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Parental Ability to Detect Visual or Ocular Anomalies in Their Children

Leya S. Mavely[1,2], Mohammad Albagdady[1] & J. Margaret Woodhouse[2]

[1] Jaber Al Ahmad Armed Forces Hospital, Ministry of Defence, Sabhan, Kuwait

[2] School of Optometry and Vision Sciences, Cardiff University, Cardiff, United Kingdom

Correspondence: Leya S. Mavely, Ophthalmology Department, Jaber Al-Ahmad Armed Forces Hospital, Subhan, Kuwait. ORCID ID: https://orcid.org/0009-0008-1230-8631 Tel: 965-2472-9911.

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Abstract

Introduction: Children typically depend on their parents to seek eyecare. Visual and ocular disorders can be challenging for parents to identify with the absence of apparent symptoms. This may hinder timely clinical diagnosis for children who need treatment. Parental awareness regarding common paediatric eye and vision anomalies along with eye care seeking behaviour has been reported, but there is a lack of studies that demonstrate parental ability to identify a presenting eye or vision disorder in their own children.

Aim: This study aimed to determine parental ability to recognise a significant eye problem in their children.

Methods: The study population consisted of beneficiaries of Jaber Al Ahmad Armed Forces Hospital in Kuwait. Structured history and symptoms were taken from parents and comprehensive eye examinations were conducted for their children. Parental responses were compared to the eye test results to attain the study purpose.

Results: A total of 188 parental interviews and 188 eye test results data were collected from 137 parents and their children. Only a few parents (18.1%) were able to detect significant visual or ocular anomalies in their children. One-third of the parents (33%) were under the assumption that the visual or ocular status of their children was within the norm, while the eye test results showed that the children had clinically significant issues. Overall, 41.5% of the entire group of parents were wrong in their assumption about the children's visual or ocular status.

Conclusion: The findings suggest that a large proportion of parents may not be able to identify a presenting eye disorder in their children. This emphasises the significance of routine eye examinations at an early age.

Keywords: vision, anomalies, parental ability, children

1. Introduction

It appears, through experience in clinical practice, that most parents seek eyecare only when their child complains, or when signs are apparent. A disruption in normal visual development and visual functions in children can have a profound impact on their academic performance and they may fail to achieve their full potential (Le Fanu, 2023). While adults can comprehend and self-report visual difficulties, such as a reduction in visual acuity (VA), children do not always understand and complain about such matters. Therefore, parental ability to identify visual or ocular abnormalities is key.

Published studies have focused on parental role in paediatric eye care, parental awareness of common paediatric eye or vision anomalies and their effect on eye care seeking behaviour (Basheikh et al., 2021; Fong et al., 2018; Moodley et al., 2018). A study in urban school children has demonstrated a positive association between parental concerns about child development and refractive errors in children (Ibironke et al., 2011). It has been reported that poor academic performance and difficulty in fine motor skills impel parents to rule out eye or vision problems (Benjamin & Borish 2006). However, the study by Moodley et al. (2018), showed that around 60% of parents do not feel the need for routine eye tests. Furthermore, some parents believe that school vision screenings are equivalent to comprehensive eye tests, thus they do not seek a full eye examination or further management (Donaldson et al., 2018). Fong et al. (2018), reported poor parental awareness regarding amblyopia and strabismus, whereas another study reported poor eye-care seeking behaviour in spite of adequate parental awareness (Mbonye 2003). Financial and time constraints, difficulty in booking appointments, misconceptions and cultural beliefs

limit eye care accessibility despite the presence of noticeable symptoms and availability of eye care facilities (Lohfeld et al., 2021; Nirmalan et al., 2004). Only one published study, in rural India, examined parental ability to detect a vision anomaly in their child and reported that 43% of mothers of children with poor visual acuity assumed that their children had good vision (Kemmanu et al., 2018).

The eye care system in Kuwait lacks delivery models for early screening of children and relies on parents to take their children for eye care. There is paucity of data in the literature regarding parental knowledge or their eye care seeking behaviour in Kuwait. A few studies were conducted in neighbouring Kingdom of Saudi Arabia (KSA), to assess the parental awareness of various eye diseases (Almalki et al., 2022; Almogbel et al., 2023; Alobaisi et al., 2022; Alsaqr, 2023; Surrati et al., 2022). While childhood blindness constitutes 4.1% of the total blindness in the Middle East, poor awareness of paediatric eye disorders was demonstrated by 72.8% of parents in the study by Almogbel et al. (2023). Recent research suggested that only a limited proportion of parents are vigilant in bringing their children for routine eye exams in KSA (Alatawi et al., 2021). Another study suggested that the health care system in KSA negatively impact the early detection of childhood refractive errors (Alanazi et al., 2023).

