

**PREVALENCE AND FACTORS ASSOCIATED WITH
DRY EYE SYNDROME IN ADULT DIABETIC
PATIENTS ATTENDING DIABETIC CLINIC AT
KIRRUDU NATIONAL REFERRAL HOSPITAL**

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INTRODUCTION 1

- Dry-eye syndrome (DES) is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear-film instability with potential damage to the ocular surface.
- Symptom of dry eyes are nonspecific, and these include redness, foreign body, burning, stinging sensation, pruritus and photophobia.
- Several studies have demonstrated a relationship between diabetes and dry eye syndrome.

INTRODUCTION 2

- Diabetes is among the common leading causes of blindness in adults aged 20- 74 years.
- Impact on Quality Of Life is compared to that of moderate angina and hip fracture in moderate and severe DES respectively
- No known documented study on DES among Diabetics has been done in Uganda.

STUDY OBJECTIVE

General Objective

- To determine the prevalence and factors associated with dry eye syndrome in adult DM patients attending outpatient DM clinic of KNRH.

Specific Objectives

- To determine the prevalence of DES in adult DM patients attending outpatient DM clinic of Kiruddu National Referral Hospital (KNRH).
- To determine the factors associated with DES in adult DM patients attending outpatient DM clinic of KNRH

METHODS

Study Design

- A hospital – based cross section study

Study period

- January 2020- March 2020

Study Setting

- Outpatient diabetic clinic under the department of Internal Medicine.

ELIGIBILITY CRITERIA

Inclusion Criteria

- were 18 years of age and above.
- gave informed consent.

Exclusion Criteria

- Patients with active eye infection.
- Patients who had undergone ocular surgery in the past 6 months, or refractive surgery in the last 2 years.
- Critically ill patients.
- ❖ Sampling technique: systematic sampling method

STUDY PROCEDURE 1

- Demographic data including age, sex, address, level of education was recorded.
- Medical history
- Ocular history was taken on frequency of visiting an eye doctor, and if currently on any eye medication or not.
- The participants were questioned regarding the presence and frequency of DES symptoms (redness, itchiness, burning sensation, crusting on lashes, lids stuck together in the morning).

STUDY PROCEDURE 2

Ocular examination

- Visual acuity - BCV

Slit Lamp Examination

- **Eyelashes:** for deposits.
- **Tear film:** Presence of foam, increased mucus strands and debris.

Clinical tests

- Tear Break Up Time
- Schirmer 1 test

RESULTS

- The study enrolled 389 diabetic patients and analyzed 385. Four (4) diabetic patients were excluded for declining to complete the study.

