

Parents' awareness and perception of children's eye diseases in Arar City

Awareness of children's eye diseases

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Abstract

Aim: In this study, we aimed to evaluate the parents' awareness and perception of children's eye diseases (CED) in Arar city of Northern Saudi Arabia. **Material and Method:** This descriptive cross-sectional, interview-based study included a stratified sample of total 1986 Saudi parents including 1030 (52%) females and 956 (48%) males. Their age ranged from 18 to 66 years with the mean age 43.5 ± 18.4 years. **Results:** Although 56.7% of the participants had sufficient knowledge about CED, there were significant differences in knowledge scores regarding ages, genders, and educational levels among the participants. The participants showed the highest scores in the questions of refractive errors in children. CED were considered as a serious issue by 1701 (85.6%) participants and 1451 (73%) participants believed that spectacles are acceptable for their kids, while only 529 (26.6%) participants showed a willingness to attend any educational session about CED. About 68% of the participants were satisfied with available CED health services. Among eye complaints in children, eye deviation was the most distressing, which might force the parents to seek immediate medical advice. For periodic examination of their children, only 700 (35%) parents had reported that they had visited the eye clinics. Family and friends' advice was reported to be the most common source of information about CED by 733 (36.9%) participants. **Discussion:** The parents' knowledge in Arar about CED is not satisfactory and in need of being improved further. More focused educational programs on early detection and proper management of CED are recommended.

Keywords

Arar City; Awareness; Children's Eye Disease; Eye Deviation; Refractive Error; Symptoms

DOI: 10.4328/JCAM.6133

Received: 18.12.2018 Accepted: 08.01.2019 Published Online: 14.01.2019

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Introduction

Good health in a child today means a healthy nation tomorrow. Children are vulnerable to many diseases including the problems in their vision. Childhood blindness and visual impairment (CBVI) in children are the major disabilities that compromise the normal development of children [1]. The management of childhood visual disability has been set by the World Health Organization as a priority in the agenda of VISION 2020, The Right to Sight [2].

Although the major portion of CBVI is preventable or treatable, many visual problems may go unnoticed by the children and/or parents or may not be reported by the children to their parents. Parent and child may differently perceive the impact of CBVI on the quality of life-related to VI in a child [3]. CBVI has a serious impact not only on the present and future quality of a child's life but also on the economy of the country [4,6].

Studies conducted on children's eye diseases (CED) have highlighted the importance of awareness among parents and teachers to combat the problems of vision in the children [7-10]. These studies also indicate that parents may be well versed with the common CED such as conjunctivitis, refractive errors (RE), and deviating eyes. A child cannot hide the symptoms like the rubbing of eyes, sitting close to watch television at home or a blackboard at school. But parents are usually unaware of the underlying causes leading to these problems. Knowledge of diseases and their symptoms is one of the prerequisites for health-seeking behavior [7]. This is also important as the parents are the primary caregivers for their children and have an important role in eye care-seeking behavior and this understanding becomes necessary as detection and intervention for CED can be effective when done at an early age.

Awareness among parents regarding CED has not been studied in Saudi Arabia. One retrospective study on common eye diseases in children in Jazan, Saudi Arabia emphasizes the need to promote public awareness and education for early detection of strabismus, RE, and amblyopia in children through periodic screenings in schools [11].

The current study aimed to evaluate parents' awareness and perception of CED and improve this awareness through personal interview and discussion with the parents.

Material and Method

Ethical issues: The study was conducted after ethical approval (Ref: 42/40/49/D) obtained from the Northern Border University ethical committee. Informed consent was obtained from each participant and confidentiality was considered in all steps of data collection and analysis. This study was conducted in Arar, the capital of the Northern Border Region of Saudi Arabia with an estimated population size of around 170000 people (2010 census).

Study design: This descriptive cross-sectional, interview-based study included a stratified sample of Saudi male and female parents aged above 18 years old. A team of Arabic speaking medical students from Northern Border University (NBU), after special training on CED, were recruited along with ophthalmologists to collect the data through a personal interview for 10 to 15 minutes with every parent.

