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Available online at: http://www.iajps.com ***Research Article***

AMBLYOPIA: PARENTS' AWARENESS AND PERCEPTIONS IN ALHASSA REGION OF SAUDI ARABIA.

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Abstract

Objective: *This study is conducted to measure parents' knowledge and perception to the causes, diagnosis, consequences, and treatment of amblyopia in Alhassa region, Saudi Arabia.*

Methodology: *A cross-sectional study was carried out from 1st September to 22th October 2018 on the parents and companions of children in Al-hassa region, Saudi Arabia. Data was collected from 384 parents using a structured computerized questionnaire designed to fulfill the objectives of the study.*

Results: *The total number of participants was 384 parents, 58.6% were female and 41.4% were male. The amblyopia awareness rate was 40%. Only 38.8% of the participants were able to identify the correct definition of the disease although the majority, about 90%, had a high educational level equal. In addition, refractive errors, congenital cataract, ptosis, corneal problems, and strabismus were anticipated correctly among 23.68%, 11.79%, 9.94%, 8.19% and 7.99% of the parents respectively as common risk factors of amblyopia. Regarding the knowledge of treatment options of amblyopia, 13.71% of the parents think that patching the strong eye is the treatment of amblyopia while using glasses was perceived by 26.43%. Awareness and perception level of amblyopia was significantly increased among parents who had a Master or Ph.D. degree and those who have a family history of amblyopia. Social media and personal experiences of eye diseases represented the main sources of knowledge about amblyopia.*

Conclusion: *This study shows that most of the participants have a mild to moderate knowledge level about amblyopia, however, they need to increase their level of awareness on the causes and treatment options of amblyopia. Social media is a useful resource that can be utilized for this purpose along with the physician's role in educating parents about the guidelines of vision screening in children.*

Keywords: *amblyopia, awareness, children, Alhassa, Saudi Arabia*

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INTRODUCTION:

Amblyopia prevalence worldwide is approximately 1%–5%. [1-4] The World Health Organization (WHO) estimates that there are 19 million children younger than 15 years of age with visual impairment. Uncorrected refractive errors and amblyopia are considered the cause of visual impairment in 12 million of them [5].

A study showed that 2 to 3 % of children suffer from amblyopia and that is why it is considered a public health problem. This percent, which represents the prevalence of amblyopia varies depending on the studied population and the implied definition, as the percent increases up to 5.6% in Germany when amblyopia was defined as visual acuity that is less than or equal to 0.63 logMAR. [6]

Prevalence of amblyopia varies among different regions of Saudi Arabia. In Riyadh, the prevalence is 2.6% among preschool children [7]. In children at school age, the prevalence is 3.9% in Qassim province [8], 1.9% in Abha [9], and 1.6% in AlBaha [10]. A recent study that was done in Dammam showed that amblyopia prevalence among children aged 1–15 years was 9.5% [11]. In Jeddah, the prevalence rate of amblyopia was 1.3% among kindergarten children [12].

Regional studies in Saudi Arabia revealed that the Saudi population has a low level of awareness and inadequate knowledge of amblyopia. They need to be aware and knowledgeable about the disease in order to detect the disease earlier in children and seek medical intervention as soon as possible to improve the outcome of the disease.

Early detection of amblyopia is very important to prevent long-term sequelae. Untreated amblyopia can lead to permanent visual loss and may affect the child socially, psychologically (as reported in amblyopic patients including personal self-image, depression, and anxiety), and academically as it can negatively impact a child's school progression, and later job opportunities [13].

AIM OF THE WORK:

To our knowledge, there are no studies conducted to assess the awareness and knowledge of amblyopia, among parents in Alhassa region.

This study was conducted to measure parents' knowledge and perception of the causes, diagnosis, consequences, and treatment of amblyopia and its relation to refractive errors in Alhassa, Saudi Arabia.

SUBJECTS AND METHODS:

❖ **Study design and sampling:**

• **Study design:** This is a cross-sectional quantitative, descriptive, and analytical study which seeks to answer the study questions about the parents' awareness and perceptions of amblyopia in children in Alhassa region of Saudi Arabia.

- **Study population:** The study population was 408,000, which represent the number of parents in Alhassa region of Saudi Arabia.

Study sample: The study sample consisted of 384 individuals, which is a representative sample of the aforementioned population.

