Dry Eyes Related Quality of Life in Elderly Patients with Meibomian Gland Dysfunction at Zagazig University Hospitals

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Abstract

Meibomian gland dysfunction (MGD) can result in indirect symptoms such as dry eyes as well as noticeable manifestations on the eyelids, affecting vision and quality of life. The study's **aim** is to assess dry eyes related quality of Life among elderly MGD patients at Zagazig university hospitals. **Design**: descriptive study. **Methods**: Demographic characteristics, Meibomian gland dysfunction (MGD) Questionnaire, Ocular Surface Disease Index (OSDI) Questionnaire, and Dry Eye–Related Quality-of-Life Score (DEQS) Questionnaire were available for 100 elderly patients and collected from ophthalmology outpatient clinic in Zagazig University Hospitals. **Results**: The score of mean subjective dry eye symptoms was 21.69±9.66. The prevalence of moderate meibomian gland symptom frequency and intensity were 34% and 37%, respectively. Overall, 28% (12.86±6.49) and 40 % (12.86±6.49) of patients had moderate DEQS frequency and severity respectively. Dry eye symptoms of meibomian gland dysfunction were significant positive predictors of DEQS (R2=0.78, P<.05). DEQS score was significantly corelated with OSDI and MGD (P<0.01). **Conclusion***:* Dry eye and meibomian gland symptom (frequency and severity) were associated with poorer quality of life as well as older age. There is an urgent need to mainstream public education programs on eyelid health, dry eye disease, and how it affects older adults' daily lives.

Keywords: Dry eyes related quality of life, Elderly patients, Meibomian gland dysfunction, Zagazig university hospitals.

Introduction

Globally, the aging population is growing at an accelerated rate. It is projected that by 2050, there will be 1.6 billion older adults worldwide, more than doubling from 761 million in 2021. The population of those 80 years of age and above is growing quickly **(United Nations, 2023)**. In Egypt, the number of older people reached 6.9 million, making up 6.7% of the total population **(CAPMAS, 2022)**. With increased life expectancy, the prevalence of eye diseases is predicted to rise even further. Among the most common eye conditions globally, dry eye affects a large number of elderly individuals. Between patients 61–70 years old and those over 70, the age-related difference in prevalence is 15.25% to 10.11% **(Aziz & Tawfik, 2020)**.

Roughly 344 million people worldwide suffer from keratoconjunctivitis sicca, commonly referred to as dry eye, an ocular surface problem with multiple factors. Ocular symptoms and a loss of tear film homeostasis are its defining characteristics. Its causes comprise hyperosmolarity, neurosensory disorders, and ocular surface inflammation, and tear film instability **(Craig et al., 2017; Weiner, 2018)**. Many factors contribute to dry eye disease (DED) in older adults, including increased age, female sex, increased use of topical and systemic medications, chronic inflammation, laxity of the eyelid, hormonal variations such as menopause, and oxidative stress **(Barabino, 2022)**.

Age-related inflammation and structural changes impact the lacrimal gland, conjunctiva, and meibomian gland, causing damage to the ocular surface **(De Paiva, 2017)**. Hyperosmolarity, proinflammatory mediators in tears, increased tear evaporation, and reduced lubrication between the globe and lids are among

the interrelated factors that lead to ocular surface damage. These factors can irritate the ocular surface and eyelids. A number of these ocular indications and symptoms conflict with the symptoms of dry eye. Evaporative dry eye is primarily supposed to be caused by dysfunction of the meibomian glands **(Chhadva et al., 2017)**.

Dry eye disease is classified into two types; aqueous-deficient dry eye, which lowers lacrimal secretion, and evaporative dry eye, which causes excessive tear film evaporation **(Bron et al., 2017)**. MGD, a common discomfort, can cause evaporative dry eye disease by reducing meibum secretion and increasing tear film evaporation rate **(Narang et al., 2023)**.

Excessive evaporation causes a continuous cycle of DED, inducing inflammation, ocular surface cell apoptosis, and desiccation, tear hyperosmolarity, and tears film instability. Restoring the tear film's lipid layer and reducing evaporation are the main objectives of treatment for DED related to MGD, as this would lessen ocular signs and symptoms **(Sheppard & Nichols, 2023)**. MGD prevalence was 47.8% in older adults **(Blackie et al., 2019)**, and it is estimated to account for 60% of all dry eye disease conditions **(Mehta et al., 2022)**.