The predesigned proforma contained four parts. The first part covered the demographic data including age, gender, level of education, and past history of CED in kids. The level of education was considered as low if the participant had any education up to high school level (no education, primary, middle or high school) and high if the participant had any education post high schooling (college, institution, university). The second part contained ten multiple choice questions regarding a simple meaning and the main complaint of a five common CED including RE, squint, glaucoma, cataract, and diabetic retinopathy (DR). The third part studied the parents' attitude towards the seriousness of CED, corrective spectacles, the efficacy of available health care services for CED and willingness of the participants to attend educational sessions about CED. The fourth part contained true or false questions regarding parents' response to their children's different eye complaints (red eye, itching, discharge, deviation, abnormal movements or improper vision in the classrooms or in front of televisions). The parents' previous attendance for periodic kids' eye examination for CED and as well as their previous attendance to CED educational sessions were discussed. The proforma was validated by the staff members of Ophthalmology and Community Medicine departments of NBU.

Data Analysis: Based on the number of people living in Arar city (2010 census) and at 95% level of confidence with an assumed precession of 5%, the minimum required sample size was 383 subjects. For questions pertaining to knowledge, persons who gave correct answers were scored as one, while persons who answered incorrectly were scored as zero. Those having scored below five out of ten were considered as having "insufficient knowledge". All the variables were summarized and reported across the study using descriptive statistics. Comparisons were conducted using Chi-Square for binary variables. A p-value less than 0.05 was considered as statistically significant.

Results

After informed consents were obtained, 1986 parents (1030 (52%) females and 956 (48%) males) were enrolled in the study. Their ages ranged from 18 to 66 years with the mean age 43.5±18.4 years. Participants' demographic data are shown in Table 1.

The overall knowledge score for CED showed that 1126 (56.7%) participants had sufficient knowledge about CED with an average score of 6.67 [range 3-9]. Participants showed the highest awareness score for RE questions (69%), followed by cataract (55%), DR (41%), while the lowest score was for strabismus

Table 1. Participants' demographic data in relation to their gender.

Parameter		Males N (%)	Females N (%)	Totals N (%)
Ages (years)	<30	432 (21.75)	202 (10.17)	634 (31.92)
	30-50	276 (13.9)	481 (24.21)	757 (38.11)
	>50	248 (12.48)	347 (17.47)	595 (29.95)
Education	Low	321 (16.16)	314 (15.81)	635 (31.97)
	High	635 (31.97)	716 (36.05)	1351 (68.02)
H/O CED	Yes	231 (11.63)	295 (14.85)	526 (26.48)
	No	725 (36.5)	735 (37)	1460 (73.51)
Total				1986 (100)

CED: children's eye diseases; H/O: history of; N: number.

questions (37%). There was a significant difference in knowledge scores regarding ages, genders, and educational levels among the participants (Table 2).

Table 2. Participants' knowledge of CED in relation to their demographic data.

Parameters	Total N (%)	Sufficient N (%)	Insufficient N (%)	Chi square p-value	
Ages (years)	<30	634 (100)	532 (51.65)	498 (48.34)	22.19, 1 < 0.0001
	30-50	757 (100)	594 (62.13)	362 (37.86)	
	>50	595 (100)	432 (68.13)	202 (31.86)	
Education	Low	635 (100)	338 (44.64)	419 (55.35)	101.6, 2 < 0.0001
	High	1351 (100)	256 (43.02)	339 (56.97)	
H/O CED	Yes	526 (100)	248 (39.05)	387 (60.94)	203.2, 1 < 0.0001
	No	1460 (100)	978 (72.39)	373 (27.6)	
Gender	Females	1030 (100)	525 (54.46)	439 (45.53)	3.816, 1 0.0508
	Males	956 (100)	601 (58.8)	421 (41.19)	
Total	1986 (100)	1126 (56.69)	860 (43.30)		

CED: children's eye diseases; H/O: history of; N: number.

Regarding parents' attitude towards CED, 1701 (85.6%) considered CED as serious. While 1451 (73%) participants considered spectacles and visual aids acceptable for their kids, only 529 (26.6%) participants showed a willingness to attend any future educational session about CED for more trusted information. These attitudes were significantly affected by the different study demographic variables (Table 3). Regarding participants' attitude towards the available health services for CED, 1344

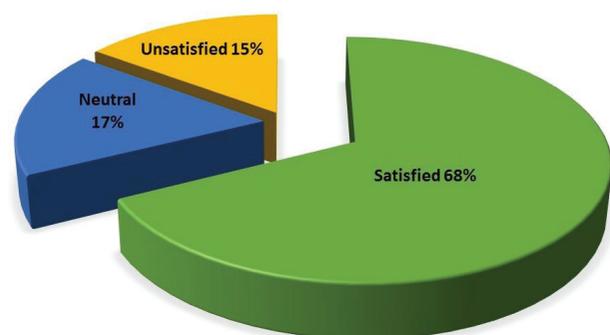


Figure 1. Parents' satisfaction with CED health care services.