Study tools: A structured questionnaire was distributed to parents and companions of children in a computerized form and a standardized paper was used to collect data in cases where a personal interview was needed.

• **Questionnaire components:** The questionnaire included basic socio-demographic variables such as (age, gender, educational level, place of residence, and family history of eye disease). The second part contained questions related to awareness of amblyopia. Moreover, background knowledge, sources of knowledge, and causes and conditions related to amblyopia were also recorded.

We also assessed the perception about diagnosis, treatment options, and possible consequences of amblyopia. Furthermore, the questionnaire assessed the participants' awareness regarding the importance of parents' role in amblyopia management by using a 5-point Likert-type scale (1= not important at all to 5= very important).

• **Study area:** The study was conducted in Alhassa region of Saudi Arabia

❖ **Study date:** The study was conducted from 1/9/2018 to 22/10/2018.

❖ **Data analysis:** Collected data was analyzed using SPSS statistics software version 22. Numerical variables were presented in the form of mean ± standard deviation and Chi-square test was used to test the significance and to observe and quantify an association between the categorical outcomes and the different variables. In addition, graphs were used as visual aids.

Ethical consideration: The ethical approval was

obtained from the Institutional Review Board (research ethics committee in the College of Medicine at King Faisal University (KFU)).

In addition, an informed consent was included with the questionnaire. The consent clearly explains the purpose of the study and ensures the confidentiality of the survey.

RESULTS:

Parents' demographics

Out of 384 participants who met the inclusion criteria, 58.6% were female and 41.4% were male. The majority were aged either between 31 and 40 years (46.4%) or between 20 and 30 years (26.6%). More than half of the participants (60.4%) had a Bachelor degree and 40.9% were government employees. 43.8% had three to five children. Nearly half of the parents use glasses or contact lenses and 53.6% had a family history of eye problems e.g. refractive errors. (Table I)

Figure I. shows that about one-third of parents (38%) have heard about amblyopia before. Almost half of them (48.5%) had their information regarding amblyopia from social media, followed by personal experience (23.2%) and ophthalmologist visits (13.6%). (Figure II)

Table I: Demographical data (N=384).

Variable	Frequency (N)	Percentage (%)
Gender		
Male	159	41.4
Female	225	58.6
Age		
Less than 20	11	2.9
20-30	102	26.6
31-40	178	46.4
+ 40	93	24.2
Marital status		
Single	26	6.8
Married	334	87.0
Divorce	19	4.9
Widowed	5	1.3
Educational level		
Less than high school	13	3.4
High school diploma	109	28.4
Bachelor	232	60.4
Master or Ph.D.	30	7.8
Occupation		
Unemployed	143	37.2
Government employee	157	40.9
Employee in the private sector	70	18.2
Retired	14	3.6
Number of children		
None	91	23.7
1-2	85	22.1
3-5	168	43.8
More than 5	40	10.4
The age of the youngest child		
Mean= 5.029		SD= 4.3502

Usage of glasses or contact lenses		
Yes	190	49.5
No	194	50.5
Family history of eye problems		
Yes	206	53.6
No	92	24.0
I don't know	86	22.4

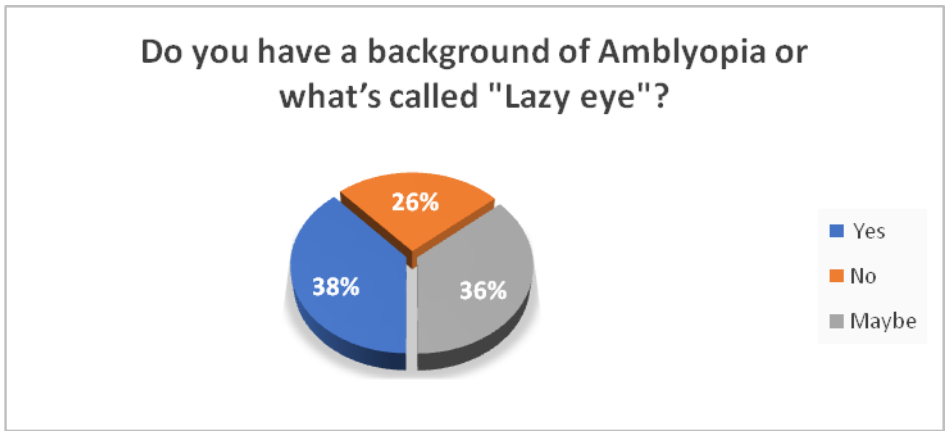

Figure I: Participants background regarding amblyopia.

