

Knowledge and awareness of ocular allergy among Jeddah population

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ABSTRACT

Background: Ocular allergy is one of the common conditions that affects patients from different age groups. Public awareness about the disease is crucial for reducing the incidence of ocular allergy. **Aim:** The present study aims to evaluate the knowledge level of the general population in Jeddah, Saudi Arabia toward ocular allergy. **Methodology:** This is a cross-sectional study that included the distribution of an online survey to the public living in Jeddah. The survey included questions to identify common demographics, knowledge, and awareness about ocular allergy signs and symptoms, prevention and treatment, and sources of information. Statistical analysis included descriptive and comparative analysis using Chi-square test and one-way ANOVA test. SPSS version 26 was used for data analysis. **Results:** In total, 1207 responded to this survey and were included in the analysis. Among them, 71% were females, 36.8% were in the age group of 15–25 years, 74.9% had a bachelor's degree, 60.4% were non-medical specialists, 13.2% were from the faculty of medicine. More than half of the participants were aware that ocular allergy affects millions of people globally every year. It is one of the most common eye conditions, itching is the primary source of discomfort, 15%–20% of the world population have ocular allergy, the disease causes discomfort and pain within the eye caused by frequent rubbing of the eye, and that symptoms of ocular allergy include redness, itching, tearing, discharge, blurred vision, and photophobia. Further, 64.9% thought that avoiding the source of triggers can help prevent ocular allergy. Social media was the most common source of information among 19.3%. The average score was 15.6 ± 6.1 out of 27 points; 42.6% of the responders had fair knowledge (50%–75%) about ocular allergy. The age group of 15–25 years ($P < 0.001$), bachelor's degree holders ($P = 0.013$), and individuals with a medical background ($P = 0.003$) were associated with significantly higher mean scores. Males ($P = 0.003$), age group of 15–25 years ($P = 0.024$), individuals with a medical background ($P < 0.001$) had significantly good knowledge about ocular allergy. **Conclusion:** The knowledge level of the general population about ocular allergy in Jeddah, Saudi Arabia is fair and requires improvement.

Keywords: Awareness, general population, knowledge, ocular allergy, Saudi Arabia

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Received: 07-08-2021

Revised: 12-12-2021

Accepted: 20-12-2021

Published: 18-03-2022

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_1591_21

Introduction

Ocular allergy (allergic conjunctivitis) involves hypersensitivity of the eye which leads to immunological reactions against allergens.^[1] Symptoms of ocular allergy are usually simple, ranging from itching, dryness, redness, and tearing. Ocular allergy is not restricted to a particular age group.^[2] However, the first presentation with ocular allergy is usually during childhood and adolescence, where some reports demonstrate allergies in

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How to cite this article: Bazuhair MS, Alsabban HH, Alsabban KH, Alzahrani KA, Alattas AA, Khinkar AM, et al. Knowledge and awareness of ocular allergy among Jeddah population. J Family Med Prim Care 2022;11:1502-7.

the third rank among most common chronic conditions during childhood.^[3]

Due to the industrial revolution and the increased air pollution levels, the incidence of ocular allergy has dramatically increased during the past few decades.^[4] It has been recently reported that almost 40% of the general population globally suffers from ocular allergy among different age groups.^[5] Other factors that may contribute to ocular allergy are hereditary factors and exposure to particular allergens (i.e. pets for instance).^[6]

Different types of ocular allergies have been identified, such as atopic keratoconjunctivitis (AKC), bacterial/viral conjunctivitis, giant papillary conjunctivitis (GPC), and perennial conjunctivitis.^[7] All of these types can be simply prevented by some hygienic measures, including primarily the avoidance of exposure to allergens and using anti-allergic medications.^[8] Furthermore, allergens causing other types of allergy that the patient may have should be avoided.^[9]

Despite the availability of multiple medications for the treatment of ocular allergy, it is usually important to consider other ocular conditions before starting any medications, such as glaucoma and eye cataract, which may be worsened by the administration of some ocular allergy medications.^[10] Antihistamine eye drops and lubricant eye drops are among the most commonly used medications for the treatment of ocular allergy.^[11]

Although there is plenty of data on ocular allergy in the medical literature globally, there is a scarcity of data on the disease in Saudi Arabia despite it affecting a wide population in the Saudi kingdom.^[12] Thus, the aim of this study was to assess the level of knowledge and awareness of ocular allergy among the Jeddah city population, Saudi Arabia.

