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Letter to the Editor

Dry Eye Disease in Palestine: A Comprehensive Analysis of Stress Levels, Age, and Associated Risk Factors

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Dear Editor-in-Chief

Dry Eye Disease (DED), primarily caused by evaporative DED, is one of the most common types of eye disorders globally. Following the 2017 report DED became recognized as a global public health disorder (1). In 2022, DED affected an estimated 400 million to 3.7 billion people worldwide. Twenty-five percent of patients who visit eye clinics report DED-related symptoms, with Palestine ranking second in the Middle East and North Africa (MENA) region for DED prevalence, after Saudi Arabia. Saudi Arabia has the highest global prevalence of DED, with a rate of 74.6% (2). This high prevalence is primarily attributed to climate and lifestyle factors. Palestine is among the 17 MENA countries classified by a systematic review and meta-analysis as having a high DED burden (3).

Therefore, the purpose of this study was to determine the prevalence of DED in relation to stress levels and provide an overview of its diagnosis and risk factors.

In a study in the Northern West Bank of Palestine (4), 64% of the 769 participants had an Ocular Surface Disease Index (OSDI) score of ≥ 13, along with at least one positive clinical sign. The study identified factors such as advancing age (≥ 45 years) and female gender as being associated with DED. Additionally, the research highlighted the significant impact of DED on participants, contributing to increased levels of stress and anxiety. It also noted the influence of environmental factors, including the arid climate, as well as the effects of drug use and systemic diseases. These findings underscore the need for further research into the broader implications of DED.

Allayed et al. assessed the prevalence and contributing factors of DED among hospital nurses in the North West Bank, Palestine (5). Their findings revealed a significant prevalence of DED based on the OSDI, particularly among nurses, with factors such as age (> 35 years), smoking, contact lens use, working in the emergency room, and shift work being linked to higher rates of the condition. The prevalence of mild, moderate, and severe DED symptoms was 17%, 14.7%, and 30.3%, respectively. The study recommended enhancing hospital infrastructure and implementing a rotation system for nurses between closed and open departments.

Ghach et al. conducted an assessment of the risk of DED in relation to tobacco and cosmetic use across four Mediterranean countries: Lebanon, Syria, Jordan, and Palestine (6). Smoking habits and the use of cosmetics were independently as-

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sociated with an increased risk of DED, particularly cigarette or Ajami smoking, smoking in enclosed spaces, and daily smoking. Additionally, the study identified a significant interaction between poor hygiene practices and the use of cosmetic products, with females exhibiting a higher risk. Jordan and Palestine had the highest prevalence of symptomatic DED compared to Lebanon and Syria.

Before the 2023, a cross-sectional study was conducted with 426 participants, revealing a DED prevalence of 31.5% (7). Confounding factors such as advancing age (≥ 50 years), female gender, menopause or pregnancy, and the use of artificial tears were associated with DED symptoms. The study also identified associations between certain conditions and a tear break-up time (TBUT) of less than 5 seconds, as well as with lid margin staining (LGS). The findings suggested that different subtypes of DED may have distinct underlying pathophysiological mechanisms. In 2023, approximately 1.9 million Gazans were internally displaced (8). In the absence of adequate international aid or reconstruction efforts, many Gazans were forced to live in temporary shelters or with relatives, often in overcrowded and unsanitary conditions. About 248 Gazan participants developed DED symptoms with moderate to high perceived stress levels (PSL) in 2025, marking a 26.7% increase compared to a previous study conducted before the war (9).

In conclusion, Gaza demonstrated a high prevalence of DED (58.2%) during the 2023 War, largely attributed to moderate to severe PSL. Research conducted in Palestine (West Bank and Gaza Strip) has identified several factors associated with an elevated risk of DED, including advancing age, female gender, smoking habits, the use of cosmetics, menopause or pregnancy, and the use of artificial tears.

Conflict of interest

The Authors declare no conflict of interest.

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