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A Clinical Study on Proportion of Dry Eye Disease in SLE Patients Attending O.P.D in a Tertiary Care Hospital in Assam

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ABSTRACT : Objective :- To study the proportion of Dry eye disease in SLE patients attending Rheumatology OPD(Department of Medicine) and Department of Ophthalmology of Assam Medical College and Hospital,Dibrugarh. Materials and Methods:- This is a hospital based cross sectional study conducted on 90 patients,the study period being 6 months. This study was conducted based on tear film status which was evaluated by Schirmer's I test,Tear film break up test,Cornealstaining,Dry eye grading. Results :- A total of 90 patients were enrolled in the study. Out of which 55(61.11%) patients were found to have dry eye disease. The proportion of dry eye was found to be more in females 52(94.54%) than males.Schirmer's test <2mm was found in 10(18.19%) patients,Tear film break up test <10secs in 18(32.72%) patients, Corneal staining Grade 4 in 10(18.19%) patients.Conclusion:- The proportion of the dry eye is 61.11% according to our study. Dry eye disease increases with age and the females were affected more than the males.

Keywords: Schirmer's I test, Tear film break up time,Cornealstaining,Dry eye grading.

I. INTRODUCTION

Dry eye disease is the most common ocular manifestations of SLE and is often associated with secondary Sjogren's Syndrome[1.] Symptoms include discomfort,fornicealforeshortening,symblepheron formation and exposure keratopathy. Dry eye can lead to corneal scar,ulcer and filamentary keratitis also can cause decreased visual acuity. The hallmark of the disease is decreased production of the aqueous layers of tear film.

There are mainly two types of dry eye-

1) Aqueous deficiency- it is mainly because of reduced aqueous production from lacrimal glands. It accounts for one tenth of dry eye disease(DED).
2) Evaporative dry eye- it is due to deficiency tear film layer which causes increased tear evaporative. It occurs due to meibomian gland dysfunction and accounts for 85% of dry eye disease[2] .

DEWS DEFINITION(2007): Dry eye disease is a multifactorial disease of tear film and ocular surface that results in symptoms of discomfort,visual disturbances, and tear instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface.[3]

DEWS DEFINITION AND CLASSIFICATION[3]

Dry eye severity level	**1**	**2**	**3**	**4+**
Discomfort,severity and frequency	Mild and/or episodic; occurs under environmental stress	Moderate episodic or chronic,stress or no stress	Severe frequent or constant without stress	Severe and/or disabling and constant
Visual symptoms	None or episodic mild fatigue	Annoying and/or activity limiting episode	Annoying ,chronic and/or constant,limiting activity	Constant and/or possibly disabling

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Conjunctival injection	None to mild	None to mild	+/-	+/++
Conjunctival staining	None to mild	Variable	Moderate to marked	Marked
Corneal staining	None to mild	Variable	Marked central	Severe punctate erosions
Corneal /tear signs	None to mild	Mild debris,decreased meniscus	Filamentary keratitis,mucusclumping,increased tear debris	Filamentary keratitis, mucus, mucus clumping, increased tear debris,ulceration
	MGD variably present	MGD variably present	Frequent	Trichiasis, keratinization, symblepheron
TBUT(sec)	Variable	≤10	≤5	Immediate
Schirmer score(mm/5 min)	Variable	≤10	≤5	≤2

II. MATERIALS AND METHODOLOGY

Aims and objectives-

- **To study the proportion of dry eye disease in SLE patients**
- **Early detection and treatment**

Methodology – we selected 90 SLE patients attending the Rheumatology OPD(Department of Medicine) and Ophthalmology OPD of Assam Medical College and Hospital.
Type of study- hospital based cross sectional study
Place of study- Rheumatology OPD(Department of Medicine) and Department of Ophthalmology of Assam Medical College and Hospital,Dibrugarh
Study duration- 6 months
Study population- patients diagnosed with SLE(2012 SLICC criteria) attending Rheumatology OPD and Ophthalmology outpatient and inpatient.
Inclusion criteria- Age≥13 years

Exclusion criteria-

- Patients with Diabetes and Hypertension
- Patient with known other Autoimmune Diseases like Rheumatoid Arthritis,AnkylosingSpondylitis,Reiter'sdisease,PsoriaticArthritis,Sjogrens Syndrome etc.
- Other known pre existing ocular diseases like corneal opacity,hazymedia,H/O complicated surgery,retinaldetachment,ocular trauma
- Patient not giving consent

Ethical consideration-

The study proposal was submitted in the Institutional Ethics Committee of Assam Medical College and Hospital, Dibrugarh for review and appraisal and the study was commenced after approval.
Consent- A written and informed consent was taken from the participants for conducting the study.