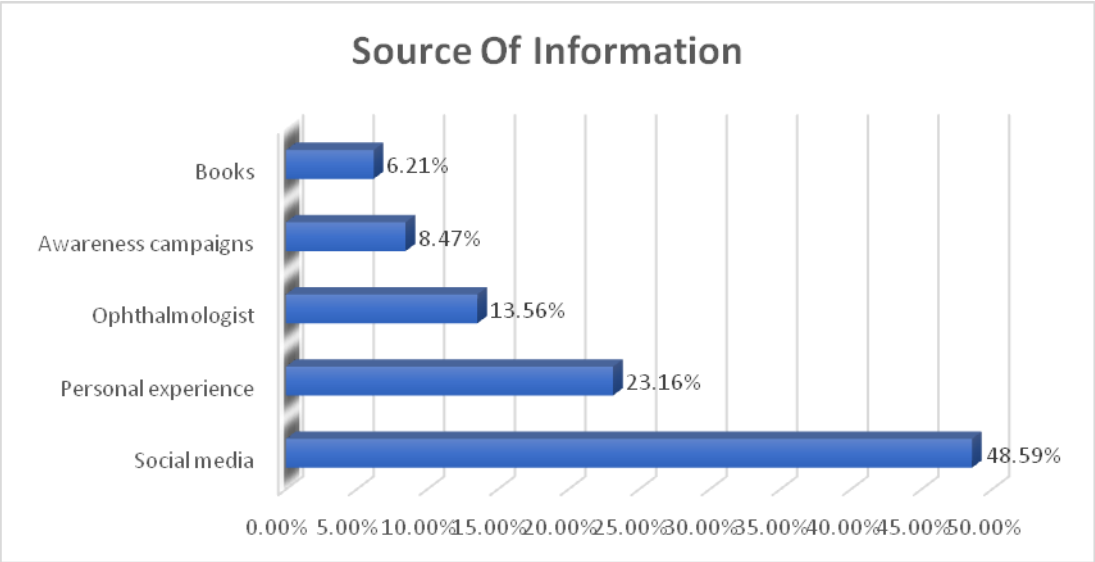

Figure II: Sources of knowledge about amblyopia.

Parental knowledge on amblyopia.

Table II shows parents' knowledge of amblyopia correlated to their demographics. The results revealed a significant difference in many aspects of knowledge between different groups of demographic variables (i.e. gender, age, marital status, educational level, occupation and number of children). High knowledge scores were noted among females, those who are 31-40 years old, married individuals, holders of a master or Ph.D. degree, and those that had 3-5 children.

Table II: Awareness and perception about amblyopia (N=384).

Questions	Correct Answer	Wrong Answer	Don't Know	Significant P - value
Q1: What is the definition of amblyopia? **(Decreased vision in one or both eyes due to disconnection between the eye and brain in childhood.)**	149 (38.8%)	235 (61.2%)	0	• Gender (P=0.025) • Age (P= 0.000) • Occupation (P= 0.037) • Number of children (P= 0.003)
Q2: Is it possible to detect amblyopia with the naked eye? **(No.)**	101 (26.3%)	187 (48.7%)	96 (25%)	• Gender (P=0.000) • Age =(P=0.000) • Social status (p=0.034) • Educational level (P= 0.004) • Occupation (P= 0.000) • Number of children (P=0.009)
Q3: Amblyopia diagnosis requires specific investigations **(Yes.)**	309 (80.5%)	18 (4.7%)	54(14.2%)	
Q4: Individuals that are more prone to amblyopia are? **(Children.)**	194 (50%)	141 (36.7%)	49 (12.8%)	• Age (P=0.005) • Educational level (P= 0.002) • Occupation (P= 0.000)
Q5: Cause of amblyopia? **(Visual acuity problems.)**	146 (38%)	169 (44%)	69 (18%)	• Gender (P= 0.035) • Age (P= 0.000) • Number of children (P=0.010)
Q6: Amblyopia is a curable disease? **(Yes.)**	189 (49.2%)	67 (17.4%)	128 (33.3%)	• Gender (P=0.002) • Age (P= 0.001) • Social Status (P= 0.001) • Educational level (P= 0.000) • Occupation (P= 0.009)
Q7: What is the impact of amblyopia on vision? **(Decrease vision and permanent vision loss.)**	150 (39.1%)	172 (44.8%)	62 (16.1%)	• Gender (P= 0.007) • Educational level (P= 0.000) • Occupation (P= 0.003) • Number of children (P=0.001)
Q8: Can we treat amblyopia after the age of 18 years? **(No.)**	147 (38.3%)	121 (31.5%)	116 (30.2%)	• Gender (P=0.002) • Age (P= 0.003) • Educational level (P= 0.003) • Number of children (P=0.001)