Existing literature indicates that parental concerns, knowledge and awareness regarding eye issues is pertinent in seeking eye care for their children. However, it is unclear from the studies whether parents are able to identify an eye problem in their child. Hence, the overarching purpose of this study was to determine whether parents can recognise a significant eye or vision problem in their own child.

2. Methods

2.1 Study Design

In this prospective study, a qualitative approach was used with one-on-one structured history and symptoms taking from the parents (DiCicco-Bloom & Crabtree 2006). No standard protocol is available to measure parental ability to detect visual or ocular anomalies in children. Hence, the study was designed to conduct a comprehensive eye test for the children following history and symptoms taking and to correlate the two outcomes. The study took place at the Ophthalmology Out-Patient Department of Jaber Al Ahmad Armed Forces Hospital, Kuwait.

2.2 Study Population

The study population included parents and their children who are beneficiaries of Jaber Al Ahmad Armed Forces Hospital in Kuwait. These include the Ministry of Defence employees, military and civilian, and their dependent family members.

2.2.1 Sample size

The required sample size for the purpose of study was approximately 170 based on previous qualitative studies on parental eye care seeking behaviour and refractive estimation studies (Ebeigbe & Emedike 2017; Senthilkumar et al., 2013; Tuncer Orhan & Gursoy 2023). Purposive sampling was used and invitation for participation was distributed through digital and print advertising in both Arabic and English languages. (Copies attached in Appendix A and B).

2.2.2 Inclusion Criteria

Parents of children up to the age of 18 years were invited to join the study. This included children who had never had an eye test before and those who had been tested in the past, including those who has been prescribed correction.

2.2.3 Exclusion Criteria

Parents who work in eye care, children with disabilities and those with a diagnosed nonrefractive congenital ocular pathology such as nystagmus, corneal, lenticular, or retinal abnormalities were excluded from the study due to the tendency of such parents to take their children for routine examinations. However, clinical services were provided to all.

Ethical approval was obtained from Kuwait Ministry of Defence Scientific Research Committee and was endorsed by the Optometry School Research Committee, Cardiff University, UK (ID code “1594”). (Copy attached in Appendix C). The research adhered to the tenets of the Declaration of Helsinki. Written informed consent was obtained from participants after they received an explanation of the study at the end of each clinical consultation.

2.3 Data Collection

Data consisted of a parental interview in the form of a structured history and symptoms as well as a comprehensive eye examination for the child, conducted by either of the first two authors who are registered optometrists in Kuwait. Data were documented in the hospital file records and in a separate Excel sheet for the study.

2.3.1 Parental interview

Parental interviews were conducted at the start of each appointment. Communication was either in Arabic, the national and main spoken language in the country or English depending on the preference of the participant. Simultaneous note taking was carried out verbatim and one of the authors, a native speaker, translated whenever required. The interview comprised 15 questions aimed at collecting and assessing parental suspicions and understanding, a detailed ocular, medical and family history of the child, parents' age, gender, and educational level as well as the age and gender of the child. The history and symptoms questions were piloted over a one-week period among parents, optometrists and ophthalmologists to ensure ease of understanding, response, and adequacy of information (Appendix D).

2.3.2 Child clinical examination

All children underwent a comprehensive ophthalmic examination in accordance with the practice pattern followed in the Ophthalmology Out-Patient Clinic. To standardise the procedures, a modified pattern was designed following the College of Optometrists' guideline and evidence-based clinical practice guideline recommended by American Optometric Association (American Optometric Association 2015). Clinical examination included assessment of distance visual acuities, objective and subjective refraction, and binocular status. Assessment of ocular health and related systemic condition was carried out by an ophthalmologist. All tests were either the gold standard or had been validated in previous studies (Al-Bagdady 2009; Camparini et al., 2001; Morales Ruiz et al., 2022; O'Donoghue et al., 2012; Paudel et al., 2019; Saunders & Westall 1992; Somer et al., 2014). However, clinical judgement, specific symptoms and signs determined the course of examination in some cases.

Age-appropriate tests were used to measure visual acuity (VA) uncorrected and with spectacle correction, if any, using Nidek System Chart SC-1600 (Nidek Co., Aichi, Japan); it included Snellen test type chart of alphabets, tumbling E, and pictures. The measurements were taken first binocularly, and thereafter monocularly and documented in Snellen metric form. The scoring termination rule used was 50% accuracy scoring, a proven method in terms of stability and repeatability among different VA range. The child was asked to read optotypes and was stopped when failed to recognise more than 50% of characters in a row.

