Awareness, perceptions and knowledge of strabismus among Ha'il population, KSA

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Abstract

Introduction: Strabismus is an ocular condition affecting the alignment of the visual axis, whether caused by abnormalities in binocular vision or anomalies of neuromuscular control of ocular motility. Strabismus is a fairly widespread disorder worldwide, especially among new-borns, and can cause loss of vision if untreated. The current study aimed to assess the knowledge level of strabismus in many aspects among the community and spread awareness in the region in the future, as well as to encourage establishment of programs in the local hospital for a regular eye examination.

Material: 411 adult persons who lived in Ha'il region, aged 18 years and more, were the material of the present study. They were asked to answer a previously designed electronic self-administered questionnaire. Ethical informed consent was taken from each participant.

Methodology: A cross-sectional study, conducted in Hail, KSA from May 15, 2020, till October 2020 was carried out using the SPSS program.

Results: Most of the participants were Saudi (97%), female (69.4%), and most of them were highly educated; 76.7% knew the definition of squint, 56% knew at least one cause of strabismus, 43% knew the symptoms and the main source of information was family /friends in 27.5%.

Key words: Strabismus, squint, awareness, Hail, KSA.

Introduction

Strabismus is an ocular condition affecting the alignment of the visual axis, whether caused by abnormalities in binocular vision or anomalies of neuromuscular control of ocular motility [1]. Strabismus is a common childhood ocular disability with prevalence ranging between 0.13%–4.7% [2].

The evident misalignment of the eyes frequently results in defective binocular depth perception and amblyopia. The objective in the treatment of strabismus is to realign the visual axes to eradicate diplopia, restore binocular vision, enhance the visual field, and provide a normal appearance. Besides these functional effects, the psychosocial impact of strabismus on both the parents and children is variable but definite and depends on the socio-cultural-economic milieu [3].

Individuals with strabismus experience a negative influence on their lives and report a problem with self-image, personal relationships, and education performance. The parents of such children are faced with an enormous decision of planning the course of management based on differing views in the social environment [4].

Strabismus may harm family relationships [5]. Also, delayed development (e.g., reaching milestones such as first walking and using single words) and difficulty with tasks involving visual perception have been found in young children with strabismus [6]. Children with strabismus frequently acquire amblyopia and diminished stereopsis. Early recognition and management of strabismic children can inhibit amblyopia. The strabismus child with amblyopia has a significantly higher risk of becoming blind by losing vision in the non-amblyopic eye, due to trauma or disease [7].

''Crossed eye'' or strabismus is a fairly widespread disorder universally especially among new-borns. Horwood et al, 2004 [8] reported a prevalence of about 73% in one-month-old babies, reducing to 50% in two-month-old babies and virtually disappearing in normal four-month olds and the prevalence of squint in 5 year olds is said to be about 5%. A study was done among primary school children in Ilorin, Nigeria which recorded a prevalence of 0.14% [9]. Previous studies in Saudi Arabia found that the prevalence of amblyopia in Saudi Arabia varies by region: 2.6% in Riyadh, 3.9% in Qassim province [10].

Regarding the awareness about strabismus in Saudi Arabia; a previous study was done by Alzuhairy et al., 2019 [11] who found that parents of children with strabismus presenting to a tertiary care eye hospital had good knowledge about the signs, symptoms, and management of strabismus. Addressing barriers perceived by parents may improve early presentation rates of children with strabismus allowing timely management. On the other hand, another study was published at almost the same time by Alsaqr & Masmali, 2019 [10] which claimed that there was a lack of amblyopia awareness among the Saudi community. This shortage of knowledge can lead to visual harm of children. The current study aimed to know the knowledge level of strabismus in many aspects among the community and spread awareness in the region in the future, as well as , to encourage establishment of programs in the local hospital for a regular eye examination.

Material: 411 adult persons who lived in Ha'il region, aged 18 years and more, were the material of the present study. They were asked to answer a previously designed electronic self-administered questionnaire. Ethical informed consent was taken from each participant.

Methodology

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Data analysis

Data analysis was performed using a computer software SPSS version 23. SPS was employed to make cross-tabulation amongst different variables, as well as to determine the statistical significance (if any), and Chi-square test (P value <0.5, was considered significant).

