

## Epidemiological study of dacryocystitis in rural population

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### Abstract

Chronic dacryocystitis which is an inflammation and infection of lacrimal sac is an important cause of epiphora leading to ocular morbidity in India. Out of many etiological factors of chronic dacryocystitis, poor hygiene and allergy have a major contribution to the disease development. The aim is to find out occurrence of dacryocystitis in patients belonging to various socioeconomic groups and to correlate dacryocystitis with socioeconomic status. The present study is cross sectional hospital based study from June 2016 to Aug 2016 in a tertiary health care centre of central India. The result shows the maximum number of patients belonging to the age groups of 61-70 years (47.32%). Females outnumbered males 69(61.61%) female patients. In this study of 112 patients who underwent surgery for Chronic Dacryocystitis, there were more patients belonging to class III, IV, V of modified B.G Prasad classification. To conclude with, we found that there were greater number of patients belonging to class III of modified B.G. Prasad classification 2014 and maximum patients fell into Class III, IV and V of socioeconomic status criteria indicating that there may be some co-relation between dacryocystitis and poor socioeconomic status.

**Keywords:** Dacryocystitis, Socioeconomic status, Nasolacrimal duct.

### Introduction

Dacryocystitis is an inflammation of the lacrimal sac often as a result of infection. Obstruction of nasolacrimal duct causes the obstruction to the flow of tears from the eye to the nose leading to the bothersome symptoms of epiphora. Abnormalities of tear drainage may be subdivided into functional and anatomical. Anatomical obstruction may occur at any point along the lacrimal drainage pathway may be congenital or acquired. The acquired nasolacrimal duct obstruction is of two types: Primary or Secondary. Primary acquired nasolacrimal duct obstruction is an obstruction caused by inflammation of unknown cause that eventually leads to fibrosis. Secondary acquired lacrimal drainage obstruction may result from a wide variety of infections, allergies, inflammatory, neoplastic, traumatic or mechanical causes.<sup>(1)</sup>

The lacrimal drainage system consists of the puncta which are the opening to the upper and lower canaliculus. These meet at the common canaliculus and open into the lacrimal sac. This runs parallel to the nose and is separated from the middle meatus by two thin plates of bone. It continues down to become the nasolacrimal duct which opens into inferior nasal meatus. Acquired Dacryocystitis occurs in two forms: acute, and chronic.

There are various epidemiological factors that contribute to dacryocystitis which include race with black race having predominance and its more common in females than males.<sup>(1)</sup> It commonly occurs in two discrete age categories- infants and older than 40 years. It is commonly encountered by ophthalmologist accounting for 87.1% of epiphora which causes social embarrassment due to chronic watering from eyes.<sup>(1-2)</sup> It is more commonly found in low socioeconomic strata.

Although with extensive search in literature there are hardly any studies of Dacryocystitis correlated with the socioeconomic status.<sup>(3)</sup> According to Gillil GD et al there is higher incidence among people of lower socioeconomic status.<sup>(4)</sup> There is a huge list of etiologies of dacryocystitis which includes many nasal conditions like sinusitis, rhinitis, trauma, tumors, atrophic rhinitis, eczemas of nares, enlarged inferior turbinate, foreign bodies, nasal septal abscesses and deviations, ethmoid mucocele, etc. Post surgery especially after Caldwell Luc operation, Lautenschlager-Halle ozena operation, radical maxillectomy, ethmoidectomy, etc. Lacrimal sac tumors like lymphoma, fibroepithelioma, transitional cell carcinoma, lymphoblastoma, nuriemoma, angiosarcoma, hemangiopericytoma, pseudotumor, melanoma, metastatic carcinomas, and benign polyps can also present as dacryocystitis.

Occupational history is important where in the people working in factories with lot of smoke, fumes and irritants are there and proper protective measures are not there. In rural India one of the most common modes of cooking is still Chulla has wherein the female population is exposed to the fumes and the irritants of the charcoal. Various studies are available in Indian literature on various methods of management of Dacryocystitis but very few studies done on the epidemiological factors contributing to Dacryocystitis in Indian population.

Untreated dacryocystitis never undergoes spontaneous resolution. It tends to progress as wall of the sac become atonic and contents can be evacuated only by the external pressure. Acute dacryocystitis may lead to lacrimal abscess. If untreated it may cause unilateral chronic conjunctivitis, corneal ulcers, lacrimal abscess fistula and panophthalmitis may occur

if any intraocular surgery is performed in presence of unrecognized dacryocystitis. Others complications are orbital cellulitis, cavernosus sinus thrombosis and orbital thrombophlebitis. Most of the people consider watering from eyes as minor discomfort and avoid themselves from presenting to ophthalmologist as they are unaware of the deleterious complications.

