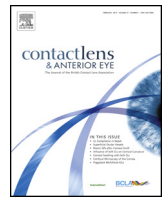




Contents lists available at ScienceDirect

# Contact Lens & Anterior Eye

journal homepage: [www.elsevier.com/locate/clae](http://www.elsevier.com/locate/clae)

## Dry eye disease: Prevalence, distribution and determinants in a hospital-based population



Stella N. Onwubiko, Boniface I. Eze\*, Nnemma N. Udeh, Obinna C. Arinze, Ernest N. Onwasigwe, Rich E. Umeh

Department of Ophthalmology, University of Nigeria Teaching Hospital, PMB 01139 Ituku-Ozalla, Enugu, Nigeria

### ARTICLE INFO

#### Article history:

Received 8 April 2013

Received in revised form 8 September 2013

Accepted 22 September 2013

#### Keywords:

Dry eye  
Prevalence  
Determinants  
Hospital  
Population

### ABSTRACT

**Objectives:** To determine the prevalence, distribution and risk factors for dry eye disease (DED) in a tertiary ophthalmic outpatient population.

**Methods:** The study was a cross-sectional descriptive hospital-based survey conducted at the Eye clinic of the University of Nigeria Teaching Hospital (UNTH), Enugu, between September and December, 2011. The participants comprised adult ophthalmic outpatients aged 18 years or older. Participants' sociodemographic data were obtained. Dry eye disease was assessed subjectively with the Ocular Surface Disease Index (OSDI) questionnaire; and objectively with Schirmer's test and Tear-film Break-up Time (TBUT). An OSDI score of  $\geq 50$  with a TBUT of  $< 10$  s or Schirmer's test reading of  $< 10$  mm was considered diagnostic of DED. Descriptive and analytical statistics were performed. In all comparisons, a  $p < 0.05$  was considered statistically significant.

**Results:** The participants ( $n = 402$ ) comprised 193 males and 209 females who were aged  $50.1 \pm 19.06$  SD years (range 18–94 years). The majorities of the participants were married – 74.1%, possessed formal education – 86.0% and were civil servants – 33.6%. The prevalence of DED was 19.2%. Dry eye disease was significantly associated with age  $> 40$  years (OR 1.88, 95% CI 1.06–3.35,  $p = 0.0004$ ), non-possession of formal education (OR 0.40, 95% CI 0.21–0.74,  $p = 0.001$ ) but not gender (OR 1.48, 95% CI 0.89–2.46,  $p = 0.158$ ).

**Conclusion:** The prevalence of DED among ophthalmic outpatients at UNTH, Enugu, is comparatively high. Older age and illiteracy are predictors of DED. There is need for high index of diagnostic suspicion to prevent sight-threatening complications of DED.

© 2013 British Contact Lens Association. Published by Elsevier Ltd. All rights reserved.

### 1. Introduction

Dry eye disease (synonyms: dry eye syndrome; keratoconjunctivitis sicca; dysfunctional tear syndrome) is a multi-factorial disease of the tear film and ocular surface that results in ocular discomfort, visual disturbance and tear film instability with potential damage to the ocular surface [1]. DED results from derangement of any component of the lacrimal functional unit which produces alteration/s in volume, composition, distribution or clearance of the tears. Although classified into two etiologic types, aqueous-deficient and evaporative, DED has two closely inter related underlying pathophysiologic mechanisms. These include tear hyperosmolarity which could result from low aqueous flow or excessive evaporation, and tear film instability which could be a primary event or secondary to underlying tear hyperosmolarity. Either way, there is associated inflammation which is an important

factor in perpetuating the disease. Dry eye disease is a common ocular disorder in the elderly and a frequent cause of eye care visits in this age group [2]. DED is an important public health problem which, in addition to interference with crucial visual activities such as reading, working on a computer and driving, is associated with increased risk of ocular surface infections [3].

Although the initial symptoms of DED are not sight-threatening, without treatment, they progress to complications which adversely affect the patients' vision and quality of life [3]. The frequently encountered complications include corneal epithelial defects, recurrent bacterial conjunctivitis, corneal ulceration and sterile corneal melting which might lead to corneal scarification or perforation, and severe loss of vision [3]. However, Narayanan et al. [4] observed that although the associated inflammation and disruption in ocular surface pre-stages ocular surface infection, this is not very common in dry eyes. DED-related pain and irritative symptoms decrease patients' vision-related functions and roles and impact negatively on ocular and mental health. Additionally, the frequent instillation of therapeutic lubricant eye drops interferes with physical and social functioning, and workplace productivity of dry eye

\* Corresponding author. Tel.: +234 8033165767.  
E-mail address: [xy3165767@yahoo.com](mailto:xy3165767@yahoo.com) (B.I. Eze).

patients [1,5]. DED is associated with multiple costs to the patient. These include multiple follow-up appointments, treatment cost, and reduced efficiency in the workplace which might necessitate changes in work type or work environment [1]. Furthermore, DED is associated with profound impairment of vision-related social function and mental health, and marked vision-related role difficulties and vision-related dependency.

Dry eye disease is a largely under-diagnosed clinical condition as patients often attribute the experienced DED symptoms to aging [6]. Epidemiological surveys have reported widely variable prevalence of DED with a range of 5.5–50.1% in population-based studies [7–19] and 17.0–29.9% in hospital-based reports [18–23]. This could be attributed to lack of consensus on the diagnostic criteria for DED, and between-survey differences in diagnostic (subjective vs objective) techniques.