Ethical consent

Ethical approval for this study was obtained from the ethical committee of the University of Hail. All measures included in the current study comply with ethical standards of the 1964 Helsinki declaration, as well as, its related subsequent modifications. Ethical approval number: 20455\5\42 dated 16\4\1442 H.

Results

Figure 1: Distribution of participants according to age group

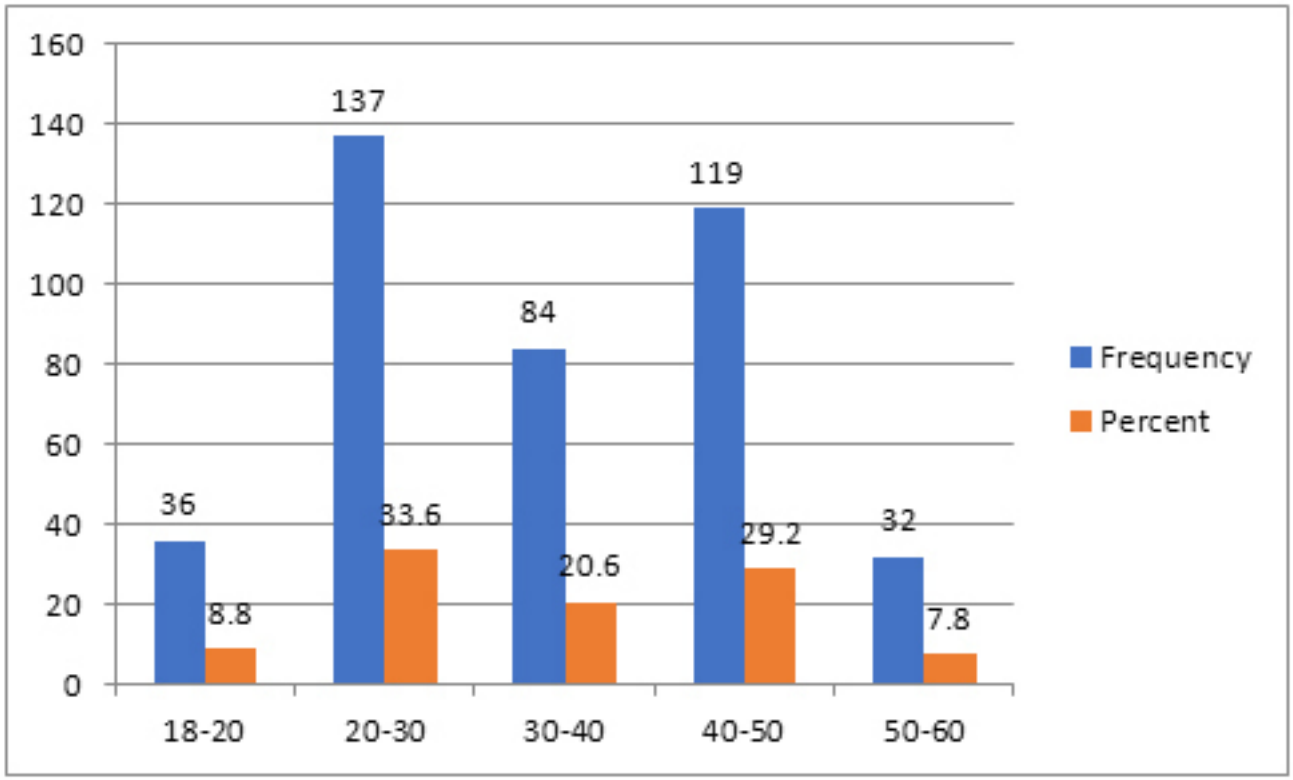