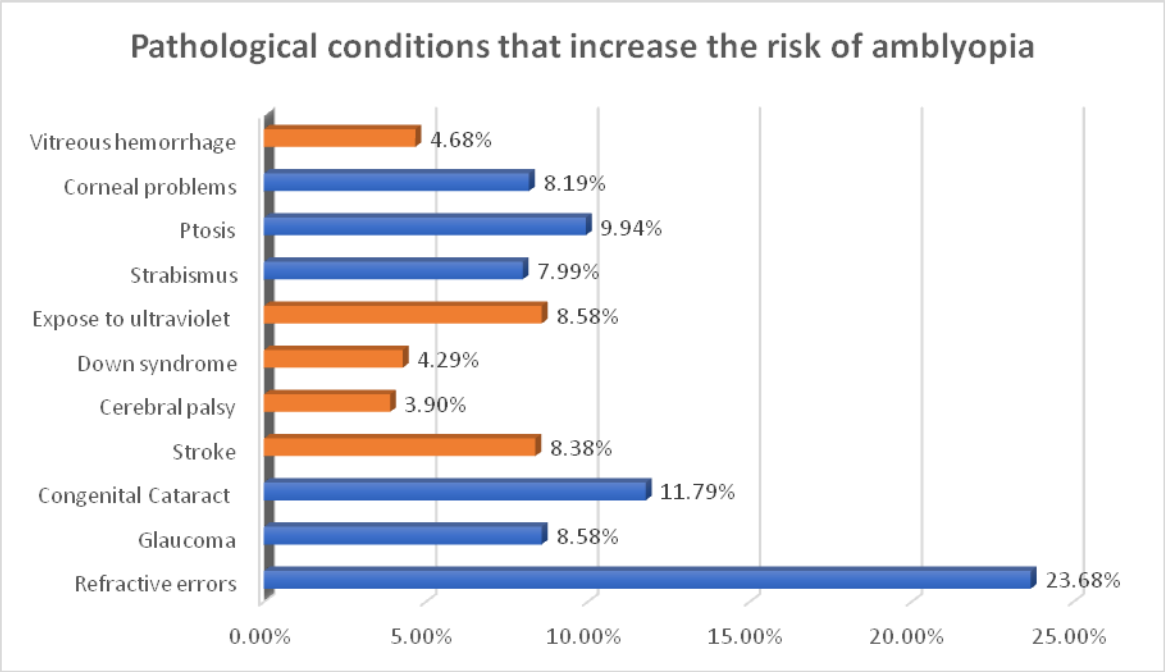

Figure III: Knowledge about amblyopia risk factors and etiologies.

