Research Article

Use of traditional eye medicines by patients with corneal ulcer in India

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Abstract

Background: Instillation of traditional eye medicines (TEMs) into the eye is one of the causes associated with poor visual outcome and corneal blindness.

Objective: To determine the use of TEM and factors for its use in patients with corneal ulcer.

Materials and Methods: This prospective study was conducted on 189 new patients with corneal ulcer attending cornea clinic of Gandhi Memorial Hospital, Rewa, Madhya Pradesh (India). After complete eye examination, information was collected for use of TEM, sociodemographic profile, symptoms necessitating its use, and complication. Necessary treatment was given and final visual outcome was noted. Lab investigations were performed to identify organism.

Result: TEM was used by 38% subjects, especially females and subjects residing in rural areas were found to be significantly associated with its use. Majority of TEM users were farmers (51.4%). The most common symptom was poor vision (66.7%) for use of TEM. Breast milk (40%) and plant products (29%) were most commonly applied TEMs. Central and entire corneal involvement was found to be significantly high among TEM users. Scarring and perforation occurred in 70.8% and 31.9% TEM users, respectively. No significant difference was found between organism identified and the use of TEM. Visual acuity up to 6/18 was found to be higher among non-TEM users (23.9%) as compared to TEM users (9.7%). At presentation, 38.9% TEM users had already lost their vision. Significant difference was found between presenting visual acuity and final visual acuity achieved in both groups.

Conclusion: Intensive health education is needed for encouraging the uptake of eye care services, particularly in rural areas.

KEY WORDS: Traditional eye medicines, corneal blindness, corneal ulcer, primary eye care

Introduction

Corneal diseases are among the major causes of vision loss and blindness in the world today, after cataract and glaucoma.[1] Cataract and corneal diseases are major causes of blindness in countries with less-developed economies.[2] According to the World Health Organization, in India, approximately 6.8 million people have been estimated to have vision less than 6/60 in at least one eye due to corneal diseases; of these, about a million have bilateral involvement.[3,4] The burden of corneal disease in our country is reflected by the fact that 90% global cases of ocular trauma and corneal ulceration leading to corneal blindness occur in developing countries.[5] The prevalence of corneal blindness varies from country to country and even from one population to another. Its epidemiology is complicated and encompasses a wide variety of infectious and inflammatory eye diseases. As trachoma and vitamin A deficiency become less common, suppurative keratitis is becoming the major cause of corneal blindness in the developing world.[6] Whereas contact lens use is a major risk factor for corneal ulceration in the developed world, a high prevalence of fungal infections, agriculture-related trauma, and use of traditional eye medicines (TEMs) is unique to the developing world.[7,8]

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TEMs are a form of biologically based therapies or practices that are instilled or applied to the eye or administered orally to achieve a desired ocular therapeutic effect.[9] TEMs are crude or partially processed organic (plant and animal products) or inorganic (chemical substances) agents or remedies that are procured from either a traditional medicine practitioner (TMP; synonyms: traditional alternative medicine practitioner, traditional healer, spiritual healer) or nontraditional medicine practitioners that could be the patient, relative, or friend.[10,11]

TEM use, either as sole first-line treatment or as an adjunct used concurrently with conventional therapy, has been associated with poor visual outcome of otherwise treatable eye diseases in clinical ophthalmic practice. TEM-related poor ophthalmic outcomes have been attributed to delay in uptake of eye care services, damage to ocular and or adnexal structures from TEM toxicity, and microbial contamination of TEM agent or procedure.[10–13]

Various studies on TEM have documented its use and have established inconsistent associations of its use with factors such as age, gender, educational status, rural residence, occupation, socioeconomic status, cultural beliefs, ignorance and access to health care, and time to presentation for uptake of eye care services.[7–15] Although several studies in Africa have documented the use of TEM before presenting to the hospital, few studies have been conducted in Indian subcontinent.

The study was conducted to determine the use of TEM and the types of TEM used by the patients of corneal ulcer attending the eye clinic of the tertiary care hospital, Rewa, Madhya Pradesh, India. The association of the use of TEM with sociodemographic and clinical correlates was also studied.

