Do Saudi parents have sufficient awareness of pediatric eye diseases in Riyadh?

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Abstract:
PURPOSE: The current study aimed to assess Saudi parents’ awareness regarding pediatric eye diseases that can be screened and treated.

METHODS: A cross-sectional study was conducted in Riyadh, Saudi Arabia. Targeted participants were selected randomly. An online questionnaire was used for data collection. A Chi-ANOVA test was used with considering a confidence interval of 95%.

RESULTS: Of 1500 participants, 1070 (71%) Saudi adults responded. Most of the participants’ knowledge test score about eye health and care was poor (91.9%). The majority of those who had acceptable knowledge were married with 94.3%. Knowledge about the eye problem in diabetes was the highest with 82.8%, then 54.3% had acceptable knowledge about eye emergencies, general eye health with 36.5%, and 26.2% for refractive error problem, whereas knowledge about strabismus, visual deprivation, glaucoma, and eye tumors was lowest (18.9, 16.1, 10.6, and 9.6%, respectively). The most commonly reported sources of knowledge were community members. Those who were at the university level of education had a higher level of acceptable knowledge (64.4%) with a mean of 5.63. Retired participants had the highest mean level of knowledge (7.25). After that, it showed that those in the medical field had the second highest mean level of knowledge (6.55). However, students recorded the lowest mean knowledge score with 2.47.

CONCLUSION: The current study found evidence of a lack of awareness among parents about common pediatric eye diseases and proper eye care behaviors. Therefore, awareness programs should be targeting both parents with a focus on mothers. The higher the educational level, the higher the chances of health awareness.

Keywords: Amblyopia, caregiver awareness, eye diseases, parents’ awareness, pediatric ophthalmology, refractive errors, Saudi Arabia

INTRODUCTION
The convention on the rights of the child defined the child as “every human being below the age of 18 years.” According to the general authority for statistics in Saudi Arabia in 2017, 31.6% (10,319,429) of the population is under the age of 19. Children’s eye health is crucial for a successful life; visual abnormalities in early life could lead to a tremendous impact on personal life, education, career, health, financial status, and life satisfaction. Furthermore, it has an economic burden and affects the productivity and development of a society. Visual impairments, including strabismus, congenital glaucoma, amblyopia, and refractive errors, could complicate to permanent loss of vision. Early intervention is the essence of prevention of complications and maintaining healthy vision. Elimination and controlling of childhood blindness are one of the priorities of the World Health Organization (WHO) through “VISION 2020: the right to sight” program. According to the WHO, 75% of blindness, regardless of age, can be prevented by therapeutic and preventive interventions. Worldwide, 500,000 children become blind each year. In the Middle East, 4.1% of cases of total blindness are caused by childhood blindness. In children, the leading cause of visual impairment is refractive errors.

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which are treatable and preventable causes of blindness in the long term. In addition, refractive errors are increasing among school-age children. Amblyopia, strabismus, and significant refractive errors affecting visual acuity were the most prevalent eye morbidities seen among school-age children in the United States. Furthermore, In Jazan, Saudi Arabia, strabismus, refractive errors with hypermetropia predominance, ocular trauma, infection of cornea and conjunctiva, and keratoconus were the most common pediatric eye conditions (36.9%, 26.5%, 7.5%, 7.3%, and 6.2%, respectively). As well as, one study conducted in Dammam, Saudi Arabia, reported that refractive errors, strabismus, and amblyopia were the most common causes of childhood ocular diseases (44.4%, 38%, and 9.1%, respectively). Most of the parents were aware of common eye morbidities, strabismus, refractive errors, and cataract but not amblyopia in Chennai, India, and Nigeria. In contrast, a study published in Riyadh, Saudi Arabia, on public awareness regarding common eye diseases, showed that the level of acceptable knowledge related to pediatric eye diseases was only 51.5%. In Ghana, Honduras, and India, most caregivers (95%) recognized the importance of eye examination. However, most of their children (66%) did not ever receive an eye examination.