Materials and Methods

Study design

A cross-sectional study was done from November 2020 to May 2021.

Study setting

King Abdul-Aziz university Jeddah, KSA.

Study participants

Population of Jeddah city, KSA.

Data collection

An online survey was conducted using a questionnaire that included items assessing participants' characters and knowledge regarding OA. Participants were asked about their knowledge about OA epidemiology, relation to visual loss, source of OA discomfort, prevention, signs, OA nature, eye structure involved, triggers, medication, forms, risk factors, and sources of their information. The right answer was given a score of 1

in 13 questions. For the question about knowledge of signs and symptoms of OA, as all eight mentioned signs were right for every right answer, the participant was given a score of 1. For the question about knowledge of the forms of OA bacterial conjunctivitis, for every right answer, the participant was given a score of 1 and a score of 0 for "I don't know," leaving a maximum score of 27 for knowledge about OA. The participant was considered to have poor knowledge if he got <50% of the total score, having fair knowledge if he got 50%–75% of the total score, and having good knowledge if he got >75% of the total score.

Statistical analyses

Data were analyzed using (SPSS) version 25. Qualitative data were expressed as numbers and percentages, and Chi-squared test (χ^2) was applied to test the relationship between variables. Quantitative data were expressed as mean and standard deviation (mean \pm SD). $P < 0.05$ was considered statistically significant.

Ethical considerations

The data will be stored at the principal investigator's office and will only be accessed by the authors. No names or ID numbers will be asked to complete the data collection form.

Results

In total, 1207 individuals from the general public responded to this online survey. All the responses are analyzed and detailed below.

Demographics of responders

Out of 1207 participants, 71% were females. Age was classified into three age groups, with 36.8% in the age group of 15–25 years old. Educational level varied from primary school to bachelor's degree, where 74.9% had a bachelor's degree. Turning to the specialty of the graduate program, 60.4% of the responders were non-medical specialists, whereas 13.2% were from the faculty of medicine, as described in Table 1.

Awareness about ocular allergy

The responders were asked a set of questions about their awareness toward ocular allergy. More than half of the participants were aware that ocular allergy affects millions of people globally every year, it is one of the most common eye conditions, and that itching is the primary source of discomfort. When the responders were asked about ocular allergy prevention, 64.9% thought it can be achieved by avoiding the source of triggers, while 61.3% thought that it can be accomplished by applying anti-allergic drugs, as described in Table 2.

Knowledge about ocular allergy

The knowledge of participants about ocular allergy was also evaluated. More than half of the responders knew that 15%–20%

