




Knowledge, Attitudes, and Practices Toward Self-Medicating Eye Symptoms in Saudi Arabia

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Purpose: Self-medication is the selection and use of drugs by individuals to treat self-diagnosed diseases or symptoms. While some patients regard self-medicating as harmless, it is far from being a safe practice. The aim of this study was to evaluate the knowledge, attitudes, and practices toward self-medicating eye symptoms in Saudi Arabia.

Patients and Methods: A cross-sectional study was conducted through an online questionnaire on a study population that consisted of Saudi nationals aged 18 and older who were using or had previously used ophthalmic medications.

Results: Among the 524 responses obtained, 79.4% were female, and more than half were less than 40 years old. Participants admitting to practicing ophthalmic self-medication measured 62.4%. The most commonly self-prescribed ophthalmic medications were artificial tears (n=276), followed by antiallergic (n=57) and antibiotic medications (n=33). Many participants reported that the reason for self-treatment was for repeated and simple symptoms that did not require professional care. While approximately 51% showed high levels of knowledge about ophthalmic medications, no significant relationship was seen with their choice to self-medicate (P=0.153).

Conclusion: Despite detecting a high level of knowledge and acceptable practices and attitudes among participants, a high incidence of self-medication was observed. This effect was mostly attributed to long hospital waiting times and patient self-diagnosis. Increasing the number of healthcare units and properly educating patients on ophthalmic medications may help decrease the incidence of self-medication.

Keywords: eye drops, KAP, Saudi Arabia, self-medication, traditional eye medicine

Introduction

Self-medication is the selection and use of drugs by individuals to treat self-diagnosed diseases or symptoms. This includes the use of herbs, prescription drugs without a valid prescription, and leftover medications that were used by other patients.¹ While some patients regard self-medication as harmless, it is far from being a safe practice. Potential risks of self-administration of ophthalmic medications include loss of vision, dangerous drug interactions, incorrect choice of treatment, inappropriate administration, and drug abuse.² The practice of self-medication is common in both industrialized and developing countries with a prevalence ranging from 25.6% to 73.6%.^{3,4} It is also positively linked to the perceived quality of the country's healthcare system.⁵ Despite the recent enforcement of a law that was passed by the Ministry of Health in 1978 which prohibits selling prescription drugs without a medical prescription in Saudi Arabia, misuse of these medications is still prevalent.⁶ A study conducted in the Riyadh region among 1354 participants revealed a high prevalence (37.2%) of self-medication.⁷ Another study reported the incidence of self-medicating with traditional eye medicine (TEM) in Taif city to be 35%.⁸ This study aims to explore the knowledge, attitudes, and practices (KAP) toward the exercise of self-medication for eye symptoms in Saudi Arabia.

Materials and Methods

Study Population

The study population consisted of Saudi nationals aged 18 and older who were using or had previously used ophthalmic medications. Non-Saudis, healthcare providers, underage participants, and individuals who had never used any form of ophthalmic medication were excluded from the study.

Data Collection

Data were anonymously collected using a simple convenient sampling approach. The authors distributed the survey in public chat groups and accounts on Telegram, WhatsApp and Twitter, with followers from different regions in Saudi Arabia. The sample size was calculated using OpenEpi based on a previous study and was estimated to be 380.⁷ The questionnaire was validated through face-validity based on study objectives and was then tested-retested for a reliability check. The survey was initially written in English but was later translated to Arabic and tested for consistency by authors who have had training on medical translation and are native speakers of Arabic.

The self-developed questionnaire was composed of five parts: The first part contained seven items assessing demographics and nine items measuring knowledge. The second and the third parts were about self-medication, drug installation, and storage practices. The fourth part was about knowledge toward ophthalmic medications. The fifth part was about attitudes toward self-medication.

To measure the participants' knowledge, each correct question answered in the knowledge section was awarded one point. As this category contained nine questions, the final score of each participant ranged from zero to nine points. Sub-scales were calculated where scores higher than five were reported as a high level of knowledge, 3–5 points as a moderate level of knowledge, and two or less as a low or absent level of knowledge. Participants were informed about the purpose of the survey.

