

ORIGINAL ARTICLE

Knowledge and awareness of cataract: a population-based survey in Saudi Arabia

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ABSTRACT

Background: Cataract is the most common cause of blindness worldwide. It develops slowly and leads to blindness if left untreated. However, early detection and treatment of cataracts are largely dependent on the public's awareness of the disease. This study aims to identify the awareness of the population in Saudi Arabia toward cataract.

Methodology: This is a cross-sectional quantitative survey study carried out online in Saudi Arabia, including public members. The study used the Arabic version of a self-administered, internet-based questionnaire. It included questions about responders' demographic characteristics and questions to evaluate their knowledge about the disease. Data analysis was executed through Statistical Package for Social Sciences version 26.

Results: Among the 494 participants who responded to this survey, 81.2% were female. 5.3% had cataracts, and 18.4% had a positive family history of cataracts. As for the knowledge about cataracts, none of the participants had sufficient knowledge regarding the risk factors, whereas most of them (71.5%) had sufficient experience regarding treatment. Overall, adequate knowledge about cataract was observed among 52.6% of the participants. The most prevalent source of information was the internet (15.6%), followed by more than one source (11.9%) and academic courses (11.5%). Results of the multivariate logistic regression analysis revealed that participants who did not know if they have a cataract or not were more likely to have insufficient knowledge about the disease (adjusted odds ratio = 5.18, 95% class interval: 2.41-11.09, $p < 0.001$).

Conclusion: Although the Saudi population's knowledge and awareness about cataracts are acceptable, further improvement is required.

Keywords: Cataract, general population, awareness, Saudi Arabia.

Introduction

A cataract is known as the human lens's opacity, which may be caused by several congenital, acquired, and developmental reasons [1]. It is worth mentioning that cataract is the leading cause of visual impairment globally, except for developed countries [2]. It can influence all ages despite it being highly prevalent in elderly people aged older than 50 years [3]. It is highly recommended to avoid this condition. Otherwise, it results in various problems that end up in irreversible blindness [4]. As a result, its negative psychosocial economic impact is revealed in individuals, families, and at the community level [5]. Several studies have reported that the leading causes of delaying treatment are lack of knowledge, low economic status, lack of transportation, and wrong perception [6]. Awareness about cataracts is the leading cause of delaying cataracts; regular eye checkups would also decrease the disease's burden

[7]. Furthermore, assessing the knowledge regarding cataracts is a precondition for designing health education and promotion programs. In developing countries, it is thought that health education has a vital role in decreasing the burden of avoidable reasons for blindness and visual impairment [8]. Several previous studies revealed a gap in knowledge regarding cataract in developing and some developed countries. The reviews also counted

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age, literacy, residency, marital status, prior exposure to eye care services, and other socio-economic variables as factors for knowledge concerning cataract [9]. Although various cataract types can influence all adult people, most previous studies conducted on age-related cataracts consider patients aged older than 40 years.

Subjects and Methods

A cross-sectional study was conducted among the adult Saudi population aged between 18 and 75 years for a total sample size of 494 subjects. A self-prepared survey was used. The survey was made in Arabic. Optometry students were appointed to record the responses of the participants. Participants were asked to answer all the questions to the best of their knowledge. Most of the questions needed a Yes or No response, and the participants were asked to tick the choices. Participants were not allowed to take the surveys away. The survey included two parts: the first deals with the demographic details, such as sex name, age, and sex; and the second part contains questions that assess the knowledge of cataracts (general, risk factors, and treatment). The answers were evaluated for accuracy by a senior ophthalmologist, according to Lakshmipriya et al.'s study [10]. Responses of the participants to the knowledge statements/questions were scored in the way that the right answers were assigned a score of "1", whereas the incorrect answers or did not know answers were given a score of ">0". The total score was computed, and its median value was defined. Those who scored at or above the median value were considered having "sufficient knowledge," whereas those below the median value were considered having "insufficient knowledge". Confidentiality was assured to all participants who agreed to participate in the study. The respondents were given a brief description of the study and its objectives. Statistical Package for Social Sciences version 26.0 was used for statistical data analysis. Descriptive statistics were carried out using frequency, percentage, mean, range, and standard deviation (SD). Chi-squared test was applied to test for the association between the level of knowledge and its associated factors in bivariate analysis. Multivariate analysis was carried out, including significant factors from bivariate analysis to control for confounding effect, and results were expressed as adjusted odds ratio (AOR) and 95% confidence interval. A *p*-value of less than or equal to 0.05 was considered significant.

