

Awareness and Attitudes towards Common Eye Diseases among the General Population of Southern region of Saudi Arabia

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Abstract

Background: Globally, the number of visually impaired persons still increases; this will increase demand for more eye care services, programmes, and treatment for the visually disabled individuals. Consequently, the first step is to map the size of the problem. Detection of the related factors of visual loss and blindness is vital to build appropriate treatment, rehabilitation, and service programmes. Public awareness regarding these eye related health conditions is the first step for mapping the problem and public concern for early detection and management.

Methodology: A descriptive cross-sectional survey was conducted focused on all adults in Aseer region. The study was conducted during the period from May 2020 to September 2020. Data were collected using pre-structured online questionnaire established by the researchers after intensive literature review and expert's consultation. The questionnaire data included participants' socio-demographic data, awareness regarding eye diseases was evaluated and its main domains included glaucoma related awareness, cataract awareness, diabetic retinopathy awareness, refractive errors awareness, and eye dryness.

Results: A total of 1,014 participants in the southern region of Saudi Arabia completed the survey. Participants' ages ranged from 18 to 75 years with mean age of 33.8 (12.2%) years old. Exactly 641 (63.2%) participants were males. Exactly 23.1% of participants defined cataract as a change in lens colour and 17.8% reported that it is an age related disorder. Glaucoma was defined as a disease that causes optic nerve damage by 22.2% of the participants while 18.6% defined the disease as a condition causing diminished peri-ocular vision. DR was defined as retinal vascular lesion disorder by 23.6% of the participants and 42.9% classified the disease as one of the DM complications. In total, good awareness regarding cataract was detected among 13.4% of the participants and 10% had good awareness regarding glaucoma.

Conclusions & recommendations: In conclusion, the study revealed that overall public awareness regarding common eye diseases was very poor especially among the old aged and females. The main source of information was a family member or friend who had the disease.

Key words: Eye diseases, disorders, cataract, glaucoma, diabetic retinopathy, awareness, population

Introduction

Globally, ocular disorders, including diabetic retinopathy, glaucoma, and cataract are judged prominent causes of blindness (1, 2). Recently, the World Health Organization reported that about 285 million people of all age are visually impaired globally constituting about 80% of the total health burden (3). A joint program of the WHO and the International Agency for the Prevention of Blindness (IAPB) initiated VISION 2020: The Right to Sight in 1999, to eliminate avoidable blindness by the year 2020 (4).

Awareness of eye diseases not only aimed for better awareness of the disease but also to promote the global population to properly use the available eye care services. Proper utilization of eye care services performs a major role in the prevention of blindness due to ocular diseases (5). Nowadays, there are 2.2 billion people around the world who have a vision impairment, of whom at least 1 billion have a reversible vision impairment due to temporary causes or is yet to be addressed (6). Consequently, improving public awareness regarding the most frequent ocular diseases has a significant role in the early detection and management of these conditions to minimize the burden of visual impairment (7, 8). Many studies have assessed the level of public awareness of common ocular diseases worldwide (9, 10). Studies have revealed many determinants which may modulate the level of awareness and knowledge regarding ocular diseases. Those include age, gender, education level, socioeconomic level, and type of disease (11, 12). Knowing the level of public awareness concerning eye health and the factors that impact eye disease consequences could help to reduce public and economic burden due to visual impairment (13, 14). Poor health awareness of these conditions and their complications causes a delay in seeking medical care and chances of early intervention and prevention. Therefore, raising public awareness of ocular diseases plays a significant role in the early diagnosis and treatment of such conditions and thus reduces the burden of visual impairment. The current study aimed to evaluate the public awareness and attitudes towards common eye diseases and their related factors in Southern region, Saudi Arabia.