The significance of parents’ awareness regarding pediatric eye diseases and eye care is not because it could lead to blindness. However, it is due to the availability of sufficient preventable measures. Parents are the primary caregivers who decide seeking health-care services for their children. Determining parents’ awareness of eye problems is mandatory to find why some of them seek medical care while others do not. There were minimal studies in the literature exploring the levels of knowledge regarding pediatric eye diseases among Saudi parents. Identifying the contributing factors, it may lead to overall better outcomes for the affected children. Thus, it may lessen the burden on health-care systems. Therefore, the current study aimed to assess Saudi parents’ awareness regarding pediatric eye diseases that can be screened and treated.

**Methods**

**Study subjects and data collection**

A cross-sectional study was conducted from October to November 2017 in Riyadh, Kingdom of Saudi Arabia. The online questionnaire was sent to 1500 adults who participated and were selected randomly through a computer generating program. Voluntary participation was followed, and all the participants signed a consent form before participating in the study. The questionnaire was self-reported which was used for data collection. The validity and reliability of the questionnaire were confirmed through the pilot study and alpha Cronbach’s test. The questionnaire was designed to assess the knowledge of pediatric eye diseases. The survey consisted of questions related to personal data, and knowledge regarding pediatric eye diseases, as well as the sources of knowledge. The responses to the questionnaire were kept confidential. The protocol was presented to Imam Mohammad Ibn Saud Islamic University, College of Medicine’s Institutional Review Board, and had approval.

A Likert scale was used to measure and analyze the responses where 1 = true, 2 = false, and 3 = I do not know. For each question, the true response was marked +2 score, the false response was marked -2 score, and I do not know response was marked -1 score. The sum of the scores on all 21 questions provided the final score for each participant. The participants’ knowledge can be categorized as “excellent” if they obtained more than 75% score, “good” if they obtained a score between 50% and 75%, and “poor” if they obtained <50% score. The participants’ score ≥ of 50% was considered as an acceptable level of knowledge.

**Data analysis**

Data were collected and tabulated through Microsoft Excel 2016, where the analysis was performed using the Statistical Package for the Social Sciences SPSS software (Version 24, IBM Corp., Armonk, NY, USA). Descriptive statistics as frequencies and percentages were performed. A comparison between subgroups was made with Chi-square, independent t-test between variables with two groups, and ANOVA test between variables with more than two groups, with considering confidence interval of 95%. Basic data were regarded as normally distributed as in Table 1 and Figure 1. P < 0.05 was considered statistically significant.

**Results**

Of 1500 participants, 1070 (71%) Saudi adults responded. The internal reliability of the questionnaire was high (Cronbach’s alpha = 0.784), as well as the normality test was performed, where P = 0.001 in the Kolmogorov–Smirnov test, which indicates that data were normally distributed as shown in Table 1 and Figure 1.

Table 2 shows the mean age ± standard deviation of the participants was 38 ± 9 years, with 48.3% males and 51.7% females, and the majority of participants were married (91.9%). It illustrated that 56.2% had university degrees as education level, and the majority of participants were government employees (42.6%). Most of the participants’ knowledge test score about the eye health and care was poor (91.9%), whereas some participants had good knowledge (7.4%), and very few participants had excellent knowledge (0.7%).

Table 3 shows the knowledge of eye health and care and its association with different demographic variables, where 52.9% of those who have acceptable knowledge were male,

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**Table 1: Tests of normality and reliability (n=1070)**

| Parameter               | Statistic    | df | Significant |
|-------------------------|--------------|----|-------------|
| Overall knowledge (mean±SD) | 5.18±10.581  |    |             |
| Kolmogorov–Smirnov*     | 0.039        | 1070| 0.001       |
| Cronbach’s alpha (21 items) | 0.784        |    |             |