Figure 2: Distribution of participants according to nationality

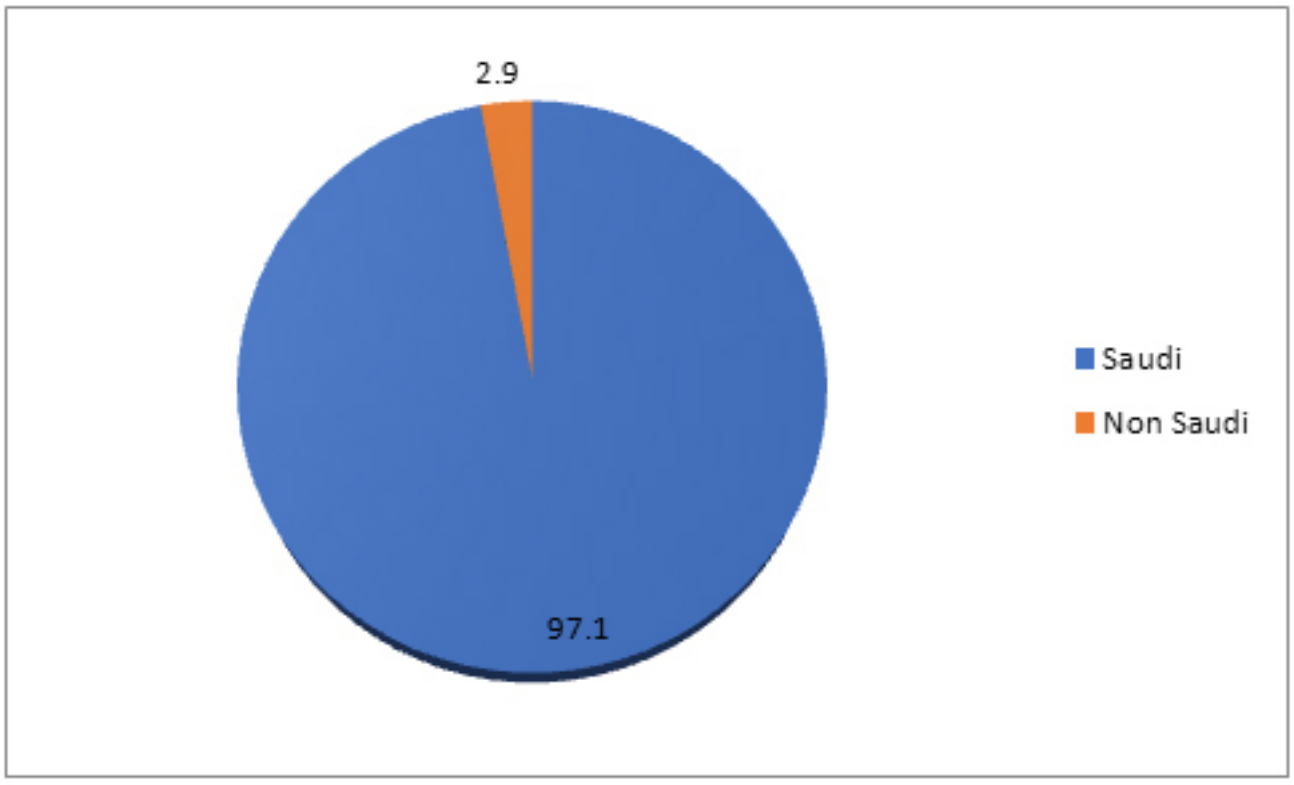


Figure 3: Distribution of participants according to gender

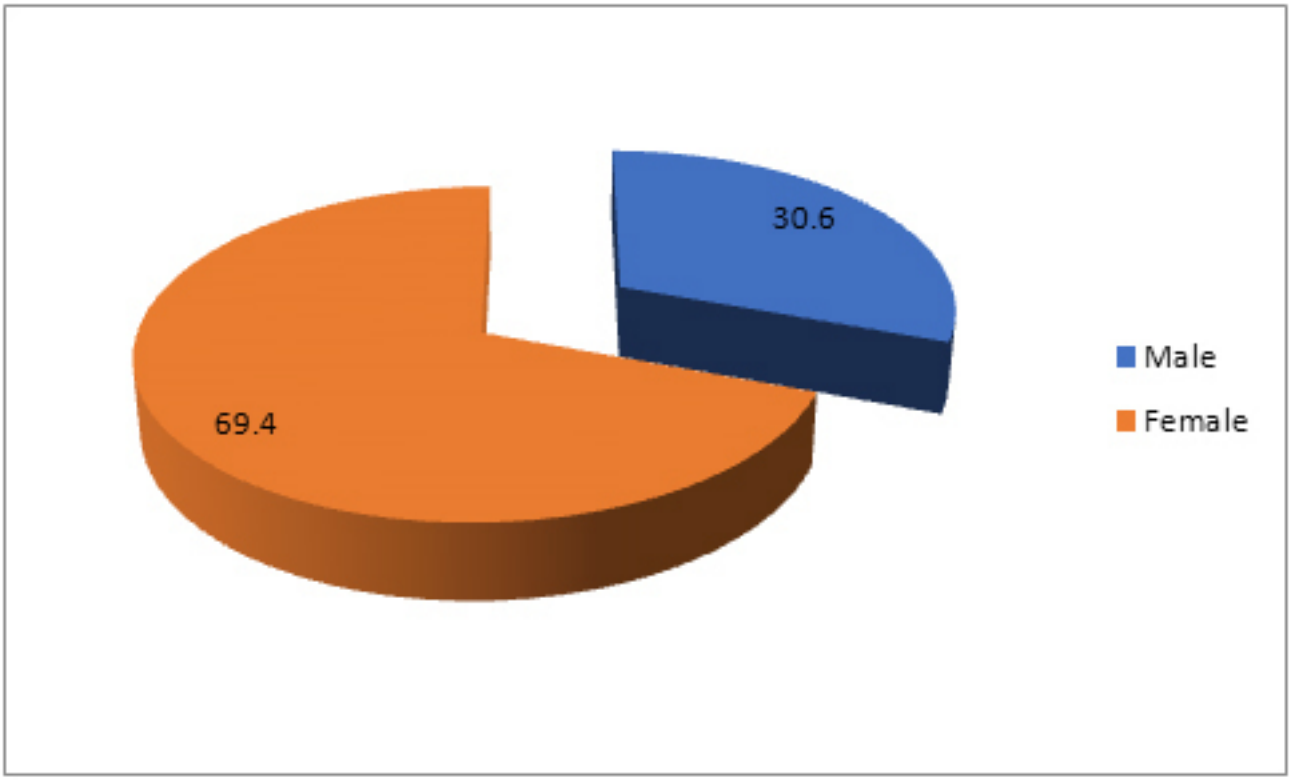
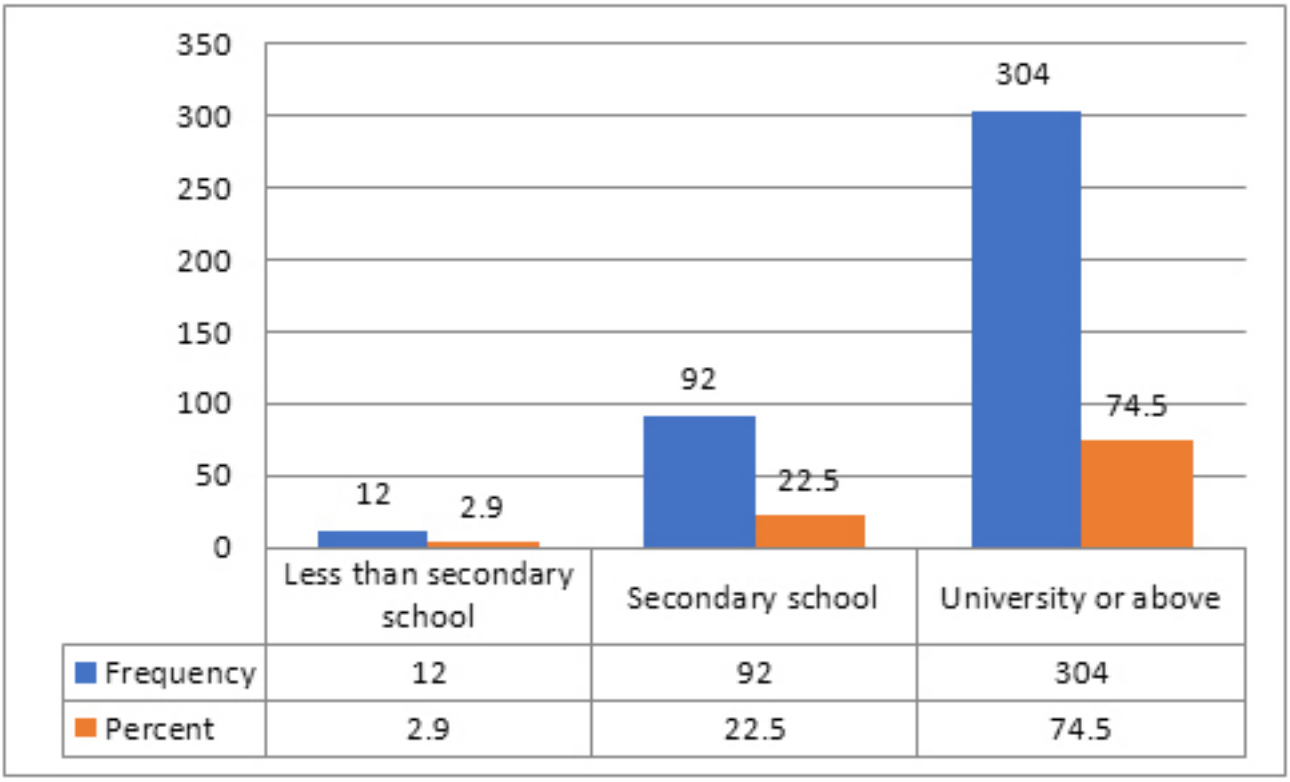