Ethical Approval

This study was approved by the Institutional Review Board (IRB) committee of the College of Medicine at Imam Mohammed bin Saud Islamic University.

Statistical Analysis

Data analysis was performed using SPSS software (Statistical Package for the Social Sciences, version 22, SPSS Inc. Chicago, IL, USA). Descriptive statistics were calculated for all variables, including the prevalence, mean, standard deviation, and shape of the distribution (skewness and kurtosis). A p-value <0.05 was considered statistically significant at a confidence interval of 95%.

Results

A total of 524 participants responded to the questionnaire. Most respondents (79.4%) were female. Many participants (64.7%) were less than 40 years old and only 11.8% were older than 50 (Table 1).

Of the total respondents, 326 (62.4%) admitted to using a type of ophthalmic medication such as eye drops, eye ointment, or TEM without a prescription. The most frequently used treatments were artificial tears (n=276), followed by antiallergic (n=57) and antibiotic (n=33) eye drops (Figure 1).

The reported traditional ophthalmic medications that were used included "Zamzam" holy water (n=69), breast milk (n=40), honey (n=33), tea (n=30), homemade saline (n=23), lemon (n=4), cautery (n=1), and kohl (n=1).

The most common symptoms that prompted the practice of self-treatment were eye redness (33.6%), burning sensation in the eye (23.3%), eye itching (22.1%), eye pain (12.6%), and tearing (10.7%) (Table 2).

Pharmacists were the most common source for drug recommendation (43.4%), followed by family members or friends (41.2%), and social media (5.8%). A majority of participants who practiced self-medication (84.9%) reported that their symptoms became better, while 14.4% reported no change in symptoms, and 0.7% became worse after self-medicating. The

Table 1 Demographic Factors

		Frequency	Percent
Gender	Male	108	20.6
	Female	416	79.4
Age	18–29 years	222	42.4
	30–39 years	117	22.3
	40–49 years	123	23.5
	Older than 50 years old	62	11.8
Residency	Central	272	51.9
	Northern	68	13.0
	Southern	30	5.7
	Western	45	8.6
	Eastern	109	20.8
Education level	Illiterate	2	0.4
	Elementary school	3	0.6
	Secondary school	109	20.8
	University	356	67.9
	Higher education	54	10.3
Profession	Student	127	24.2
	Unemployed	130	24.8
	Employee	267	51.0
Medical insurance Coverage?	No	341	65.1
	Yes	183	34.9
Monthly income	Less than 5000 SR	218	41.6
	5000–10,000 SR	128	24.4
	10,000–25,000 SR	150	28.6
	More than 25,000 SR	28	5.3

most common reason for self-medication was having similar symptoms in the past (36.6%), and 26.8% thought that their cases were simple and did not warrant a visit to the ophthalmologist (Table 3).

Most participants (64.9%) reported that they had never let the eye drop nozzle touch their eyes when applying the medication. Some participants admitted to sharing their eye drop medication with other individuals (18.3%). Many participants (18.9%) did not space between their eye drop medications when using them together, while 15.3% thought it would not matter if they started applying eye drop medication or eye ointment when prescribed together. Most participants (73.7%) stated that they read the medication pamphlet, and the vast majority (87%) read the expiration date of the medication before using it. Moreover, 41% of participants would always wash their hands before using eye drops. Finally, 54.6% store ophthalmic medications in the refrigerator while 45.4% store them in warm rooms (Table 4).

