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Awareness about Causes and Risk Factors of Cataract among General Population of Albaha City

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ABSTRACT

Background: cataract is the most common age-related eye disease and the most treatable cause of visual impairment and blindness in adults.

Aim of the work: this study aimed to assess the knowledge of Saudi population in Albaha city about cataract and its risk factors. **Methods:** this was a cross-sectional study that included a representative sample of 756 adults of the Saudi population in this region. Participants answered self-administered questionnaires consisting of items assessing the knowledge about cataract.

Results: nearly half of the studed sample (50.5%) misunderstood cataract as a white membrane growing over the eye, while only 222 (29.4%) realized it as an increase in eye lens opacity. Moreover, this study revealed clearly deficient knowledge in the studied population about risk factors of cataract. High percent of participants (84%) did not know that incidence of cataract increases with positive family history. Likewise, there was a shortage of knowledge about the relationship of malnutrition, dehydration, hypertension and ultraviolet rays and the development of cataract. Fortunately, considerable numbers considered cataract as an age related disease and recognized that diabetes mellitus is a major precipitating factor to cataract. **Conclusion:** Saudi population in Albaha city had poor knowledge towards cataract and its risk factors. Hence, great efforts should be made to increase the knowledge and awareness of the general public about this disease.

Keywords: cataract, Saudi population, survey, risk factors.

INTRODUCTION

Cataract is any opacification of the lens of the eye, which may lead to increased light scattering. Lens opacities may result from protein phase separation, protein aggregation or disturbance of the regular alignment or packing of the fiber cells. Sometimes increased coloration and subsequently decreased light transmission is found in cataracts with nuclear opacities [(1)]. Early-onset cataracts are responsible for a relatively small percentage of visual disability, but age-related cataracts contribute to the majority of all blindness worldwide. Cataracts remain the leading cause of blindness in middle- and low-income countries. Approximately 90% of visually impaired people live in developing countries and most of all visual impairments can be prevented or cured [(2)].

Cataract is one of the most expensive eye diseases requiring care. Identification of its risk factors may help to arrange preventive and treatment strategies in order to minimize the economic and public health burden of this disease [(3)]. Cataract is a multifactorial disease that could have a genetic, socio-demographic, behavioral or environmental basis. Although it is likely that these factors interact with each other and age is still the single most important risk factor for cataract [(4)]. Risk factors that have been associated with cataract also included educational status [(5)], smoking [(6)], diabetes [(7)], sunlight exposure [(8)], body mass index [(9)] and drug use [(10)].

Although cataract is often considered to be an unavoidable consequence of aging, recent studies of the risk factors associated with human cataract identified some interventions that may prevent cataract or slow its progression.

Despite being the leading cause of treatable blindness, the lack of awareness about the disease and its treatment is still a major hurdle in decreasing the blindness due to cataract in the developing countries especially in the rural areas. Hence, we conducted a survey among general population in Albaha City to assess their level of awareness about cataract causes and risk factors. Our specific objectives were to evaluate the degree of awareness about cataract causes and risk factors; to measure people practices related to the care, prevention and management of cataract and to increase the level of knowledge about cataract causes and risk factors among people living in Albaha city, Saudi Arabia.

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METHODS

Ethical considerations

This study design was approved by the institutional review board of the Faculty of Medicine, Albaha University. An informed consent was obtained from each participant.

Study design

This study had a random cross-sectional design that was used to evaluate the awareness about cataract causes and risk factors among general population of Albaha city in Saudi Arabia.

This study was carried out from the beginning of June, 2017 to the end of August, 2017, among the general population of Albaha city, Saudi Arabia.

A sample size of 756 participants (both males and females), aged between 18 to 80 years were randomly selected from the population in Albaha city. People who approved to participate in this study were included, but those not achieving inclusion criteria and those with incomplete data were excluded from this study.

A self-administered questionnaire was used for data collection. The questionnaire had two parts. The first part recorded the personal information of the participants. The second part consisted of fifteen questions about causes, symptoms and diagnosis of cataract. The questionnaire was distributed to the participants by direct contact with them. Data were confirmed then coded and entered to a personal computer. Thanks and appreciations were used to inspire the participants to be involved in this study.

Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) software version 20.0. Numerical data were tested for normality using Shapiro-Wilk test and were represented using median and interquartile range (expressed as 25^{th} -75^{th} percentiles). Categorical data were represented as numbers and percentages in brackets and Pearson's Chi Square test was used to examine associations between two variables. Significance was adopted at $p < 0.05$.

RESULTS

The present study was carried out on 756 participants who completed the self-administered questionnaires. Their age ranged from 14 to 74 years with a mean of 38.12±13.07. Most of the study participants were males (76.2%), 69.7% were married and 71.0% in the level of higher education. Teachers, employees and students were the most frequent participants (19.7%, 17.5% and 13.7% respectively) as showed in **table 1.**

This survey showed that thirty out of 756 participants confirmed that they suffer from cataract with overall prevalence of 4%. Responses to questions on cataract were presented in **table 2.** Most of the participants (97.6%) had knowledge about cataract as an eye disease with higher percent (98.7%) reported by subjects who did not develop cataract. About half of the study sample (50.5%) misunderstood cataract as a white membrane growing over the eye, while only 222 (29.4%) realized it as an increase in eye lens opacity. Some participants had known that cataract could decrease vision (85.2%) or cause blindness (54.8%). This consequence of cataract was highly reported by subjects who had cataract (93.3%) compared to other participants. About two thirds (61.2%) of the study population stated that vision might return back again. An inverse opinion was reported only by 5.6% with greater percentages reported by subjects who did not develop cataract than others (64.0% versus 50.0% and 46.5% respectively).

Table 3 illustrated awareness about risk factors of cataract. Less than half (42.9%) of the study subjects reported that incidence of cataract did not increase with positive family history. A nearly similar percent (41.0 %) did not know that presence of cataract in one or more of family members increased the likelihood of the disease. Furthermore, 352 (46.6%) considered that cataract is not a genetic disease. Concerning age, 602 (79.6%) subjects considered cataract as an age related disease whereas 16.1% did not know that. For ultraviolet rays risk, about two thirds (66.4%) did not know its relationship to the development of cataract whereas 53.3% of the cataract group reported it as a risk factor. Awareness about risk of malnutrition was low, where 57.7% of the study participants did not know whether malnutrition could precipitate cataract or not, with a higher percentage (60.0%) reported by cataract group. The same was observed for dehydration where 53.2% did not know its risk but 32.3% deliberated it as a risk factor. Hypertension was reported by 36.5% as a risk factor, whereas 48.1% did not know its

association with cataract. Great percent (69.6%) had information about diabetes mellitus as a precipitating factor to cataract. Of the thirty subjects who developed cataract, 22 (73.3%) also recognized this risk. Awareness about the hazard of obesity, drugs or smoking was poor; 54.0%,66.9% and 57.1% respectively did not know whether they could precipitate cataract or not. Information about treatment of cataract was demonstrated in **table 4**. Surgical intervention was indicated by great numbers (86.5%), while only 5.8% recorded medical intervention as an option. Awareness was higher among cataract group where 93.3% of them recommended surgery. Nonetheless, only 47.6% of all participants and two thirds (66.7%) of cataract group suggested surgery as the only line of treatment. Out of the study participants, 496 (65.6%) proposed that cataract is treated once it affect vision, while almost one third (32.3%) linked the treatment to maturation of the affected lens. Media was the most frequent source of information for cataract (34.4%), followed by patients and friends (24.6% and 14.0% respectively). Remarkable numbers of all participants and specifically the cataract group liked greatly to know more information about cataract (91.0% and 100.0% respectively). Additionally, they suggested education campaigns, media and brochures (45.0%, 36.8% and 11.9% respectively) as means to increase awareness about cataract **(Table 5).**

Table 1: socio-demographic characteristics of the studied participants.