Figure 4: Distribution of participants according to educational level



	Less than secondary school	Secondary school	University or above
Frequency	12	92	304
Percent	2.9	22.5	74.5

Table 1: Demographic characteristics of participants

N = 408

Variable	Sub variable	Frequency	Percent
Age group	20-18	36	8.8
	30-20	137	33.6
	40-30	84	20.6
	50-40	119	29.2
	60-50	32	7.8
Nationality	Saudi	396	97.1
	Non Saudi	12	2.9
Gender	Male	125	30.6
	Female	283	69.4
Marital status	Single	164	40.2
	Married	224	54.9
	Divorced	6	1.5
	Widowed	14	3.4
Educational level	Less than secondary school	12	2.9
	Secondary school	92	22.5
	University or above	304	74.5

The majority of participants were within the age group 20 -30, 40 – 50 then 30 -40 respectively (33.6%, 29.2% and 20.6%). Most of them were Saudi (97%), female (96%), married (55%) and most of them had university degree or above (Table I, Figures 1-4).

Table 2: Participants' knowledge related to squint definition and age of appearance

N = 408

Variable	Sub variable	Frequency	Percent
Squint is	Optical defect that while one eye looks forwards to focus on an object, the other eye turns either inwards, outwards, upwards or downwards.	313	76.7
	Can be permanent or temporarily	22	5.4
	Affect one or both eyes	57	14.0
	I don't know	16	3.9
When does the squint appear?	Less than 6 months	313	76.7
	From 6 months to 7 years	22	5.4
	At any age	57	14.0
	I don't know	16	3.9

The majority of participants (76.7%) defined squint as an optical defect where one eye looked forward to focus on an object, the other eye turned either inwards, outwards, upwards or downwards. Also about 76.7% of participants

Table 3: Participants' knowledge related to the cause of squint

N = 408

Variable	Sub variable	Frequency	Percent
Causes of squint	Hereditary	49	12.0
	Prenatal exposure to toxic material during pregnancy (alcohol-smoker)	1	.2
	Birth problems (low birth weight ‹prematurity')	14	3.4
	Systemic disease (down syndrome, cerebral palsy, brain tumor)	7	1.7
	Refractive error (near-sightedness, farsightedness, and astigmatism, cataract)	38	9.3
	Head trauma	13	3.2
	Excessive use of smartphone	7	1.7
	Multiple causes	230	56.4
	I don't know	49	12.0

More than half of participants (56%) mentioned more than one cause of squint, the hereditary factor dominated the different causes (12%), followed by refractive error (near-sightedness, farsightedness, astigmatis , cataract) (9.3%) (Table 3).

Table 4: Participants' knowledge about the symptoms of squint

N = 408

Variable	Sub variable	Frequency	Percent
What are the symptoms of squint? (multiple choices)	Headache & eye ache	22	5.4
	Photophobia	4	1.0
	Inability to read comfortably	14	3.4
	Problems in judging distances and positions especially of moving objects	57	14.0
	No symptoms	55	13.5
	Multiple symptoms	176	43.1
	I don't know	80	19.6

Regarding the main symptoms of squint, as mentioned by participants, were problems in judging distances and positions especially of the moving objects (14%), headache & eye ache (5%), and inability to read comfortably (3%), while (43%) mentioned multiple symptoms. 13.5% of participants denied any symptoms and 19.6% didn't know the correct symptoms (Table 4).