Objective assessment of refractive error was conducted in each child by static (distance) retinoscopy using retinoscope and a table mounted Nidek ARK-1a Autoref/ Keratometer (Nidek Co., Aichi, Japan). The device has been validated and shown to give comparable results with retinoscopy in research by Paudel et al. (2019). Confirmatory cycloplegic assessment was performed when clinically necessary. One drop of preservative free 1% cyclopentolate hydrochloride eyedrops was instilled two times at 10 minutes interval, and cycloplegic autorefraction was performed. Mohindra retinoscopy, a standard alternative for cycloplegic refraction was performed in all other cases. Saunders and Westall (1992), have validated the use of Mohindra retinoscopy in clinics for assessing the refractive status of children.

Subjective verification of refraction was performed in most children based on the cooperation and response of the child. Dynamic retinoscopy was performed to measure accuracy of accommodation and to aid in prescribing decisions for hypermetropia.

Ocular alignment was assessed using the Hirschberg test, cover test and cover/uncover test. Prism cover test was used to measure the magnitude and type of strabismus (squint), with and without refractive correction. Using random dot test, stereopsis was assessed. Measurement of ocular motility was done using pen torch or illuminated toys in all cardinal gaze positions.

Anterior and posterior segments were examined by a single ophthalmologist using slit lamp (Haag Streit BI 900) and Volk lens.

2.4 Statistical analysis

Children were divided into two groups based on the presence or absence of clinically significant visual or ocular issues. Children with clinically significant problem were those presenting with (Ojaimi 2005):

- Visual acuity (VA) one or more lines poorer than the age norm in one or both eyes (over presenting spectacles, if any), including amblyopia. Amblyopia was defined as an inter-ocular difference of one Snellen line or more with the best refractive correction.
- Strabismus (squint).
- Uncorrected or under corrected refractive errors in one or both eyes, including anisometropia. Anisometropia was defined as an inter-ocular difference of ≥ 1.00 Dioptre Sphere (DS). Spherical equivalent refractive error (SER) was calculated and defined as myopia (≤ -0.50 DS), hypermetropia (≥

+2.00DS) and astigmatism (≤ -0.75 Dioptre Cylinder). It was decided to consider low amounts of hypermetropia < 2.00DS as a defect, particularly in children with decreased uncorrected VA, strabismus, anisometropia, age above 4 years and/or asthenopic symptoms (Leat 2011).

- Eye infections or allergies.

Data from the most ametropic eye were used for statistical analysis.

Based on content analysis using a deductive approach used in qualitative research, history taking notes were manually organized and further categorized into four predetermined groups (Milne et al., 2017). Parental data were then compared to the children's eye test results. Parents were divided into four categories.

- A. Parents who predicted the child to have a disorder and the child did.
- B. Parents who predicted the child to have a disorder and the child did not.
- C. Parents who predicted the child to not have a disorder and the child did not.
- D. Parents who predicted the child to not have a disorder and the child did.

Parents of those children who were already prescribed optical correction were categorised as below:

- A. Parents who suspected their child to need a change in prescription and were right.
- B. Parents who suspected their child to need a change in prescription and were wrong.
- C. Parents who did not suspect their child to need a change in prescription and were right.
- D. Parents who did not suspect their child to need a change in prescription and were wrong.

Parents and children were divided into age-groups. Gender, age-group of parents and children as well as education level were used as factors for comparison. Statistical analysis was performed using statistical software (SPSS software version 27; SPSS, Inc., Chicago, IL). Non-parametric techniques were used, as the attributes to be measured were not normally distributed.

A chi-square test was used to determine the relationship between two categorical variables (Swinscow & Campbell, 2002). Any association between factors such as different parental age groups, children age groups and parent educational level were explored against the ability of parents to detect a clinically significant problem. Considering small sets of data in a particular group where the expected cell value was less than 5, Fisher's Exact Probability Test was used. The significance threshold was fixed at 0.05 for all analyses.

To detect a relationship or difference between groups, sensitivity and specificity of parents were determined. The sensitivity of parents was defined as, suspecting a disorder whenever a child has a clinically significant problem (true positive), and the specificity as, to accurately predict the child's eye status whenever a child has no clinically significant problem (true negative). The number of parents in each of the four groups was calculated for children who had no previous eye test and for children who were already prescribed optical correction. Table 1 shown below is a 2x2 contingency table taken from a study of statistical principles and adapted to this study by changing assignment status and disease status to parental interview results and eye/ vision status respectively, to demonstrate the formula used for calculation in the SPSS (Gothwal et al., 2003). Furthermore, parental reasons and perspectives for bringing their child for the study was recorded to determine common patterns of observed parental behaviour and confounding factors.

Table 1. Calculation formula used for sensitivity and specificity of the study model

Parental interview results	**Actual eye/vision status as per eye test result of child**	
	Positive	*Negative*
Positive	True Positive (TP)	False Positive (FP)
Negative	False Negative (FN)	True Negative (TN)

Sensitivity = TP/ (TP+FN).

Specificity = TN/ (FP+TN).