		N	%
Age (years)	Range	14-74	
	Mean ±SD	38.12 ±13.07	
Sex	Female	180	23.8
	Male	576	76.2
	Total	756	100.0
Marital status	Single	208	27.7
	Married	524	69.7
	Divorced	20	2.7
	Total	752	100.0
Education level	Primary	6	0.8
	Secondary	174	23.3
	Graduate	530	71.0
	Postgraduate	36	4.8
	Total	746	100.0
Occupation	Teacher	144	19.7
	Employee	128	17.5
	Student	100	13.7
	Retired	70	9.6
	No	60	8.2
	Private sector	54	7.4
	House wife	50	6.8
	Solider	34	4.7
	Doctor	28	3.8
	Engineer	22	3.0
	Nurse	10	1.4
	Professor	10	1.4
	Officer	8	1.1
	Pharmacist	4	0.5
	Pilot	4	0.5
	Judge	2	0.3
	Writer	2	0.3
	Total	730	100.0

Table 2: information about cataract disease and its sequel.

		Do you suffer from cataract?								Chi-Square and Fisher's Exact tests	
		Yes N=30		No N=634		Do not know N=92		Total			
		N	%	N	%	N	%	N	%	X^2	P
Do you know that cataract is an eye disease?	Yes	28	93.3	626	98.7	84	91.3	738	97.6	16.912	<.001*
	No	2	6.7	8	1.3	8	8.7	18	2.4		
What is cataract?	A white membrane growing over the eye	14	46.7	322	50.8	46	50.0	382	50.5	7.243	.461
	A lens change where lens becomes opaque	10	33.3	192	30.3	20	21.7	222	29.4		
	An age-related process leading to decrease in vision	4	13.3	76	12.0	16	17.4	96	12.7		
	A white spot in the eye	2	6.7	28	4.4	6	6.5	36	4.8		
	Do not know	0	0.0	16	2.5	4	4.3	20	2.6		
Does cataract decrease vision?	Yes	28	93.3	554	87.4	62	67.4	644	85.2	36.634	<.001*
	No	2	6.7	14	2.2	0	0.0	16	2.1		
	Do not know	0	0.0	66	10.4	30	32.6	96	12.7		
Does cataract cause blindness?	Yes	16	53.3	364	57.4	34	37.0	414	54.8	40.364	<.001*
	No	4	13.3	88	13.9	2	2.2	94	12.4		
	Do not know	10	33.3	182	28.7	56	60.9	248	32.8		
Is it possible to get back vision from cataract blindness?	Yes	14	50.0	362	64.0	40	46.5	416	61.2	16.434	.002*
	No	2	7.1	34	6.0	2	2.3	38	5.6		
	Do not know	12	42.9	170	30.0	44	51.2	226	33.2		

Table 3: awareness about risk factors of cataract.