Table 3. Parents' attitude towards CED, spectacles and education session on CED

Parameters	Totals 100% Yes N (%)	CED are serious			Corrective spectacles for children			Willingness to attend CED education sessions			
		No N (%)	P-value	Acceptable N (%)	Non-acceptable N (%)	p-value	Yes N (%)	No N (%)	p-value		
Gender	Females	1030	932 (90.5)	98 (9.5)	40.71, 1 < 0.0001	635 (61.6)	395 (38.3)	141.6, 1 < 0.0001	298 (28.9)	732 (71.1)	5.770, 1 0.0163
	Males	956	769 (80.4)	187 (19.6)		816 (85.3)	140 (14.6)		231 (24.1)	725 (75.8)	
Ages (years)	<30	634	576 (90.8)	58 (9.1)		361 (56.9)	273 (43.1)		143 (22.5)	491 (77.4)	
	30-50	757	674 (89)	83 (10.9)	68.00, 2 < 0.0001	512 (67.6)	245 (32.4)	270.4, 2 < 0.0001	285 (37.6)	472 (62.3)	47.23, 2 < 0.0001
	>50	595	451 (75.8)	144 (24.2)		578 (97.1)	17 (2.9)		101 (16.9)	494 (83.1)	
Education	Low	635	500 (78.7)	135 (21.3)	36.26, 1 < 0.0001	575 (90.6)	60 (9.4)	145.1, 1 < 0.0001	103 (16.2)	532 (83.7)	51.83, 1 < 0.0001
	High	1351	1201 (88.9)	150 (11.1)		876 (64.8)	475 (35.2)		426 (31.5)	925 (68.4)	
H/O CED	Yes	526	433 (82.3)	93 (17.7)	6.456, 1 0.0111	524 (99.6)	2 (0.4)	256.4, 1 < 0.0001	292 (55.5)	234 (44.5)	305.3, 1 < 0.0001
	No	1460	1268 (86.8)	192 (13.1)		927 (63.5)	533 (36.5)		237 (16.2)	1223 (83.8)	

CED: children's eye diseases; H/O: history of; N: number.

(67.7%) were satisfied, 348 (17.5%) neutral, and 294 (14.8%) were unsatisfied (Figure 1). The effect of the demographic variables on this attitude is shown in Table 4.

As far as children's different ocular complaints are concerned, eye deviation was the most distressing, which might force them to go for immediate medical consultation (Figure 2). The effect of the demographic variable on this attitude is shown in Table 5.

Only 700 (35%) participants reported to have visited the eye clinics for periodic examination of their children and a limited number [175 (8.8%)] of the participants reported to have attended organized educational sessions about CED (Table 6). Family and friends' advice was the most common sources of knowledge about CED in 733 participants (36.9%), while the organized educational sessions were the least in 48 participants (2.4%) (Figure 3).

Discussion

The current study has evaluated the knowledge, attitude, and behavior of the parents in Arar city towards CED. The overall knowledge score about CED showed that 56.7% of the participants had sufficient knowledge about CED with the highest scores for the questions on RE. Majority of the participants (85.6%) considered CED as a serious issue and only 67.7% were satisfied with the available health services for CED. Eye deviation was the most distressing symptom which may force them to seek medical advice. Limited number (8.8%) of participants reported that they had visited the eye clinics for the periodic examination of their children. Family and friends' advice was the most common (37%) source of knowledge about CED for participants.

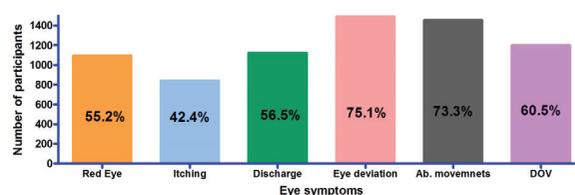


Figure 2. Parents' positive response to their children's ocular symptoms. Ab. Movements: abnormal movements; DOV: diminution of vision

Table 4. Participants' satisfaction with the available health services for CED in relation to their demographic data.