Dry eye disease has a detrimental influence on quality of life and visual function in more ways than healthcare providers recognize. The DED symptoms that may arise include dryness, irritation, blurred vision, tired or aching eyes, and watering. The symptoms may have a negative impact on the individual's quality of life, making it difficult for them to drive, work, socialize, or perform other daily tasks. In addition to, trouble sleeping as a consequence of undue dryness **(Shigeyasu et al., 2018)**.

Moreover, depression and anxiety are more common among patients suffering from dry eye disease. The varied signs and symptoms of dry eye frequently drive patients to pursue eye care due to its prevalent effect on daily living, and the cost burden of long-term dry eye management can be substantial **(Guo & Akpek, 2020)**.

Nurses can notice the indicative signs and symptoms of dry eye disease, begin treatment with techniques like warm compresses, mild eyelid massages, and good eyelid hygiene, as well as refer patients to other medical professionals for additional care **(Chuckpaiwong et al., 2022)**. The initial DED management principle is controlling the ocular environment. It is the responsibility of nurses to counsel patients about the negative effects of concentration on blink rate, as well as to stay away from dry environments and high air speeds (like fans, car heaters, and air conditioning). Using digital devices, working on a computer screen, and reading are some examples of concentration **(Buckley, 2018)**.

Significance of the study

Dry eye disease poses a substantial public health problem in senior patients, producing ocular discomfort, exhaustion, and visual disruption that impairs quality of life in several phases of physical, social, and psychological functioning, as well as daily activities. Previous research on dry eye-related quality of life and MGD associations is limited, with few studies focusing on older adults or the Egyptian population, and none on DED and MGD associations in Egypt. Consequently, the present study was executed to evaluate dry eyes related quality of life in elderly patients with meibomian gland dysfunction at zagazig university hospitals.

Aim of the study

The study aimed to evaluate dry eyes related quality of life in elderly patients with meibomian gland dysfunction at zagazig university hospitals.

Objectives

- Assess intensity and frequency levels of meibomian gland symptoms in elderly patients with meibomian gland dysfunction
- Assess dry eye severity in elderly patients with meibomian gland dysfunction
- Evaluate dry eye- related quality of life in elderly patients with meibomian gland dysfunction

Research questions

1. What are the intensity and frequency levels of meibomian gland symptoms in elderly patients with meibomian gland dysfunction?
2. What is the severity of dry eye in elderly patients with meibomian gland dysfunction?
3. What is the effect of dry eye on the quality of life of elderly patients with meibomian gland dysfunction?

Subjects and Methods

Design

The study was conducted utilizing a descriptive design

Setting

This research was carried out in the ophthalmology outpatient clinic of Zagazig University Hospitals, which consists of four rooms and two large halls. The first room is well-equipped with the latest diagnostic devices. The second room is for measuring visual acuity. The third room is for optic technicians, ophthalmology specialist, and visual sonar. The fourth room is for measuring the visual field. The halls are equipped with chairs for patient waiting.

Sample

A purposive sample composed of 100 elderly was selected from the prior described setting. The criteria that followed for inclusion include: senior patients with ocular symptoms and a diagnosis of MGD who were free of communication issues (speech and hearing impairments) and willing to take part in the study. Exclusions from the study included patients with anterior blepharitis, atopic or allergy problems, systemic conditions including Sjögren's syndrome, those utilizing artificial tears instead of eye drops, active infections or ocular abnormalities, and general treatments such as ocular hypertension, and recent ocular surgery, trauma, or chemical burns.

Sample size

Based on the association between dry eyes and the quality of life score in individuals with diabetes was 0.417 **(Yazdani-Ibn-Taz et al., 2019)**, with power of test 95%, and confidence level 95%, and added one to be round number, the sample size calculated to be 100 elderly according to the following formula:

Sample size = $[(Z\alpha+Z\beta)/C]\ 2 + 3$

The standard normal deviate for $\alpha = Z_\alpha = 1.96$

The standard normal deviate for $\beta = Z_\beta = 1.6449$

$C = 0.5 * \ln [(1+r)/(1-r)]$

Data collection

The following four tools were used for data collection:

Tool I: Demographic characteristics

It entails data about age, gender, marital status, educational attainment, and employment prior to retirement, current employment, place of residence, income, and smoking habit.