		Do you suffer from cataract?								Chi-Square and Fisher's Exact tests	
		Yes		No		Do not know		Total			
		N	%	N	%	N	%	N	%	X^2	P
Family history	Yes	6	20.0	104	16.4	12	13.0	122	16.1	12.473	.014
	No	16	53.3	280	44.2	28	30.4	324	42.9		
	Do not know	8	26.7	250	39.4	52	56.5	310	41.0		
Age	Yes	22	73.3	514	81.1	66	71.7	602	79.6	12.190	.012*
	No	4	13.3	26	4.1	2	2.2	32	4.2		
	Do not know	4	13.3	94	14.8	24	26.1	122	16.1		
Ultraviolet rays	Yes	16	53.3	166	26.2	14	15.2	196	25.9	18.133	.001*
	No	2	6.7	50	7.9	6	6.5	58	7.7		
	Do not know	12	40.0	418	65.9	72	78.3	502	66.4		
Malnutrition	Yes	2	6.7	142	22.4	16	17.4	160	21.2	14.706	.005*
	No	10	33.3	140	22.1	10	10.9	160	21.2		
	Do not know	18	60.0	352	55.5	66	71.7	436	57.7		
Dehydration	Yes	6	20.0	212	33.4	26	28.3	244	32.3	18.565	.001*
	No	12	40.0	88	13.9	10	10.9	110	14.6		
	Do not know	12	40.0	334	52.7	56	60.9	402	53.2		
Hypertension	Yes	6	20.0	242	38.2	28	30.4	276	36.5	33.403	<.001*
	No	14	46.7	96	15.1	6	6.5	116	15.3		
	Do not know	10	33.3	296	46.7	58	63.0	364	48.1		
Diabetes mellitus	Yes	22	73.3	448	70.7	56	60.9	526	69.6	7.855	.084
	No	2	6.7	32	5.0	2	2.2	36	4.8		
	Do not know	6	20.0	154	24.3	34	37.0	194	25.7		
Obesity	Yes	10	33.3	102	16.1	14	15.2	126	16.7	25.217	<.001*
	No	12	40.0	198	31.2	12	13.0	222	29.4		
	Do not know	8	26.7	334	52.7	66	71.7	408	54.0		
Certain drugs	Yes	12	40.0	174	27.4	12	13.0	198	26.2	14.068	.007*
	No	2	6.7	46	7.3	4	4.3	52	6.9		
	Do not know	16	53.3	414	65.3	76	82.6	506	66.9		
Smoking	Yes	6	20.0	154	24.3	12	13.0	172	22.8	10.280	.036*
	No	8	26.7	130	20.5	14	15.2	152	20.1		
	Do not know	16	53.3	350	55.2	66	71.7	432	57.1		
Genetic	Yes	10	33.3	124	19.6	12	13.0	146	19.3	17.476	.001*
	No	12	40.0	308	48.6	32	34.8	352	46.6		
	Do not know	8	26.7	202	31.9	48	52.2	258	34.1		

Table 4: awareness about treatment of cataract.

		Do you suffer from cataract?								Chi-Square and Fisher's Exact tests	
		yes		No		Do not know		Total			
		N	%	N	%	N	%	N	%	X^2	p
How is cataract treated?	Surgical	28	93.3	560	88.3	66	71.7	654	86.5	19.282	<.001*
	Medical	2	6.7	32	5.0	10	10.9	44	5.8		
	Do not know	0	0.0	42	6.6	16	17.4	58	7.7		
Is surgery the only treatment?	Yes	20	66.7	308	48.6	32	34.8	360	47.6	17.793	.001*
	No	6	20.0	150	23.7	18	19.6	174	23.0		
	Do not know	4	13.3	176	27.8	42	45.7	222	29.4		
When is cataract treated?	When the lens is mature	12	40.0	204	32.2	28	30.4	244	32.3	3.212	.477
	When cataract affects vision	18	60.0	418	65.9	60	65.2	496	65.6		
	Do not know	0	0.0	12	1.9	4	4.3	16	2.1		

Table 5: sources of information of the study participants and their suggestions to increase awareness.

		Do you suffer from cataract?								Chi-Square and Fisher's Exact tests	
		Yes		No		Do not know		Total			
		N	%	N	%	N	%	N	%	X^2	p
Source of information	TV and social media	4	13.3	222	35.0	34	37.0	260	34.4	52.143	<.001*
	Internet	2	6.7	8	1.3	2	2.2	12	1.6		
	Studying	0	0.0	2	0.3	0	0.0	2	0.3		
	Friend	2	6.7	84	13.2	20	21.7	106	14.0		
	Doctor	12	40.0	62	9.8	10	10.9	84	11.1		
	Books	2	6.7	84	13.2	4	4.3	90	11.9		
	Patients	8	26.7	160	25.2	18	19.6	186	24.6		
	All of them	0	0.0	4	0.6	0	0.0	4	0.5		
	Do not know	0	0.0	8	1.3	4	4.3	12	1.6		
Do you like to know more information?	Yes	30	100.0	570	89.9	88	95.7	688	91.0	6.329	.042*
	No	0	0.0	64	10.1	4	4.3	68	9.0		
How can we increase the awareness about cataract	TV and social media	12	40.0	232	36.6	34	37.0	278	36.8	4.903	.901
	Awareness campaigns	14	46.7	286	45.1	40	43.5	340	45.0		
	Brochures	2	6.7	76	12.0	12	13.0	90	11.9		
	Social media	0	0.0	16	2.5	4	4.3	20	2.6		
	All of them	2	6.7	22	3.5	2	2.2	26	3.4		
	Do not know	0	0.0	2	0.3	0	0.0	2	0.3		