Table 5: Participants' knowledge related to diagnosis, discovery, treatment and effect of delayed repair of squint

N = 408

Variable	Sub variable	Frequency	Percent
How will the squint be diagnosed?	Using specific test by doctors	202	49.5
	By naked eye	181	44.4
	I don't know	25	6.1
In your opinion who can discover the squint 1-family /friend, 2-doctor	Family/friend	14	3.4
	Doctor	39	9.6
	Family/friend and doctor	355	87.0
Optional treatment of squint	Glasses or contact lenses	58	14.2
	Eye patch	10	2.5
	Eye surgery	78	19.1
	Botox	3	.7
	Multi treatment options	196	48.0
	Not a curable disease	9	2.2
	I don't know	54	13.2
There is difficulty in repairing strabismus when treatment was delayed	Yes	328	80.4
	No	80	19.6

For diagnosis procedures of squint, 49.5% mentioned that it could be diagnosed by using a specific test by doctors, while 44.4% mentioned it could be diagnosed by the naked eye. The majority of participants (87%) mentioned that both family/friend and doctor could discover the squint. For optional treatment of squint, 19.1% mentioned eye surgery, while, 14.2% mentioned glasses or contact lenses. On the other hand, 48% stated multi treatment options. About 80% of participants mentioned that there were difficulties in repairing strabismus when treatment was delayed (Table 5).

Table 6: Participants' knowledge related to complications of an untreated squint

N = 408

Variable	Sub variable	Frequency	Percent
Complications of an untreated squint	Visual loss	7	1.7
	Cosmetic stigma	31	7.6
	Affect child performance at school	8	2.0
	Affect socially	3	.7
	Psychological problems	20	4.9
	Affects economically	3	.7
	There is no affect	9	2.2
	Multiple causes	327	80.2

The majority of participants mentioned that the complications of an untreated squint might lead to cosmetic stigma (7.6%), psychological problems (4.9%), visual loss (1.7%). Or more than one complications (80.2%) (Table 6).

Table 7: Participants' knowledge about the source of information of squint and importance of applying periodic complete ophthalmology examination in health centers

N = 408

Variable	Sub variable	Frequency	Percent
Source of your information about squint	Family/friends	112	27.5
	Awareness campaigns/school-college/courses	25	6.1
	Social media	59	14.5
	Your experience- know someone	99	24.3
	Ophthalmologist	21	5.1
	I don't know anything about squint	92	22.5
Do you think that regular periodic complete ophthalmology examination should be applied in health centres for paediatric age for early detection of squint?	Yes I agree	366	89.7
	Yes but no need for all age of paediatrics	33	8.1
	No, it's useless	9	2.2

As mentioned the main source of information about squint was family/friends (27.5%), experience or know someone (24.3%) or social media (14.5%). Most participants agreed that performing a regular periodic complete ophthalmology examination should be applied in health centres for paediatric age to detect squint earlier (Table 7).

The overall mean of knowledge of all study groups was 76.01%.

Table 8: Independent t -test between the overall knowledge of participants related to squint's causes, symptoms, complications, treatment options and demographic variables

Correct score									
		N	Mean	Std. Deviation	Std. Error Mean	F	Sig.	95% Confidence Interval of the Difference	
								Lower	Upper
Nationality	Saudi	396	3.53	.901	.045	.12	0.72	-.573	.462
	Non Saudi	12	3.58	.793	.229			-.565	.453
Gender	Male	125	3.50	.981	.088	2.401	0.12	-.238	.141
	Female	283	3.54	.859	.051			-.248	.152
Educational Level	Less than secondary school	12	3.00	1.348	.389	5.982	.010	-1.040	.026
	Secondary school	92	3.67	.786	.082			-1.200	-.148
	University or above	304	3.51	.901	.052			-1.367	.354
Age Group	18 - 40	257	3.47	.964	.060	13.165	.000	-.353	.002
	41 - 60	150	3.65	.706	.058			-.340	-.012

There was a statistically significant association between the the overall knowledge of participants related to squint, causes, symptoms, complications and treatment options, educational level and age groups, P Value is < 0.05.