DIAGNOSIS:
Ocular Examinations:
Schirmer I test : Wetting more than 15 mm in 5 minutes was considered normal[4]
Tear film break up time (TBUT): Value less than 10 secs indicate abnormal /unstable tear film[4]
Rose Bengal staining: Bijsterveld[5] suggested a grading system based on density of staining of the temporal and nasal conjunctiva and cornea.
Fluorescein Staining: Any break in the epithelial barrier permits rapid fluorescein penetration and staining of the areas of denuded epithelium[4].
Lissamine green staining: It is less irritating as compared to rose bengal[4].

III. RESULTS:

Total 90 SLE patients were enrolled in our study of which 55 patients(61.11%) were found to have dry eye disease.

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Table 1: Distribution of patients according to status of Dry Eye

DRY EYE	NUMBER OF PATIENTS	PERCENTAGE
PRESENT	55	61.11
ABSENT	35	38.89
TOTAL	90	100

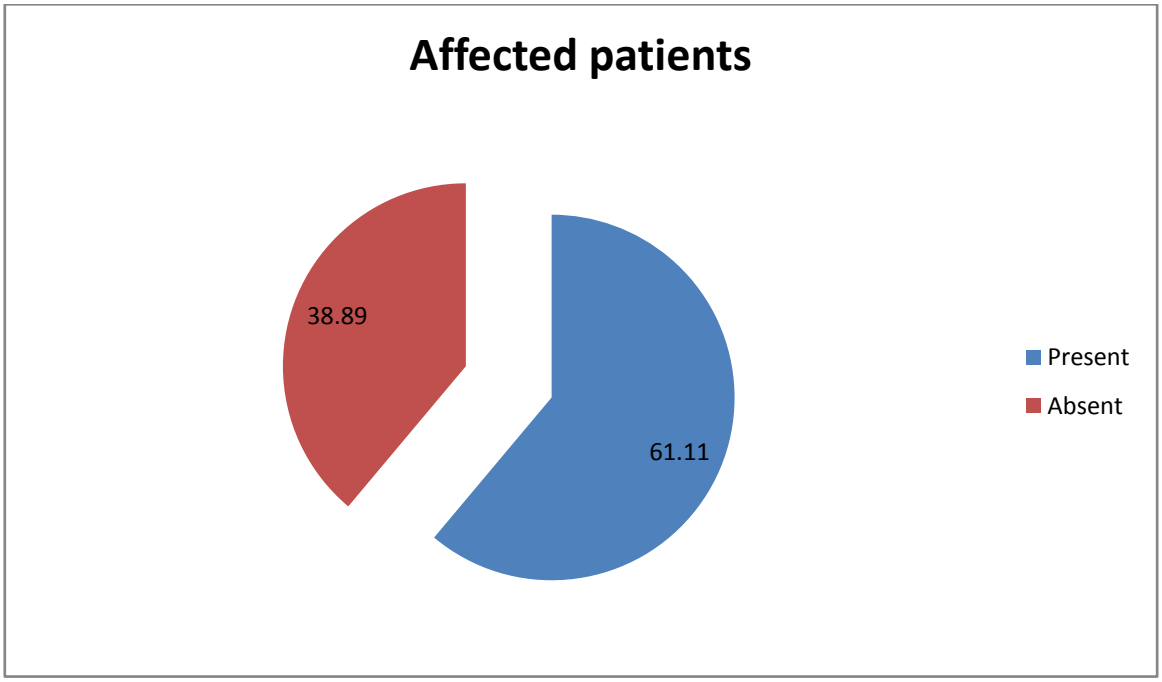

Figure 1: Distribution of patients according to status of Dry Eye

Out of 90 patients 55(61.11%) patients had dry eye and 35(38.89%) patients presented without dry eye.

