic health professionals, level of knowledge regarding retinoblastoma was of an excellent grade in 66 [43.3% (95% confidence interval 35.5-51.3)

of participants. It was good in 48 (31.6%) and poor in 25 (16.4%) participants. A grade of very poor knowledge was noted in 13 [8.6% (95% CI 4.1-13.0) participants.

The variation in participant's Rb knowledge regarding definition, presentation, provisional diagnosis and action to be taken was significant ($P < 0.001$), (Table 1).

The excellent grade of Rb knowledge among participants was associated with demographic variables, Table 2. Male gender ($P = 0.008$) and type of health profession (PHC Physician with better knowledge) ($P = 0.004$) were significantly associated with the level of Rb knowledge.

There were 74 (48.7%) participants who related to providing child health care (paediatrician and family physicians). Excellent grade of Rb knowledge among them was in 35 (44.9%) participants. While in remaining 78 other health professionals, the excellent grade of knowledge was in 31 (39.7%) participants. The difference of knowledge in two groups was not significant ($P = 0.84$).

Table: 2 The association of an excellent grade of knowledge about retinoblastoma to demographic variables.

		Excellent knowledge		Not excellent Knowledge		Validation
		Number	Percentage	Number	Percentage	
Age group	<26	23	34.8	27	31.4	P = 0.7
	26 to 35	24	36.4	42	48.8	
	>35 years	19	28.8	17	19.8	
Gender	Male	45	68.2	40	46.5	OR = 2.5 (95% CI 1.3-4.8), P = 0.008
	Female	21	31.8	46	53.5	
Nationality	Saudi	37	56.1	44	51.2	P = 0.6
	Non-Saudi	29	43.9	42	48.8	
Work as	PHC Physicians	29	43.9	23	26.7	$\chi^2 = 8.5$ df = 5 P = 0.004
	Interns	21	31.8	23	26.7	
	1 st year PG students	7	10.6	20	23.3	
	2 nd year PG students	8	12.1	15	17.4	
	Other	1	1.5	6	7.0	
Exposure to Rb suspect	Yes	38	57.6	59	68.6	OR = 0.6 (95% CI 0.3; 1.2), P = 0.2
	No	28	42.4	27	31.4	

DISCUSSION

Less than half of non-ophthalmic healthcare professionals of Qassim region had an acceptable level of knowledge regarding retinoblastoma and its management. It was significantly better among males and physicians working at PHCs compared to the other. It did not differ among those related to child health care and other. The level of knowledge about Rb presentation and action to be taken at primary level varied by type of professionals.

To the best of our knowledge, this is first such study in middle Eastern countries where the incidence of Rb is higher than in the western countries.³ The outcomes of this study may be useful beyond the study area in revising the Primary eye care (PEC) integration to PHC.

The low level of knowledge of Rb-a highly common ocular childhood tumour among Saudi professionals is a matter of concern. Medical education related persons of the regions and KSA should take note of this deficit and address it. Nearly 44% of the participants in our study were Non-Saudi. Their training for early detection of Rb and action to be taken for addressing Rb could vary as

they hail from many countries. Thus, a standard operating system to manage Rb at PHCs is needed in Saudi Arabia. The skills of non-ophthalmic health professionals could also be improved by holding short training. Organised efforts of integrating PEC into PHC in Saudi Arabia was endorsed but not yet completed.¹⁰ The inclusion of Rb a childhood blinding disease in PEC training of PHC staff is recommended. Training of PHC staff for health issues related to mother and child health (MCH) in Western Saudi Arabia had shown positive impact for improving overall KAP of PHC staff and limited impact on knowledge component of growth monitoring.¹¹ A study in Spain, 45.6% paediatric primary health care providers expressed about their limited knowledge of congenital nasolacrimal duct management and need for training to improve their knowledge on different eye ailments.¹² Thus, the demand for improved knowledge about eye ailment among PHC staff seems to be universal.

A study held in Mexico targeting final year medical students revealed that knowledge regarding Rb diagnosis based on primary and secondary presentation was in less than half of the students.⁹ The knowledge for taking action, i.e. 'referring to ophthalmologist' however, was found among 85% of respondents. The situation in

African countries is different. Child health care is mainly provided by trained mid-level health care professionals and community health workers. The level of knowledge about Rb in one of the African countries; Brazzaville, therefore, assessed midwives. Only 10% of participants knew that strabismus and leukocoria were signs of retinoblastoma in children.⁸ It seems that integration of PEC into PHC and focussing on priority blinding eye diseases is a universal need in countries of all regions of the world.

A significantly higher rate of knowledge in male and female professional in our study is surprising, and we do not have any logical explanation of this finding. A similar gender difference was noted while assessing the DM management related knowledge of PHC staff of Al Hasa region of Saudi Arabia.¹³ A study with a larger sample to confirm this gender variation is recommended. The training for PEC should note this gender variation.