3. Results

3.1 Study Population

A total of 199 children attended for the advertised study. Out of these patients, parents of children with disabilities (n=2), corneal pathology (n=1), incomplete data (n=3), children of eyecare professionals (n=2) and parents who did not consent (n=3) were excluded from analysis resulting in a total of 188 included child-parent pairs of which 140 children (74.5%) had never attended an eye test before. Out of the remaining 48 children (25.5%) who had a previous eye test, 44 children (91.7%) had been prescribed a correction. A total of 137 parents were interviewed and 188 children underwent a comprehensive eye examination. Of these, 99 parents (72.3%) had only one child whereas 38 parents (27.7%) had more than one child. Parental interviews, data recording and analysis were done separately for each child. Parental age groups were as follows: 34 years and below (n=36), 35-44 years (n=68) and 45 years and above (n=84). Most (71.3%) were mothers (n=134). With regard to education, 46% (n=87) had a bachelor's degree, 21% (n=40) had a technical diploma, 13% (n=24) had a higher education certificate and 20% (n=37) had a high school certificate or below. The age range of the children was between 2 and 18 years (mean= 9±3.71); 92 (48.9%) were boys and 96 (51.1%) were girls. Children were divided into four age groups for statistical analysis: 0-4.99 years (n=16), 5-9.99 years (n=85), 10-14.99 years (n=66) and 15-18 years (n=21).

3.2 Parental Interview Results

Of the 188 children, only 26.6% (n=50) were suspected to have a clinically significant problem (even with their presenting spectacles, if any) by their interviewed parent, whereas 73.4% (n=138) had assumed their child to be within the norm.

3.3 Children's Eye Test Results

Clinical examination showed that 48.9% children (n=92) did not have any clinically significant problem, while 51.1% children (n=96) had a clinically significant problem. In some children, clinically significant problems overlapped. For instance, myopia or hypermetropia along with strabismus, astigmatism, anisometropia and/or amblyopia. The overall proportion of myopia, hypermetropia and astigmatism in the study cohort were 34%, 5.3% and 40.4% respectively. In addition, 1.6% children (n=3) with low amounts of hypermetropia (<2.00 DS) were prescribed spectacle correction. Children's clinical findings are shown in Figure 1:

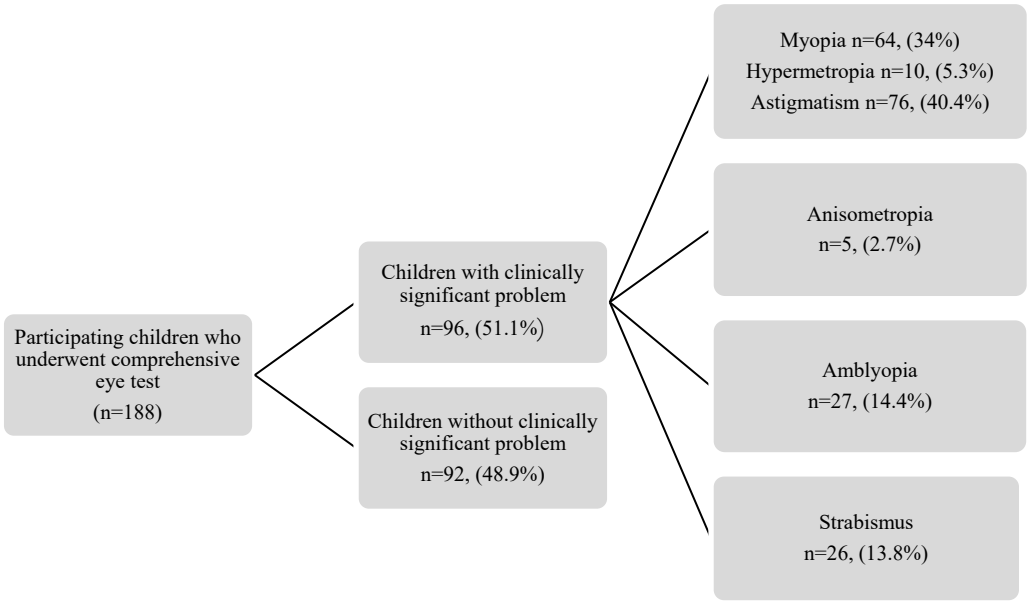

Figure 1. Flow chart displays comprehensive eye test results of the children

3.4 Comparison of Parental Interview Results with Children's Eye Test Results

Figure 2 shows the number of parents in each category for the whole group of children (n=188).

