

CLINICAL SCIENCE

SELF-MEDICATION: INITIAL TREATMENTS USED BY PATIENTS SEEN IN AN OPHTHALMOLOGIC EMERGENCY ROOM

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doi: 10.1590/S1807-59322009000800005

Carvalho RS, Kara-José N, Temporini ER, Kara-Junior N, Noma-Campos R. Self-medication: initial treatments used by patients seen in an ophthalmologic emergency room. Clinics. 2009;64(8):735-41.

OBJECTIVE: This study seeks to identify practices of self-medication in the treatment of ocular emergencies. We examine patients' use of both homemade preparations and manufactured products before seeking specialized care.

MATERIALS AND METHODS: We conducted a cross-sectional analytic survey of consecutive patients seen in the ophthalmology emergency room of a teaching hospital.

RESULTS: The sample included 561 subjects, 51.3% males and 48.7% females, with a mean age of 39.8 years. Prior to seeking emergency care, 40.5% reported self-medicating; 29.4% used a homemade preparation (13.9% referred to an industrialized product like boric acid as a homemade preparation), and 11.1% used a manufactured product. The most frequently used products included a boric acid solution (53.3%), a normal saline solution (35.7%), herbal infusions (6.1%) and breast milk (4.8%). Viral conjunctivitis was the most frequent diagnosis (24.4%), followed by the presence of a corneal foreign body (7.4%). No significant differences were found in the self-treatment of ocular injuries according to gender ($p = 0.95$), level of education ($p = 0.21$) or age ($p = 0.14$). In addition, self-medication practices were not related to the medically judged severity of the condition.

CONCLUSION: Patients often attempt to treat conditions that require ophthalmologic emergency care by self-medicating with homemade or manufactured products. The most widely used products include boric acid, normal saline, leaf infusions and breast milk. This behavior occurs independently of educational level, gender, age or the nature of the ocular condition. Self-medication is a culturally driven practice that is used even in cases of acute ocular injuries.

KEYWORDS: Cultural habits; Eye-drops; Homemade remedies; Ophthalmologic first-aid; Self-medication.

INTRODUCTION

Most societies have culturally specific ways of explaining disease and of treating health problems, and official Western medicine often exists together with other forms of care.¹

Three superimposed and interconnected domains of healthcare have been identified: the informal domain, which includes lay people; the popular domain, which includes traditional healers and so-called "witch doctors"; and the

professional domain, which includes legally sanctioned professionals such as Western medical physicians. Western scientific medicine is also known as "official medicine."²

The informal domain is where disease is first recognized and where care begins. It includes self-medication; therapeutic tips or counseling from relatives, friends, neighbors or peers; healing practices or mutual support activities conducted by groups linked to churches, religious sects or self-help organizations; and consultations with other lay people who have gone through similar experiences.² In 1978, estimates indicated that 70% to 90% of healthcare activities in both Western and non-Western societies were carried out in the informal domain.³

Self-medication is a common phenomenon all over the world and is linked to the perceived quality of a country's healthcare system.⁴

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Received for publication on February 25, 2009

Accepted for publication on May 04, 2009

Even in industrialized countries, many simple medications are available for routine use and are sold without a medical prescription in pharmacies, drugstores or even supermarkets.⁵

To quickly relieve their discomfort, or because they lack other options, patients are often compelled to use either manufactured or homemade medicines without appropriate medical supervision.

A few examples of this practice include the use of lemon balm as a sleep inducer, aniseed to relieve a baby's gas, pain medication for headaches, lemon drops to clear the eyes, boric acid for eyelid edema and breast milk for conjunctivitis in newborns.⁶

In ocular emergencies, visual prognosis is highly dependent on first-aid measures. The use of self-medication can delay a patient's search for specialized care, aggravate his or her condition and ultimately jeopardize the patient's visual prognosis.

