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RESEARCH ARTICLE

AMBLYOPIA WITH RESPECT TO PARENTS' AWARENESS AND PERCEPTIONS IN AL-JOUF REGION OF SAUDI ARABIA

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Abstract

Background/Objective: Amblyopia; also known as lazy eye is an abnormal condition which is associated with decrease in an eye vision. Parents can play an important role in the management of amblyopia in their children, if they have correct information regarding the disease. The present study was conducted to check parents' awareness and perception regarding the treatment, diagnosis, causes and consequences of amblyopia in Al-Jouf region of Saudi Arabia.

Methodology: A questionnairebased study was conducted in Al-Jouf region of Saudi Arabia to fulfill the objectives of the study. A total of 429 parents aged between 19-45 years were included in the study. Out of 429 parents, 110 were males and 312 were females. Data obtained was analyzed both qualitatively and in percentages.

Results: Majority of participants were of the opinion that there is no treatment for amblyopia 280 [66.4%], early treatment leads to better outcomes 369 [87.4%], can be best treated at young age 326 [77.3%] and condition worsens if left untreated 324 [76.8%]. It was observedthat parents occupation and source of knowledge regarding amblyopia is statistically significant with the amblyopia (p-value less than 0.05).

Conclusion: In this study we reported that most of the parents are having mild to moderate level of knowledge regarding amblyopia. Furthermore, there is need for parents to increase their awareness level regarding the treatment options and causes of amblyopia.Social media has emerged as an important resource of information regarding amblyopia.

Introduction:-

Amblyopia is a form of functional vision loss that results in decrease in the best possible visual acuity (VA) and is an unidentifiable ocular pathology. The reduction of visual acuity and contrast sensitivity in amblyopia is caused by abnormal visual cortex stimulation in early childhood without obvious structural or pathological abnormalities [1]. Prevalence of Amblyopia is approximately 1-5% worldwide [2][3][4]. According to the World Health Organization (WHO) there are around 19 million cases of children (>15 years of age) with visual impairment.Among them, around 12 million children are suffering from amblyopia and other types of refractive errors (uncorrected ones)[5]. Amblyopia is considered to be the public health problem, as there are reports that show2 to 3% of children suffer

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from amblyopia[6]. This percentage varies between different populations and in Germany has been reported to be 5.6% [7].

In Saudi Arabia, it has been reported that the prevalence of amblyopia varies across different regions. For example, in Riyadh, the prevalence of amblyopia among preschool children is 2.6%[8]and in Qassim province, its prevalence among school age children is3.9% [2]. Similarly, the prevalence of amblyopia in the Abha region is 1.9% [9] and in the Al-Baha region, the prevalence is 0.6% [10]. Recently, it has been reported that in Dammam region, the prevalence of amblyopia among children aged (1–15 years) is 9.5%[11] and in Jeddah, the prevalence of 1.3% was found among children (kindergarten ones) [12].

Earlier studies had reported that in Saudi Arabia, there is low awareness and incomplete knowledge among people regarding amblyopia. There is an urgent need to spread awareness and knowledge regarding amblyopia, so to detect the disease in an earlier stage and seek possible medical interventions. It has been reported that untreated amblyopia can be associated with permanent visual loss and therefore can affect a child in a number of ways like socially, academically and psychologically[13]. The present study was therefore carried out to check parents' awareness and perception regarding the treatment, diagnosis, causes and consequences of amblyopia in Al-Jouf region of Saudi Arabia.

Methodology:-

The present study is based on cross-sectional questionnaire data analysis.Collection of data was carried out using a questionnaire based approach. The survey questions were designed with reference to earlier published studies[2][4][10].Two pediatric ophthalmologists helped us for reviewing the questionnaire with respect to content and face validation.

The questionnaire was divided into 6 parts, which includes(a) demographic data, (b) awareness on detection and diagnosis of amblyopia; (c)knowledge about the definition, possible etiologies, treatment options, and the source of knowledge of amblyopia; (d) perception and attitude about complications and treatment of amblyopia; (e) perception and attitude about amblyopia complications and impact; (f) awareness of the role of parents in prevention and early detection, diagnosis, treatment efficacy, compliance with treatment, follow-up, psychological and social support of the affected child.

The Amblyopia knowledge score (AKS) was calculated as:total number of answers (correct ones) for questions with respect to etiology (14 items), definition (10 items) and treatment options of amblyopia (6 items).

Ethical approval:

The study was approved by the Research Ethics Committee of Qurayyat Health Affairs (on 15july2020). In addition, an informed consent was electronically obtained from all participants.The consent clearly explains the purpose of the study and ensures the confidentiality of the survey.