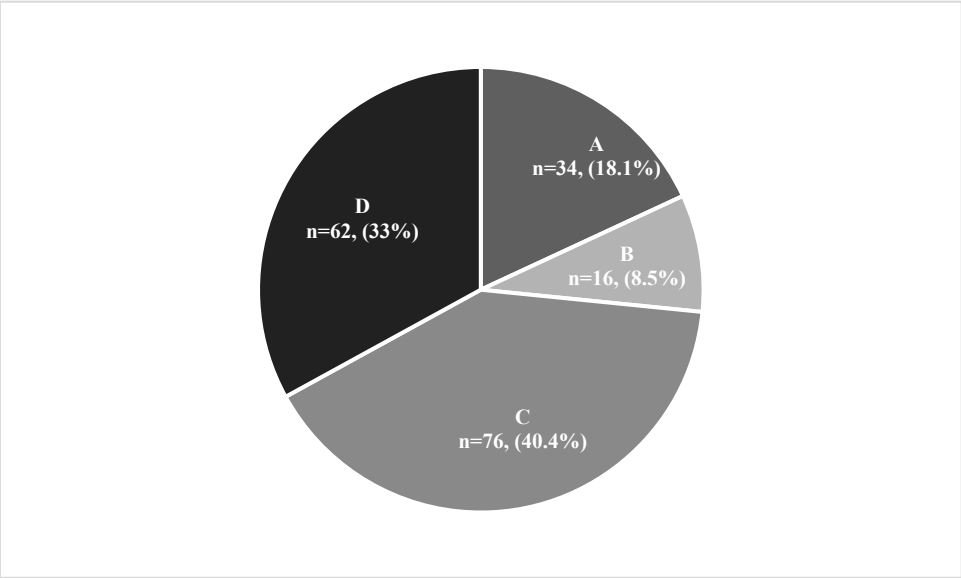

Figure 2. The distribution of parental categories for the whole group of children (n=188); where; A=Parents who predicted the child to have a disorder and the child did, B= Parents who predicted the child to have a disorder and child did not, C= Parents who predicted the child to not have a disorder and the child did not, and D= Parents who predicted the child to not have a disorder and the child did

Figure 3 shows the number of parents in each category for children who had never had a previous eye test (n=140).

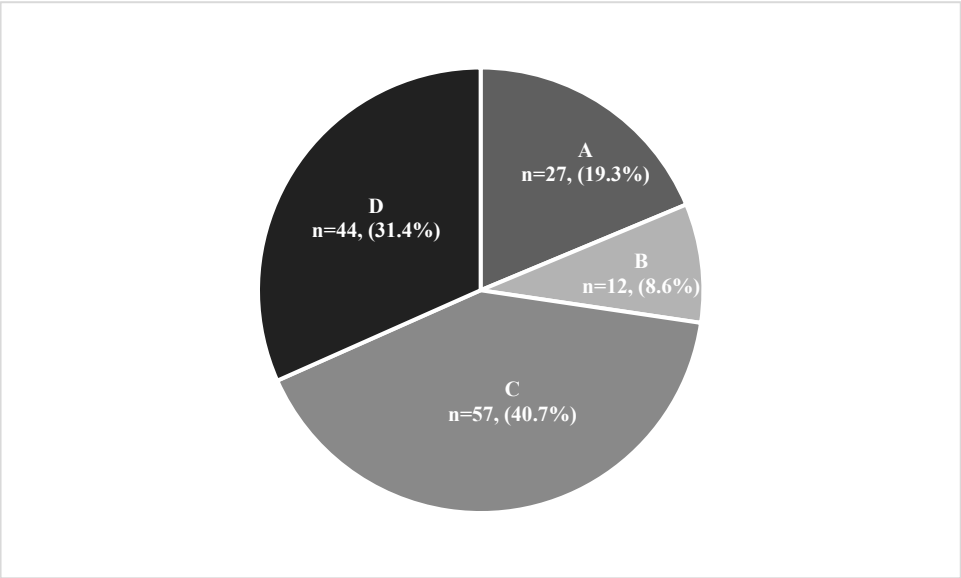

Figure 3. The distribution of parental categories of children who had never had a previous eye test (n=140); where; A= Parents who predicted the child to have a disorder and the child did, B= Parents who predicted the child to have a disorder and child did not, C= Parents who predicted the child to not have a disorder and the child did not, and D= Parents who predicted the child to not have a disorder and the child did

Figure 4 shows the number of parents in each category for children with presenting spectacles (n=44).