Piovesan (1970)⁷ emphasized the need to understand the cultural habits of different societies in order to comprehend individual behaviors in respect of health and disease. Only then is it possible to intervene and change behavior when necessary. In our review of the literature, we have not found any data on first-aid measures used to treat ocular injuries that ultimately require emergency care.

The objective of the present study was to identify self-medication practices involving homemade and manufactured preparations that were used to treat ocular disorders before patients arrived at an ophthalmology emergency care unit.

METHOD

We conducted a cross-sectional analytic survey of patients seen at the Ophthalmology Emergency Unit of the University of São Paulo Medical School General Hospital (HC-FMUSP) during what can be assumed to be a typical week (April 1 to April 8, 2006).⁸ According to Tanaka and Melo (2001),⁹ the "typical week" is the most practical duration for collecting this kind of data. It constitutes a definite and representative time period and makes it possible to collect data that should lead to an understanding of the broader context and allow for the establishment of an assessment framework.

We formed a non-probabilistic, readily accessible sample of patients who arrived at the aforementioned service at our facility. The survey tool was a semi-structured questionnaire administered by trained interviewers. Patients were enrolled in the study 24 hours a day between 6:00 a.m. on April 1, 2006 and 6:00 a.m. on April 8, 2006.

The study included patients who arrived directly at the unit, those who were referred to the unit, and those who were

sent for consultations; there was no prior screening of the target population. Patients with communication difficulties or those under the age of 14 years were allowed the help of caregivers and/or legal representatives. Patients were excluded from the study if they had a loss of consciousness, multiple traumas with severe pain or if they refused to participate.

Boric acid and normal saline solutions were categorized as homemade preparations by patients themselves, who described these as "natural products" without "chemicals."

The diagnoses were divided into four categories: trauma, inflammation and/or infection, degenerative disorders and other ophthalmologic pathologies.¹⁰

In this study, a fifth category was added: no ocular changes. Patients seen for follow-up were mentioned but were not included in these categories.

Patients were asked about their availability and willingness to participate in the survey, and they understood, through a written informed consent form, that participation in the study was voluntary and would not influence their wait time before consultation; they were also informed that their refusal to participate would not negatively affect their medical care.

The data obtained were entered into a database using EpiData (version 9.0) software. The significance level in the statistical analysis was $p \leq 0.05$.

The survey was approved by the Ethics Committee of the University of São Paulo Medical School Hospital and supported by FAPESP (Research Support Fund of São Paulo).

RESULTS

The sample included 561 patients, or 95.2% of all patients seen at the emergency unit during our one-week study period. The patients' ages ranged from 27 days to 91 years old (mean = 39.8 years; SD = 20.9); 51.3% of the patients were male, and 48.7% were female. Sixty-three patients (11.3%) were illiterate, and 301 (53.9%) had completed no more than primary education. Among those who stated their monthly income, 136 (33.8%) said that they had no income, and 50.0% of the patients earned less than BRL311 (US \$182.94 according to the March 2008 exchange rate).

A diagnosis was confirmed in 549 (97.9%) of the 561 patients. Three hundred three patients (55.2%) were diagnosed with inflammation or infection; 19.1% presented cases of trauma. No ocular changes were found in 3.6% of patients, and 1.1% of patients were at the ER for follow-up consultations (Table 1).

Of the patients seen at the ER, 227 (40.5%) reported

Table 1 – Distribution of patients according to diagnosis at the Ophthalmology ER of the University of São Paulo Medical School General Hospital during a typical week in April 2006

Diagnostic Category	(n = 549) ¹	
	n	%
Inflammation/ infection	303	55.2
Trauma	105	19.1
Degenerative disorders	22	4.1
Other	93	16.9
No ocular changes	20	3.6

1- Five patients left the hospital without permission before their examination; for seven patients, no diagnosis was reported. Follow-up consultations accounted for 1.1% of the cases (6 patients).

self-medicating to treat their affliction. Of these, 165 (29.4%) used homemade preparations (13.9% referred to products like boric acid and saline solution as homemade preparations) and 62 (11.1%) used manufactured products (Figure 1). The patients who self-medicated with manufactured products before they arrived at the ER reported the following: 59 individuals (47.2%) used drugs at their own discretion or on the recommendation of family members; 14 (11.2%) used drugs already known from previous therapies; 7 (5.6%) followed recommendations from friends and neighbors; and 6 (4.8%) used drugs recommended by the pharmacist (multiple answers were possible).