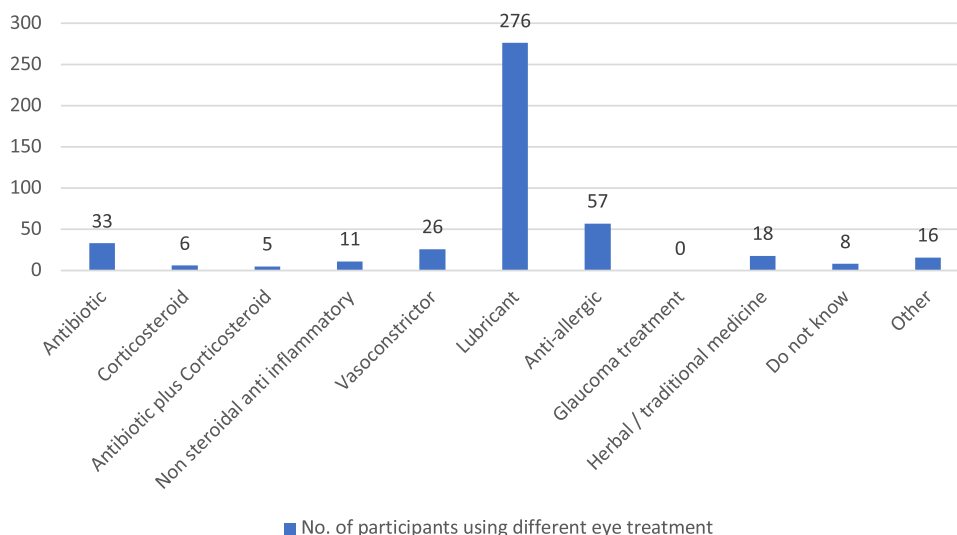


Figure 1 Type of ophthalmic self-medication used by the participants.

According to many participants (87%), most of the information conveyed to them by healthcare professionals was about the medication dose and duration of use. However, some participants (40%) reported that they were taught how to apply the medication, and few reported being provided information about storage conditions (7%) and side effects (12.5%).

Nearly 51% of the sampled respondents had a high level of knowledge about eye medications, while 41% had a moderate level of knowledge, and 10.9% had low or absent levels of knowledge. Level of knowledge was determined by knowing right answers regarding correct storage and usage of eye medication and seeking information from the appropriate sources. There was no significant difference between males and females in their level of knowledge ($P=0.556$). Although older participants seem to have a higher level of knowledge than younger participants, no significant correlation was seen ($P=0.632$). Area of residency and education level did not seem to affect the level of knowledge. In contrast, participants' professions had a significant influence on the level of knowledge. Interestingly, unemployed participants had a higher level of knowledge compared to other professions.

Table 2 Symptoms Lead the Participant to Self-Medication

	Frequency	Percent from Sample
Eye redness	176	33.6
Burning eye	122	23.3
Eye pain	66	12.6
Tear	56	10.7
Decrease vision	25	4.8
Eye itching	116	22.1
Eye secretion	23	4.4
Trauma	22	4.2
Swollen eyelids	4	0.8
Other	19	3.6

Table 3 Reasons for Self-Medication Among Participants

	Frequency	Percent
Repeated symptom	116	36.6
Long hospital waiting times	32	10.1
High cost of treatment or not having medical insurance	25	7.9
Far hospital	11	3.5
Being busy	33	10.4
Thought that is simple symptom	85	26.8
Un-satisfaction about medical service	10	3.2
Other	5	1.5

Table 4 Eyedrop Installation and Storage Practices

		Frequency	Percent
Does the eyedrop bottle nozzle touch your eye while using?	Sometimes	157	30.0
	Never	340	64.9
	Always	27	5.2
Do you share your eyedrop with others	No	428	81.7
	Yes	96	18.3
Time space between different eyedrops	No time spacing	99	18.9
	5 minutes	156	29.8
	5–10 minutes	269	51.3
When using both, which do you use first; eyedrops or eye ointment?	Ointment first	14	2.7
	Eyedrop first	430	82.1
	Not matter	80	15.3
Do you read medication pamphlets?	No	138	26.3
	Yes	386	73.7
Do you wash your hands before applying eyedrops?	Always	215	41.0
	Sometimes	227	43.3
	Never	82	15.6
Place of storage of eyedrops	Refrigerator door	286	54.6
	In warm rooms such as a bedroom	238	45.4
Do you check the expiration date of medication before use	No	68	13.0
	Yes	456	87.0

Finally, when the participants were asked about their attitude toward self-medication, 84.5% thought that it was dangerous and ineffective, and 25.4% reported that they would use these medications again without counseling a healthcare provider (Table 5).