Results

This quantitative study included 494 participants who responded almost fully to the questionnaire. Their demographic characteristics are summarized in Table 1. The majority of them (81.2%) were female. Their mean \pm SD age was 33.7 ± 12.7 years, and the most prevalent age group ranged between 21 and 30 years (35.6%). As for marital status, 52.5% were married. Also, 79% had a university degree or above, while 53% were unemployed.

Table 1. Demographic characteristic of the participants (n = 494).

	Count	%
Gender		
Male	93	18.8
Female	401	81.2
Age group (n = 452)		
< 20	63	13.9
21-30	161	35.6
31-40	99	21.9
41-50	80	17.7
>50	49	10.8
Mean \pm SD	33.7 \pm 12.7	
Marital status (n = 491)		
Single	195	39.7
Married	258	52.5
Divorced	24	4.9
Widowed	14	2.9
Educational level		
Below secondary school	11	2.2
Secondary school	93	18.8
University degree or above	390	79.0
Employment status (n = 489)		
Employed	230	47.0
Unemployed	259	53.0

Assessment of knowledge about cataract

General knowledge

From Table 2, it can be seen that most of the participants (71.1%) knew that clouding of the lens reduces vision, whereas only 32% could recognize that a cataract causes blindness, and 28.9% knew that a cataract is a white spot in the eye.

Risk factors knowledge

Regarding the knowledge of cataract risk factors, the most frequently known were diabetes (59.7%) and genetic factors (56.3%), whereas the least known were smoking (21.3%), malnutrition (19.4%), and obesity (17.8%) (Table 3).

Treatment knowledge

Most participants (61.5%) knew that surgery is a cataract treatment, while only 22.1% could recognize that it is the only treatment. Less than half of the participants (46%) knew that a cataract should be treated when it interferes with vision (Table 4). None of the participants had sufficient knowledge regarding risk factors, whereas most of them (71.5%) had sufficient knowledge regarding treatment. Overall, sufficient knowledge about cataracts was observed among 52.6% of the participants, as shown in Figure 1.

Knowledge and awareness of cataract

Table 2. Responses of the participants to the cataract general knowledge statements.

Knowledge statements/questions	Correct answer	
	No.	%
Do you know what is meant by a cataract? (Yes)	208	42.1
A cataract is a white membrane that grows over the eye (Yes)	203	41.1
A cataract is a change in the lens where the lens becomes opaque (Yes)	190	38.5
A cataract is an age-related process that results in a decrease in vision (Yes)	216	43.7
A cataract is a white spot in the eye (Yes)	143	28.9
Does the clouding of the lens reduce vision? (Yes)	351	71.1
Does cataract cause blindness? (Yes)	158	32.0
Is it possible to restore vision from opaque blindness? (Yes)	222	44.9

Table 3. Responses of the participants to the cataract risk factors knowledge.

Knowledge of risk factors	Correct answer	
	No.	%
Ultraviolet exposure	188	38.1
Malnutrition	96	19.4
Eye dryness	201	40.7
Hypertension	236	47.8
Diabetes	295	59.7
Obesity	88	17.8
Medications	176	35.6
Smoking	105	21.3
Genetic factors	278	56.3

Table 4. Responses of the participants to the cataract treatment knowledge.