Methodology

A descriptive cross-sectional survey was conducted focused on all adults in Aseer region. The study was conducted during the period from May 2020 to September 2020. All persons aged less than 18 years, besides others who were not permanently living in the southern region (or for at least 1 year) were excluded. Data were collected using pre-structured questionnaire established by the researchers after intensive literature review and expert's consultation. The questionnaire data included participants socio-demographic data such as age, gender, nationality, monthly income, and education. Adults' awareness regarding eye diseases was evaluated including its main domains which included glaucoma related awareness, cataract awareness, diabetic retinopathy awareness,

refractive errors awareness, and eye dryness. A panel of 3 experts reviewed the questionnaire separately for content validity and all reported changes and modifications were applied till the final tool was attained. The questionnaire was uploaded online using social media platforms by the researchers and their relatives and friends, to be filled in by all the population in Aseer region. A consecutive convenience sampling method was used due to the current situation of the COVID-19 pandemic. All adults fulfilling the inclusion criteria who received the electronic questionnaire during the study period were invited to participate through filling in the questionnaire. A pilot study was conducted to assess tool applicability and reliability. The tool reliability coefficient (Alpha Cronbach's) was assessed and equalled 0.77.

Data analysis

After data was extracted, it was revised, coded, and fed into Statistical Software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analysis was done using two tailed tests. P value less than 0.05 was statistically significant. For awareness items, each correct answer was scored one point and total summation of the discrete scores of the different items at each eye disease type was calculated. A patient with score less than 60% of the maximum score was considered to have poor awareness while good awareness was considered if they had a score of 60% of the maximum or more. Descriptive analysis based on frequency and percent distribution was done for all variables including demographic data and awareness items. Crosstabulation was used to assess distribution of awareness according to participants' personal data. Relations were tested using Pearson chi-square test.

Results

A total of 1014 participants in the southern region completed the survey. Participants' ages ranged from 18 to 75 years with mean age of 33.8 12.2 years old. Exactly 641 (63.2%) participants were males. Saudi were 987 (97.3%) and 819 (80.8%) were university graduated and 35 (3.5%) had educational level below secondary. Regarding monthly income, 381 (37.6%) participants had monthly income less than 5000 SR and 20.7% had income of 15000 SR or more (Table 1).

Table 2 shows awareness regarding cataract among general population. Exactly 23.1% of participants defined cataract as a change in lens colour and 17.8% reported that it is an age related disorder. As for risk factors, the most reported was age (46.9%) followed by DM and hypertension (41.6%), systemic disorders (10.7%), and drugs (9.9%). As for treatment methods, surgery was reported by 78.7% of the participants. Exactly 51.8% of the participants agreed that vision can return to normal after treating cataract. Regarding source of information, 19.5% of the participants had their information from a diseased family member or friend and 17.9% reported from health care provider while 17% learned about it from mass media and social media.

Table 3 demonstrates awareness regarding glaucoma among the general population. Glaucoma was defined as a disease that causes optic nerve damage by 22.2% of the participants while 18.6% defined the disease as a condition causing diminished peri-ocular vision. With regard to risk factors, 37.1% of the participants reported increased intra-ocular pressure, followed by age (29.6%), history of having cataract (23.7%), and family history of glaucoma (10.2%). Surgery as treatment modality was reported by 59.6% of the participants and 23.1% reported treatment by drugs. Vision can return to normal after treating cataract was reported by 41.8% of the participants. As for source of information, 19.5% of the participants reported Family member/ friend have the disease followed by learned from a health care provider (17.9%), and by social media and mass media (17%).

Table 4 illustrates awareness regarding diabetic retinopathy among the general population. DR was defined as retinal vascular lesion disorder by 23.6% of the participants and 42.9% classified the disease as one of the DM complications. The most reported risk factors for DR was DM and hypertension (50%) followed by age (25.4%), dietary habits (15.8%), and systemic diseases (11.4%). Exactly 39.9% of the participants agreed that vision can return to normal after treating DR. Regarding frequency of eye examination for diabetic patients, 10.9% of the participants reported it should be annually while 51.8% selected every 6 months. As for source of information regarding DR, Social media and mass media was selected by 20.3% of the participants followed by health care provider (20.1%), and family member/ friend have the disease (18.8%).