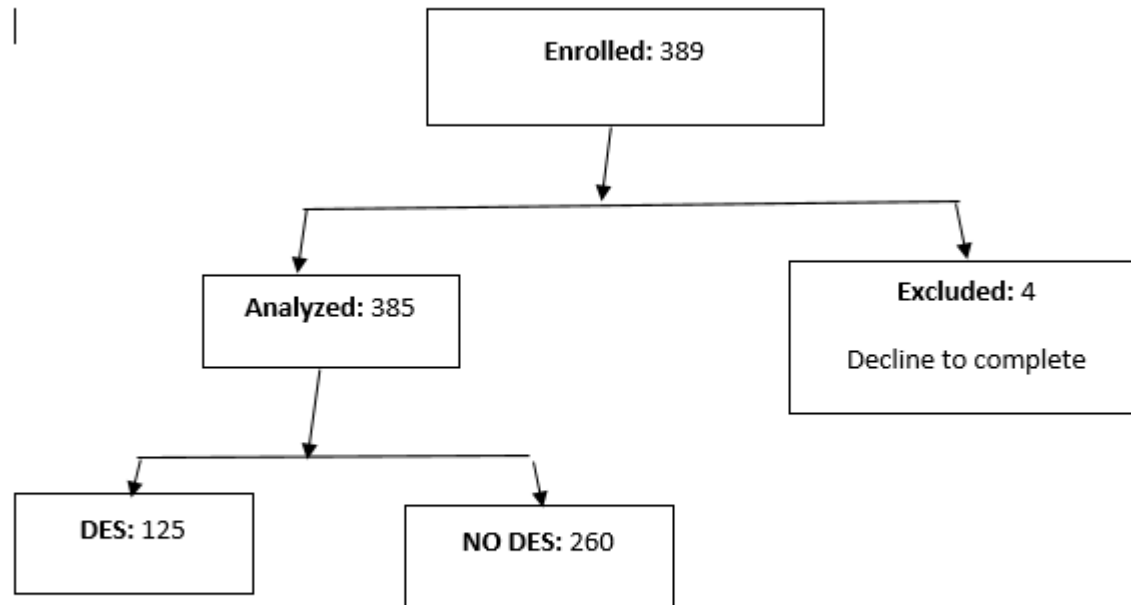


Figure 1: Participation flowchart

Table 1: Social Demographic Characteristics

Variable	frequency	%
Age categories in years		
20-35	29	7.5
36-50	135	35.1
51-65	158	41.1
>65	63	16.4
Occupation		
Outdoor	312	81.0
Indoor	73	19.0
Home setting		
Urban	271	70.4
Rural	114	29.6
Sex		
Male	153	39.7
Female	232	60.3
Cigarette Smoking		
Yes	3	0.8
No	382	99.2

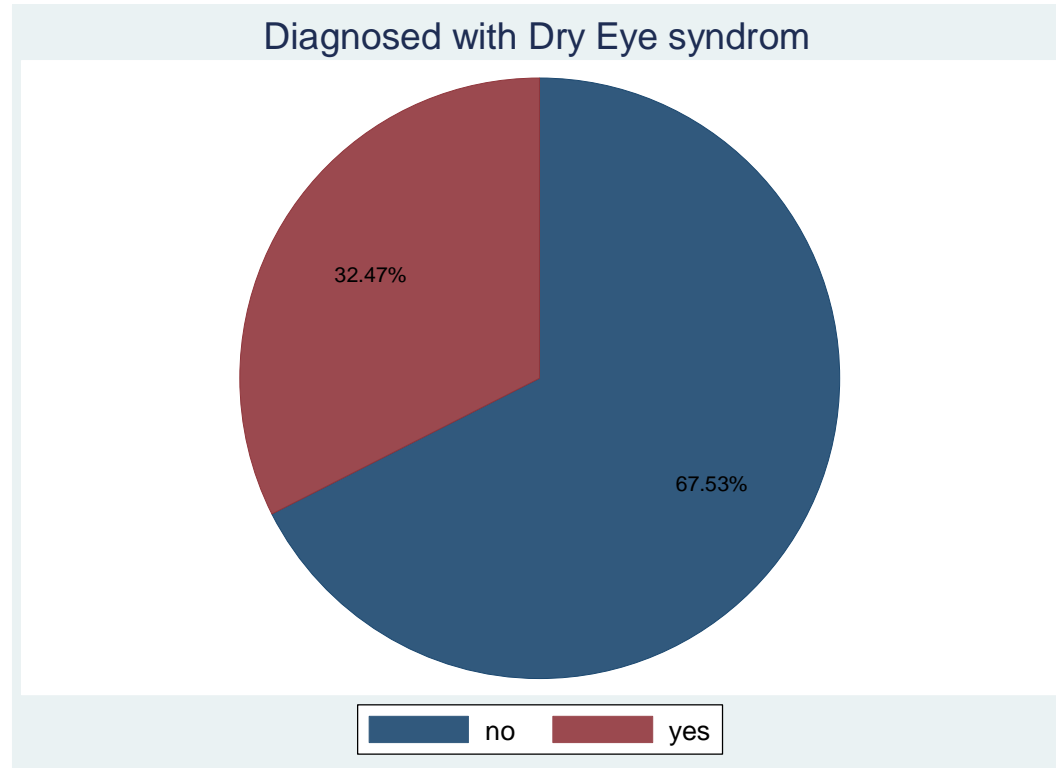
Table 2: Clinical Characteristics

Variable	n/ median(IQR)	%
Duration of diabetes		
10-14years	113	29.4
Method used for glycemic control		
Oral hypoglycemic	306	79.5
Diet	29	7.5
Insulin	50	13.0
RBS		
Abnormal	183	47.5
Arthritis		
Yes	14	3.6
Currently on eye medication		
Yes	64	16.6
How often do you visit eye doctor*		
Monthly	4	3.5
Every 3 months	10	8.8
Every year	12	10.5
> every year/rarely/once a while	88	77.2