### Materials and Methods

The hospital records of 127 patients who underwent surgery (DCR) for epiphora under ophthalmology or ENT department were included in this study and the record was analyzed in details for various parameters like name, age, sex, address, occupation, nasal and ophthalmologic pathologies, previous history of exposure to fumes at work or any trauma. Socioeconomic status was calculated by using Revised Modified B.G. Prasad's scale. The advantage with Prasad's classification is that it takes into consideration only the income as a variable and it is simple to calculate. This can be applied to assess the socioeconomic status in both rural and urban areas but we focused on rural population only.

### Revised Modified B.G. Prasad SES classification for year May 2014:

SES Class	Income
I	Rs. 5571 and above
II	Rs. 2786-5570
III	Rs. 1671-2785
IV	Rs. 836-1670
V	Below Rs. 836

If some details pertaining to our study were not there in the records then the patients were telephonically conversed. Since we could not contact 15 such patients, they were excluded from the study. Final analysis was done on 112 patient records. Case record forms were filled and the results were analyzed. This was a cross sectional experimental type of study carried out in Department of ENT from 1<sup>st</sup> Aug 2015 to 31<sup>st</sup> July 2016. All those patients who underwent surgery for chronic dacryocystitis in ENT and Ophthalmology department at our hospital were included.

### Results

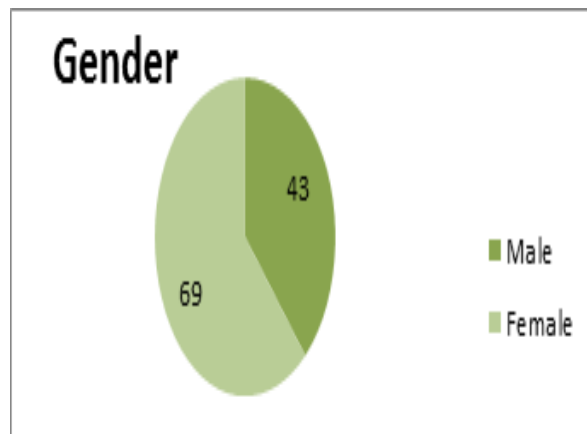
Chronic Dacryocystitis was observed in almost all age groups with a very high incidence in age group of 61-70 years followed by 51-60 yrs (Table1).

**Table 1: Age distribution in patients of Dacryocystitis**

Age groups	No of patients	Percentage (%)
20-30	05	4.46
31-40	05	4.46
41-50	11	9.82
51-60	25	22.32

61-70	53	47.32
71-80	13	11.60
Total	112	100.00

Female outnumbered males as in Fig. 1 where there were 69 females and 43 males out of 112 patients.



**Fig. 1: Gender distribution**

**Table 2: Laterality of Dacryocystitis**

Dacryocystitis	No of patients	Percentage(%)
Right Side	44	39.28
Left Side	38	33.92
Both sides	30	26.78
Total	112	100.00

Out of the total of 112 patients the highest incidence of dacryocystitis was seen in the right side i.e. 44 patient (39.28%) and 38 patients(33.92%) had a left sided disease while 26.78% had a bilateral disease(Table 2).

**Table 3: Distribution of patients in socioeconomic status as per revised B.G. Prasad SES classification**

Income	Socioeconomic status	No of Patients
Rs. 5571 and above	I	05
Rs. 2786-5570	II	07
Rs. 1671-2785	III	30
Rs. 836-1670	IV	14
Below Rs. 836	V	56
Total		112

Maximum number of patients of our study had an income less than Rs 773 and fell in class V of socioeconomic status classification and second largest group of patients i.e. 30 patients belong to class III (Table 3). Chronic Dacryocystitis which is attributed to multiple etiologies was studied according to various causes as enlisted in the Table 4.