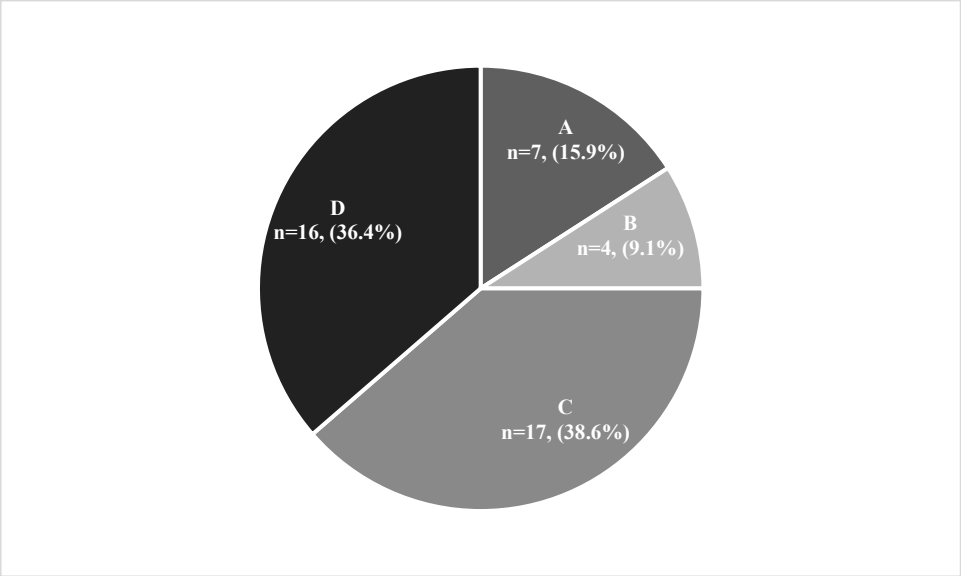

Figure 4. The distribution of parental categories for children who were already wearing prescribed optical corrections (n=44)*;* where A= Parents who suspected their child to need a change in prescription and were right, B= Parents who suspected their child to need a change in prescription and were wrong, C= Parents who did not suspect their child to need a change in prescription and were right, and D= Parents who did not suspect their child to need a change in prescription and were wrong

All figures show a similar pattern; around one third of parents (category D) had assumed their child was within the norm, while the children had an eye or vision issue.

3.5 Parental Ability to Detect a Clinically Significant Problem in Association with Socio-Demographic Factors

With the Chi-square test and Fisher's Exact Probability Test association between factors and parental ability to detect a clinically significant problem was determined. No statistically significant association was found between any of the following factors and parental ability: child's age group ($p=0.371$), gender of child ($p=0.628$), parents' age-group ($p=0.542$), educational level of parent ($p=0.331$), and the four parental categories A, B, C and D ($p>0.05$ for all comparisons).

A Chi-square test was also conducted to assess agreement between children with significant refractive error and the four different categories of parental match of diagnosis. There was a correlation between child with significant refractive error and parental ability to detect a clinically significant problem, $p<0.001$. This analysis was not performed for other clinical anomalies due to the limited number of children in this particular group.

3.6 Sensitivity and Specificity

Sensitivity and specificity of parental ability to detect all visual or ocular problems including significant refractive errors were calculated. The sensitivity to detect clinically significant problems was 31.5% and significant refractive errors was 33.7%. The specificity for identifying children without clinically significant problem was 81% and without significant refractive errors was 82% respectively.

4. Discussion

The present study analysed the ability of parents to detect significant eye or vision problems in their children. It was noted that parental perceptions of their child's eye conditions differed considerably. The results indicate that although most parents are able to identify whether or not their child has a visual or ocular anomaly, around one-third of parents (33%) failed to identify an existing clinically significant problem. The proportion did not differ between children who had never had a previous eye exam (31.4%), and children with presenting spectacles (36.4%). More than half the children wearing spectacles (52.3%) needed a change in their prescription and at least one-third of their parents had no knowledge about it. This suggests that children presenting with spectacles have the same risk of not having worsening vision detected by their parent. The study explored the effects of parent's age, child's age, child's gender as well as the educational level of parents on the parental ability to evaluate the child's defects. Chi-square tests found that these factors did not influence the parental ability.

The findings of the study are in line with a prior study by Kemmanu et al. (2018), that used a similar approach and reported that half of the mothers of children with VA < 6/18, failed to detect a visual problem. Another study by Moodley et al. (2018), with similar findings reported that more than half the parents (60.1%) never took their children for an eye test due to the assumption of the child having normal vision. A large proportion of these children (44.9%) were found to have defective vision. None of these studies commented on the parents of children who had already received eyecare in the past. It is unclear whether these studies had conducted a comprehensive eye examination in the children. One possible explanation for some parents being not aware of the visual or ocular issues is that children tend not to complain, as they do not know that vision problems are abnormal. A study by Gothwal et al. (2003), showed that children with vision problems may carry out daily activities, mostly relying on non-visual clues. In this study, most children with visual impairment had presumably assumed their eye sight to be at par with their peers of normal vision status and did not display symptoms.

It is likely that parents who were able to suspect a problem might have been influenced by common factors in published research by Ebeigbe and Emedike (2017), that drive parents to seek eye care including complaint by child, rubbing of eyes, headaches, sitting close to television and poor academic performance. A recent study reported a positive association between parental knowledge about eye examination and uptake of eye care services (Masarwa et al., 2023). Senthilkumar et al. (2013), reported poor parental knowledge and awareness about eye conditions in their study. However, assessment of parental knowledge and awareness about children's eye conditions was not in the remit of the study.