Tool II: Meibomian gland dysfunction (MGD) Questionnaire

It was adopted from **Kwan et al. (2013)**, comprised eighteen items measuring the intensity and frequency of nine symptoms. The patients replied questions regarding the frequency and intensity of each symptom separately. Dry, gritty, or sandy, burning, fluctuating vision, soreness, scratchiness, crusting, itching, and sensitivity to bright light were the nine symptoms. Response options were zero (never or not intense) to nine (always or very intense). The sum of the patient's individual item scores yields the patient's

overall score. The total score is broken down into four categories: low meibomian gland symptom (<25%), mild (25-50%), moderate (>50-75%), and high [or severe for MGD severity] (>75%).

Tool III: Ocular Surface Disease Index (OSDI) Questionnaire

A 12-item questionnaire was developed by the Outcomes Research Group at Allergan Inc. **(Walt et al., 1997)** for assessing ocular irritation symptoms and their impact on visual function. The questionnaire comprises three subscales: vision-related function, ocular symptoms, and environmental triggers. Patients score their reactions on a 0 to 4 scale, with 0 indicating "none of the time" and 4 indicating "all of the time". The final score is computed as follows: normal (0-12), mild (13-22), moderate (23-32), and severe (≥33).

Tool IV: Dry Eye–Related Quality of Life Score (DEQS) Questionnaire

It was adopted from **Sakane et al. (2013)** to assess the effects of DED symptoms on the subjects' weekly daily lives using a 15-item questionnaire. The DEQS comprised two sections: nine questions concerning the impact of DED on daily life, and six questions concerning bothersome ocular symptoms. The frequency and severity of each question are displayed in Columns A and B, respectively. Respondents used a 5-point scale, with zero points for "none of the time" and four points for "all the time," to indicate how frequently each symptom occurred in column A. Next, using a 4-point rating system, the interviewee assessed the severity in column B. Greater impact on daily life and more severe DED symptoms were indicated by higher scores. The DEQS score was computed using the following formula, with a range of 0 to 100: (total degree scores for all questions replied) × 25/ (total number of questions replied) and categorized as follows: high [or severe for severity] > 75%, moderate > 50-75%, mild 25-50%, and low < 25%.

Content validity and reliability

To determine whether the tools achieved the study objectives or not, the tools were reviewed by three specialists in the disciplines of gerontological nursing, community health nursing, and community medicine at Zagazig University. The results showed that the study tools had a Cronbach's alpha reliability coefficient as follows:

Variables	Cronbach's Alpha	N of Items
Meibomian gland symptom	0.894	7
Meibomian gland symptom severity	0.918	7
OSDI	0.764	12
DEQS symptom	0.846	6
DEQS symptom severity	0.946	6
DEQS disability	0.894	9
DEQS severity of disability	0.935	9

Field Work

The researchers began to arrange a schedule for gathering the data, once the permission was permitted to progress in the study. The study's goal was conveyed to each elderly person individually before they were asked to participate. Answering the interview questionnaire took between 20 and 30 minutes. Three months were allotted for the fieldwork, which started at the beginning of October 2023 up to the end of December 2023; two days each week (Sunday and Tuesday) from 9.00 am - 1.00 pm.

Pilot study

A pilot sample of 10% (10) of patients was provided prior to the commencement of the main study to assess the clarity and understanding of the items as presented, as well as to appreciate the time required to fill out the tools. Since no modifications were necessitated, data from the piloted elderly were involved in the study.

Administrative design and ethical considerations

A formal letter from the nursing faculty dean at Zagazig University was submitted to the Zagazig University outpatient clinics director to request official permission for data collecting. Moreover, the researcher attended to the study setting, met with the outpatient clinics director, clarified to her the study aim, importance, and its procedures, and asked for his collaboration.