Knowledge of treatment	Correct answer	
	No.	%
What is the treatment of cataracts? (Surgery)	304	61.5
Is surgery the only cataract treatment? (Yes)	109	22.1
When should a cataract be treated? (when it interferes with vision)	227	46.0

History of cataract among the participants:

As shown in Figure 2, 5.3% and 18.4% of the participants reported personal and family history of cataracts, respectively.

Sources of information about cataract

Almost one-third of the participants (34.6%) had no source of information about cataracts. The most common source of information was the internet (15.6%), followed by more than one source (11.9%) and academic courses (11.5%). The least original information was books (0.6%), as shown in Figure 3.

Factors affecting knowledge toward cataract

From Table 5, it can be seen that females were more knowledgeable than males (55.6% vs. 39.8%), $p = 0.006$. Participants with a family history of cataracts and those

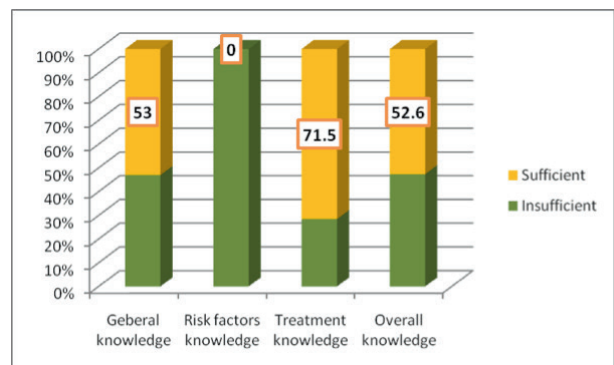


Figure 1. Overall and specific knowledge of the participants about cataract.

having their information about cataracts from doctors or books were more knowledgeable about the diseases than their counterparts. Participants who did not know if they

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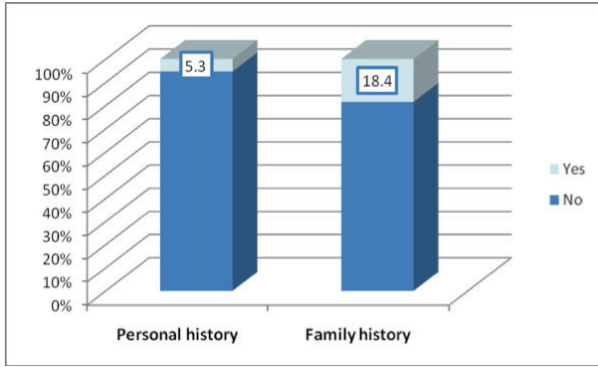


Figure 2. Personal and family history of cataract among the participants.

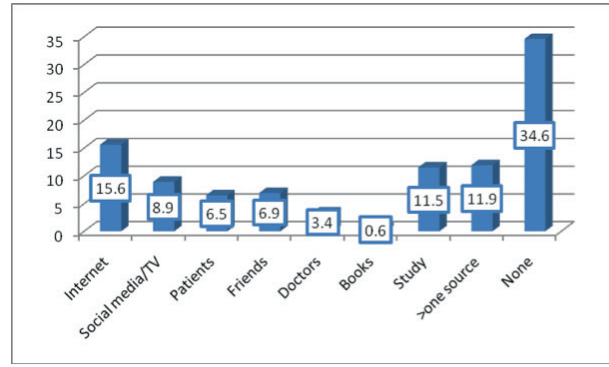


Figure 3. Sources of information about cataract among the participants.

Table 5. Factors associated with the knowledge about cataract among the participants.