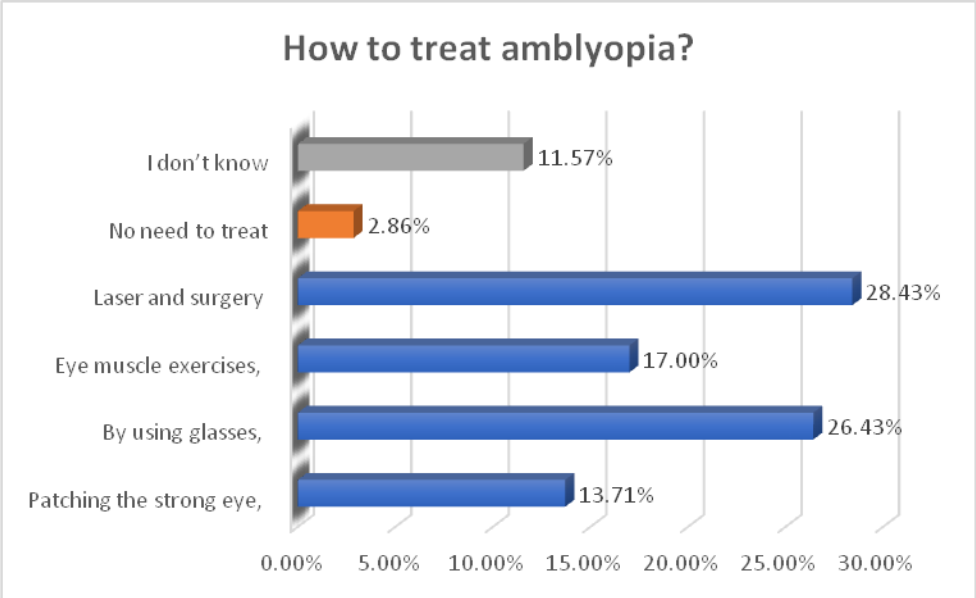

Figure IV: Knowledge about amblyopia treatment.