Inclusion criteria:

All parents of children below 14 years of age living in the Al-Jouf region of Saudi Arabia were included.

Exclusion criteria:

Parents of children with multiple disabilities or special needs.

Statistical analysis:

All the statistical analysis wascarried out using SPSS statistics software version 22.Descriptive statistics use used to fill participants' characteristics and answers to the questionnaire parts. Categorical variables were presented as frequency and percentage and continuous variables as mean ± standard deviation (SD). Mann-Whitney and Kruskal-Wallis tests were used for data analysis and a p-value of <0.05 was considered significance.

Results:-

In the present study, a total of 429 persons received the questionnaire and only 422[98.36%]completed it.Table 1 shows characteristics of the participants. A total of 312 [74%] were females and 110[26%] were males. So far as marital status of the participants is concerned, 380[90.3%] were married, 31[8.1%] were divorced and only

11[1.6%] were widowed. Out of total 422 participants, 180 [42.7%] of parents aged between 31-40 years, 129[30.6%] were between 20-30 years, 92[21.7%] were above 40, while the least number of participants were below 20 years 21 [5%]. With respect to the number of children, the participants reported the following information, 93 [22%] having less than 2 children, 93 [22%] having 2-3 children, 124[29%] having3-5 children and 112[27%] having more than 5 children. The education level was different among the parents with 326 [77.4%] had a university degree, or above, 78 [18.3%] had a middle/secondary school education and only 18 [4.3%]were illiterates. So far as occupation of participants is concerned, 226[53.6%] were employed, 170[40.2%] were unemployed while as 26 [6.2%] of participants were retired ones. Most of the participants report family history of eye diseases 310 [73.5%] and while as 112[26.5%] disagreewith family history of eye diseases.

Next, participants were questioned about their awareness regarding amblyopia and they were offered with different options (as shown in table 2). Out of 422 participants, 189 [44.8%] had earlier heard about the disease amblyopia, while as equal no. of participants 189 [44.8%] had never heard about amblyopia and 44 [10.4%] of participants did not answer the question. On asking about detection of Amblyopia by naked eye, 103 [24.4%] agree with it, 129 [30.6%] did not agree, while as majority of participants 190 [45.0%] did not answer the question. On asking the parents about the diagnosis of Amblyopia by general pediatric or family doctor, 158 [37.4%]agree with it, 122 [28.9%] participants did not agree and 142 [33.7%] parents did not answer the question. When asked about the diagnosis of Amblyopia only be an eye specialist, a majority of participants 381 [90.3%]agree with it, 4 [0.9%] did not agree and 37 [8.8%] did not answer the question. On asked, who are exposed to amblyopia? 148 [35.1%] replied with children, 27 [6.4%] replied with adults, while as majority of participants 247 [58.5%] replied both.

With regard to the participants perception about the amblyopia treatment outcomes, about amblyopia complications and about parents role in amblyopia, different answers were received from the participants [as shown in table 3 (I), 3 (II) and 3(II)].Regarding treatment outcome [table 3 (I)], majority of participants replied as: there is no treatment for amblyopia280 [66.4%],early treatment leads to better outcomes 369 [87.4%], Amblyopia can be best treated at young age 326 [77.3%], Amblyopia worsens if left untreated 324 [76.8%] and the cause should always be treated to prevent relapse324 [67.8%]. Regarding amblyopia complications [table 3 (II)], majority of participants replied as: 192 [45.5%] strongly agree with decreased visual acuity, 140 [33.2%] agree with double vision, 123 [29.1%] somewhat agree about blindness, 151 [35.8%] agree with disability, 148 [35.1%] strongly agree with stigmatization, 149 [35.3%] agree with impaired quality of life, 119 [28.2%] agree with negative impact on family, 144 [34.1%] strongly agree with school failure and 102 [24.2%] agree with economic burden on family. Similarly, with respect to parent's role in amblyopia [table 3 (III)], majority of participants replied as: parents are very important in prevention of Amblyopia 241 [56.2%],early detection 295 [68.8%], diagnosis 250 [58.3%], treatment efficacy 265 [61.8%], treatment compliance 295 [68.8%], follow-up 303 [70.6%], social support 260[60.6%] and psychological support 287 [66.9%].

Factors associated with knowledge about amblyopia are discussed in table 4. It was observed that parents occupation and source of knowledge regarding amblyopia is statistically significant with the amblyopia (p-value less than 0.05).

Table 1:- Characteristics of participants (N= 422).

