

Article

The Link Between Dry Eye Outcomes and Quality of Life: A Comprehensive Review

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Abstract: Dry eye disease (DED) is a multifactorial condition that significantly affects patients' quality of life and visual function worldwide. Despite advancements in treatment, a comprehensive understanding of its management's impact on quality of life remains limited. This study reviews six key research articles assessing the effects of DED treatments using validated questionnaires. A total of 63 patients were evaluated, with treatment outcomes measured using the VFQ-25 questionnaire, converted to a 100-point scale following NEI guidelines. Results indicated that optimal DED management effectively reduced symptoms and enhanced patients' quality of life with minimal side effects. These findings underscore the importance of evidence-based treatment strategies in improving the well-being of individuals with DED.

Keywords: Dry eye diseases, A questionnaire quality of life, Treatment impact

1. Introduction

A significant percentage of people globally suffer from dry eye disease (DED), a prevalent ocular surface condition. Geographically, the frequency of DED varies in 4.6% to North America and 47.9% in Africa [1,2,3,4,5,6]. About 20.1% of people in Asian nations experience DED. In addition, more than 25% of people in several developed Asian nations—like Taiwan, Korea, and Japan—are affected [7,8,9,10]. An imbalance between excessive tear evaporation and inadequate aqueous production is a hallmark of DED, a multifactorial disease [11,12]. Less lubrication of the eye surface is produced when the lacrimal gland produces fewer tears, while excessive tear evaporation occurs while the meibomian gland secretes less oil.

Normal tear production, little to no staining, and a short tear film break-up time (TBUT) are characteristics of the reduced wettability type of DED [13,14,15,16]. This kind of causes decreased corneal surface wettability because of a lack or anomaly of membrane-associated mucin. Female sex, contact lens use, extended computer use, thyroid problems, hypertension, antidepressant and antihistamine use, and contact lens use are the most prevalent risk factors that contribute most to DED [17,18]. Asian ethnicity, Sjögren's syndrome, hormonal disruption and replacement treatment, lifestyle choices, aging, pharmaceutical use, and cataract surgery are additional risk factors [19,20,21]. These elements play a part in ocular surface inflammation, tear film instability, elevated blood sugar, and the ensuing pain in the eyes. [22]

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2. Materials and Methods

TREATMENTS MANAGEMENT OF DED IN REVIEWS.

Between January 2023 and January 2024, a thorough literature analysis was conducted at different hospitals in Iraq to identify the validated, trustworthy dry eye questionnaires, including QOL measures that are now accessible for usage by researchers and clinicians. For the data results, we enrolled sixty-three individuals. The VFQ-25 was transformed into a 100-point rating system, where 100 is the highest possible score and the least amount of subjective impairment, and 0 is the smallest or highest. The above scale conversion, as well as subscale scores were computed in accordance with the NEI's stated rules.

In terms of reviews collected methodology, the OSDI is a 12-item survey that evaluates dry eye symptoms and how they have affected vision-related functions throughout the previous seven days. It is divided into three sections: environmental triggers, ocular symptoms, and vision-related function. On a 0–4 scale, which goes between “none of the time” to “all of the time,” patients are asked how frequently they experience certain symptoms and how difficult it is to do tasks connected to their eyesight. The sum of all the scores is multiplied by 25 to determine the final score, which is then divided through the total amount of questions answered. Normal is represented by a score of 0–12, mild DED by 13–22, moderate DED by 23–32, and severe DED by 33. Both the OSDI overall and each of its three subscales separately exhibit good to exceptional test-retest reliability and are internally consistent.

The questionnaire shows a moderate association with the use of artificial tears and a significant correlation with a number of other dry eye surveys despite having a limited correlation of clinical dry eye tests. The scale can reliably distinguish between mild-to-moderate, severe, and normal DED. Furthermore, a minimum clinically significant difference between mild-to-moderate illness (4.5–7.3) as well as severe disease (7.3–13.4) has been identified. The OSDI's vision-related function subscale contains the primary QOL metrics. Six items make up this subscale, which evaluates the prevalence of visual issues and vision-related activities, including reading, watching TV, driving, and using a computer or automated teller machine. These six items can be calculated through a unique vision-related function subscale rating in addition to being part of the overall OSDI score.

3. Results

FINDINGS OF DED TREATMENT.