Variables	Categories	Knowledge about cataract		p-value
		Insufficient n = 209	Sufficient n = 243	
Gender	Male (n = 93)	56 (60.2)	37 (39.8)	0.006
	Female (n = 401)	178 (44.4)	223 (55.6)	
Age group	<20 (n = 63)	32 (50.8)	31 (49.2)	0.700
	21-30 (n = 161)	71 (44.1)	90 (55.9)	
	31-40 (n = 99)	49 (49.5)	50 (50.5)	
	41-50 (n = 80)	33 (41.3)	47 (58.8)	
	>50 (n = 49)	24 (49.0)	25 (51.0)	
Marital status	Single (n = 195)	89 (45.6)	106 (54.4)	0.316
	Married (n = 258)	124 (48.1)	134 (51.9)	
	Divorced (n = 24)	11 (45.8)	13 (54.2)	
	Widowed (n = 14)	10 (71.4)	4 (28.6)	
Educational level	Below secondary school (n = 11)	5 (45.5)	6 (54.5)	0.992
	Secondary school (n = 93)	44 (47.3)	49 (52.7)	
	University/above (n = 390)	185 (47.4)	205 (52.6)	
Employment status	Employed (n = 230)	110 (47.8)	120 (52.2)	0.806
	Unemployed (n = 259)	121 (46.7)	138 (53.3)	
Personal history of cataract	No (n = 387)	155 (40.1)	232 (59.9)	<0.001
	Yes (n = 26)	11 (42.3)	15 (57.7)	
	I do not know (n = 77)	64 (83.1)	13 (16.9)	
Family history of cataract	No (n = 259)	127 (49.0)	132 (51.0)	<0.001
	Yes (n = 91)	17 (18.7)	74 (81.3)	
	I do not know (n = 141)	89 (63.1)	52 (36.9)	
Source of information	Internet (n = 77)	32 (41.6)	45 (58.4)	<0.001
	Social media and TV (n = 44)	19 (43.2)	25 (56.8)	
	Patients (n = 32)	7 (21.9)	25 (78.1)	
	Friends (n = 34)	15 (44.1)	19 (55.9)	
	Doctors (n = 17)	1 (5.9)	16 (94.1)	
	Books (n = 3)	0 (0.0)	3 (100)	
	Studying (n = 57)	11 (19.3)	46 (80.7)	
	All of them (n = 59)	12 (20.3)	47 (79.7)	
	None (n = 171)	137 (80.1)	34 (19.9)	

*p-value at the level of significance <0.05.

Table 6. Predictors for insufficient knowledge about cataract: results of multivariate logistic regression analysis

	AOR	95% CI	p-value
Personal history of cataract			
No ^a	1.0	-	
Yes	1.25	0.48-3.29	0.649
Don't know	5.18	2.41-11.09	<0.001
Family history of cataract			
No ^a	1.0	-	
Yes	0.37	0.19-0.72	0.004
Don't know	1.11	0.67-1.85	0.678
Source of information			
None ^a	1.0	-	
Internet	0.29	0.16-0.54	<0.001
Social media/TV	0.30	0.14-0.63	0.002
Patients	0.10	0.04-0.28	<0.001
Friends	0.32	0.14-0.71	0.005
Doctors	0.03	0.001-0.23	0.001
Studying	0.11	0.05-0.23	<0.001
All of them	0.08	0.03-0.17	<0.001

The term gender was removed from the final model (not significant).

CI = Confidence interval.

^aReference category.

have a cataract or were the least knowledgeable about the disease were $p < 0.001$. Results of multivariate logistic regression analysis revealed that participants who did not know if they have a cataract or no were more likely to have insufficient knowledge about the disease (AOR = 5.18, 95% class interval (CI): 2.41-11.09, $p < 0.001$) (Table 6). Participants who have a family history of cataracts were at a lower significant risk of having insufficient knowledge than those with no family history of the disease (AOR = 0.37, 95% CI: 0.19-0.72, $p = 0.004$). Compared to participants who had no information source, those who reported any source of information were less likely to have insufficient knowledge about cataracts.