**Table 4: Various factors affecting Dacryocystitis**

Factors	Positive	Negative
Exposure to irritants	63(56.25%)	49(43.75%)
Allergic association	42(37.5%)	70(62.5%)
Obstructive lesion of eye/nose	13(11.60%)	99(88.39%)
Trauma	11(9.82%)	101(90.18%)

56.25% of patients had a history of exposure to irritants in the form of smoke or fumes. 37.5% had a positive history of allergy which led them to itch their eyes often. 25.9% of the patients had either deviated nasal septum, polyps or as in one patient there was an ethmoid tumor with intraorbital extension. 11% of the patients had a history of trauma and previous nasal surgery.

### Discussion

Chronic Dacryocystitis leads to Epiphora which is an important cause of morbidity in India. Either of the eyes could be affected. It is the cause of social embarrassment to so many people and is encountered in 87% of cases of Epiphora. Our present study of 112 cases all the patients who have undergone Dacryocystorhinostomy is either ENT or Ophthalmology department in one year from August 2015 to 31<sup>st</sup> July 2016 of our tertiary care institute were included in this study. The records were studied over the period from June 2016 to August 2016. All the data from patients with respect to their age, sex, occupation, association to allergies, recurrent infections, trauma (iatrogenic, accidental, any obstructive lesion of eye or nose) was noted down. These facts are being now discussed being comparison with previously published studies.

In our study maximum incidence of disease was found in Females that is in 69(61.61%) patients while 43(39.39%) were males. In a study carried out by Pawar and Patil.<sup>(5)</sup> The incidence of Chronic dacryocystitis was seen in 56% of females. This high incidence in female has been attributed to narrow lumen of bony lacrimal canal. Mellerin 1929 and Maritinoz Roman in 1966<sup>(6)</sup> had reported this as a cause for female predilection.

In our study the disease was found lateralized to Right side in 44(39.28%) of cases while it was Left in 38(33.92%) of cases and bilateral in 30(26.78%) of cases. In our study we found that disease prevalence was highest in the age group of 61-70 years that was 47.32% followed by 22.3% in the age group of 51-60 years. Jacobs BH<sup>2</sup> in a study found maximum incidence in age group of 40-55 years. While Saxena RC and Garg KC<sup>(7)</sup> quoted a maximum age incidence in the 4<sup>th</sup> decade.

The living standard is an important determinant of socioeconomic status which does have influence over

the prevalence of the few diseases. In our study we tried to access the relationship of socioeconomic status with chronic dacryocystitis. We found that 56% of the patients were of Class V of Modified B.G. Prasad classification of socioeconomic strata 2014.<sup>(8)</sup> 14%, 30% cases were in the IV and III class of modified B.G. Prasad classification of socioeconomic strata 2014. Hence as per our study Chronic Dacryocystitis is more common in III and V socioeconomic class. This can be attributed to poor hygienic conditions.

It was observed in a study that highest rate of patients were female and most of the females came from the middle and lower income groups, who working in the farms used wood and dried cow dung for cooking, which gave away a lot of smoke particles, which could have settled down in the conjunctive sac, entered the nasolacrimal duct through tears and in turn had blocked the nasolacrimal duct. On the other hand, considering that chronic sinusitis can be one of the causes of the nasolacrimal blockage<sup>(9-10)</sup> and given the geography and climate of the north of Iran and the presence of allergens such as pollen, agricultural pesticides, which has an important role in sinus infection and subsequent inflammation of the nasolacrimal duct.

63% of the patients had positive history in the past of exposure to irritants out of them 42% had a history of exposures to fumes while cooking without gas, 60% had history of exposure to fumes, chemicals at their work place. Since ours is a tertiary care institute and is rural based and caters patients of factory workers in the vicinity, hence such a large figure was seen.

Allergic association was asked to all the patients and it was found that 42% patients had allergy to some allergens specially dust mites. 13% patients had some obstructive lesions of the nose (DNS, polyps, tumor, hypertrophied turbinates), eye (mucocoele, mucopyocoele) 11% patients had history of accidental injury (63%) while 37% had history of nasal surgery.

### Conclusion

The goal of present study was to correlate between dacryocystitis and socioeconomic status. In our study of 112 patients who underwent surgery for chronic dacryocystitis; we had more patients belonging to class III, IV, V of modified B.G Prasad classification 2014. Although with the extensive search in literature we found very few studies correlating between dacryocystitis and socioeconomic status. However in our study we have found that the number of patients belonging to class III and above was more. Thus this socioeconomic status criterion was indicating that there may be some co-relation between dacryocystitis and poor socioeconomic status. Hence an extensive study to solve the possibility of this association needs to be carried out. In addition there was strong association of exposure of irritants in most of the patients in our study.

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