TABLE 2: Gender Distribution

GENDER	NUMBER OF PATIENTS	PERCENTAGE
FEMALE	52	94.54
MALE	3	5.45
TOTAL	55	100

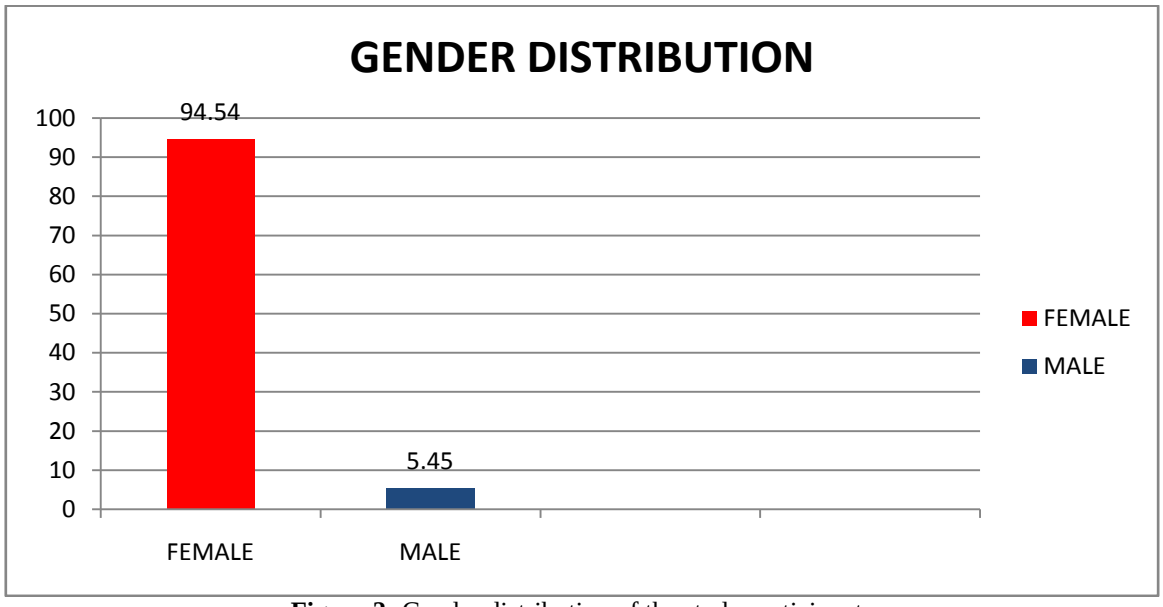

Figure 2: Gender distribution of the study participants

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Out of the 55(61.11%) patients having Dry Eye Disease , 52(94.54%) patients are female and 3(5.45%) patients are male.