Parameter	Satisfied N (%)	Level of satisfaction			P-value
		Neutral N (%)	Unsatisfied N (%)		
Gender	Females	638 (61.94)	174 (27.27)	218 (21.16)	121.3, 2 < 0.0001
	Males	706 (73.84)	174 (24.64)	76 (7.95)	
Ages (years)	<30	500 (78.86)	98 (19.6)	36 (5.68)	69.36, 2 < 0.0001
	30-50	483 (63.8)	124 (25.67)	150 (19.81)	
	>50	361 (60.67)	124 (34.34)	110 (18.49)	
Education	Low	348 (54.8)	190 (54.59)	97 (15.27)	77.17, 4 < 0.0001
	High	996 (73.72)	158 (15.86)	197 (14.58)	
H/O CED	Yes	321 (61)	130 (40.5)	75 (14.26)	104.9, 2 < 0.0001
	No	1023 (70)	218 (21.30)	219 (15)	

CED: children's eye diseases; H/O: history of; N: number.

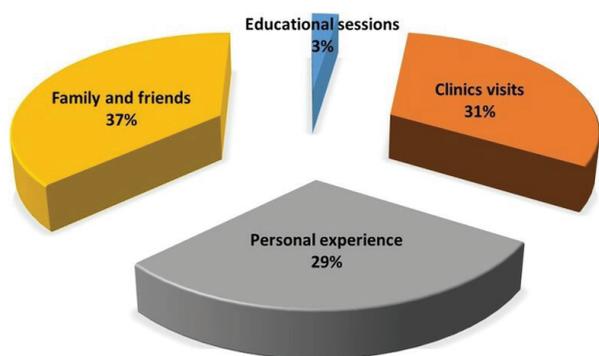


Figure 3. Parents' source of knowledge about CED.

In the current study, 56.7% of the participants had sufficient knowledge about CED, which is higher than reported in Tabuk, Saudi Arabia in 2018 by Al-Lahim et al. [12]. Elder participants with more life experience and educated persons showed higher

scores in comparison to others, which is in accordance with data reported in 2017 in Jordan by Haddad et al. [13]. In addition, parents whose children had a history of eye diseases showed higher scores in comparison to others, which reveals the importance of experience as a source of knowledge and this is in line with the study conducted by Peruffo et al. (2018) [14]. Participants showed the highest awareness score of 69% for RE, while the lowest score was for strabismus. This is different from data reported in the study conducted in Tabuk, Saudi Arabia, which showed the highest scores for cataract, followed by glaucoma, DR and RE. However, a study in Southern India by Chew et al. (2017) showed that 75% of the general public was aware of RE [15]. These differences may be attributed to the different demographic data among the studied populations. Also, this pattern of knowledge may be due to a higher prevalence of RE in Arar, as Parrey and Alswelmi (2017) reported that RE was the leading cause of visual impairment in Arar city [16]. The current study revealed that more than 85% of parents believed that CED is a critical issue as they might cause future disabilities and limit the opportunities for their children. This point of view is in accordance with previous data published by Nwosu (1990) [17], who reported that the issue of childhood blindness is increasing, with around 70 million blind yearly caused by eye diseases starting during childhood. Spectacles were highly accepted by elderly and educated persons as they have shown more awareness which improves their attitude towards the corrective aids. However, most females did not accept spectacles for their children. Their response may be due to the concept that spectacles may put a limitation on their children's daily activities and also most females may not accept the spectacles for cosmetic reasons or social stigma. These data are in accordance with earlier published data on

Table 5. Parents' response to seeking medical advice in relation to different CED symptoms.