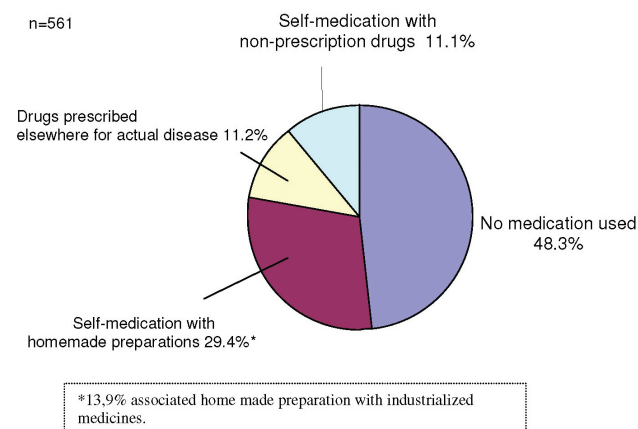


Figure 1 – Use or not self-medication before arrival at the Ophthalmology ER of University of São Paulo Medical School General Hospital, during a typical week in April 2006

One hundred sixty-five patients (29.4%) reported using a home remedy before arriving at the Ophthalmology Emergency Unit of the University of São Paulo Medical School General Hospital. In most cases, the patient decided to use the homemade product him- or herself (Table 2). The

most frequently used products were boric acid (53.3%) and normal saline (35.7%). Seventeen patients (10.3%) reported that their eye condition improved after using homemade preparations.

In the use of self-medication to treat ocular symptoms, no significant differences were observed between genders ($p=0.95$), different levels of education ($p=0.21$) or different age groups ($p=0.14$) (Table 3). Likewise, no difference was observed in the pattern of self-medication according to employment status ($p=0.15$) or place of residence ($p=0.52$).

While 120 patients (52.4%) complaining of watery eyes used self-medication, only 39.9% of patients without this symptom pursued self-medication ($p = 0.003$). Other complaints associated with a higher use of self-medication were foreign body in the eye ($p = 0.001$), chemicals in the eye ($p = 0.01$), red eyes ($p = 0.01$) and itching ($p=0.02$) (Table 4).

Patients diagnosed with inflammation or trauma had the highest rates of self-medication (49.5%); those with

Table 2 - Use of homemade medicines in the eye prior to arrival at the Ophthalmology ER of the University of São Paulo Medical School General Hospital during a typical week in April 2006

Use of homemade preparations	n	%	
(n = 165)			
Source of recommendation¹			
Patient him/herself	86	52.1	
Mother or father	18	10.9	
Other family members	6	3.6	
Friends or neighbors	12	7.3	
Pharmacist	15	9.1	
Used product, but did not know who recommended it	28	17.0	
Product used¹			
	(n = 165)	(n=561)	
Boric acid solution	88	53.3	15.7
Saline solution	59	35.7	10.5
Water from faucet or well	14	8.5	2.5
Herbal preparations (rosemary, rue and others)	10	6.1	1.8
Breast milk	8	4.8	1.4
Water with salt or sugar	4	2.4	0.7
Ice	6	3.6	1.1
Shampoo	2	1.2	0.3
Holy water	1	0.6	0.2
Urine	1	0.6	0.2
Mixed herbal infusion	1	0.6	0.2

¹ multiple answers possible.