TABLE 3: Schirmer's I test in study participants

SCHIRMER'S TEST	NUMBER OF PATIENTS	PERCENTAGE
>5mm-<10mm	27	49.09
>2mm-<5mm	18	32.72
<2mm	10	18.19
TOTAL	55	100

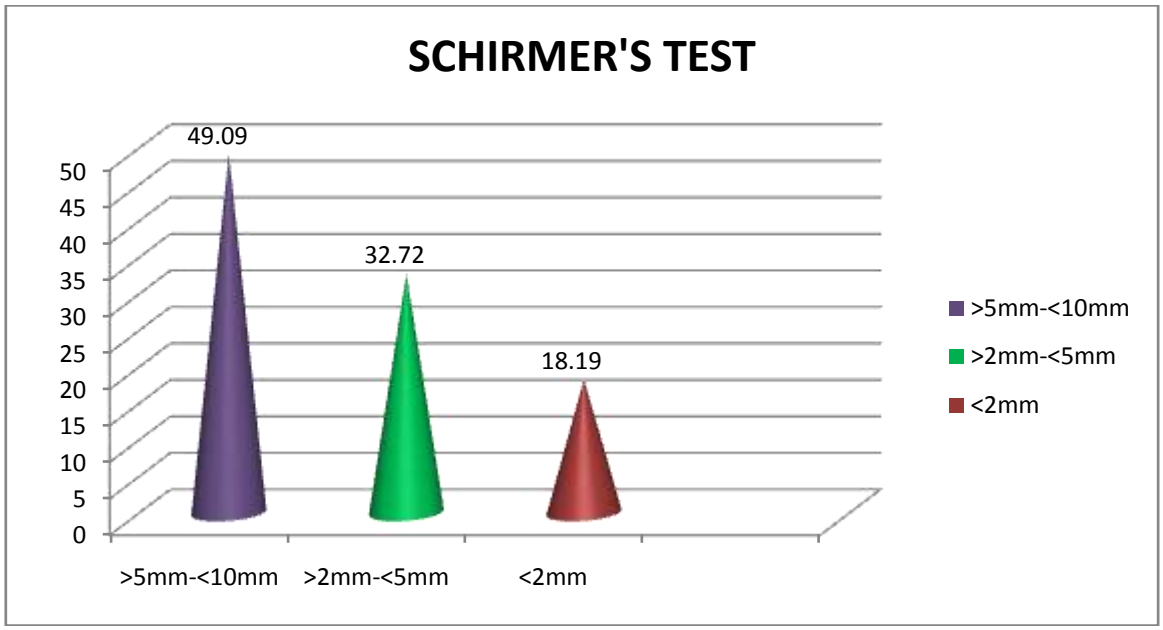

Figure 3: Schirmer's test in study population

Out of 55 patients with dry eye, Schirmers test >5mm-<10mm in 27(49.09%) patients,>2mm-<5mm in 18(32.72%) patients and <2mm in 10(18.19%) patients.

TABLE 4: Tear film break up time(TBUT) in study participants

TBUT	NUMBER OF PATIENTS	PERCENTAGE
>10 SECS	31	56.37
<10 SECS	18	32.72
IMMEDIATE	6	10.91
TOTAL	55	100.00

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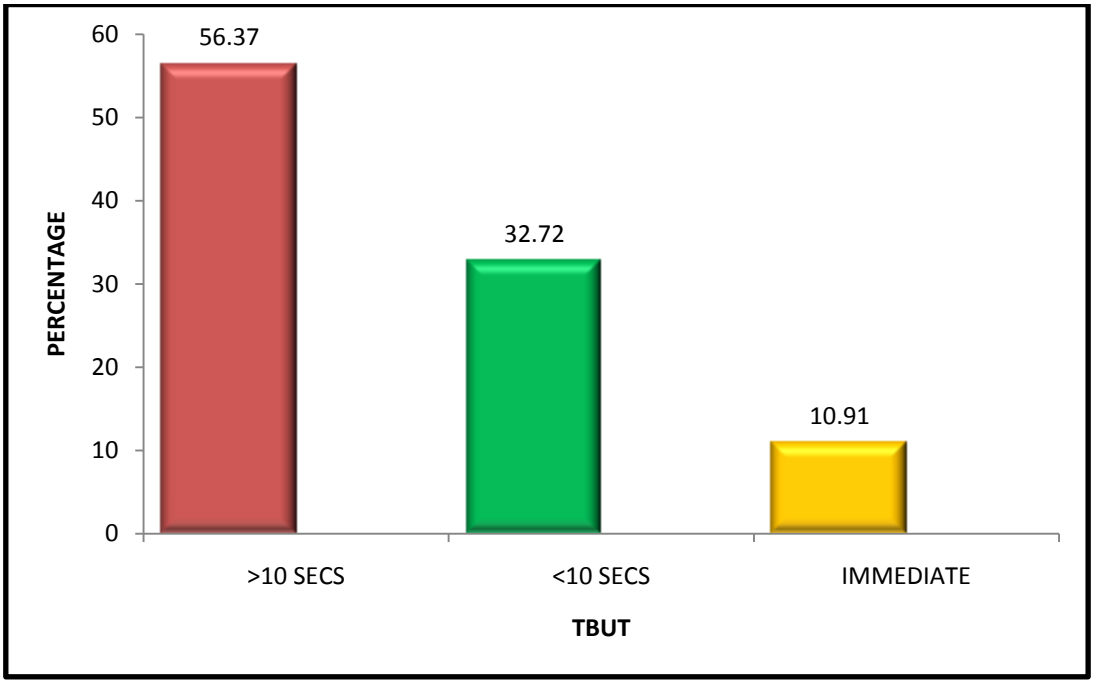

Figure 4: Tear film break up test(TBUT) in study participants

Out of the 55 dry eye patients, 31(56.37%) patients had TBUT >10 secs, 18(32.72%) patients had TBUT <10 secs and immediate breaking up in 6 (10.91%)patients.