Table 5 Association Between Demographic Factors and Level of Knowledge

		Level of Knowledge						P-value
		Poor		Moderate		High		
		Frequency	Percentage N %	Frequency	Percentage N %	Frequency	Percentage N %	
Gender	Male	14	13.0%	40	37.0%	54	50.0%	0.556
	Female	43	10.3%	175	42.1%	198	47.6%	
Age	18–29 years	29	13.1%	86	38.7%	107	48.2%	0.632
	30–39 years	11	9.4%	50	42.7%	56	47.9%	
	40–49 years	14	11.4%	53	43.1%	56	45.5%	
	Older than 50 years old	3	4.8%	26	41.9%	33	53.2%	
Residency	Central	34	12.5%	109	40.1%	129	47.4%	0.874
	Northern	8	11.8%	30	44.1%	30	44.1%	
	Southern	3	10.0%	11	36.7%	16	53.3%	
	Western	5	11.1%	19	42.2%	21	46.7%	
	Eastern	7	6.4%	46	42.2%	56	51.4%	
Education level	Illiterate	0	0.0%	0	0.0%	2	100.0%	0.241
	Elementary	0	0.0%	0	0.0%	3	100.0%	
	Middle school	0	0.0%	0	0.0%	0	0.0%	
	Secondary school	16	14.7%	45	41.3%	48	44.0%	
	University	37	10.4%	142	39.9%	177	49.7%	
	Higher education	4	7.4%	28	51.9%	22	40.7%	
Profession	Student	15	11.8%	56	44.1%	56	44.1%	0.043*
	Unemployed	8	6.2%	45	34.6%	77	59.2%	
	Employee	34	12.7%	114	42.7%	119	44.6%	
Using any type of eye treatment (ointment, drops) or popular over-the-counter remedies without a prescription	No	15	7.6%	81	41.1%	101	51.3%	0.153

Discussion

This study will aid in recognizing the most commonly used ophthalmic medications and usage patterns. Addressing those medications and their side effects and correct uses is very important in terms of educating the population. Individuals may find the urge to self-medicate when they experience eye symptoms before or even without seeking professional medical care. The medications used may include pharmaceutical eye drops, eye ointments, or TEM. However, the reasons behind the practice of self-medication are not fully understood and vary among different populations.

Medical policies in Saudi Arabia restrict dispensing some drugs without a prescription.⁷ The prevalence of self-medication with ophthalmic medications or TEM is 62.4% in our study, which is higher than the reported prevalence in Argentina (25.6%) and Brazil (40.5%). The prevalence is, however, lower than what was reported in Nigeria (73.6%).³ Additionally, the prevalence differs within Saudi Arabia where it was reported to be 54.1% in the Riyadh region, and 35% in Taif.^{7,8} These variations may be due to the utilization of different study designs and target populations.

In our study, lubricant, antiallergic, and antibiotic eye drops were the most commonly self-medicated eye treatments. In contrast, other studies revealed that antibiotics were the most common medication used while antiallergic and steroid eye medications ranked second.^{3,9,10} These differences may be attributed to the high prevalence of allergy and dry eye in the Saudi community as well as the restrictions implemented on antibiotic dispensing since 2018.^{7,11,12}

The most common TEM used in our study was “Zamzam” holy water. This is similar to another study done in Saudi Arabia, where the most commonly used TEM was spiritual, including “Zamzam” holy water.¹³ The efficacy and safety of “Zamzam” water in treating eye diseases have not been established.

In this study, the most common symptoms that triggered self-treatment were eye redness and itching. This finding is concordant with other studies done in India and Ethiopia.^{4,14} The practice of self-medication might delay the treatment of more severe conditions like infections that might present with similar symptoms.