Material and Methods

This prospective study was conducted on 189 consecutive patients presenting with first episode of corneal ulcer at the ophthalmic clinic of the Teaching Hospital, Shyam Shah Medical College, associated with Gandhi Memorial Hospital, Rewa, between January 2008 and December 2008. All applicable institutional and government regulations concerning the ethical use of human volunteers were followed during this research. Oral informed consent was obtained from the patients before enrollment into the study. An interviewer-administered questionnaire was used during the study. All new patients seen in the eye clinic during the study period were asked about the use of TEM.

Patients' demographics such as sex, age, occupation, education, and rural/urban residence were recorded. The symptoms necessitating the use of TEM, the type of TEM, history of trauma preceding the use of TEM, complications, presenting visual acuity, and final visual outcome were documented. The visual acuity was recorded in terms of Snellen notation.

A penlight exam was performed followed by fluorescein stain with slit lamp bio-microscopy to detect corneal lesions. Ulcers were classified as peripheral, central, and those involving the whole cornea. Corneal scrapings were sent for Gram's staining, and KOH mount culture sensitivity tests were performed, where required. Systemic and local treatment was given.

Data were analyzed with SPSS software, version 13 (SPSS, Chicago, IL) including calculation of frequency tables, proportion, percentage, and χ^2-test to determine the statistical significance of variables. The statistically significant level (p) was set at 0.05.

The study was carried according to the ethical guidelines for biomedical research on human subjects (2000).

Results

Total 189 subjects were interviewed for the use of TEM. Table 1 presents the use of TEM among subjects by their sociodemographic characteristics. Of total 189 subjects, 101 (53.43%) were males and 88 (46.57%) were females. The use of TEM was documented in 72 (38%) subjects before presenting to hospital. Significantly high proportion of females were found to use TEM. Age of the subjects varied from 4 to 72 years. Half of the subjects (50.8%) belonged to the age group of 30–50 years. Slightly high use of TEM was noted in the age groups of <30 and >50 years, but this difference was not found to be significant. Among TEM users, majority (69.4%) belonged to the rural background. Very significant association was found between TEM use and rural/urban residence. Table 2 presents occupation of the TEM users.

Table 1: Sociodemographic characteristics of patients with corneal ulcer

Category (n)	TEM user (n = 72)	Non-TEM user (n = 117)	χ^2-Value, p-value	Significant/not significant
Gender				
Male (101)	29 (40.3%)	72 (61.5%)	7.265, 0.007	Very significant
Female (88)	43 (59.7%)	45 (38.5%)		
Age group (years)				
<30 (41)	16 (22.2%)	25 (21.4%)	0.2397, 0.887	Not significant
30–50 (96)	35 (48.6%)	61 (52.1%)		
>50 (52)	21 (29.2%)	31 (26.5%)		
Residence				
Rural (102)	50 (69.4%)	52 (44.4%)	10.23, 0.0014	Very significant
Urban (87)	22 (30.6%)	65 (55.6%)		

Table 2: Occupation of the TEM users (*n* = 72)

Occupation	TEM users	%
Agriculture work	37	51.4
Housewife and unemployed	11	15.3
Laborer	06	8.3
Student	08	11.1
Service	03	4.2
Business/self-employed	05	7
Professional	02	2.8

Table 3: Symptoms leading to the use of TEM (*n* = 72)

Symptoms	TEM users	%
Diminution of vision	48	66.7
Trauma, foreign body	21	29.1
Redness, itching, discharge, white spot	03	4.2

Table 4: Type of material used as TEM (*n* = 72)

Type of TEM	No	%
Breast milk	29	40
Leafy matter	20	20
Honey	07	9
Castor oil	05	7
Sugar water	04	5
Ghee	04	5
Others[a]	03	4

[a]Cows' urine (01), toothpaste (01), hens' blood (01).

Farmers constituted the highest occupational group accounting for 37 (51.4%) whereas professional constituted the lowest group with 2 (2.8%). Table 3 documents the symptoms leading to the use of TEM, which included pain, redness, discharge, itching, poor vision, trauma, and white spot. The most common symptom was poor vision found among 48 patients (66.7%) followed by trauma in 21 (29.1%). Table 4 presents types of material used as TEM by the subjects. Breast milk (29; 40%) and plant products (20; 29%) were most common materials applied as TEMs. Location, complications, and microbial profile of the subjects are given in Table 5. Central and entire corneal involvement was found to be significantly high among TEM users. Significant association was found between complications experienced and the use of TEM. Scarring and perforation occurred in 70.8% and 31.9% TEM users, respectively. Fungal organism was isolated in 58.3% TEM users and in 52.1% non-TEM users, but no significant difference was found between organism identified and the use of TEM. Table 6 depicts the visual acuity of subjects on presentation and final visual acuity after the completion of treatment. Proportion of patients presenting with visual acuity up to 6/18 was higher among non-TEM users (23.9%) as compared to TEM users (9.7%). Before presenting to the health-care facility, 38.9% TEM users had already lost their vision. Slight improvement in visual acuity (up to 6/18) is achieved in both groups after treatment as shown in Table 6. The proportion of patients with visual acuity <6/18 was reduced slightly to 83.3% in TEM users and 69.2% in non-TEM users after the treatment. Significant difference was found between presenting visual acuity and final visual acuity achieved in both groups.