TABLE 5: Corneal staining in study participants

CORNEAL STAINING GRADE	NUMBER OF PATIENTS	PERCENTAGE
GRADE 1	15	27.28
GRADE 2	17	30.90
GRADE 3	13	23.63
GRADE 4	10	18.19
TOTAL	55	100.00

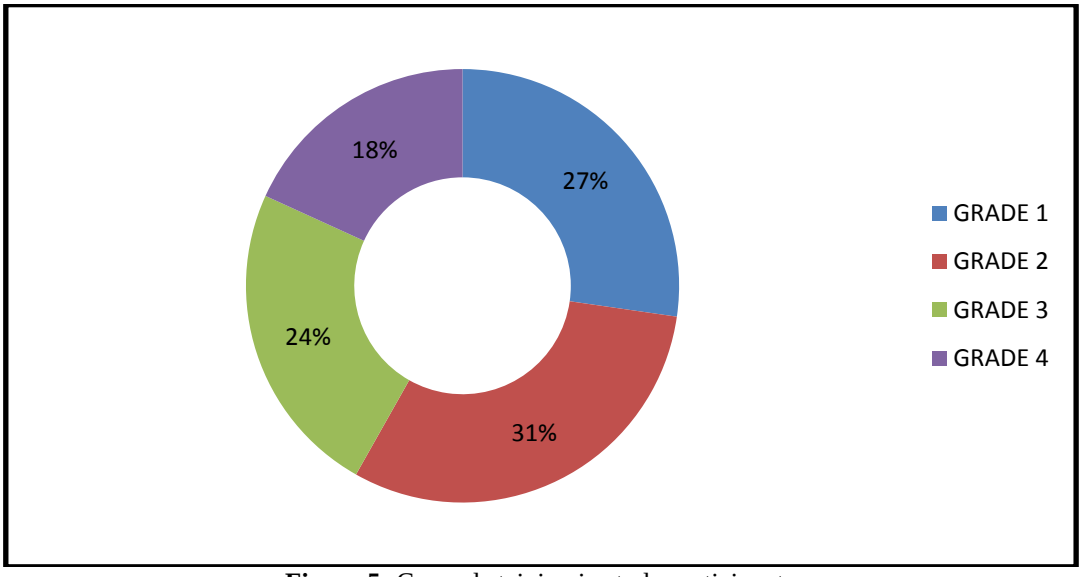

Figure 5: Corneal staining in study participants

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According to CCLRU(Corneal and contact lens research unit) standard for corneal staining with fluorescein based on the extent of staining of cornea,out of 55 patients with dry eye, corneal staining was grade 1 in 15 (27.28%)patients,grade 2 in 17(30.90%) patients, marked central in 13(23.63%) patients and was severe in 10(18.19%)patients.