Characteristics	Frequency	Percentage (%)
Age		
< 20 years old	21	5.0
21-30 years old	129	30.6
31-40 years old	180	42.7
> 40 years old	92	21.7
Gender		
Male	110	26.0
Female	312	74.0
Marital status		
Married	380	90.3
Divorced	31	8.1
Widow	11	1.6
Number of children		
< 2	93	22.0
2-3	93	22.0

3-5	124	29.0
> 5	112	27.0
Occupation		
Unemployed	170	40.2
Employed	226	53.6
Retired	26	6.2
Educational Level		
Illiterate	18	4.3
Up to middle/secondary school	78	18.3
University or above	326	77.4
Family History of eye diseases		
Yes	310	73.5
No	112	26.5

Table 2:- Awareness of participant about amblyopia (N= 422).

	Frequency	Percentage(%)
Have you ever heard of amblyopia?		
Yes	189	44.8
No	189	44.8
I don't know	44	10.4
Amblyopia can be detected by naked eye.		
Yes	103	24.4
No	129	30.6
I don't know	190	45.0
Amblyopia can be diagnosed by General Pediatric or family doctor.		
Yes	158	37.4
No	122	28.9
I don't know	142	33.7
Amblyopia can only be diagnosed by an eye specialist		
Yes	381	90.3
No	4	0.9
I don't know	37	8.8
Who are exposed to amblyopia?		
Children	148	35.1
Adults	27	6.4
Both	247	58.5

Table 3 (I):- Perception of amblyopia treatment outcomes (N= 422).

Perception about treatment outcomes	No (False)		Yes (True)		I don't know	
	N	%	N	%	N	%
There is no treatment for amblyopia	9	2.1	280	66.4	133	31.5
Early treatment leads to better outcomes	6	1.4	369	87.4	47	11.1
Amblyopia is best treated at young age	32	7.6	326	77.3	64	15.2
Amblyopia worsens if left untreated	25	5.9	324	76.8	73	17.3
Cause should always be treated to prevent relapse	22	5.2	324	67.8	76	18.0

Table 3 (II): Perception of amblyopia complications (N= 422).

Perception about Amblyopia complications and impact	Strongly disagree		Disagree		Somewhat agree		Agree		Strongly agree	
	N	%	N	%	N	%	N	%	N	%
Decreased visual acuity	1	0.2	14	3.3	67	15.9	148	35.1	192	45.5
Double vision	7	1.7	48	11.4	100	23.7	140	33.2	127	30.1
Blindness	17	4.0	102	24.2	123	29.1	88	20.9	92	21.8

Disability	7	1.7	42	10.0	112	26.5	151	35.8	110	26.1
Stigmatization	7	1.7	40	9.5	90	21.3	137	32.5	148	35.1
Impaired quality of life	4	0.9	41	9.7	101	23.9	149	35.3	127	30.1
Negative impact on family	19	4.5	84	19.9	104	24.6	119	28.2	96	22.7
School failure	8	1.9	30	7.1	104	24.6	136	32.2	144	34.1
Economic burden on family	23	5.5	97	23.0	101	23.9	102	24.2	99	23.5

Table 3 (III):- Parents role in amblyopia (N= 422).

Statement:Parents play role in	Not important at all		Not important		Somewhat important		Important		Very important	
	N	%	N	%	N	%	N	%	N	%
Amblyopia prevention	13	3.0	21	4.9	54	12.6	100	23.3	241	56.2
Early detection	9	2.1	6	1.4	26	6.1	93	21.7	295	68.8
Diagnosis	12	2.8	15	3.5	37	8.6	115	26.8	250	58.3
Treatment efficacy	8	1.9	5	1.2	41	9.6	110	25.6	265	61.8
Treatment compliance	7	1.6	2	0.5	28	6.5	97	22.6	295	68.8
Follow-up	7	1.6	2	0.5	22	5.1	95	22.1	303	70.6
Social support	8	1.9	9	2.1	36	8.4	116	27.0	260	60.6
Psychological support	7	1.6	4	0.9	30	7.0	101	23.5	287	66.9

Table 4:- Factors associate with knowledge about amblyopia.