Table 1: Demographics of responders

	Count	Percent
Gender		
Male	350	29.0
Female	857	71.0
Age group		
15-25 years	444	36.8
26-40 years	424	35.1
>40 years	339	28.1
Educational level		
Primary school	10	0.8
Middle school	28	2.3
High school	169	14.0
Bachelor	904	74.9
Diploma	96	8.0
Educational graduate program		
Medical	228	18.9
Non-medical	729	60.4
Not applicable	250	20.7
Educational graduate program specialty		
College of Applied Medical Sciences	30	2.5
College of Communication and Media	5	0.4
College of Engineering	39	3.2
College of Home Economics	53	4.4
College of Maritime Studies	2	0.2
College of Nursing	26	2.2
College of Science	123	10.2
Community College in Jeddah	4	0.3
English Language Institute	12	1.0
Faculty of Arts and Humanities	112	9.3
Faculty of Computing and Information Technology	45	3.7
Faculty of Dentistry	6	0.5
Faculty of Earth Sciences	7	0.6
Faculty of Economics and Management	98	8.1
Faculty of Educational Graduate Studies	15	1.2
Faculty of Environmental Designs	5	0.4
Faculty of medicine	157	13.0
Faculty of Meteorology, Environment and Arid Land Agriculture	2	0.2
Faculty of Pharmacy	9	0.7
Institute of Arabic Language for Speakers of Other Languages	1	0.1
Institute of Islamic Economics	3	0.2
law School	8	0.7
Not Applicable	250	20.7
Others	193	16.0
Tourism Institute	2	0.2

of the world population have ocular allergy, the disease causes discomfort and pain within the eye upon frequent rubbing of the eye, and that symptoms of ocular allergy include redness, itching, tearing, discharge, blurred vision, and photophobia. As for the source of information about ocular allergy, social media was the most common source of information among 19.3% of the responders, as illustrated in Table 3.

Each question in the awareness and knowledge sections was scored, where every correct answer was given 1 point, as described

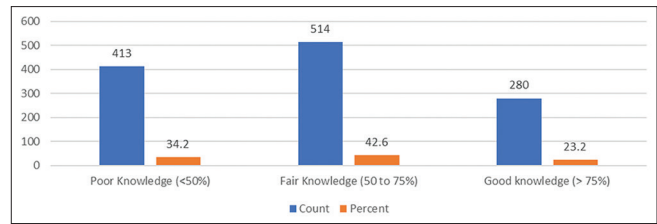


Figure 1: Evaluation of the level of knowledge about ocular allergy

in the methods section. The average score was 15.6 ± 6.1 , with a minimum score of 1 and a maximum score of 27. Furthermore, percents were calculated for each participants' score, which showed that 42.6% of the responders had fair knowledge (50%–75%) about ocular allergy, as demonstrated in Figure 1.

Factors affecting knowledge level of the responders

The mean score was compared over different groups for each demographic variable by using one-way ANOVA test at a level of significance of $P < 0.05$. The age group of 15–25 years old ($P < 0.001$), bachelor's degree holders ($P = 0.013$), and individuals with a medical background ($P = 0.003$) were associated with significantly higher mean scores, as illustrated by Table 4.

Each category of knowledge level was also compared using Chi-square testing over different demographic variables at a level of significance of $P < 0.05$. Males ($P = 0.003$), age group of 15–25 years old ($P = 0.024$), and individuals with a medical background ($P < 0.001$) had good knowledge about ocular allergy compared to their peers, as shown in Table 5.

Discussion

Chronic ocular conditions can lead to significant limitations for the quality-of-life of patients.^[13] One of the most common conditions is ocular allergy that affects individuals from all age groups. Patients with ocular allergy usually suffer from a wide range of symptoms that may vary in severity.^[14] Although preventable, ocular allergy prevention depends mainly on the awareness of the public about the disease, measures of prevention, signs and symptoms, and common treatments.^[15]

The present study evaluated the knowledge and awareness of the general public in one large city in Saudi Arabia, Jeddah toward ocular allergy symptoms and prevention. The mean score for knowledge level was above average (15.6 ± 6.1 points out of 27); however, upon categorizing the knowledge level into three categories, it was found that 42.6% of the population had a fair knowledge level about the disease. This knowledge level was based on social media as the most common source of information about ocular allergy among 19.3% of the responders.