Table 3 – Use of self-medication to treat ocular conditions according to socio-demographic characteristics

Characteristics	Self-medication				p ¹
	Yes		No		
	n	%	n	%	
Gender (n = 561)					0.95
Male	129	44.8	159	55.2	
Female	123	45.1	150	54.9	
Age group (yrs; n = 561)					0.14
0 - 19	38	44.2	48	55.8	
20 - 29	47	41.2	67	58.8	
30 - 39	58	55.8	46	44.2	
40 - 49	40	46.5	46	53.5	
50 - 59	28	45.9	33	54.1	
60 or older	41	37.3	69	62.7	
Education (n=558)					0.21
Never attended school	27	42.9	36	57.1	
Elementary school	54	37.2	91	62.8	
Primary school	78	50.0	78	50.0	
High school	70	46.7	80	53.3	
College	22	50.0	22	50.0	
Job (n=547)					0.15
Employed	139	47.6	153	52.4	
Retired	48	43.6	62	56.4	
Unemployed	17	29.3	41	70.7	
Student	27	47.4	30	52.6	
Domestic chores	14	46.7	16	53.3	
Place of residence (n=555)					0.52
Hospital neighborhoods	76	47.8	83	52.2	
Other neighborhoods in the city of São Paulo	105	45.9	124	54.1	
Greater São Paulo urban area	63	43.4	82	56.6	
Outside the greater São Paulo urban area	7	31.8	15	68.2	

¹ *chi*-square test.

degenerative disorders exhibited the lowest rates of self-medication (13.6%) (Table 5).

Self-medication was not associated with the need to use tertiary or emergency care services (Table 6).

DISCUSSION

When a person becomes ill, he or she follows a “hierarchy of resort” in seeking treatment; options often include self-medication, consultation with “witch doctors” or traditional healers, and professional medical care. Health decisions are based on lay beliefs about the structure and

Table 4 - Use of self-medication to treat ocular conditions according to complaints in patients seen at the Ophthalmology ER of the University of São Paulo Medical School General Hospital during a typical week in April 2006 (n = 561)

Complaint	Self-medicated				p ¹
	Yes		No		
	n	%	n	%	
Eye redness					0.01
Yes	179	48.9	187	51.1	
No	73	37.6	121	62.4	
Itching					0.02
Yes	115	51.1	110	48.9	
No	137	40.9	198	59.1	
Foreign body					0.001
Yes	34	66.7	17	33.3	
No	218	42.8	291	57.2	
Visual impairment					0.12
Yes	68	40.0	102	60.0	
No	184	47.2	206	52.8	
Chemicals in the eye²					0.01
Yes	25	64.1	14	35.9	
No	225	43.3	294	56.7	
Pain					0.16
Yes	154	47.5	170	52.5	
No	98	41.5	138	58.5	
Watery eyes					0.003
Yes	120	52.4	109	47.6	
No	132	39.9	199	60.1	
Trauma or blow²					0.83
Yes	20	46.5	23	53.5	
No	231	44.8	284	55.2	
Rheum					0.45
Yes	59	48.0	64	52.0	
No	193	44.2	244	55.8	
Spots³					0.89
Yes	18	43.9	23	56.1	
No	233	45.0	285	55.0	

¹ *chi*-square test. ² Information available for 558 patients.

³ Information available for 559 patients.

function of the body as well as about the origin and nature of diseases. According to Kleinman (1980),² individuals can self-medicate in a number of ways, and many use pharmaceutical products and traditional medicines or make dietary and behavioral changes based on beliefs and superstitions.

In this study, 40.5% of patients with conditions considered to be ocular emergencies reported self-medicating with homemade medicines or preparations before seeking professional emergency care. Of these patients, 29.4% used homemade preparations (13.9% referred to products like boric acid and normal saline as homemade preparations), and 11.1% used industrial medical products (Fig. 1). Most of the patients who used homemade

Table 5 - Use of self-medication to treat ocular conditions according to the diagnosis. (n = 543)

Diagnostic category ¹	Self-medication				p
	Yes		No		
	N	%	n	%	
Inflammation/ infection	150	49.5	153	50.5	0.002
Trauma	52	49.5	53	50.5	
Degenerative disorders	3	13.6	19	86.4	
Other	32	34.4	61	65.6	
No change	6	30.0	14	70.0	

¹ Information available for 543 patients. Return visits were not considered. "p" refers to the *chi*-square test.