Discussion

This study was conducted to document the usage of TEM among patients presenting with corneal ulcer to a tertiary care facility in central India. Our study reported the use of TEM in 38% subjects. This is comparable to a study conducted in southern India in which 47.7% patients with corneal ulcer used TEM before presenting to the hospital.[10] Another study carried out in Gujarat documented the use of TEM by 9.5% patients with corneal ulcer.[16] Large-scale use of TEM

Table 5: Location, complications, and microbial profile in patients of corneal ulcer (*n* = 189)

	TEM users (*n* = 72)	Non-TEM users (*n* = 117)
Location of ulcer (*n*)		
Peripheral (90)	24 (33.3%)	66 (56.4%)
Central (77)	36 (50%)	41 (35.1%)
Entire (22)	12 (16.7%)	10 (8.5%)
χ^2 = 9.957, df = 2, *p* = 0.0069; significant association		
Complications		
Scarring (118)	51 (70.8%)	67 (57.3%)
Perforation (29)	23 (31.9%)	6 (5.1%)
Secondary glaucoma (26)	10 (13.9%)	16 (22.2%)
Iridocyclitis, endophthalmitis, and panophthalmitis (16)	10 (13.9%)	06 (5.1%)
χ^2 = 14.5, df = 3, *p* = 0.0023; significant association		
Organism		
Fungus (103)	42 (58.3%)	61 (52.1%)
Bacteria (86)	30 (41.7%)	56 (47.9%)
χ^2 = 0.46, df = 2, *p* = 0.49; not significant		

Table 6: Visual acuity of the patients with corneal ulcer

Visual acuity	Presenting visual acuity		Final visual acuity	
	TEM users (*N* = 72)	Non-TEM users (*N* = 117)	TEM users (*N* = 72)	Non-TEM users (*N* = 117)
6/6–6/18	7 (9.7%)	28 (23.9%)	12 (16.7%)	36 (30.8%)
<6/18–6/60	12 (16.7%)	30 (25.6%)	7 (9.7%)	25 (21.4%)
<6/60–3/60	25 (34.7%)	27 (23.1%)	18 (25%)	21 (17.9%)
<3/60–PL	24 (33.3%)	29 (24.8%)	28 (38.9%)	30 (25.6%)
No PL	4 (5.6%)	03 (2.6%)	7 (9.7%)	05 (4.3%)
p-Value	0.0276, significant		0.0125, significant	

has been reported from Africa.[8,9,11,12,14,15] Courtright et al.[8] reported that 33.8% patients with corneal ulcers in rural Malawi used TEM before presentation to hospital. Singh[17] from Nepal reported that 57% patients with corneal ulcers used TEM. Recent studies from Nigeria reported the use of TEM by many new patients, 1.57% by Ukponmwan and Momoh[18] and 5.9% by Eze et al.[19] A study conducted by Yorston and Foster[20] in Tanzania showed that 25% patients with corneal ulcers were associated with the use of TEM.