Table 3: Proportion of DES on ocular Examination

Variable	n	%
Crusting on lashes		
Yes	150	39.0
Redness		
Yes	43	11.2
Mucoid discharge		
Yes	123	32.0
Frothy discharge		
Yes	190	49.4
TBUT in seconds		
Abnormal (≤ 10 seconds)	8	2.1
Schirmer's test		
Abnormal (≤ 5.5 mm)	220	57.1

- The overall prevalence of dry eye syndrome was 32.5%.



- Table 4: Univariate Analysis

Variable	Dry eye syndrome		p- value**
	No n(%) / median(IQR)	Yes N(%) / median(IQR)	
Overall prevalence	260 (67.5)	125(32.5)	
Age categories in years			
51-65	99(38.1)	59(47.2)	
>65	45(17.3)	18(14.4)	0.155
Rbs categories			
Abnormal (≥ 11.1 mmol/l)	107(41.2)	76(60.8)	<0.001
Home setting			
Rural	84(32.3)	30(24.0)	0.056
Occupation			
Outdoor	203(78.1)	109(87.2)	
Indoor	57(21.9)	16(12.8)	0.032
Sex			
Female	149(57.3)	83(66.4)	0.088
Arthritis			
Yes	5(1.9)	9(7.2)	0.017

*_only those who had ever visited the eye doctor, ** comparison using Pearson's chi square test or Fisher's exact test, VI= Visual Impairment

Table 5: Factors associated with dry eye syndrome

Variable	cOR	95%CI	p-value
Age categories in years			
51-65	2.17	0.950-4.935	0.066
sex			
Female	1.30	0.956-1.778	0.094
Occupation			
Indoor	0.63	0.396-0.993	0.047
Home setting			
Rural	0.73	0.530-1.063	0.106
Duration of diabetes			
10-14 years	1.37	0.946-1.982	0.096
Method used for glycemc control			
Diet	0.83	0.449-1.525	0.544
Insulin	0.90	0.572-1.415	0.648
RBS,			
Abnormal	1.71	1.270-2.308	<0.001
Arthritis			
Yes	2.06	1.352-3.126	0.001
Currently on eye medication			
Yes	1.25	0.886-1.774	0.201
Frequency of visits to the eye doctor			
Within ≤ 1 year	1.80	1.17-2.78	0.008
cOR = crude odds ratio , CI = confidence interval, VI = Visual Impairment			

Table 6: Multivariate analysis of factors associated with DES

Variable	aOR	95%CI	p-value
Arthritis			
yes	3.40	1.898-6.077	<0.001
Frequency of visits to the eye doctor			
Within ≤ 1 year	2.22	1.475-3.345	<0.001
Occupation			
indoor	0.65	0.301-1.385	0.261
sex			
female	1.95	1.139-3.347	0.015
Age categories in years			
51-65	2.57	0.645-10.270	0.181
Duration of diabetes			
6-9 years	1.30	0.499-3.384	0.591
10-14 years	1.59	0.711-3.539	0.260
>14 years	1.83	0.858-3.890	0.118
Method used for glycemic control			
diet	1.86	0.577-5.994	0.299
insulin	0.97	0.376-2.521	0.957

aOR = adjusted odds ratio

DISCUSSION

- The prevalence of Dry eye syndrome (DES) among diabetic adults in the current hospital based study was high .
- In this study, female diabetic more likely to have dry eye syndrome (DES) compared to males, this could be due to the hormonal changes in menopausal women.
- Patients with frequent visits to the eye doctor were more likely to have dry eye syndrome and this could be due to the under diagnosis and under treatment.

CONCLUSION AND RECOMMENDATION

Conclusion

- Prevalence of DES was high in this study setting
- Dry eye syndrome was significantly associated with; female gender, co-morbidity of arthritis and frequency of visits to the eye doctor.

Recommendation

- Diabetics should be routinely screened for Dry eye syndrome.