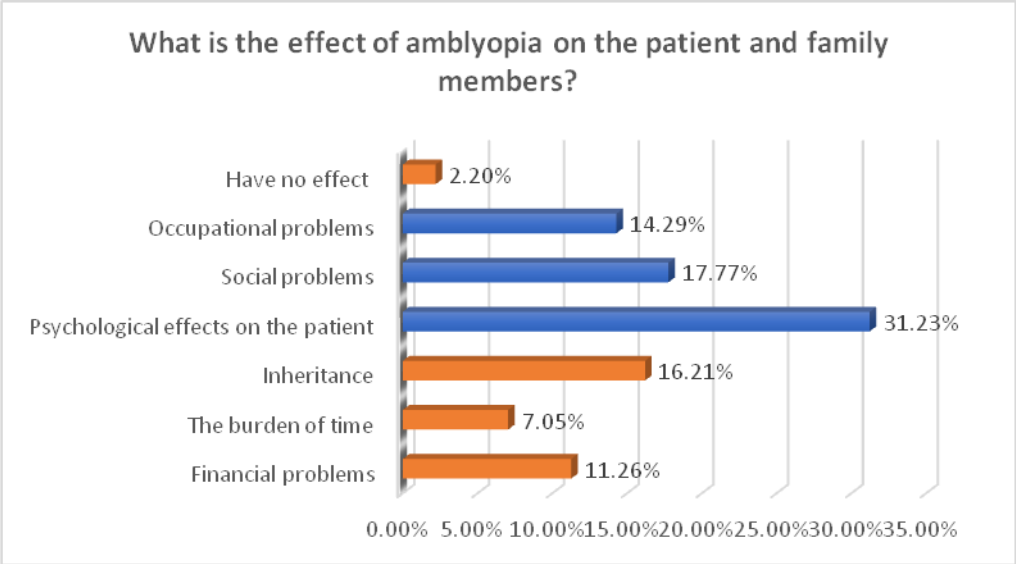

Figure V: Knowledge about the impact of amblyopia**.**

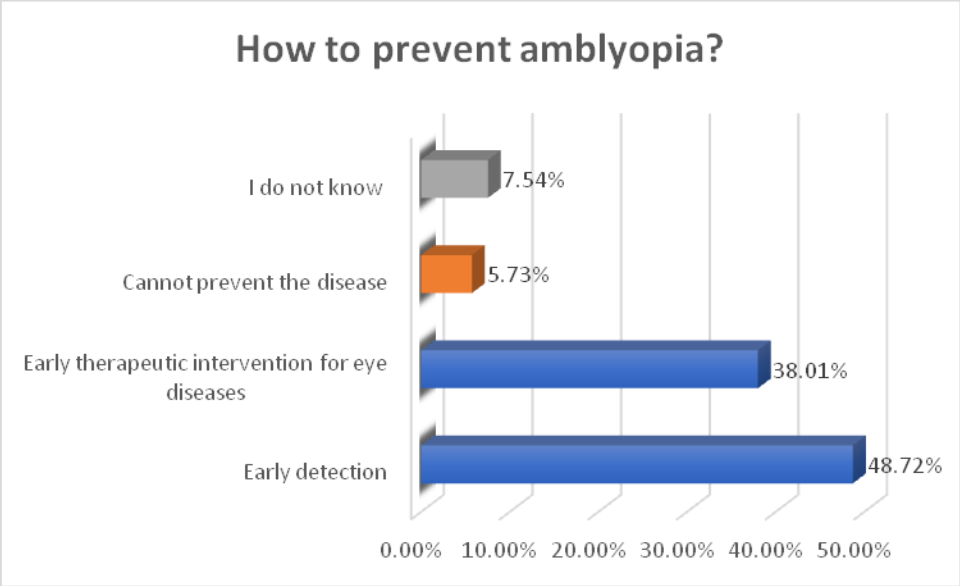

Figure VI: Knowledge about amblyopia prevention.

Parents' attitude towards amblyopia

Parental attitudes towards amblyopia are shown in Table III. Most parents were aware about the role of parents in amblyopia detection and prevention.

There is a significant association between parents' educational level and different statements on the role of parents in treating amblyopia. The majority of participants who strongly agreed with statements on attitude had an educational level that is Master or Ph.D. degree.

Table III: Association between the role of parents in treating amblyopia and parents' educational level.

Educational level	Very Important	Important	Somewhat important	Not important	Not important at all	P - Value
Prevention the disease						
Less than high school	7 (53.8%)	4 (30.8%)	2 (15.4%)	0 (0%)	0 (0%)	**0.001***
High school diploma	92 (84.4%)	16 (14.7%)	1 (0.9%)	0 (0%)	0 (0%)	
Bachelor	206 (88.8%)	23 (9.9%)	2 (0.9%)	1 (0.4%)	0 (0%)	
Master or Ph.D.	26 (86.2%)	4 (13.3%)	0 (0%)	0 (0%)	0 (0%)	
Total	331 (86.7%)	47 (12.2%)	5 (1.3%)	1 (0.3%)	0 (0%)	
Early detection of the disease						
Less than high school	8 (61.5%)	5 (38.5%)	0 (0%)	0 (0%)	0 (0%)	**0.211**
High school diploma	74 (67.9%)	30 (27.5%)	1 (0.9%)	3 (2.8%)	1 (0.9%)	
Bachelor	189 (81.5%)	37 (15.9%)	4 (1.7%)	2 (0.9%)	0 (0%)	
Master or Ph.D.	23 (76.7%)	6 (20%)	1 (3.3%)	0 (0%)	0 (0%)	
Total	294 (76.6%)	78 (20.3%)	6 (1.6%)	5 (1.3%)	1 (0.3%)	
Knowing various methods of treatment						
Less than high school	4 (30.8%)	2 (15.4%)	1 (7.7%)	6 (46.2%)	0 (0%)	**0.000***
High school diploma	61 (56%)	31 (28.4%)	6 (5.5%)	11 (10.1%)	0 (0%)	
Bachelor	182 (78.4%)	39 (16.7%)	10 (4.3%)	1 (0.4%)	0 (0%)	
Master or Ph.D.	25 (83.3%)	5 (16.7%)	0 (0%)	0 (0%)	0 (0%)	
Total	272 (70.8%)	77 (20.1%)	17 (4.4%)	18 (4.7%)	0 (0%)	
Commitment to treatment						
Less than high school	2 (15.4%)	9 (69.2%)	2 (15.4%)	0 (0%)	0 (0%)	**0.000***
High school diploma	56 (51.4%)	35 (32.1%)	16 (14.7%)	2 (1.8%)	0 (0%)	