DED is a major public health problem whose burden is likely to increase due to the increasing proportion of the aging population and adoption of modern lifestyles [6]. Due to competing research resource needs from the major blinding eye diseases like cataract, glaucoma, and age-related macular degeneration, DED remains an under-researched condition in low- and middle-income countries (LMICs). Consequently, hospital- and population-based epidemiological data, across all ages, on DED is scarce in these resource-deficient settings, especially in sub-Saharan Africa. For instance, in Nigeria, DED was not covered in the 2007 Nigerian National Blindness and Visual Impairment Survey [24]. Available literature on DED is therefore dominated by reports from developed nations and older populations [7–23].

Consequently, the investigators embarked on a cross-sectional descriptive survey of DED among adult ophthalmic outpatients at the Eye clinic of the University of Nigeria Teaching Hospital, Enugu. In addition to generating comparative epidemiological data, the results will assist eye care planners and providers in Nigeria and under similar settings elsewhere.

## 2. Methods

### 2.1. Background information

Established in 1971, the University of Nigeria Teaching Hospital (UNTH), Enugu, is one of the first generation tertiary health facilities in Nigeria. It is located in Enugu state, one of the five component states of Nigeria's south-east geopolitical zone. The state is located in the tropical rainforest climatic zone. At Enugu, there is essentially no weather difference between indoor and outdoor environments. UNTH provides tertiary health care services in all major medical specialties, undertakes undergraduate and postgraduate medical training, and conducts research. UNTH's Ophthalmology Department is staffed by consultant and trainee ophthalmologists, optometrists, ophthalmic technician, and ophthalmic nurses. It provides inpatient and outpatient promotive, preventive, curative and rehabilitative eye care services to the inhabitants of Enugu state, other states in south-east geopolitical zone, and beyond. The clinical activities in the ophthalmic outpatient clinic include medical eye care, refraction services and minor surgical procedures like epilation and removal of superficial ocular foreign body.

The study was a cross-sectional descriptive, hospital-based screening survey conducted at the Eye clinic of UNTH between September and December, 2011. The participants comprised eligible and consenting adult males and females, aged 18 years or older, who sought outpatient ophthalmic care at the UNTH's Eye clinic during the study period.

### 2.2. Exclusion criteria

Excluded were subjects who had any form of orbital disease, acute or chronic superficial or intra-ocular infection/inflammation or eyelid pathology. Also excluded were contact lens wearers and those who had extra-ocular or intra-ocular surgery within six months of the screening.

### 2.3. Ethics

Prior to commencement of the study, ethics clearance compliant with 1964 Helsinki Declaration, was obtained from UNTH's Medical and Health Research Ethics Committee (Institutional Review Board). Additionally, a written informed consent was obtained from each participant before recruitment into the survey.

### 2.4. Sample size and sampling

The minimum sample size of 323 was based on a previously reported prevalence of 29.9% from a related Indian survey [13], 95% confidence interval and error bond of 5%. This was deliberately inflated to 402 to take care of refusals to participate. Consecutively presenting and eligible participants were recruited until the required sample size was obtained.

Each participant's socio-demographic (age, gender, occupation, marital and educational status) data was obtained by in-person interview and entered into a pretested protocol specifically designed for the survey.

## 3. Screening procedures for dry eye disease

### 3.1. Subjective screening

This was performed with the previously validated Ocular Surface Disease Index (OSDI) [24,25] questionnaire. The 12-item OSDI questionnaire has three sub-fields on vision-related symptoms (Questions 1–5), ocular symptoms (6–9) and environmental triggers (10–12) of DED. The response to each OSDI question has 5 options. The score for each option was graded as follows: 'All of the time' – 4, 'Most of the time' – 3, 'Half of the time' – 2, 'Some of the time' – 1, and 'None of the time' – 0. For each subject, the sum of scores for all the questions answered is divided by the number of questions answered and then multiplied by 25 to give the OSDI. This has a range of 0–100. Higher OSDI represent greater disability. OSDI of 50 and above is considered abnormal and indicative of dry eye.

### 3.2. Objective (clinical) screening

Subsequently, a co-investigator, who was masked to the outcome of subjective screening, administered the objective screening tests. These comprised the Schirmer's test to assess the aqueous tear and the Tear film Break-Up Time (TBUT) to assess tear evaporation. These tests were performed on all participants under the same room temperature conditions i.e., 25–27 °C, between 9.00 am (09 hours GMT) and 1.00 pm (13 hours GMT). TBUT was administered first; thereafter at a 10-min interval, to minimize reflex tearing and ocular surface changes secondary to TBUT testing, the Schirmer's test was performed on both eyes, starting with the right eye.

TBUT was measured by inserting a pre-cut fluorescein strip impregnated with 2% sodium fluorescein (Ophthalmic Technology Pvt. Ltd., India), wetted with a drop of sterile water, into the inferior conjunctival fornix midway between the outer and the middle third of the lower lid for 1 min. After removal of the strip, subject was instructed to blink as necessary and then hold the eyes open. The tear film was examined using the broad beam of cobalt

Download English Version:

<https://daneshyari.com/en/article/2693095>

Download Persian Version:

<https://daneshyari.com/article/2693095>

[Daneshyari.com](https://daneshyari.com)