Furthermore, the present study was able to identify the most significant factors contributing to a good level of knowledge,

Table 2: Awareness about ocular allergy

	Count	Percent
In your opinion does OA affect millions of people worldwide each year?		
Yes	895	74.2
No	30	2.5
Don't know	282	23.4
Could OA lead to visual loss?		
Yes	370	30.7
No	189	15.7
Don't know	648	53.7
OA is one of the most common eye conditions encountered by general practitioners as well as eye care practitioners		
Yes	674	55.8
No	106	8.8
Don't know	427	35.4
Majority of people who have OA experience itching as the primary source of discomfort		
Yes	860	71.3
No	109	9.0
Don't know	238	19.7
Are ocular allergies transmitted from person to person?		
Yes	256	21.2
No	572	47.4
Don't know	379	31.4
What is the best way to prevent OA?		
Avoid the source of triggers	783	64.9
Apply anti- allergic drugs	740	61.3
Visit eye clinics	637	52.8
Stay away from those with the disease	254	21.0
Don't know	136	11.3

which were male gender, age between 15 and 25 years old, and having a medical background ($P < 0.05$). These factors were also significantly associated with significantly higher mean scores for knowledge level ($P < 0.05$), except for gender, which was statically non-significant ($P > 0.05$).

Awareness and knowledge about ocular allergy among the general public were evaluated in different contexts. Kyei *et al.*^[16] examined the knowledge about ocular allergy in Ghana among 1000 undergraduate students from three universities. Kyei *et al.*^[16] distributed an online questionnaire to the responders which demonstrated that only a third of the students (34.7%) were aware of the disease, while their knowledge level was classified as low level.^[16] Furthermore, Kyei *et al.*^[16] showed that the educational background was significantly associated with the knowledge level about ocular allergy.^[16]

Unlike Kyei *et al.*,^[16] the present study demonstrated a slightly higher knowledge level about ocular allergy (fair), which was just above average. In addition, the present study included individuals from the general public, not just university students. On the contrary, similar to Kyei *et al.*,^[16] the present study also showed that educational specialty was significantly associated with a higher mean score ($P = 0.003$) and having significantly good knowledge about ocular allergy ($P < 0.001$).

Table 3: Knowledge about ocular allergy

	Count	Percent
Approximately 15%-20% of the population in the world suffers from OA		
Yes	788	65.3
No	70	5.8
Don't know	349	28.9
What is your understanding of OA?		
Discomfort and pains within the eye	670	55.5
Caused by frequent rubbing of the eye	646	53.5
Inflammation of the eye in response to a harmless foreign substance	613	50.8
Don't know	191	15.8
Eye structures involved in OA include		
Conjunctiva, cornea, and eyelids	463	38.4
Conjunctiva	143	11.8
Conjunctiva and cornea	69	5.7
Cornea	63	5.2
Don't know	469	38.9
Do you know substances that trigger allergies in the eye?		
Yes	397	32.9
No	810	67.1
In your opinion, which medications are used for treating OA?		
Lubricant eye drops	449	37.2
Antihistamine	262	21.7
Don't know	259	21.5
Antibiotics	153	12.7
Warm compress	84	7.0
Some eye allergies are inherited		
Yes	406	33.6
No	281	23.3
Don't know	520	43.1
Smoking is a risk factor for OA		
Yes	458	37.9
No	175	14.5
Don't know	574	47.6
Knowledge of signs and symptoms of OA		
Redness	1071	88.7
Itching	1070	88.6
Tearing	769	63.7
Discharge	714	59.2
Blurred vision	665	55.1
Photophobia	612	50.7
Headache	306	25.4
Nausea	38	3.1
Knowledge of the forms of OA		
Seasonal/vernal conjunctivitis	426	35.3
Bacterial conjunctivitis	406	33.6
Viral conjunctivitis	366	30.3
Giant papillary	288	23.9
Perennial conjunctivitis	230	19.1
Don't know	610	50.5
Knowledge of the forms of OA		
Social media	233	19.3
Friends and relatives	212	17.6
Eye specialist	96	8.0
Others	666	55.2