A proper technique involving multiple steps is used to administer eyedrop medications with maximum effectiveness without contaminating the bottle. However, there is no specific way to apply them optimally. In our study, many participants showed acceptable eye drop instillation practices, defined as practices not expected to cause any kind of harm to the eyes. Additionally, 58.9% of participants sometimes or never washed their hands before putting the eyedrop and 35.2% reported that the bottle nozzle sometimes or always touched the eye while applying the eye drop treatment. Furthermore, 18.3% of participants reported sharing their eye drop medication with others. These practices might lead to contamination of the eye drop and subsequent eye infection.¹⁵ 19% of participants instilled their drops back-to-back, and nearly 18% might have applied an eye ointment first before the eye drop. Patients should be informed about the washout effect that happens when eye drops are instilled back-to-back: The conjunctival cul-de-sac capacity is 30 μ L and one eye drop ranges from 29 to 65 μ L, and any excess volume will be washed out.¹⁶

Eye drop preparations have different storage requirements. If stored inappropriately in hot, wet, or brightly illuminated places, these medications might lose their effectiveness because of changes in their chemical and physical properties. Most ophthalmic preparations are stored in a cool dry place between 2–8°C. Some drugs can be irreversibly degraded when exposed even briefly to temperatures between 25°–30°C. These temperatures could easily occur in the bedrooms in countries with hot climates like Saudi Arabia. Our results showed that 45.4% of participants stored their medication in warm rooms; this finding is similar to a study done by Mohindroo et al (35%) and Alfawzan et al (43%). Although many rooms are equipped with air conditioning; medications can still be affected by hot weather.^{17,18} In our population, most of the participants were young with no comorbidities. The quality of eye drop instillation and storage techniques may be lower in older patients, patients with severe visual field defects, poorly educated patients, and patients with comorbidities such as arthritis.¹⁹

Pharmacists have a significant influence on which medication consumers use for their complaints.²⁰ In our study, they represented 43.4% of the source of recommendation for self-medication, which is similar to other studies⁹. Moreover, most participants reported that pharmacists and ophthalmologists were more interested in discussing medication dose and duration rather than the method of application, storage guidelines, and side effects. This observation is comparable to a study done by Alfawzan et al.¹⁸ Healthcare providers are required to give proper instructions on drug dose, duration, as well as eye drop instillation techniques as improper drug application may lead to contamination and noncompliance. Incorrect storage may

also lead to a change in the chemical properties of the medication, consequently resulting in a loss of efficacy. Lack of knowledge regarding the side effects of medications may lead to improper use and self-medication.^{16,21,22}

In our study and in a study conducted in Nigeria, participants showed an attitude advocating against self-medication, yet they still seem to self-medicate despite it being dangerous and sometimes ineffective. Self-medication with ophthalmic medications can lead to corneal ulceration, endophthalmitis, evisceration, exenteration, and even blindness.^{23,24} This attitude toward self-medication could be due to various reasons. In our study, participants mainly sought self-medication because they experienced similar symptoms before. Others thought that their cases were simple and not worth the long waiting time that accompanies a visit to the ophthalmologist. In contrast, studies conducted in Ethiopia and India revealed that travel distance was the primary reason for self-medication.^{4,14}

No correlation was seen between demographic factors and level of knowledge, except with profession; participants' profession had a significant influence on the level of knowledge. Furthermore, it was found that the practice of self-medication was not affected by the individual's level of knowledge. This finding is comparable to the results of a study done in Peru.²⁵ However, it seems that participants with a low level of knowledge were more interested in self-medicating. This association is concordant with the results of another article in Ethiopia.⁴

This study was conducted by using an online-based survey that collected the most recent responses amongst the general population in Saudi Arabia, however, study only included people that would respond to an on-line chat-based solicitation population. On the other hand, our study limitations include recall and response bias where the respondents may have answered differently to "look good" in the survey, even if it is anonymous. Another limitation of the present study is that the majority of respondents were females, and the small sample size may not be sufficient to generalize the findings across the population.

In conclusion, we found a high level of knowledge among the participants along with acceptable practices and attitudes. There is a high incidence of self-medicating with ophthalmic medications, which can be attributed to long waiting times at the hospital and self-diagnosis. The government of Saudi Arabia implemented laws that prohibit dispensing most medications without a valid prescription from a licensed practitioner. Increasing the number of healthcare units and proper education of patients regarding the harmful effects of some herbal and non-prescribed medication may decrease the incidence of self-medication. Despite these findings, further studies are needed to better understand and evaluate the knowledge, attitude, and practice toward eye drops and self-medication in Saudi Arabia.

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