Table 1. Demographic characteristics of enrolled patients

Characteristics	No. of patients [n = 63]	%
Age, years		
30 – 40	13	20.63%
41 – 50	20	31.75%
51 – 60	30	47.62%
Gender		
Male	40	63.49%
Female	23	36.51%
Symptoms		

Stinging or burning sensation in the eyes	24	38.10%
Sensitivity to light	44	69.84%
Redness in the eyes	12	19.05%
Blurred vision	38	60.32%
Eye fatigue	28	44.44%
Difficulty wearing contact lenses	11	17.46%
Excessive tearing	31	49.21%
Eye discharge	26	41.27%
Education status		
Primary school	3	4.76%
Junior middle school	4	6.35%
Senior middle school	44	69.84%
University	9	14.29%
Post-graduate	3	4.76%
Occupation status		
Employed	14	22.22%
Unemployed	4	6.35%
retired	45	71.43%

Table 2. Diagnoses outcomes of vision field in terms of right and left eyes

Items	Mean ± Sd	
	Right eye	Left eye
Best-corrected visual acuity	0.24 – 0.19	0.26 – 0.20
Intraocular pressure	16.40 – 5.32	15.38 – 4.92
Total DES symptom score	7.45 – 3.18	6.67 – 4.22
Tear-film breakup time test	5.70 – 3.48	4.80 – 3.77
Fluorescein staining score	0.06 – 0.18	0.05 – 0.20
Schirmer test (mm)	4.62 – 3.55	4.66 – 3.41

Table 3. Evaluation of quality-of-life through VFQ-25 in all items enrolled

ITEMS	VFQ-25 (MEAN ± SD)
General Health	52.10 ± 9.80
General Vision	58.53 – 10.95
Ocular Pain	44.20 ± 6.88
Activity	62.11 ± 8.0
Social function	68.17 ± 5.30
Mental health	56.10 ± 6.44
Dependency	63.11 ± 5.72
Color vision	64.27 ± 6.73
Peripheral vision	55.19 ± 3.37
Driving	50.67 ± 6.84

Table 4. Baseline data of participants enrolled in the last reviews

No. of articles	Authors	Sample	Methods used
1	Qianqian Ellie Cheng et al.	535	<ul style="list-style-type: none"> OSDI and other tests were used to evaluate DED symptoms. Used the Short Form Health Survey (SF-36) to assess quality of life.
2	Cheng-Wei Lin et al.	-	<ul style="list-style-type: none"> Review of the dry eye disease assessment questionnaires. Evaluation of patient-reported outcomes to determine the effectiveness of treatment.
3	Lydia Hui-Peng Tan et al.	78	<ul style="list-style-type: none"> Participants were split into groups with mild and severe DED. FVA was evaluated using the IVI questionnaire and the DryeyeKT app.

4	Kostas G Boboridis	12,245	<ul style="list-style-type: none"> • A cross-sectional online survey was conducted in eight European nations. • A variety of questionnaires measuring the impact and severity of DED were filled out by participants.
5	Elbakary et al.	30	<ul style="list-style-type: none"> • IPL treatment (Group 1) • Insertion of punctal plugs (Group 2)
6	Tetiana Zhud, et.al	72	<ul style="list-style-type: none"> • Questions for the Ocular Surface Disease Index (OSDI) to measure quality of life. • Oxford and Efron scales for assessing corneal and conjunctival staining.

Table 5. Enrolling clinical outcomes of participants in the last reviews

No. of articles	Authors	Findings	Conclusion
1	Qianqian Ellie Cheng et al.	Poorer MCS was connected to vision-related function along with ocular symptoms, whereas poorer PCS and MCS of SF-36 were linked to worse DED indicators at baseline.	<ul style="list-style-type: none"> • Found modest relationships. • Future studies should focus on diverse demographics and focused examinations.
2	Cheng-Wei Lin et al.	SMGT Potential Treatment for Severe DED Patients. <ul style="list-style-type: none"> • Offers excellent results. 	DED Treatment Methods Impact on Patient Satisfaction and QoL