Medical Advice	Females N (%)	Gender		Ages (years)			Education		H/O CED among kids			
		Males N (%)	< 30 N (%)	30-50 N (%)	> 50 N (%)	Low N (%)	High N (%)	History N (%)	No history N (%)			
Totals		1030(100)	956 (100)	956 (100)	757 (100)	595 (100)	635 (100)	1351 (100)	526 (100)	1460 (100)		
Red eye	Yes	867 (84.2)	494(51.7)	232 (36.6)	432(57.1)	432(72.6)	383(60.3)	713 (52.8)	338 (64.3)	758 (51.9)		
	No	163 (15.8)	462(48.3)	402 (63.4)	325(42.9)	163(27.4)	252(39.7)	638 (47.2)	188 (35.7)	702 (48.1)		
P- value		242.8, 1 < 0.0001		162.7, 2 < 0.0001		9.928, 1		0.0016	23.81, 1 < 0.0001			
Itching	Yes	475 (46.1)	367(38.4)	232 (36.6)	365(48.2)	245(41.2)	251(39.5)	591 (43.7)	262 (49.8)	580 (39.7)		
	No	555 (53.9)	589(61.6)	402 (63.4)	392(51.8)	350(58.8)	384(60.5)	760 (56.3)	264 (50.2)	880 (60.3)		
P- value		12.12, 1		0.0005		19.61, 2 <0.001		3.147, 1		0.0761	16.10, 1 < 0.0001	
Discharge	Yes	675 (65.5)	448(46.9)	345 (54.4)	343(45.3)	435(73.1)	313(49.3)	810 (60)	448 (85.2)	675 (46.2)		
	No	355 (34.5)	508(53.1)	289 (45.6)	414(54.7)	160(26.9)	322(50.7)	541 (40)	78 (14.8)	785 (53.8)		
P- value		70.35, 1 < 0.0001		106.5, 2 < 0.0001		19.99, 1		<0.0001	238.6, 1 < 0.0001			
Eye deviation	Yes	753 (73.1)	739(77.3)	435 (68.6)	546(72.1)	511(85.9)	431(67.9)	1061(78.5)	436 (82.9)	1056 (72.3)		
	No	277 (26.9)	217(22.7)	199 (31.4)	211(27.9)	84 (14.1)	204(32.1)	290 (21.5)	90 (17.1)	404 (27.7)		
P- value		4.668, 1		0.0307		54.88, 2 <0.0001		26.27, 1		<0.0001	23.08, 1 < 0.0001	
Abnormal eye movement	Yes	798(77.5)	657(68.7)	437(68.9)	520(68.7)	498(83.7)	382(60.2)	1073(79.4)	478 (90.9)	977(66.9)		
	No	232(22.5)	299(31.3)	197(31.1)	237(31.3)	97(16.3)	253(39.8)	278(20.6)	48(9.1)	483(33.1)		
P- value		19.39, 1 < 0.0001		47.23, 2 < 0.0001		81.85, 1		<0.0001	113.3, 1 < 0.0001			
DOV	Yes	732 (71.1)	469(49.1)	276 (43.5)	427(56.4)	498(83.7)	450(70.9)	751 (55.6)	399 (75.9)	802 (54.9)		
	No	298 (28.9)	487(50.9)	358 (56.5)	330(43.6)	97 (16.3)	185(29.1)	600 (44.4)	127(24.1)	658 (45.1)		
P- value		100.5, 1 < 0.0001		215.6, 2 < 0.0001		42.18, 1		< 0.0001	70.83, 1 < 0.0001			

CED: children's eye diseases; DOV: diminution of vision; H/O: history of; N: number

Table 6. Parents' attitude towards periodic eye examination of their children and CED education sessions.

Parameters Females N (%)		Gender		Ages (years)			Education		H/O CED in kids	
		Males N (%)	< 30 N (%)	30-50 N (%)	> 50 N (%)	Low N (%)	High N (%)	Yes N (%)	No N (%)	
Totals		1030(100)	956 (100)	956 (100)	757 (100)	595 (100)	635 (100)	1351 (100)	526 (100)	1460 (100)
Periodic examination	Yes	435 (42.2)	265 (27.7)	100 (15.8)	300 (39.6)	300 (50.4)	366 (57.6)	334 (24.7)	306 (58.2)	394 (27)
	No	595 (57.8)	691 (72.3)	534 (84.2)	457 (60.4)	295 (49.6)	269 (42.4)	1017 (75.3)	220 (41.8)	1066 (73)
P- value		45.76, 1 < 0.0001			171.7, 2 < 0.0001		205.1, 1 < 0.0001		164.8, 1 < 0.0001	
Education Sessions	Yes	98 (9.5)	77 (8.1)	53 (8.4)	90(11.9)	31 (5.2)	32 (5)	142 (10.5)	91 (17.3)	83 (5.7)
	No	932 (90.5)	879 (91.9)	581 (91.6)	667 (88.1)	564 (94.8)	603 (95)	1209 (89.5)	435 (82.7)	1377 (94.3)
P- value		1.316, 1 0.2514		18.78, 2 < 0.0001			16.18, 1 < 0.0001		65.27, 1 < 0.0001	

CED: children's eye diseases; H/O: history of; N: number

attitude towards spectacles and corrective lenses by Adeoti, (2009) [18] and Alobaidan et al. (2018) [19].