TABLE 6: Dry eye grading in the study participants

GRADING	NUMBER OF PATIENTS	PERCENTAGE
GRADE 1	13	23.63
GRADE 2	21	38.19
GRADE 3	12	21.81
GRADE 4	9	16.37
TOTAL	90	100

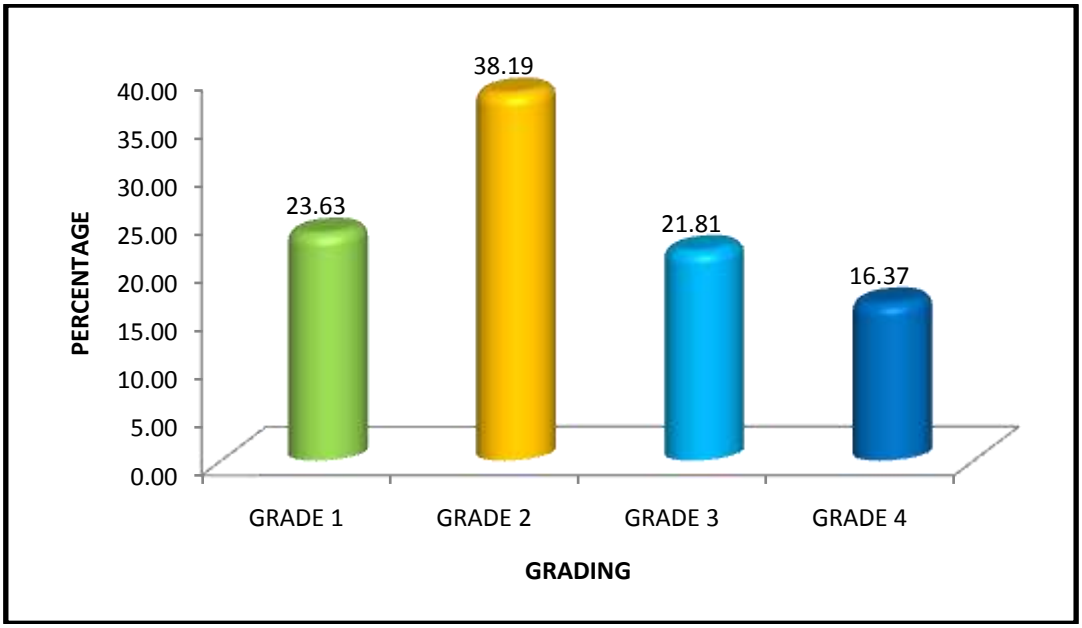

Figure 6: dry eye grading in study participants

55 dry eye patients were graded by 'DRY EYE SEVERITY GRADING SCHEME- DEWS' and grade 1 dry eye was seen in 13(23.63%) patients, grade 2 dry eye in 21(38.19%) patients , grade 3dry eye in 12 (21.81%)patients and grade 4 dry eye in 9(16.37%) patients. Thus in our study it was observed that most of the patients had grade 2 dry eye status.

TABLE 7: Types of dry eye in study participants

TYPES OF DRY EYE	NUMBER OF PATIENTS	PERCENTAGE
EVAPORATIVE	**44**	**80**
AQUEOUS DEFICIENCY	**11**	**20**
TOTAL	**55**	**100**

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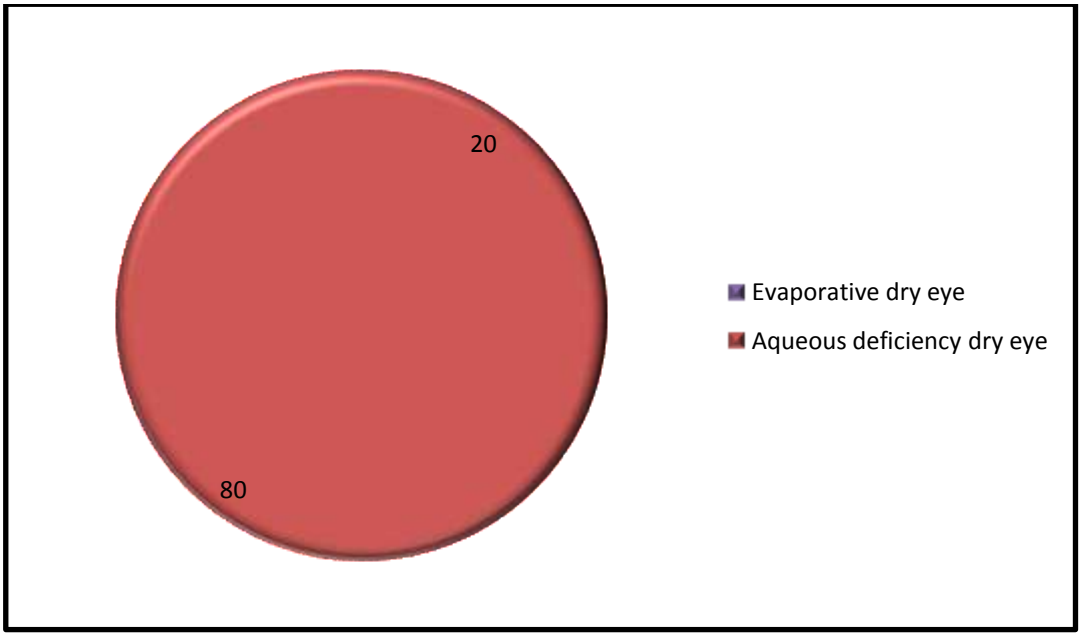


Figure 7: Types of dry eye in study participants

In SLE the dry eye can be secondary to Sjogren'ssyndrome that affects all exocrine glands including those responsible for the tear production. Thus aqueous deficiency type of dry eye is more common in our study found in 44(80%) patients found in our study in the SLE patients.