Table 4: Factors affecting the knowledge level of the responders

	Mean	SD	P
Gender			
Male	15.3	6.3	0.221
Female	15.8	6.0	
Age group			
15-25 years	16.5	6.1	<0.001
26-40 years	15.3	6.1	
>40 years	14.9	6.0	
Educational level			
Primary school	12.3	7.3	0.013
Middle school	13.5	6.4	
High school	14.9	6.3	
Bachelor	15.9	6.1	
Diploma	14.9	5.3	
Educational graduate program			
Medical	16.6	6.8	0.003
Non-medical	15.6	5.8	
Not applicable	14.7	6.1	

Table 5: Comparison of different knowledge categories

	Poor	Fair	Good	P
Gender				
Male	40.3%	35.4%	24.3%	0.003
Female	31.7%	45.5%	22.8%	
Age group				
15-25 years	30.6%	41.0%	28.4%	0.024
26-40 years	36.1%	43.6%	20.3%	
>40 years	36.6%	43.4%	20.1%	
Educational level				
Primary school	50.0%	50.0%	0.0%	0.067
Middle school	46.4%	32.1%	21.4%	
High school	42.0%	35.5%	22.5%	
Bachelor	32.0%	43.7%	24.3%	
Diploma	36.5%	46.9%	16.7%	
Educational graduate program				
Medical	31.6%	36.0%	32.5%	<0.001
Non-medical	32.6%	46.0%	21.4%	
Not applicable	41.2%	38.8%	20.0%	

In Saudi Arabia, knowledge of the general public in Hail city about ocular allergy was examined by Almasaud *et al.*^[17] The study included subjects aged 15–40 years old who had an electronic survey to fill. Almasaud *et al.*^[17] demonstrated that the Internet was the most common source of information for 33.2% of the responders, while 75% of the responders thought that itching was the most common symptom. Finally, Almasaud *et al.*^[17] described the knowledge level of the included cohort as “moderate level.”

The knowledge level in the present study from Jeddah is similar to that for the population in Hail as described by Almasaud *et al.*^[17] However, the most common symptom described by the population in Jeddah was redness among 88.7%, followed by itching among 88.6%. In addition, the most common source of

information about ocular allergy in the present study was social media, in contrast to the Internet in Hail study.

Another study in Tabuk city, Saudi Arabia also evaluated the knowledge of undergraduate students about ocular allergy.^[18] Al-Ghofaili *et al.*^[18] included 382 students from one university, with 28% of them having a medical background. Al-Ghofaili *et al.*^[18] showed that the knowledge level of the students was relatively low, whereas senior students had significantly higher knowledge compared to their peers.^[18]

These findings from Al-Ghofaili *et al.*^[18] contradict the findings from Almasaud *et al.*^[17] in Hail city and the present study from Jeddah, where the level of knowledge was higher than that reported by Al-Ghofaili *et al.*^[18] in Tabuk. On the contrary, similar to Al-Ghofaili *et al.*,^[18] the present study demonstrated a significant correlation between knowledge level and age; however, the younger age group had significantly higher knowledge level.

However, the present study suffers from some limitations, which should be taken into consideration while interpreting the results of this study. Only participants from Jeddah city were eligible for inclusion in this study, which limits the external validity of the findings and hinders the extrapolation of the knowledge levels demonstrated in Jeddah to other cities in Saudi Arabia. Moreover, the responses of the participants depended mainly on their subjective opinion about the topic, which may reduce the reliability of the findings. These limitations should be considered in future studies.

Conclusion

Knowledge and awareness of the Saudi population in Jeddah is fair, which can explain the increased incidence of the disease in Saudi Arabia. Accordingly, awareness about ocular allergy should be increased through awareness posters and flyers in eye clinics for patients, as well as through awareness sessions in public areas and hospitals about the disease. Furthermore, similar studies should be conducted in each city in Saudi Arabia to figure out a national estimate for the knowledge level about ocular allergy all over the Saudi kingdom.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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