Regarding the parents' behavior towards the eye complaints in children, eye deviation was the most distressing, which can force the majority of parents to seek urgent medical advice, although the participants' knowledge score for squint was low. This is in line with Clarke (2005) [20], who reported that squint is one of the pediatric problems which required urgent ophthalmology consultation referral for the children to save the vision and prevent amblyopia. While other complaints as red eye, discharge or itching may be self-limited and can be treated by the known eye drops or after family physician consultation.

The current study also revealed that most parents (around 65%) did not take their children for periodic examination to the eye clinics. This means that common childhood eye conditions as RE, amblyopia, and strabismus may be left untreated, which can cause lifelong visual disability. This lack of public awareness about the importance of periodic eye examination is in accordance with Katibeh et al. (2017) [21] who reported that around 73% of people in Denmark were unaware about the importance of periodic eye examination.

While the majority of the participants were satisfied with the available health services for CED, around 15% were unsatisfied. The reasons for being unsatisfied were mainly long waiting lists and a long time spent to get the service in the healthcare centers. These reasons are similar to what was reported by Mansour and Al-Osimy (1993) in Riyadh [22] and Mahfouz et al. (2004) in Aser region of Saudi Arabia [23].

For the sources of knowledge about CED, family and friends' advice was reported to be the most common source. This is in accordance with other studies conducted by Katibeh et al. (2014) [24], Al Rashed et al. (2017) [25] and Al-Lahim et al. (2018) [12]. All of them have highlighted that family and friends' misconceptions about eye disease are the source of wrong information about the CED.

The overall parents' knowledge in Arar about CED is not satisfactory and in need of being improved. More focused educational programs targeting parents should be employed for early detection and proper management of CED. In addition, the awareness should be raised among parents to help them in compliance of children to the visual aids to improve and maintain proper vision in children.

Acknowledgment: I express my gratitude to the students Faculty of Medicine, NBU Arar; Mr. Abdulrhman Ahmed Alenazi, Miss. Latifa Yasser Al.Mohaimmed and Miss Luluah Ma'an Abdullah for their assistance in collecting data for this project.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Funding: None

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

References

- Khandekar R, Kishore H, Mansu RM, Awan H. The status of childhood blindness and functional low vision in the Eastern Mediterranean region in 2012. Middle East Afr J Ophthalmol. 2014; 21(4): 336-43. DOI: 10.4103/0974-9233.142273.
- Gilbert C, Foster A. Childhood blindness in the context of VISION 2020-the right to sight. Bull World Health Organ. 2001; 79(3): 227-32.
- Tadić V, Cumberland PM, Lewando-Hundt G, Rahi JS. Vision-related quality of life group. Do visually impaired children and their parents agree on the child's vision-related quality of life and functional vision? Br J Ophthalmol. 2017; 101 (3): 244-250. DOI: 10.1136/bjophthalmol-2016-308582.
- Decarlo DK, McGwin G Jr, Bixler ML, Wallander J, Owsley C. Impact of pediatric vision impairment on daily life: results of focus groups. Optom Vis Sci. 2012; 89(9): 1409-16.
- Toledo CC, Paiva AP, Camilo GB, Maior MR, Leite IC, Guerra MR. Early detection of visual impairment and its relation to academic performance. Rev Assoc Med Bras. (1992). 2010; 56(4): 415-9.
- Köberlein J, Beifus K, Schaffert C, Finger, RP. The economic burden of visual impairment and blindness: a systematic review. BMJ Open. 2013; 3(11). DOI: 10.1136/bmjopen-2013-003471.
- Senthilkumar D, Balasubramaniam SM, Kumaran SE, Ramani KK. Parents' awareness and perception of children's eye diseases in Chennai, India. Optom Vis Sci. 2013; 90(12): 1462-6. DOI: 10.1097/OPX.000000000000084.
- Ebeigbe JA, Emedike CM. Parents' awareness and perception of children's eye diseases in Nigeria. J Optom. 2016; 10(2): 104-10.
- Singh A, Rana V, Patyal S, Kumar S, Mishra SK, Sharma VK. To assess knowledge