Table 5 shows awareness regarding refractive errors among the general population. Short vision was defined as focused image front of retina by only 5 participants (0.5%) and 56.8% reported that it means you cannot see far objects. As for long vision, it was defined as Focused image behind retina by 14.5% of the participants and 53.6% said that it means inability to see near objects. Exactly 76.8% of the participants agreed that excess TV watching/ mobile use can cause refractive error while only 10.1% denied that refractive error can be avoided. As for source of information, 32.1% were told by family member/ friend who has the disease, 24.3% had their information from health care provider, 15.7% from social media and mass media.

Table 6 illustrates awareness regarding dry eye among the general population. Exactly 60.3% of the participants defined dry eye as insufficient lacrimation. As for treatment methods, 71.8% reported moistening drops, 29.5% said drugs, and 5.2% know about other methods. As for complications of dry eye, the most identified were unclear vision (37.7%) followed by eye ulcers (35%), and eye infections (18.2%). About source of information regarding dry eye, 26.1% had their information from health care providers followed by family member/ friend who have the disease (22.9%), social and mass media (13%), and 14.1% had other sources.

In total, good awareness regarding cataract was detected among 13.4% of the participants and 10% had good awareness regarding glaucoma. On the other hand, 9.5% of the participants had good awareness regarding dry eye, 7% had good awareness regarding DR, and 3.5% had good awareness regarding refractive errors (Figure 1). Totally, 5.3% of the participants had good awareness regarding common eye diseases.

Table 7 demonstrates distribution of participants' awareness regarding common eye diseases by their personal data. Good awareness was detected among 8.3% of young age group (<25 years) in comparison to 0.8% of those who were aged 45 years or more with statistical significance ($P=.001$). Also, 7.2% of male participants had good awareness compared to 2.1% of females ($P=.001$). Good awareness was detected among 15.5% of participants with high income compared to 6.3% of those who had monthly income of less than 5000 SR ($P=.001$).

Discussion

The current study focused to assess public awareness and attitude regarding common eye diseases and their related factors in Aseer region, Southern Saudi Arabia. Globally, the numbers of visually impaired persons still increases; this will increase demands for more eye care services, programmes, and treatment for the visually disabled individuals (15). Consequently, first step is to map the size of the problem. Detection of the related factors of visual loss and blindness is vital to build appropriate treatment, rehabilitation, and service programmes. Public awareness regarding these eye related health conditions is the first step for mapping the problem and public concern for early detection and management (16).

The current study revealed that less than half of the participants correctly defined cataract as one of the most reported eye diseases (40.9%). Also, nearly the same portion reported cataract related risk factors especially age and diabetes. Surgery was the most identified treatment modality (more than three quarters of the participants) and about half of the participants agreed on the patient ability to return to normal visual ability after treating the disease which is a low percentage regarding cataract disease nature of being totally manageable after surgical intervention. These findings were consistent with Misra V et al in Delhi, India, (17) who estimated that 89.9% had heard of cataract but only 42% were aware of any symptom of cataract. White opacity in eyes and loss of vision were the most identified symptoms. Exactly 40.1% of the participants reported surgery as a treatment of cataract. A higher level of awareness was detected in Ethiopia by Alimaw YA (11). The authors found that about 67% (562) of respondents' adults were knowledgeable regarding cataract [95% CI, 63.8–70.2]. and 61.7% of them had good knowledge about cataract. In Saudi Arabia, the current study findings were higher than what reported by Moustafa S et al, (18) who reported that nearly 28% of the participants correctly defined cataract and 78% did

Table 1. Personal characteristics of survey participants, Southern region, Saudi Arabia