Bachelor	181 (78%)	46 (19.8%)	4 (1.7%)	1 (0.4%)	0 (0%)	
Master or Ph.D.	26 (88.7%)	4 (13.3%)	0 (0%)	0 (0%)	0 (0%)	
Total	265 (69%)	94 (24.5%)	22 (5.7%)	3 (0.8%)	0 (0%)	
Child's follow-up with an ophthalmologist						
Less than high school	3 (23.1%)	1 (7.7%)	1 (7.7%)	8 (61.5%)	0 (0%)	**0.000***
High school diploma	46 (42.2%)	33 (30.3%)	16 (14.7%)	14 (12.8%)	0 (0%)	
Bachelor	177 (76.3%)	47 (20.3%)	6 (2.6%)	2 (0.9%)	0 (0%)	
Master or Ph.D.	24 (80%)	5 (16.7%)	1 (3.3%	0 (0%)	0 (0%)	
Total	250 (65.1%)	86 (22.4%)	24 (6.3%)	24 (6.3%)	0 (0%)	
Provision of social and psychological support						
Less than high school	2 (15.4%)	4 (30.8%)	5 (38.5%)	2 (15.4%)	0 (0%)	**0.000***
High school diploma	49 (45%)	39 (35.8%)	14 (12.8%)	7 (6.4%)	0 (0%)	
Bachelor	176 (75.9%)	46 (19.8%)	10 (4.3%)	0 (0%)	0 (0%)	
Master or Ph.D.	26 (86.7%)	3 (10%)	1 (3.3%)	0 (0%)	0 (0%)	
Total	253 (65.9%)	92 (24%)	30 (7.8%)	9 (2.3%)	0 (0%)	

DISCUSSION:

Amblyopia is a condition that needs to be detected and treated early for better outcomes. Therefore, a child's parents have an important role for this purpose and in the compliance to treatment. Limited public understanding of this eye condition can affect the family quality of life. Thus, through this study we aimed to determine and reveal the knowledge and awareness level in Alhassa parents' population about amblyopia.

In this study, the percentage of knowledge was equivalent to 40%, which means that Alhassa's population has a low to moderate awareness level about amblyopia. Another local study, conducted in Jeddah, assessing the awareness and perceptions of amblyopia among attendees of paediatric and ophthalmology clinics showed an awareness level about amblyopia that is 49.7%. [14]

Only 38.8% of the participants were able to identify the correct definition of the disease although the majority of them, about 90%, had high educational level equals to high school and beyond. On the other hand, the participants correctly anticipated the most common risk factors of amblyopia (i.e. refractive errors, ptosis, and strabismus), when they were asked to choose in a multiple-choice question.

From an international standpoint, a low level of amblyopia awareness is evident in different parts of the world too. A study conducted in India assessing the level of parents' awareness of children-eye conditions revealed a poor level of knowledge and awareness. They assessed parents after attending a focus group, and their results showed that only one parent out of 25 was aware about amblyopia. [15]

Our study showed that there is a good level of amblyopia awareness in parents who have a family history or personal experience with eye problems especially problems that are associated with

childhood regardless of the educational level. This finding is similar to what has been reported by Ebeigbe et al in which they found that in Nigerian parents only 2.9% know about amblyopia and this was positively associated with having a family history of the disease. [16]

Social media and personal experiences with eye diseases represented the main sources of knowledge about amblyopia. Nowadays, social media is considered a primary and dominant source that contributes to enrichment of peoples' information. This is considered a good opportunity that can be used to increase the awareness about this disease. Educational videos and articles can be posted on popular social media platforms through which information can reach a large segment of the population. Another method to increase awareness can be through organizing campaigns targeting public places such as schools, malls, hospitals, and universities.

The results of our study will help eye care professionals in planning awareness programs among parents, especially for amblyopia and its harmful effects.

Strengths of the study

The questionnaires were self-administered allowing the respondents to answer the questions independently. Furthermore, each individual in the targeted population had an equal chance of being chosen to participate which decreased the bias. Finally, a large sample size supports the power of the results.

Limitations of the study

This study has some limitations, it was conducted in only one city in Saudi Arabia; therefore, the obtained results cannot be generalized to the population all over the country. Future research on the topic will require recruitment of indiviudals from different areas in the country.

The questionnaire was self-administered, making it liable for a biased reporting by the parents. Most of the data collected relied on the population memory which may also lead to reporting bias. Furthermore, as there were multiple-choice questions in the questionnaire, there is a possibility that the correct answer was chosen by chance.

CONCLUSION:

In conclusion, most of the participants have low to moderate level of knowledge about amblyopia. A planned educational program is needed to increase the level of knowledge among the studied population. Social media is a useful resource that can be utilized to achieve such goal. The educational level of the population needs to be taken into consideration when the program is planned. Awareness programs incorporated into school vision-screening programs and popularized through media infotainment programs may lead to better eye care seeking in the community.

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