DISCUSSION

This population based cross sectional study was undertaken to measure awareness regarding cataract and its risk factors among people residing in Albaha city, Saudi Arabia. To the best of our knowledge, this is the first study exploring level of knowledge and misconceptions about risk factors of cataract with such a large sample size of the general populations.

In this study, awareness of Saudi population in Albaha city about the pathophysiology of cataract disease was poor. There was misunderstanding of the disease where half of the study population defined cataract as a white membrane growing over the eye. Only, less than one third realized that it is an increase in lens opacity. Again, knowledge of consequences of this common eye disease is not sufficient. Nearly half of the participants know that cataract could cause blindness and the majority of them imagine that it is reversible. Moreover, this study revealed clearly the knowledge deficiency in the study population about risk factors of cataract. High percent (84%) did not know that incidence of cataract increases with positive family history. Likewise, there was a shortage of knowledge about the relationship of malnutrition, dehydration, hypertension and ultraviolet rays and the development of cataract. In accordance with these findings, **Magliyah *et al*.** [11] surveyed 384 persons in Makkah city and detected similar deficient awareness about definition, risk factors and complications of cataract. They attributed this to deficient health education programs provided by health care providers. The only substantial public health education about cataract in Saudi Arabia was supported by Saudi Ophthalmology Society in cooperation with King Khaled Eye Specialist Hospital.

Fortunately, considerable numbers considered cataract as an age related disease and recognized that diabetes mellitus is a major precipitating factor to cataract. This could be explained by the reported high prevalence of diabetes among Saudi adult population [12, 13] with consequent huge efforts in public health promotion about diabetes and its complications achieved by Saudi Ministry of Health [14].The current study revealed acceptable level of awareness among the study participants about treatment of cataract. Great numbers (85%) of them had known that surgical intervention is the recommended treatment of cataract. In contrast, **Magliyah *et al*.** [11] reported poor awareness in Makkah region about the treatment of cataract where, almost two-thirds of the study subjects (65.9%) did not know that cataract is treated surgically when it affects vision. This community survey reported that 30 out of 756 participants confirmed that they suffer from cataract with overall prevalence of 4%. Additionally, it was observed that the amount of knowledge in these subjects about cataract perception, risk factors and treatment was fairly higher compared to other participants.

The leading sources of the study participant's information were TV and social media followed by their diseased relatives and friends. This indicated that Saudi individuals preferred the new easy modern ways to get their information through social media and TV programs. Alternatively, others acquired their health information from asking other community members as their patients and friends. Furthermore, this study revealed that remarkable numbers of the participants were motivated to know more information about cataract and suggested appropriate means including education campaigns, TV and social media programs. This should be considered and targeted health promotion strategies are recommended. Similarly, **Al Rashed *et al*.** [14] suggested that public eye health awareness should be more focused on the ready accessible social media and the internet.

According to World Health Organization, cataract is the leading cause of visual impairment in developing countries. Regarding Saudi Arabia, an earlier study performed in the southwestern region revealed that cataract is responsible for 52.6% of blindness and 20.6% of visual impairment. In addition, this study revealed that proper management of cataract and correction of refractive errors will cure 73.6% of blind subjects and 88.5% of visually challenged people [15]. This emphasizes the need of such health education programs to raise the recorded deficient public awareness in this study. Indeed, improved understanding of the disease and its risk factors will help in minimizing the incidence with improved eye care and better outcomes.

CONCLUSION

Saudi population in Albaha city had poor knowledge towards cataract and its risk factors. Hence, great efforts should be made to increase the knowledge and awareness of the general public about the disease.

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