Personal data	No	%
Age in years		
<25 Yrs.	351	34.6%
25-34	202	19.9%
35-44	213	21.0%
45+	248	24.5%
Gender		
Male	641	63.2%
Female	373	36.8%
Nationality		
Saudi	987	97.3%
Non-Saudi	27	2.7%
Education		
Below secondary	35	3.5%
Secondary	160	15.8%
University/ more	819	80.8%
Income		
<5000 SR	381	37.6%
5000-10000 SR	193	19.0%
10001-15000	230	22.7%
15001-20000	126	12.4%
>20000	84	8.3%

Table 2. Awareness regarding cataract among general population, Southern region, Saudi Arabia

Cataract awareness	No	%
What is cataract		
<i>Change in eye lens colour (opaque)</i>	234	23.1%
<i>White fluid in the eye</i>	425	41.9%
<i>Age related visual defect</i>	180	17.8%
<i>White coat on the eye</i>	165	16.3%
<i>Don't know</i>	161	15.9%
Risk factors for cataract		
<i>Age</i>	476	46.9%
<i>Smoking</i>	89	8.8%
<i>Dietary habits</i>	79	7.8%
<i>DM</i>	422	41.6%
<i>HTN</i>	422	41.6%
<i>Systemic diseases</i>	108	10.7%
<i>Drugs</i>	100	9.9%
<i>Don't know</i>	243	24.0%
Treatment methods of cataract		
<i>Drugs</i>	103	10.2%
<i>Surgery</i>	798	78.7%
<i>Others</i>	86	8.5%
<i>Don't know</i>	131	12.9%
Vision can return to normal after treating cataract		
<i>Yes</i>	525	51.8%
<i>No</i>	148	14.6%
<i>Don't know</i>	341	33.6%
Source of information for cataract		
<i>Health care provider</i>	182	17.9%
<i>Family member/ friend have the disease</i>	198	19.5%
<i>Family member/ friend free of the disease</i>	111	10.9%
<i>Social and mass media</i>	172	17.0%
<i>Don't know</i>	351	34.6%

Table 3. Awareness regarding glaucoma among general population, Southern region, Saudi Arabia

Glaucoma awareness	No	%
What is glaucoma		
<i>Increased intra-ocular pressure</i>	205	20.2%
<i>Blue fluid in the eye</i>	217	21.4%
<i>Optic nerve damage</i>	225	22.2%
<i>Diminished peri-ocular vision</i>	189	18.6%
<i>Age related disorder</i>	128	12.6%
<i>Don't know</i>	352	34.7%
Risk factors for glaucoma		
<i>Age</i>	300	29.6%
<i>Family history</i>	103	10.2%
<i>Increased intra-ocular pressure</i>	376	37.1%
<i>History of cataract</i>	240	23.7%
<i>Drugs</i>	75	7.4%
<i>Don't know</i>	371	36.6%
Treatment methods of glaucoma		
<i>Drugs</i>	234	23.1%
<i>Surgery</i>	604	59.6%
<i>Others</i>	95	9.4%
<i>Don't know</i>	276	27.2%
Vision can return to normal after treating cataract		
<i>Yes</i>	424	41.8%
<i>No</i>	140	13.8%
<i>Don't know</i>	450	44.4%
Source of information for cataract		
<i>Health care provider</i>	182	17.9%
<i>Family member/ friend have the disease</i>	198	19.5%
<i>Family member/ friend free of the disease</i>	111	10.9%
<i>Social and mass media</i>	172	17.0%
<i>Don't know</i>	351	34.6%

Table 4. Awareness regarding diabetic retinopathy among general population, Southern region, Saudi Arabia