- and attitude of parents toward children suffering from strabismus in Indian sub-continent. *Indian J Ophthalmol*. 2017; 65(7): 603-6. DOI: 10.4103/ijo.IJO_619_16.
10. Nirmalan PK, Sheeladevi S, Tamilselvi V, Victor AC, Vijayalakshmi P, Rahmathullah L. Perceptions of eye diseases and eye care needs of children among parents in rural south India: the Kariapatti Pediatric Eye Evaluation Project (KEEP). *Indian J Ophthalmol*. 2004; 52(2): 163-7.
11. Darraj A, Barakat W, Kenani M, Shajry R, Khawaji A, Bakri S, et al. Common Eye Diseases in Children in Saudi Arabia (Jazan). *Ophthalmol Eye Dis*. 2016; 8: 33-9. DOI: 10.4137/OED.S39055.
12. Al-Lahim WA, Al-Ghofaili RS, Mirghani H, ALBalawi H. Evaluation of Awareness and Attitudes towards Common Eye Diseases among the General Population of Northwestern Saudi Arabia. *Egyptian Journal of Hospital Medicine*. 2018; 70(11):1201-8
13. Haddad MF, Bakkar MM, Abdo N. Public awareness of common eye diseases in Jordan. *BMC ophthalmology*. 2017; 17(1): 177.
14. Peruffo E, Marchegiani L, Vicentini F. Experience as a source of knowledge in divestiture decisions: emerging issues and knowledge management implications. *Journal of Knowledge Management*. 2018; 22(2): 344-61.
15. Chew YK, Reddy SC, Karina R. Awareness and knowledge of common eye diseases among the academic staff (non-medical faculties) of University of Malaya. *Med J Malaysia*. 2004; 59(3): 305-11.
16. Parrey MU, Alswelmi FK. Prevalence and causes of visual impairment among Saudi adults. *Pakistan journal of medical sciences*. 2017; 33(1):167.
17. Nwosu SNN. Childhood eye diseases in Anambra State, Nigeria. *Niger J Ophthalmol*. 1999; 34-8.
18. Adeoti CO. Beliefs and attitude towards spectacles. *Nigerian journal of clinical practice*. 2009; 12(4):359-61
19. Alobaidan OS, Alkhalifah MK, AlSayegh AA, Alhumaid FA, Ashammery AS, Alghamdi K, et al. Knowledge and practice regarding contact lens among Saudi urban contact lens users. *Saudi Journal of Ophthalmology*. 2018; 32(2): 93-6.
20. Clarke WN. Paediatric ophthalmology: things that do not require referral. *Paediatrics & child health*. 2005; 10(7): 395.
21. Katibeh M, Ahmadi H, Beiranvand R, Soleimanizad R, Javadi MA. Awareness of the Necessity of Regular Eye Examinations among Diabetics: The Yazd Eye Study. *Int J Prev Med*. 2017 4; 8: 49. DOI: 10.4103/ijpvm.IJPVM_218_15.
22. Mansour AA, Al-Osimy MH. A study of satisfaction among primary health care patients in Saudi Arabia. *Journal of community health*. 1993; 18(3): 163-73.
23. Mahfouz AA, Al-Sharif AI, El-Gama MN, Kisha AH. Primary health care services utilization and satisfaction among the elderly in Asir region, Saudi Arabia. *East Mediterr Health J*. 2004; 10(3): 365-71.
24. Katibeh M, Ziaei H, Panah E, Moein HR, Hosseini S, Kalantarion M, et al. Knowledge and awareness of age related eye diseases: a population-based survey. *Journal of ophthalmic & vision research*. 2014; 9(2): 223.
25. Al Rashed WA, Bin Abdulrahman AK, Zarban AA, Almasri MS, Mirza AS, Khandekar R. Public Awareness regarding Common Eye Diseases among Saudi Adults in Riyadh City: A Quantitative Study. *J Ophthalmol*. 2017; 2017. DOI: 10.1155/2017/9080791.

How to cite this article:

Rehman Parrey MU. Parents' awareness and perception of children's eye diseases in Arar City. *J Clin Anal Med* 2019; DOI: 10.4328/JCAM.6133.