Contrarily, there was no statistically significant association between the the overall knowledge of participants related to squint's causes, symptoms, complications and treatment options, nationality and gender, P Value is > 0.05 (Table 8).

Discussion

The present study was carried out to assess the knowledge and attitude regarding strabismus in Ha'il, KSA. Strabismus is a treatable condition that requires identification and treatment at an early age. However, whether the treatment is given in a timely manner depends on parents and the population knowledge and attitude [13].

In the present work, there was a statistically significant association between the overall knowledge of participants related to squint as regards causes, symptoms, complications and treatment options, educational level and age groups, (P Value is < 0.05). This outcome was similar to that of Khojah et al, 2020 [13], who found that higher educational level has a better knowledge of strabismus treatability and treatment options otherwise it did not show any significant relationship between the knowledge of the definition of strabismus and age [13].

On the other hand, in the present study, there was no statistically significant association between the overall knowledge of participants related to squint's causes, symptoms, complications and treatment options, and nationality and gender, (P Value is > 0.05). However, in a previous study, there were significant associations between awareness and gender with males being 1.66 times less likely to be aware of strabismus than females [14]. The results reported by Bukhari et al in 2018,[15] showed females had better knowledge about strabismus than males although both genders had acceptable knowledge levels [15].

The present work found that 77.2% of participants had good knowledge of definition of strabismus which is an optical defect which meant that while one eye looks forwards to focus on an object, the other eye turns either inwards, outwards, upwards or downwards. Only 14% had chosen that squint could affect one or both eyes. A lower percentage of awareness was reported in a previous study in Western Province, Saudi Arabia. They reported that 52.8% of their participants stated the correct definition of strabismus [13].

In the present study, most of the participants were aware of the causes of squint where 12% had chosen heredity as one of causes, followed by refractive error 9%. This result was consistent with a previous study that took place in Jeddah, Saudi Arabia, where heredity was the most frequently identified etiology (68.9%), followed by trauma (61.3%) [15]. On the other hand, another work in Cheha District, Central Ethiopia found that 62.8% did not know the causes of strabismus and mentioned only misconceived causes like exposure to bright light [16].

Strabismus treatment aims to restore binocular vision. Eyeglasses can be prescribed and other treatment options may include patching of the dominant eye or even performing surgical procedures. The present study showed that 14.2% of the whole population knew that strabismus could be treated by glasses or contact lenses and 19% chose eye surgery. Isawumi et al in 2014 found 54% of the population in Nigeria did not know that strabismus can be treated [14].

The present research showed a high degree of awareness (80%) about complications of untreated strabismus. The reported complications were Cosmetic stigma (8%), psychological problems (5%) and 80% gave more than one complication. The results reported by Khojah et al in 2020 [13], supported the present result where they found that frequent complications of untreated strabismus were visual loss (4.6%), cosmetic stigma (3.9%), and poor self-image (2.4%); however, a clear majority (55.2%) chose "All of the above" [13].

Conclusion

The present study was done to assess the knowledge and attitude of strabismus in Hail, KSA; most participants were Saudis (97%), and females represented 69.4% of them. There was good knowledge and attitude about strabismus's symptoms, causes, and treatment in Ha'il region, KSA, with an overall mean of correct answers of 75.2%. The majority of participants could define strabismus (77.2%). Furthermore, there was a significant positive relationship between the overall knowledge of participants related to squint and educational level of participants. Higher educational level had a better knowledge of strabismus. Thus, health education is still needed to focus light on strabismus especially to lower educational level population, wishing to prevent strabismus complications.

Recommendation:

In the present study, we faced several limitations regarding the distributed survey through different channels of social media. In addition, the study was restricted to the Ha'il region of Saudi Arabia; thus, it could not be filled out by someone outside this region. Therefore, we recommend conducting the study among all Saudi Arabian residents in different areas. Health education about strabismus is extremely needed to throw light on this disease and the importance of early diagnosis and early treatment to save the vision of its victims.

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