Diabetic retinopathy awareness	No	%
Diabetic retinopathy		
<i>Increased IOP due to DM</i>	292	28.8%
<i>Retinal vascular lesion</i>	239	23.6%
<i>Diabetes complications</i>	435	42.9%
<i>Blindness</i>	4	.4%
<i>Don't know</i>	266	26.2%
Risk factors for DR		
<i>Age</i>	258	25.4%
<i>DM/ HTN</i>	507	50.0%
<i>Dietary habits</i>	160	15.8%
<i>Systematic diseases</i>	116	11.4%
<i>Drugs</i>	74	7.3%
<i>Smoking</i>	99	9.8%
<i>Don't know</i>	313	30.9%
Vision can return to normal after treating DR		
<i>Yes</i>	405	39.9%
<i>No</i>	217	21.4%
<i>Don't know</i>	392	38.7%
Frequency of eye examination for DM		
<i>Every 6 months</i>	525	51.8%
<i>Annually</i>	111	10.9%
<i>Every 2 years</i>	19	1.9%
<i>According to degree of vision defect</i>	110	10.8%
<i>Don't know</i>	249	24.6%
Source of information for DR		
<i>Health care provider</i>	204	20.1%
<i>Family member/ friend have the disease</i>	191	18.8%
<i>Family member/ friend free of the disease</i>	66	6.5%
<i>Social and mass media</i>	206	20.3%
<i>Don't know</i>	347	34.2%

Table 5. Awareness regarding refractive errors among general population, Southern region, Saudi Arabia

Refractive errors awareness	No	%
Short vision		
<i>Focused image on retina</i>	164	16.2%
<i>Focused image behind retina</i>	72	7.1%
<i>Cannot see far objects</i>	576	56.8%
<i>Cannot see near objects</i>	237	23.4%
<i>Focused image front of retina</i>	5	.5%
<i>Don't know</i>	129	12.7%
Long vision		
<i>Focused image on retina</i>	82	8.1%
<i>Focused image behind retina</i>	147	14.5%
<i>Cannot see far objects</i>	244	24.1%
<i>Cannot see near objects</i>	544	53.6%
<i>Focused image front of retina</i>	81	8.0%
<i>Don't know</i>	113	11.1%
Excess TV watch/ mobile use can cause refractive error		
<i>Yes</i>	779	76.8%
<i>No</i>	106	10.5%
<i>Don't know</i>	129	12.7%
Refractive error can be avoided		
<i>Yes</i>	652	64.3%
<i>No</i>	102	10.1%
<i>Don't know</i>	260	25.6%
Source of information for refractive errors		
<i>Health care provider</i>	246	24.3%
<i>Family member/ friend have the disease</i>	326	32.1%
<i>Family member/ friend free of the disease</i>	124	12.2%
<i>Social and mass media</i>	159	15.7%
<i>Don't know</i>	159	15.7%

Table 6. Awareness regarding dry eye among general population, Southern region, Saudi Arabia

Dry eye awareness	No	%
Eye dryness		
<i>Insufficient lacrimation</i>	611	60.3%
<i>Sand feel in eye</i>	290	28.6%
<i>Photosensitivity</i>	185	18.2%
<i>Don't know</i>	138	13.6%
Treatment methods of dry eye		
<i>Drugs</i>	300	29.5%
<i>Surgery</i>	73	7.1%
<i>Moistening drops</i>	783	71.8%
<i>Other methods</i>	54	5.2%
<i>Don't know</i>	128	12.6%
Complications of dry eye		
<i>Eye infections</i>	185	18.2%
<i>Eye ulcers</i>	355	35.0%
<i>Unclear vision</i>	382	37.7%
<i>Don't know</i>	297	29.3%
Source of information for dry eye		
<i>Health care provider</i>	265	26.1%
<i>Family member/ friend have the disease</i>	232	22.9%
<i>Family member/ friend free of the disease</i>	84	8.3%
<i>Social and mass media</i>	132	13.0%
<i>Others</i>	143	14.1%
<i>Don't know</i>	158	15.6%