IV. DISCUSSION

In our study 55(61.11%) patients had dry eye.

Out of which 52(94.53%) patients were female and 3(5.45%) patients were male.In a study conducted by Maria D Alonso et al. Rheumatol Int. 2014, out of 150 SLE patients 127(84.7%) were female and 23(15.3%) were male.[6]

Schirmer's test was >5mm-<10mm in 27(49.09%) patients,>2mm-<5mm in18 (32.72%)patients and <2mm in 10(18.19%) patients.

TBUT was found to be >10 secs in 31(56.37%) patients,<10 secs in 18 (32.72%)patients and immediate in 6(10.91%) patients.

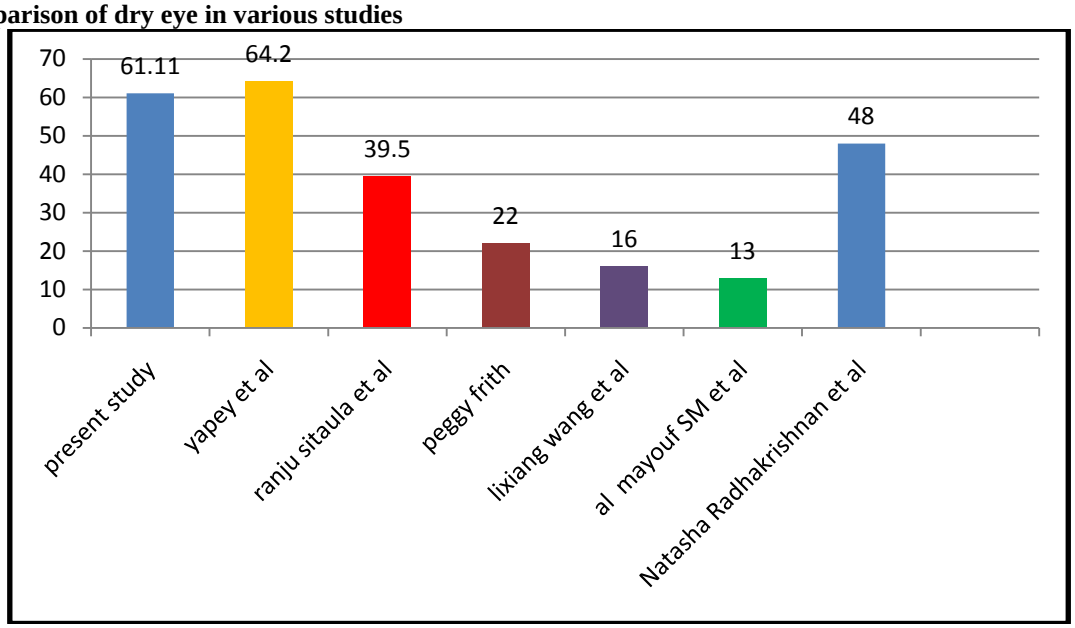
Corneal staining was observed to be of Grade 1 in 15(27.28%) patients, Grade 2 in 17(30.90%) patients, Grade 3 in 13(23.63%) patients and Grade 4 in 10(18.19%) patients.

Dry eye patients were graded by"**DRY EYE SEVERITY GRADING SCHEME–DEWS**" and Grade 1 dry eye was seen in 13(23.63%) patients, Grade 2 dry eye in 21(38.19%) patients, Grade 3 dry eye in 12 (21.81%)patients, and Grade 4 dry eye in 9(16.37%) patients.

Comparison of dry eye in various studies

Serial number	Studies	Percentage
1	Present study	61.11
2	Yapey et al[7]	64.2
3	Natasha Radhakrishnan et al[8]	48
4	RanjuSitaula et al[9]	39.5
5	Peggy Frith[10]	22
6	Lixiang Wang et al[11]	16
7	AlMayouf SM et al[12]	13

Comparison of dry eye in various studies



V. CONCLUSION

In conclusion,the proportion of the dry eye is 61.11% according to our Hospital based Cross Sectional Study in a study among 90 SLE patients. The proportion was found to be more in the females .

SLE is an autoimmune disease responsible for significant morbidity and mortality worldwide,thus ophthalmic screening of all SLE patients is of utmost importance specially if they are suffering from lupus nephritis or CNS lupus.

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