Type of profession in our study significantly affected the level of knowledge about retinoblastoma. It was better in PHC physicians compared to postgraduate students working in a large hospital. A similar variation of knowledge was noted in a study evaluating hand hygiene practices.¹⁴ The long interval between medical education and present survey of Saudi postgraduate students and poor level of training of the primary eye care component during medical education could be an explanation for this observation.

Level of knowledge did not vary very much among those who came across Rb case and those who did not. Detailed study of a case referred to the ophthalmologist is recommended by physicians to improve their knowledge.

The family physicians and paediatrician residents who are likely to be future 1st contact health professional for patients with Rb did not have better knowledge than other health staff in our study. This is puzzling and a matter of concern. In a country with high incidence of Rb, this is possible either due to parents taking their child with eye problem directly to the eye doctors or the skill of 1st contact physician is low and need to be improved.

There were few limitations in our study. The selection of participant was not random. Thus, extrapolation of study outcome to entire non-ophthalmic health professionals of the region should be carried out with caution. The questionnaire for determining Rb knowledge was although prepared after consulting an expert ophthalmologist and primary health care staff; it contained limited questions covering different aspects of diagnosis and management of Rb. This could intensify the difference noted in the knowledge level of the subgroup of Rb related knowledge.

Non-ophthalmic health professionals had less than desired knowledge about Rb. It also differed by gender and type of health professional. While integrating

primary eye care into primary health care, one should include Rb in childhood blindness for imparting knowledge and device protocol for taking actions.

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REFERENCES

1. Aerts I, Lumbroso-Le Rouic L, Gauthier-Villars M, Brisse H, Doz F. Retinoblastoma update. *Arch Pediatr.* 2016;23(1):112-6.
2. Khandekar RB, Al-Towerki AA, Al-Katan H, et al. Ocular malignant tumors. Review of the Tumor Registry at a tertiary eye hospital in central Saudi Arabia. *Saudi Med J.* 2014;35(4):377-84.
3. Pirouzian A. Retinoblastoma (RB) in Saudi Arabia-retrospective comparative review of a registry. *Peertechz J Pediatr Ther.* 2015;20(015):1983-97.
4. Mansoor N, Mansoor T, Ahmed M. Eye pathologies in neonates. *Int J Ophthalmol.* 2016;9(12):1832-8.
5. Cotter SA, Cyert LA, Miller JM, Quinn GE. Vision screening for children 36 to <72 months: recommended practices. *Optometry Vision Sci.* 2015;92(1):6.
6. Murthy G, Raman U. Perspectives on primary eye care. *Community eye health/International Centre for Eye Health.* 2009;22(69):10-1.
7. Chawla B, Singh R. Recent advances and challenges in the management of retinoblastoma. *Indian J Ophthalmol.* 2017;65(2):133-9.
8. Atipo-Tsiba PW, Itoua C. Retinoblastoma: Assessing the level of knowledge of tumour by midwives in Brazzaville. *East Afr Med J.* 2015;92(5):241-4.
9. Leal-Leal CA, Dilliz-Nava H, Flores-Rojo M, Robles-Castro J. First Contact Physicians and Retinoblastoma in Mexico. *Pediatr Blood Cancer.* 2011;57(7):1109-12.
10. Eastern Mediterranean Region works towards Universal Eye Health in 'Global Action Plan-Eastern Mediterranean'. Available at: <https://www.iapb.org/advocacy/global-action-plan-2014-2019/global-action-plan-eastern-mediterranean/>. Accessed 8 November 2017.
11. Salem KA, Balahmar MK, Milaat W, Gabal MS. The effects of a training program on knowledge, attitude and practice of the staff of primary health care centers towards growth monitoring: an intervention study. *J Egypt Pub Heal Assoc.* 1999;74(5-6):627-49.

12. Galindo-Ferreiro A, Palencia-Ercilla T, Ferreira LM, Galvez-Ruiz A, Zornoff DCM, Khandekar R, et al. A survey of management of congenital nasolacrimal duct obstruction by pediatric primary health care providers in Spain. *Eur J Ophthalmol.* 2017;27(4):502-5.
13. Khan AR, Al Abdul Lateef ZN, Khamseen MB, Al Aithan MA, Khan SA, Al Ibrahim I. Knowledge, attitude and practice of ministry of health primary health care physicians in the management of type 2 diabetes mellitus: a cross-sectional study in the Al Hasa District of Saudi Arabia, 2010. *Niger J Clin Pract.* 2011;14(1):52-9.
14. Róžańska A, Wójkowska-Mach J, Bulanda M. Work experience and seniority in health care vs. medical students' knowledge of selected hand hygiene procedures. *Med Pr.* 2016;67(5):623-33.

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