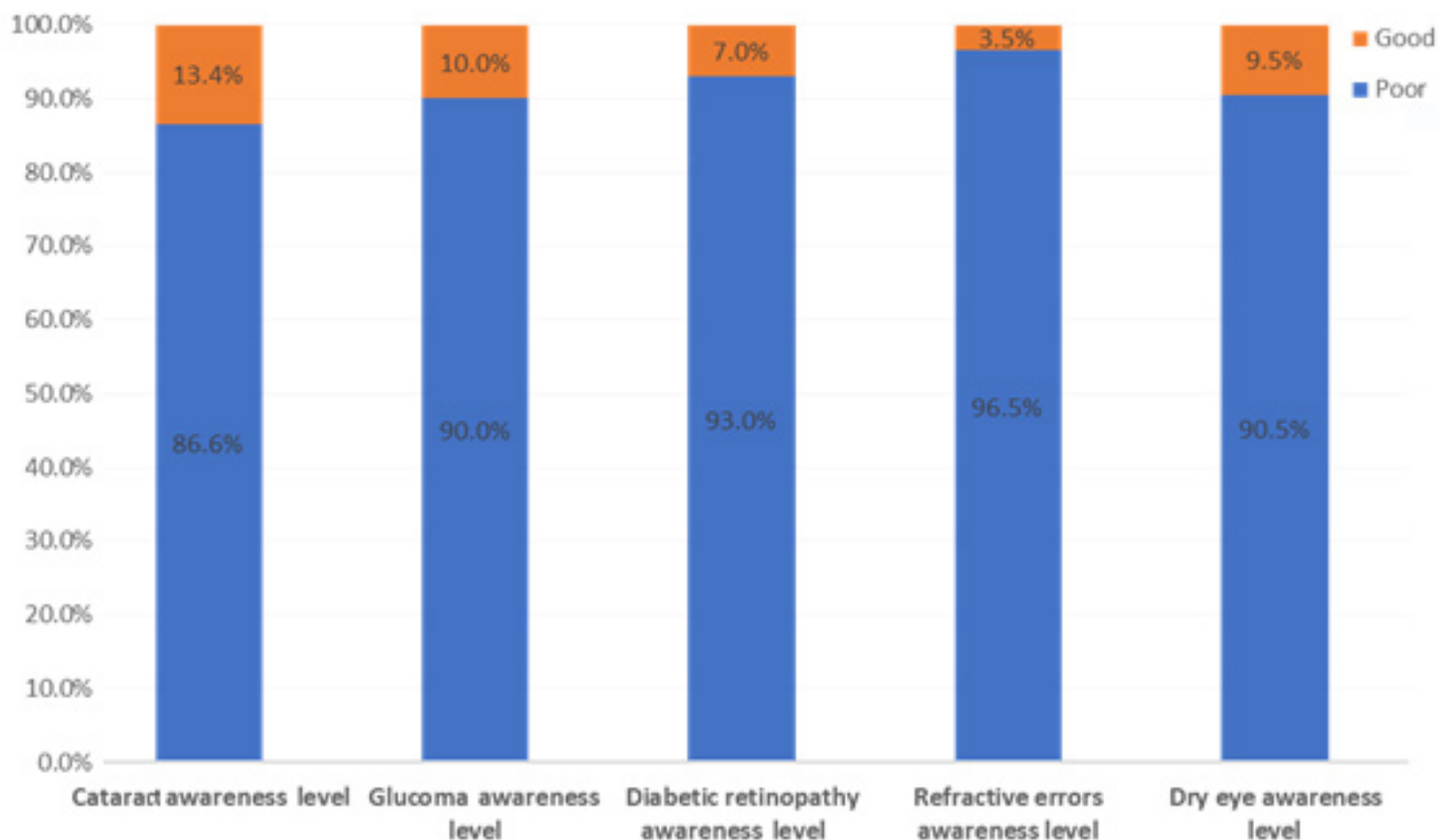
Figure 1. Overall awareness regarding common eye diseases among study participants

Table 7. Distribution of participants awareness regarding common eye diseases by their personal data