The sociodemographic characteristics of the study subjects showed that those who presented with ocular complaints were predominantly in the productive age group, which has adverse economic implications for the patient, the family, and the country. Sociodemographic profile in our study is comparable with that of the studies conducted in India.[10,16] Slight preponderance of TEM use was observed in less than 30 years or older (>50 years); however, no difference was observed between the groups with regard to age. This is similar to the study conducted in south India.[10] TEM use was found to be significantly high among females in our study. However, Prajna et al.[10] and Ukponmwan and Momoh[19] observed no difference in age and sex among TEM users and non-TEM users. TEM use by females has been attributed to inability to access eye care services due to gender-related factors. As shown by our study, rural residence continues to be an important risk factor for usage of TEM. Rural residence imposes both geographic and economic barriers to access eye care services. Illiteracy, poor socioeconomic status, unawareness, physical distance to hospitals, and health care and other barriers to access eye care are few facts for increasing use of HR/TEM.[21] The lack of access to hospitals due to geographic and economic barriers, proximity, and relative access to TEM through friends, relatives, and neighbors likely explains the preponderance of rural subjects resorting to TEM. Half of the TEM users were engaged in agriculture work. A large population of India resides in rural areas and their main occupation is agriculture. These workers are exposed to trauma and a hot humid climate predisposes them to ocular conditions such as abrasions, lacerations, allergies, and bacterial conjunctivitis which is compounded by poverty and lack of access to medical care. Hence, they are more likely to use TEM. Previous studies have similarly reported farmers, traders, and artisans as people who frequently use TEMs.[10,18,19] In contrast to practice in Africa, TEM most commonly used in India is human breast milk followed by plant extract.[8,10,16] In Africa, TEMs are more of plant than animal origin.[8,18,19] This difference might be attributed to prevailing cultural practices. Patients who reported TEM use were more likely to have vision impairment (visual acuity <6/18) on presentation (90.3%) as compared to non-TEM users (76.1%). Low presenting visual acuity among TEM users, apparently due to delays caused by prior TEM use, has been reported in various studies.[10,14,15,18,19] The proportion of patients with visual impairment was reduced slightly to 83.3% in TEM users after various appropriate treatments. Poor visual outcome was also seen more in patients who used TEMs than in those who did not use them.[15] When various substances are applied, visual prognosis may be compromised further even after definitive ophthalmic interventions have been offered. Generally, the visual outcome of corneal ulcer depends majorly on other indices. Therefore, further studies are needed to evaluate effect of additional factors such as duration and frequency of TEM instillation, trauma, and systemic illness. In this study, 70.8% subjects who used TEM developed complications. Scarring followed by perforation were the most common complications. Another study reported ocular complications in 54.8% most common were corneal opacity.[19] Many studies indicated that HR/TEM is likely to have adverse effects on the eye. Most of these traditional medications are often prepared with alkaline or acidic solutions, resulting in high degree of corneal damage and scarring. Ocular complications such as keratitis, endophthalmitis, and panophthalmitis were more frequent in patients with a positive history of TEM than those with a negative history. This finding is consistent with that of the study conducted in Tanzania.[20] TEM may also cause corneal damage by introducing microorganisms into the eye, which lead to primary or secondary infection. The secondary infections are likely to be due to the unsanitary condition used to make and instill TEM. Investigators from Tanzania[20] found that corneal ulcers associated with the use of TEM were more likely to cause dense scars. However, Lewallen and Courtright[22] reported in their study that peripheral corneal ulcers were associated with the use of TEM. Our study showed diminution of vision followed by trauma as most common symptom necessitating the use of TEM. The study conducted in Nigeria also found poor vision as main symptom necessitating the use of TEM followed by inflammatory eye condition.[18] Prajna et al.[10] reported that patients with a history of trauma

were more likely to use TEM than those without any such history. To conclude, our study documents the use of TEM predominantly by population living in rural areas and those who are engaged in agriculture work. Symptoms suggest the use of TEM for various ocular conditions. This suggests that the necessary human and material resources, needed for the treatment of these leading eye conditions, should be made available and accessible to all particularly rural population. The use of TEM can further degrade visual outcomes in patients with minor or major ocular problems. A large proportion of subjects presented with low vision and blindness due to either complications caused by TEM or underlying disease, trauma, and so on. Further community-based studies are needed to reveal other factors that play role in attaining final visual outcome. The prevalence of this preventable blindness can be reduced by intensive health education to the communities, both urban and rural, about the dangers of TEM. Primary eye care workers have a very important role to play in the prevention of blindness from TEM. They should be encouraged to be the first point of contact for ocular conditions. They must be trained to recognize minor ocular ailments and equipped for treating it. Their contact with the community is important in discouraging the use of TEM. Nurses and community healthcare workers should be trained to recognize and promptly refer cases of corneal ulcers and trauma to ophthalmologists. There is a need of intensive health education for encouraging the uptake of preventive and promotive primary eye care.

Conclusion

Intensive health education is needed for encouraging the uptake of eye care services particularly in rural areas.

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