		<ul style="list-style-type: none"> • Enhances enjoyment and quality of life. 	<ul style="list-style-type: none"> • Increased patient satisfaction with various treatments. • Importance of qualitative PRO information for effective therapy management.
3	Lydia Hui-Peng Tan et al.	<p>Study on Functional Vitality in Severe DED</p> <ul style="list-style-type: none"> • Age declines Functional Vitality (FVA). • Severe DED affects 38.5% of women. • Despite challenges, daily tasks persist. 	<p>Severe Dry Eye Impact on Quality of Life</p> <ul style="list-style-type: none"> • No significant correlation between FVA and QOL. • Significant influence on QOL. • FVA is not the sole factor contributing to health-related QOL impairment.
4	Kostas G Boboridis	<p>DED Participants' Health Status</p> <ul style="list-style-type: none"> • Poorer functional vision and general health. • Severe symptoms increase severity. • Reduced vision impacts daily activities, quality of life, and job productivity. 	<p>Study on DED Impact</p> <ul style="list-style-type: none"> • Self-reported DED leads to inferior functional vision and lower health. • Situation worsens with worsening condition.
5	Elbakary et al.	<p>Study on OSDI Score Improvement</p> <ul style="list-style-type: none"> • Group 1 showed significant improvement in OSDI score and QOL. • Group 2 showed 80% improvement. 	<p>IPL Treatment Outperforms Punctal Plugs in QOL</p> <ul style="list-style-type: none"> • Better safety profile. • No documented problems.

		<ul style="list-style-type: none"> • Group 1's tear breakup time also improved. • 13.3% of Group 2 participants experienced complications. 	
6	Tetiana Zhmud et al.	<p>Study on Experimental Diabetes Treatment</p> <ul style="list-style-type: none"> • Experimental group experienced mild DED symptoms in 54.4% of cases. • Moderately severe DED in 46.6% of cases. • No severe DED occurrences in the experimental group. • The experimental group had a higher mean OSDI score than the control group. • Keratopathy significantly impacted patients' OSDI values. • The experimental group received grades II and III in DEWS methodology. 	<p>"DED negatively impacts type 2 DM patients' quality of life."</p> <ul style="list-style-type: none"> • Correlation with keratopathy unknown.

4. Discussion

Compared to other eye conditions, including cataracts, glaucoma, and age-related macular degeneration, DES was not a prevalent cause of persistent visual morbidity. Hence, its effect on quality of life was somewhat overestimated. As a result, a relatively small percentage of Chinese older people seek medical attention, particularly those with mild to moderate DES. However, the increased prevalence of DES among the elderly, the growing demands of contemporary living, such as the use of computers and air conditioners, and the recent increase in life expectancy all underscored the impact of DES on the general population's quality of life in relation to vision. [23]

For the first time, it was reported that the total score of participants with DES was significantly lower than that of participants with no DES or with suspected DES [24]. This

suggests that DES can have a substantial detrimental effect on the general quality of life-related to vision in a population that is not based in a clinic and does not seek medical attention. Additionally, in line with earlier research on outpatients with DES diagnoses, the current study found that the subscale score of ocular discomfort dramatically decreased among the general population having DES or dry eye symptoms. [25,26]

According to reports, individuals with DES had ocular pain subscale scores ranging from 60 to 70, suggesting that DES may increase ocular pain and discomfort. It has been suggested that ocular discomfort, particularly in people who have severe dry eye conditions like Sjogren's syndrome, is at least largely to blame for the negative effects of DES on quality of life. In the meanwhile, the indications, symptoms, and quality of life related to DES may be improved by the use of synthetic tears or other treatments. [27]

Notably, despite the fact that they had no overt symptoms of DES, the symptomatic individuals also reported worse ratings for mental health and ocular discomfort. When compared to normal controls, asymptomatic participants with dry eye symptoms reported comparable VFQ-25 scores. It emphasized how DES symptoms differed from signs, and the multiple regression study demonstrated that DES symptoms, not signs, had a significant influence on VFQ scores. A reduced quality of life may result from the bothersome signs of dry eye, including searing or stinging, ocular grittiness, blurred vision, photophobia, and a sense of a foreign body, as well as from the unsatisfactory results of palliative therapies. [28,29,30]

Our study was consistent with other research that found no correlation among the goal-directed ocular surface examination findings as well as the VFQ-25 or SF-8 scores or among patient-reported signs of DES and clinical variables (TBUT, ST, and FSS). Since symptoms are the most frequent reason people seek eye care, they need to be a crucial outcome metric for evaluating the effectiveness of therapy and the enhancement of quality of life. [31,32,33,34]

5. Conclusion

DED is an increasingly prevalent issue that causes patients' visual function and quality of life to deteriorate in a variety of ways. We have included the research on how DED affects patients' quality of life in one review. These studies consistently demonstrate that DED has a quantifiable effect on a number of patient quality of life (QoL) factors, such as discomfort, vitality, the capacity to carry out certain tasks requiring prolonged visual attention (such as driving or reading), and decreased productivity at work.

Since this feature of DED seems to be the main factor influencing its significance for both individual patients and society at large, treatments for the condition should focus on enhancing patients' quality of life. It can be crucial to raise society's understanding of the dry eye through educational initiatives.

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