Table 6 - Use of self-medication to treat ocular conditions according to the need for tertiary and emergency care services (n = 561)

Type of care	Self-medication				p ¹
	Yes		No		
	N	%	n	%	
Need for tertiary care					0.27
Yes	81	48.5	86	51.5	
No	171	43.4	223	56.6	
Emergency care²					0.50
Urgency	47	49.5	48	50.5	
Relative urgency	95	46.1	111	53.9	
Non-urgency	95	42.6	128	57.4	

¹ *chi*-square test.

preparations did so either on their own initiative or based on recommendations from family members (Table 2); this highlights the influence of the socio-cultural environment on this kind of behavior.

Self-medication is a cultural phenomenon that is observed all over the world and encouraged by advertisements that always end with the warning: *"If symptoms do not disappear, please seek medical advice."*⁸ Lay people are instructed to first use the advertised drug and to only seek medical advice if their symptoms persist.

Kara-José et al. (1985)¹¹ analyzed knowledge and practices related to ocular health in a sample of the population of Campinas, Brazil. They found that 25.6% of people reported self-medicating. Many patients cited their lack of understanding of healthcare and their difficulty in obtaining medical care as reasons for these practices.

In this study, patients who self-medicated with

industrialized medical products used drugs that had been recommended by doctors for earlier conditions; this suggests that patients keep the eye drops or ointments they are prescribed and, when experiencing the same or similar symptoms, tend to use the same product. Matos (2005)⁴¹ states that, when therapies prove successful, a cause and effect relationship is established (*"this treats that"*) and people believe that they have learned *"how to treat diseases"*.

In Brazil, it has been reported that "quite often patients use eye drops they have at home or that have been beneficial to one of their relatives or children in the past"; apparently, it is no overstatement to say that a reasonable proportion of the population ignores the fact that eye drops have different indications and contraindications¹¹.

Many people in Brazil routinely use eye drops that are considered to be "mild," such as artificial tears or vasoconstrictors. The use of these substances may delay appropriate treatment of a more serious condition.¹²

Self-medication with manufactured drugs can have a number of dangerous effects. These medications can have a cumulative effect that leads to toxicity and adverse reactions after a person uses them for a long period of time. Low doses may lead to the development of bacterial resistance and loss of the drug's efficacy.^{13,14}

Some patients (4.8%) used industrialized medicines before coming to the ER on the advice of a pharmacist. The habit of searching for this kind of advice has already been clearly identified in Brazil. One survey showed that 27.1% of patients sought advice from a pharmacist for the treatment of conjunctivitis; 13.6% of these patients had attended college.¹¹

The sale of eye drops without a prescription seems to be an increasingly frequent occurrence¹⁵ and has been observed in between 77.0% and 86.0% of the drugstores in Brazil^{16,17}.

So-called "homemade" products are also used to help relieve ocular problems. In this study, 29.4% of our patients reported using a homemade preparation before seeking care at the Ophthalmology ER of the University of São Paulo Medical School General Hospital. We therefore conclude that informal care is relevant among patients with emergency conditions (Fig.1).

We note that even those patients who had suffered trauma (true emergency cases) used homemade preparations or readily available drugs before seeking medical assistance at the Ophthalmology ER (Table 5). In this context, Noia et al. (2000)¹⁸ reported practices such as rinsing the eyes with milk, oil, tap water, normal saline and boric acid after chemical trauma.