Personal data	Overall awareness level				P-value
	Poor		Good		
	No	%	No	%	
Age in years					
<25 Yrs.	322	91.7%	29	8.3%	.001*
25-34	188	93.1%	14	6.9%	
35-44	204	95.8%	9	4.2%	
45+	246	99.2%	2	0.8%	
Gender					
Male	595	92.8%	46	7.2%	.001*
Female	365	97.9%	8	2.1%	
Nationality					
Saudi	936	94.8%	51	5.2%	.175
Non-Saudi	24	88.9%	3	11.1%	
Education					
Below secondary	35	100.0%	0	0.0%	.343
Secondary	152	95.0%	8	5.0%	
University/ more	773	94.4%	46	5.6%	
Income					
<5000 SR	357	93.7%	24	6.3%	.001*
5000-10000 SR	190	98.4%	3	1.6%	
10001-15000	220	95.7%	10	4.3%	
15001-20000	122	96.8%	4	3.2%	
>20000	71	84.5%	13	15.5%	

not know that cataract can cause blindness. Also, 90% of participants were not aware regarding cataract risk factors and only 24% reported age as the main risk factor. Surgical treatment for cataract was identified by only 34% of the participants. Other researchers estimated public awareness regarding cataract between 24% to 79% and this was based on the nature of the community (urban vs. rural) and upon the nature of the tool used to assess public awareness (19-23)

As for glaucoma, the current study showed that only one third of the participants know of glaucoma and its nature (38.8%). Also, one third of the participants were aware of glaucoma related risk factors including intra-ocular pressure, age, and family history. Surgery was reported as the treatment modality among nearly two thirds of the participants and less than half of the participants know that the patient can return to their normal visual ability. These findings were consistent with that reported by Alemu DS et al, (24) who found that nearly 35% of the public participants were knowledgeable regarding glaucoma with good awareness among 49.6%. This estimated awareness level was mostly higher than a previous study in Riyadh, (25) which assessed awareness level among the general population with 14.8%, 7% in Bangladesh, 15.8% in Nigeria, and 8.3% in north India (26-28). Considering diabetic retinopathy (DR), the current study

revealed that more than two thirds of the participants were knowledgeable regarding DR (66.5%). The surprising finding was that only 50% of the participants reported diabetes as the main risk factors ignoring its name which indicated its association with diabetes. Also, only 10% of the participants reported the recommended interval for eye check-up for diabetic patients but more than half of them recommended it should be every 6 months instead of being annually. A study conducted in India by Venugopal D et al, (29) assessed that only 34.9% participants know about DR and 34.1% had an adequate knowledge level. Similar results regarding DR awareness were reported by Koshy et al (30) and Hussain et al (31).

Regarding refractive errors (RE) awareness, the current study findings recommended that more than half of the participants were aware of long and short vision disorders. These findings matched that previously reported in a Riyadh study by Al-Rashed et al, (25) who reported that 63% of the participants were aware of RE and by Alghamdi AH et al, (32) who assessed an awareness level of 53%. With regard to dry eye, more than two thirds of the participants had good awareness level regarding dry eye and its treatment alternatives including moistening drops. These findings were consistent with other previous studies in Saudi Arabia which assessed awareness regarding dry eye among the population as between 38% to 86%

(25, 33, 34). In total, less than 10% of the participants had good awareness level regarding common eye diseases. The awareness level was higher among young, than aged participants, male group, and those with high income.

Conclusions and recommendations

In conclusion, the study revealed that overall public awareness regarding common eye diseases was very poor especially among the old aged and females. The main source was family member or friend who had the disease, but physicians and other health care staff had a minimal role as a source of information. This means that more effort should be paid from health care providers to provide more information regarding the disease's nature and their preventive measures. Also, there is urgent need to implement strategies to increase public awareness of ocular diseases to reduce the risk of visual complications through mass media, posters, health education sessions and other relevant methods. Provision of periodic screening campaigns may also play an important role in public awareness and concern.

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