A large proportion of parents (58.5%) were able to predict the presence or absence of a clinically significant problem. Interestingly, most of these parents (40.4%) belonged to those children who were within the norm. There are no similar studies to compare this aspect with. A statistically significant correlation was found between parents of children with significant refractive errors and their ability to identify a problem. This is in line with a previous finding by Ebeigbe and Emedike (2017), who reported that parents could recognise refractive errors when they are associated with evident symptoms and signs.

In the present study, the majority of the parents were well educated and aged 35 years and above. None of the demographic factors of parents or children showed an association with parental ability or failure. Although the factors behind this are unclear, it can be estimated that age of parent, age of child, and educational level of parent do not have a significant impact on the parental perspective. This argument is supported by a similar study conducted by Kemmanu et al. (2018) and Moodley et al. (2018). In contrast, Surrati et al. (2022), reported a positive association between parents aged 51 years or above, and with high income in their knowledge about childhood eye diseases. However, the ability of these parents to detect an eye issue in their own children was not examined. Similar to this, another study has reported an observation that lack of education could be a major deterrent to recognize eye problems and uptake of eye care services (Paranjpe et al., 2016).

The findings of the present study suggest that half of the children's cohort had a clinically significant issue, with the majority being identified with uncorrected or partly corrected refractive errors. This is significantly greater than those reported in studies from KSA. Some children in the present study are susceptible to amblyopia, if not appropriately managed in the critical period (Al Wadaani et al., 2012; Alrahili et al., 2017; Bahhawi et al., 2018). This is in addition to a significantly high proportion of children (14.4%) detected with amblyopia. The overall global prevalence of amblyopia being around 1.4%, the higher rate of amblyopia and refractive errors in our study may be due to participants being recruited from a hospital, and not representative of the general population of Kuwait (Hu et al., 2022).

One cannot overlook the possibility of a higher prevalence of refractive error in this region. Recent studies in GCC have reported a positive association between prevalence of myopia and digital device use, which was in line with the excessive usage of smartphone in almost all households in Kuwait (Buabbas et al., 2021; Foreman et al., 2021). The strikingly high rate of myopia seen in the present study could also be due to the pressure placed on education as well as 100% of country's population living in urban settings. This is supported by estimates of global surge in myopia, particularly among urban school children in the past two decades (Narayanan et al., 2021). A recent study from KSA support these findings (Khouj et al., 2023).

Our study is unique in that it contributes toward addressing the gap between parental knowledge, awareness and practices explained in existing literature and actual parental ability to detect an eye condition in their children, both uncorrected and with presenting spectacles. These findings offer a glimpse into the complex field of parental understanding. The study specifically demonstrated the susceptibility of parents to overlook significant eye problems in their children. Clinically consistent, comprehensive eye tests on a large sample of participating children ensured a robust correlation of parental perceptions and child's actual eye status.

4.1 Limitations of the Study

Recruitment of participants from Military Hospital have resulted in unavoidable selection bias and may have affected parental perspectives. A greater representation of children with significant problem should not be the case on a nationwide basis. A randomised, population-based study in a larger sample size would be more appropriate for accurate estimates of clinically significant problems. To gain a clear understanding, a validated questionnaire distributed among parents to explore the knowledge, attitude, and practices of child eye health is recommended.

In summary, the study findings suggest that parents might fail to notice a significant eye issue in their children. Perhaps, routine eye tests are important for early detection and timely intervention, regardless of parental abilities and perceptions. Policymakers in public health could devise a child eye care model encompassing screening programmes and routine eye exams. This is essential to close the gap between those children whose parents recognize a problem and seek eye care and those who do not.

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Informed Consent

Obtained.

Provenance and Peer Review

Not commissioned; externally double-blind peer reviewed.

Data Availability Statement

The data that support the findings of this study are available on request.