* Verbal report after hearing advertisement in the media

Other ocular complaints associated with self-medication using homemade preparations or readily available drugs included the following: sensation that a foreign body was in the eye ($p = 0.001$), watery eyes ($p = 0.003$), ocular exposure to foreign substances ($p = 0.02$), itching ($p = 0.02$) and redness ($p = 0.03$) (Table 4).

Before seeking help at the ER, 1.8% of the patients used herbal infusions applied with soaked dressings and/or lavage (Table 2).

The use of herbal medicines and other natural products is a centuries-old practice based on popular traditions that are almost always orally transmitted from one generation to the next.¹⁹

Santos et al. (1995)²⁰ concluded that 65.7% of elementary school teachers in São Paulo, Brazil believe that homemade "remedies" can treat any kind of disease; 34.3% believe that they can treat certain diseases, and 51.4% think that they know which herbs should be used for which disease. The information taught to children by schoolteachers has an influence on the adoption of practices and behaviors and helps to perpetuate such popular beliefs.

Annichino et al. (1986)²¹ assessed the knowledge about and use of medicinal herbs and plants among the population and concluded that 95.2% of people know of and use therapeutic plants.

In this study, besides ocular dressings and lavages with herbal infusions, 3.2% of patients also reported the use of water (either faucet or well water, with salt or sugar), and 0.2% reported using holy water.

While phytotherapeutic agents may contribute to the treatment of ocular conditions, it is well known that the habit of washing the eyes with plant-derived substances may cause irreversible damage, such as that resulting from fungal ulcers.²²

The use of faucet or other potable water (with salt or sugar) for eye lavage is a dangerous practice that may lead to ocular infections. Those who use this kind of preparation may be exposed to contamination from fungi, bacteria and parasites.^{23,24}

In this survey, 15.7% of patients reported using boric acid, and 10.5% reported using a saline solution (Table 2). The use of these products has also been mentioned in cases of acute eye injury. Kara-José et al. (2007)²⁵ concluded that boric acid bottles are often handled inappropriately, leading to contamination; in addition, many patients keep the bottle open for long periods of time, use the contents to treat several different eye conditions, and share the same bottle among several different individuals. They also found that a great many very simple problems end up in ophthalmologic emergency rooms of a tertiary hospital in São Paulo.²⁷

While saline solution is considered to be a neutral substance by the public, its use in ocular lavage also has contraindications.²⁸

Another practice identified was the use of breast milk to treat ocular conditions (1.4%) (Table 2). In general, the use of breast milk in the eye is related to the treatment of conjunctivitis. Traditionally accepted as a natural remedy, breast milk is used in the eye and, sometimes, is even recommended by pediatricians for newborn babies with conjunctivitis.

However, its use is not recommended by ophthalmologists "because some forms of conjunctivitis are quite dangerous and, if not treated early, may cause blindness, as in the case of gonorrheal conjunctivitis."²⁹

We note that 40.5% of all patients with a possibly acute eye condition used some form of self-medication as their initial approach to therapy. They used homemade preparations, industrialized products or both and used products that had treated earlier conditions or been recommended by other non-professional people.

This approach was common among people of both genders and with different levels of education, and it did not depend on disease severity (Tables 3, 5 and 6).

Self-medication and delaying a search for professional medical care are dangerous, and educational measures are necessary to prevent the use of treatments that may cause irreversible damage to the eye.

Health education is the responsibility of everyone, especially professionals working in the healthcare and education sectors.

Research suggests that preventive measures may help avoid 80.0% of cases of blindness. It is therefore essential to understand patient behaviors following an ocular injury and to design educational projects that help patients avoid dangerous practices that can lead to a poorer prognosis.³⁰

CONCLUSION

Many patients initially use self-medication to treat acute ocular injuries. This practice is widespread and is not dependent on the patient's level of education, age, gender or disease severity. Such procedures, especially in urgent cases, can be either directly harmful or can cause harm by delaying appropriate care.

SUGGESTION

Educate the population about appropriate conduct following an acute ocular injury.

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