Discussion

A cataract is the most treatable cause of blindness in adults. The incidence of blindness in the southwestern region of Saudi Arabia is 0.7% and visual impairment is 10.9%. Additionally, it represents the leading cause of blindness (52.6%) and visual impairment (20.6%). Appropriate and early management of cataract and correction of refractive errors is estimated to cure 73.6% of blind patients and 88.5% of visually challenged people in this region [11]. Accordingly, improving the public's awareness of the disease is expected to improve treatment outcomes and reduce its incidence [12]. The present study examined the knowledge and awareness of the Saudi public about cataracts. It has been shown that the Saudi public's knowledge and awareness are considered acceptable; however, further improvement of

this level is required as more than half of the responders did not know about the disease. Moreover, factors associated with an insufficient level of knowledge were those who did not know if they have/do not have cataracts or those without a family history of cataracts or those who had no source of information about cataracts. The awareness and knowledge about cataracts have been discussed in different settings. In a community, Ethiopian cross-sectional study, Alimaw et al. [13] showed that participants' average age was approximately 28 years. Of the total participants, 67.2% had awareness about cataract, also 61.7% had a good knowledge of cataracts. Alimaw et al. [13] also reported that a higher level of education, higher economic status, having a previous eye examination, and a positive family history of cataracts were positively related to good knowledge. The present study had 21-30 years as the most prevalent age in the included cohort. The knowledge about cataracts in the Saudi population was intermediate as 52.6% had sufficient knowledge about the disease, and 15.6% understood the illness through the internet. Although the educational level and employment status did not significantly affect the disease's knowledge, responders who understood the disease through academic courses had a significantly higher level of knowledge about the disease.

In Iran, Katibeh et al. [14] carried out a cross-sectional study to determine general awareness and knowledge about cataracts, glaucoma, and diabetic retinopathy, as common avoidable causes of blindness in an Iranian population. Katibeh et al. [14] concluded that the

awareness regarding glaucoma, cataract, and diabetic retinopathy was 46.6%. Besides, 19.2%, 57.3%, and 72% of respondents could give at least a basic definition of the mentioned diseases, respectively [14]. Only 22.6% and 41.6% realized glaucoma and diabetic retinopathy are treatable conditions; on the contrary, 77.2% categorized cataract as treatable. Only 19% and 7.1% knew that diabetic retinopathy and glaucoma might start without apparent symptoms, respectively [14]. In the present study, the Saudi population was examined for the knowledge and awareness about cataract in general, not only diabetic glaucoma. One-third of the responders knew the causes, complications, and symptoms of cataracts, while more than half of the responders knew three or more of cataracts' risk factors. Another Saudi Arabian study in Makkah by Magliyah et al. [15] concluded that 72.4% of the population had poor knowledge of cataracts, and 78% were not aware that cataracts could cause blindness. 90.6% of the population was not aware that the prevalence of cataract increases by positive family history, and 76.4% that the prevalence of cataract increases by age. Also, 65.9% did not know that it can be treated surgically [15]. In the present study, a more national figure for the awareness of cataracts has been demonstrated compared to Magliyah et al. [15], which was only conducted in Makkah. The present study demonstrated that more than half did not know about the disease, while 61.5% knew that cataract is surgically treated. Also, the prevalence of cataracts among the included cohort was only 5.3%.

Finally, the present study showed some limitations; it should be noted that the study may have suffered from a selection bias, which is demonstrated in the significantly larger participation of females and subjects without cataracts. This bias might affect the reliability of the factors affecting the knowledge about the disease. Additionally, the responses to this survey depended mainly on responders' subjective opinions, which might affect the results' reliability.

Conclusion

The Saudi population's awareness and knowledge on general cataract information, risk factors, and treatment are relatively acceptable; however, further improvements are required through public awareness campaigns about the disease, its risk factors, and complications.

List of Abbreviation

AOR	Adjusted odds ratio
CI	Class interval
SD	Standard deviation

Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent to participate

Written informed consent was obtained from all the participants.

Ethical approval

The present study was approved by the Institutional Review Board at King Abdullah International Medical Research Center, Jeddah, via Ref # (no. RJ20/239/J).

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