	AKS (median, Q1, Q3)	P
Age		
< 20 years old	8,3,10	0.187
21-30 years old	7,4,10	
31-40 years old	7,4,10	
> 40 years old	8,5,10.75	
Gender		
Male	7,5,10	0.207
Female	7,4,10	
Marital status		
Married	7,5,80	0.386
Divorced	8, 6.75,81.25	
Widow	9,6,89	
Number of children		
< 2	7,5,10	0.278
2-3	6,4,9.5	
3-5	7,5,10.5	
> 5	7,5,10	
Occupation		
Unemployed	7,4,10.25	0.024
Employed	7,4,9	
Retired	8.5,7,10.25	
Educational Level		
Illiterate	9,7.5,13	0.104
Up to middle/secondary school	7,4.5,9	
University or above	7,4.75,10	
Family History		
Yes	7,5,11	0.175
No	7,4,9.25	
Source of knowledge		
Relatives/ Friends		
Yes	7,5,9	0.001**
No	6,4,10	

Internet/ Social media Yes No	 8,5,11 6,4,9	 0.000
Doctor Yes No	 8,5,12 7,4,9	 0.01
Awareness campaigns Yes No	 9,6,13 7,4,9	 0.000**
Books Yes No	 12,7,17 7,4,9	 0.000

*P <.05 declared for statistical significance. Non- parametric tests. Kruskal-Wallis and Mann-Whitney were used; Q1: 25th percentile. Q3: 75th percentile; AKS: amblyopia knowledge score.

Discussion:-

Amblyopia:a condition that needs an early intervention and therefore should be detected in an early age for better outcome. A child's parents therefore have a crucial role for this purpose and in the treatment compliance. Less awareness and knowledge of this eye condition can affect one's family quality of life[14][15]. Therefore, the present study aims to determine awareness and knowledgeof amblyopia in the parent population of the Al-Jouf region.

In the current study, it was found that the percentage of knowledge regarding amblyopia among parents was 44.4%. It means that Al-Jouf region population has moderate awareness level about amblyopia, a similar type of data has been observed in earlier studies in Saudi Arabia[16].Another study carried out in Jeddah, evaluated the knowledge among the Saudi population regarding common eye diseases and found that only 10% of the participants had heard of amblyopia [17]. Study carried out in different regions of Saudi Arabia population showedalmost complete lack of awareness about amblyopia [16].Furthermore, earlier studies in different countries had reported a low awareness of amblyopia among the population[18][19][20]. It should be noted here that poor understanding regarding eye errors and critical care has been reported worldwide[21].

Only 44.4% of the participants were able to identifythe correct definition of the disease although the majority of them, about 90%, had high educational level (university or above). This trend has been reported earlier also[22][16].

Our study showed that there is good level of awareness in parents (about amblyopia) who have a family history or personal experience witheye problems especially problems that are associated withchildhood regardless of the educational level. These types of results had already been reported in Saudi population [16].

With regarding to the participantperception about the amblyopia treatment outcomes, amblyopia complications and their role in amblyopia, a diverse view was obtained. Majority of parents (66.4%) reported that there is no treatment for amblyopia, early treatment leads to better outcomes[87.4%], can be best treated at young age [77.3%] and worsens if left untreated [76.8%]. Although amblyopia is treatable at early stage, but the target population was unaware of this fact [23]. As reports by our study, early intervention to amblyopia can lead to better outcome [24].

Regarding amblyopia complications, majority of participants in our study reported that amblyopia can result in decreased visual acuity[45.5%], agree with double vision [33.2%], agree with disability [35.8%], strongly agree with stigmatization[35.1%], agree with the impaired quality of life[35.3%], agree with negative impact on family [28.2%], strongly agree with school failure [34.1%] and agree with economic burden on family [24.2%].

Similarly, with respect to the parent's role in amblyopia, our study found that the majority of participants accept that their roles very important in prevention of Amblyopia [56.2%], early detection[68.8%], diagnosis [58.3%], treatment efficacy[61.8%], treatment compliance [68.8%], follow-up [70.6%], social support [60.6%] and psychological support[66.9%].Social media has emerged as a main source of information about eye diseases like amblyopia[25]. Nowadays, use of social media for disease awareness can be used a good opportunity to curb the disease early.Research articles and educational videos can be posted and circulated on popular social media platforms, so to

reach out at larger population[24]. The results of our present study will be quite helpful for eye care professionals for planning awareness programs among parents, especially for amblyopia.

Conclusion:-

In conclusion, most of the parents still have low or moderate level of knowledge about amblyopia. A planned strategy is needed in Saudi Arabia to increase the level of awareness and knowledge among the target population. Social media can be used as a useful resource to achieve this goal. It is important to take the educational level of the population into consideration before such program is planned. Awareness programs must be incorporated into school vision-screening programs and makes them popularize via media infotainment programs can lead to better eye care seeking in the community.

Conflict of interest:

Authors reported no potential conflict of interest.

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