SD: Standard deviation
compared to 47.1% for females — the significant association between knowledge score and gender ($P = 0.047$). While, males had higher mean knowledge of eye health and care score (5.84) when compared to females mean knowledge (4.56). The majority of those who had acceptable knowledge were married with 94.3%. However, no significant differences were seen in knowledge between married, divorced, or widowed ($P \geq 0.05$). The participants who were illiterate had the lowest level of acceptable knowledge (1.1%). However, those who were at the university level of education had a higher level of acceptable knowledge (64.4%). Moreover, it illustrated that participants with the postgraduate level recorded the highest mean knowledge score with (7.86) when compared to the university level with (5.63), and it was statistically significant ($P \leq 0.05$). The occupation variable relationship with the knowledge level showed that different occupational groups were recorded different knowledge level. Those who retired got the highest mean level of knowledge (7.25). After that, it showed that those in the medical field had the second highest mean level of knowledge (6.55). However, students recorded the lowest mean knowledge score with 2.47. Most of those who had acceptable knowledge were working in governmental sectors.

Table 4 and Figure 2 show the level of acceptable and poor knowledge related to specific morbidities is given in, as well as the mean and standard deviation. It illustrated a significant relationship between the acceptable and poor level of ocular morbidity related knowledge among Saudi parents. The participants’ knowledge was ordered in a descending pattern as follows: knowledge about the eye problem in diabetes was the highest with 82.8%, then 54.3% had acceptable knowledge about eye emergencies, general eye health with 36.5%, and 26.2% for refractive error problem, whereas knowledge about strabismus, visual deprivation, glaucoma, and eye tumors was lowest (18.9, 16.1, 10.6, and 9.6%, respectively).

Table 5 shows the sources of information for accessing knowledge of pediatric eye disease. The most commonly reported sources were community members (e.g., family members, relatives, friends, school, university, or workplace) with 27.28%. What comes after it was the Internet (14.78%) and social media (12.45%).

**Discussion**

Up to our knowledge, this is the first study that measured the parent’s awareness and misconceptions about various pediatric eye diseases and eye care behaviors among Saudi adults in Riyadh city that used a large sample size.
The illiterate participants were found to have the lowest level of awareness. On the other hand, both the university level and the postgraduate level were found to have a significant increase in awareness. This finding confirms the previous assumption, which states: the higher the educational level, the higher the chances of health awareness. The previous finding is quite expected as educated people nowadays are more aware of the latest health recommendations through different sources such as social media or through the community.

Most of the adults who had the highest level of awareness were married. This result is logical, as married people tend to be more caring and more medically educated for their children’s health benefits.

Retired people had the highest level of awareness. After that, those in the medical field had a lower level of awareness, and finally, students had the lowest level of knowledge. This finding could be justified by assuming that retired people tend to have lots of free time. Thereby, they would read, listen, or watch health education materials either through social media,
This low level of awareness of the previously mentioned diseases could be explained by the fact that parents might not be aware of such red flags and thus could lead to unavoidable complications such as visual impairment or even permanent vision loss. Such complications could be easily prevented through periodical screening, and parents report any abnormalities they may discover. One study showed the lack of awareness parents might have.\cite{17} Another study has found that the majority of the parents believed in the importance of eye examinations and screening for their children.\cite{18}

The community members were found to be the highest source of knowledge, and the internet and social media come after it. This finding was consistent with other studies.\cite{19,20} Another study has demonstrated that social media was the highest source of knowledge regarding eye diseases.\cite{21} This finding could be explained by assuming that people tend to accept a shared experience or advice by someone they know regardless of whether they were in the medical field or not. Unfortunately, laymen community members are not the optimal people to get proper health education advice, as some of the information could be myths or misconceptions, and may not be evidence-based.

At least the Internet or social media sometimes could be reliable sources if the information was taken from experts in the field or well-known health organizations. However, this does not replace the critical role of parents to seek medical advice through their own primary care physician for initial screening or a pediatric ophthalmologist if needed as not all the cases are the same.

**Limitations**

The conventional five-point Likert scale was not used in the questionnaire as it may complicate the simplicity of the questionnaire to our participants, and to avoid uncertain answers by participants. Hence, a three-point scale was used instead.

**Conclusion**

The current study found evidence of a lack of awareness among parents about common pediatric eye diseases and proper eye care behaviors. Therefore, awareness programs should be targeting both parents with a focus on mothers. The higher the educational level, the higher the chances of health awareness.

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Conflicts of interest
There are no conflicts of interest.

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