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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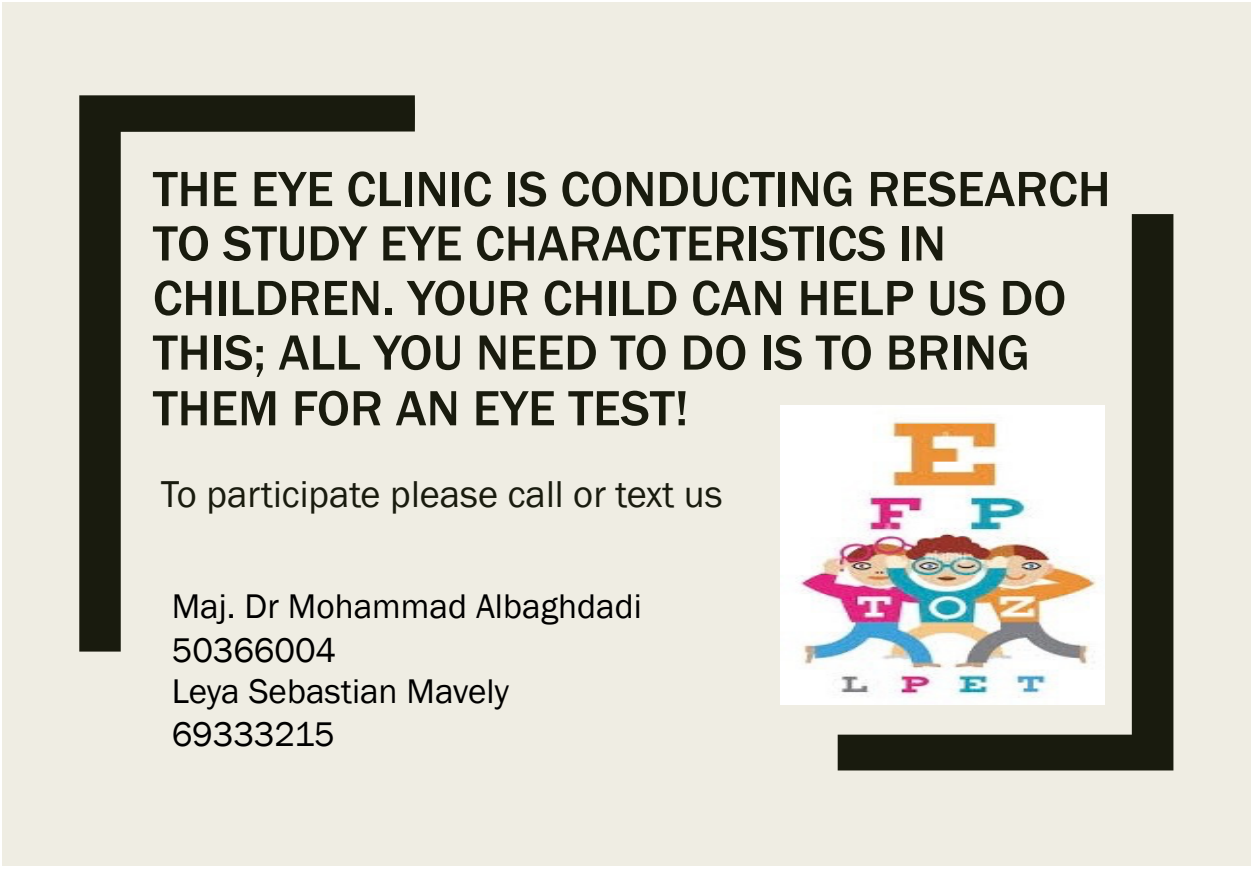
Appendices

Appendix A: Invitation in English



Appendix B: Invitation in Arabic

تقوم شعبة العيون ببحث علمي لجمع معلومات حول صحة عيون الأطفال. نتمنى دعمكم من خلال احضار اطفالكم لفحص النظر!

للمشاركة، يرجى الاتصال هاتفيا او عبر الواتساب

رائد/ د. محمد وليد البغدادي
50366004
ليا سيباستيان مافلي
69333215

Appendix C: Ethical Committee Approval Letter

Ministry of Defence Scientific Research Committee
Decision Letter

Date: 13/12/22

Study title: Parental ability and accuracy in detecting visual/ocular anomalies in their children

Final Decision:

Approved with no amendments ✓

Approved with minor amendments

Major revisions

Rejected

Review committee names and signatures:

Name:	Signature:
مقدم طبيب دكتور مساعد أول علم الأحياء الدقيقة الإكلينيكية سعود ناصر العازمي	
مقدم طبيب / د. أحمد محمد الأنصاري Lt. Col. Dr. Ahmad Alansari Specialist, Internal Medicine	
د. محمد محمود Dr. Mohamed Mahmoud Clinical Pharmacist Msc, Phd Clinical Pharmacy	

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Appendix D: History and Symptom taking Questions

I	**Demographic information**	
a	Child interview	Age
		Gender (Male or Female)
		Developmental Delay
b	Parent/Legal guardian interview	Age
		Gender (Male or Female)
		Level of education
		Contact information (Address, Telephone Number and Email)
II	**Semi Structured Questions**	
1	What brings you here today?	
2	Do you think your child has an eye/vision problem?	
3	If yes, what do you think the problem is?	
4	Did the child ever have an eye test?	
5	If yes, what were the results?	
6	Does anybody in the family have eye/vision problems? Does anybody in the family Wear glasses/contact lenses? Has anybody had refractive surgery?	