The Scientific Research Ethical Committee at Zagazig University's Faculty of Nursing approved the study (Code: ID/Zu.Nur.REC#:0038). Each of the elderly subjects verbally consented to participate in the study after being properly informed of its aim. Participants were given the choice of rejecting participation; moreover they were guaranteed that all information would be private and applied for the study purpose only. The researcher emphasized preserving anonymity and privacy of subjects' data.

Data analysis

IBM SPSS was used in the study for data collection, tabulation, and analysis. Whereas qualitative data was expressed as absolute frequencies and relative frequencies, quantitative data was expressed as mean ± SD. The Pearson's correlation coefficient was calculated in order to assess the relation between the variables. Furthermore, correlation near to 1 and 0 denote high and weak correlation, respectively. Direct and inverse correlation are shown by the (+) and (-) signs, respectively. The study used two-sided tests with p-values < 0.05 for statistical significance and ≥ 0.05 for insignificance.

Results

Table 1 displays the demographic characteristics of the studied elderly. The mean age of the elderly was 68.61 ± 7.79 years, with 80% of them were females. The same table also reveals that 70% of the studied elderly belonged to rural areas, 34% had basic education, and 36% were handworkers previously. Moreover, the studied elderly were married, living with their family, and had sufficient income (62%, 81%, and 49%) respectively.

34% of the elderly in the study had moderate meibomian gland symptom frequency, as shown in **figure 1** followed by mild frequency (25%) then high frequency (23%) with mean 33.81±16.17 (median, 37; range, 3–63). Regarding Meibomian gland symptom intensity, 37% of the elderly had moderate symptom intensity, followed by mild intensity (26%), and 19% of them had severe intensity with mean 32.77±15.86 (median, 36; range, 2–63).

Tables 2 reveals that the OSDI total mean score was 21.69 ± 9.66 (median, 22; range, 4–44). As well, 42% and 32% of the studied elderly, respectively, reported mild and moderate dry eye symptoms in light of the OSDI total score.

According to **Table 3**, the dry eye-related quality of life symptoms frequency and severity mean score ± SD was 12.86±6.49 and 12.58±5.01 respectively. Furthermore, 28% and 40% of the elderly reported moderate frequency and severity of DEQS respectively. Table 3 also demonstrates that dry eye-related quality of life disability frequency and severity mean score ± SD was 18.72±10.5 and 20.04±8.38 respectively. Additionally, 28% of the studied elderly had moderate impact frequency and 44% had mild impact severity.

Table 4 shows the correlation matrix between the variables that are being studied. A significant positive correlation was observed between the OSDI total score and MGD (symptom and intensity) ($P<0.01$). Changes in the frequency and severity of the DEQS and the symptom and intensity of the MGD were found to have significant positive correlation ($P<0.01$). The variations in the OSDI total score and DEQS

(frequency and severity) scores showed a significant positive correlation ($P < 0.01$). Furthermore, there were statistically significant positive correlation ($P < 0.01$) between the patients' age per year, OSDI, DEQS (frequency and severity), and MGD (symptom and intensity).

Multiple linear regression analysis for the DEQS revealed that OSDI and Meibomian gland symptoms were statistically significant independent positive predictors of DEQS ($P<0.05$). A measure of the Dry Eye–Quality-of-Life was not significantly impacted by any other variables. According to **Table 5** r-square value, 78% of the variation in this score can be explained by the model**.**

Table 1. Demographic Characteristics of elderly patients (N=100)

Variables		
Age per years Mean± SD Median (range)	68.61±7.79 68(50-97)	
	N	**%**
<70 years	59	59.0
≥70years	41	41.0
Gender		
Male	20	20.0
Female	80	80.0
Education		
Illiterate	31	31.0
Basic education	39	34.0
Secondary education	8	8.0
University	22	22.0
Marital status		
Single	6	6.0
Married	62	62.0
Divorced	13	13.0
Widow	19	19.0
Previous Occupation		
Employee	35	35.0
Handwork	36	36.0
Housewives	29	29.0
Current Occupation		
Working	11	11.0
Not working	89	89.0
Residence		
Rural	70	70.0
Urban	30	30.0
Living		
With family Alone	81 19	81.0 19.0
Income		
Sufficient	49	49.0
Sufficient and saving	23	23.0
Insufficient	28	28.0

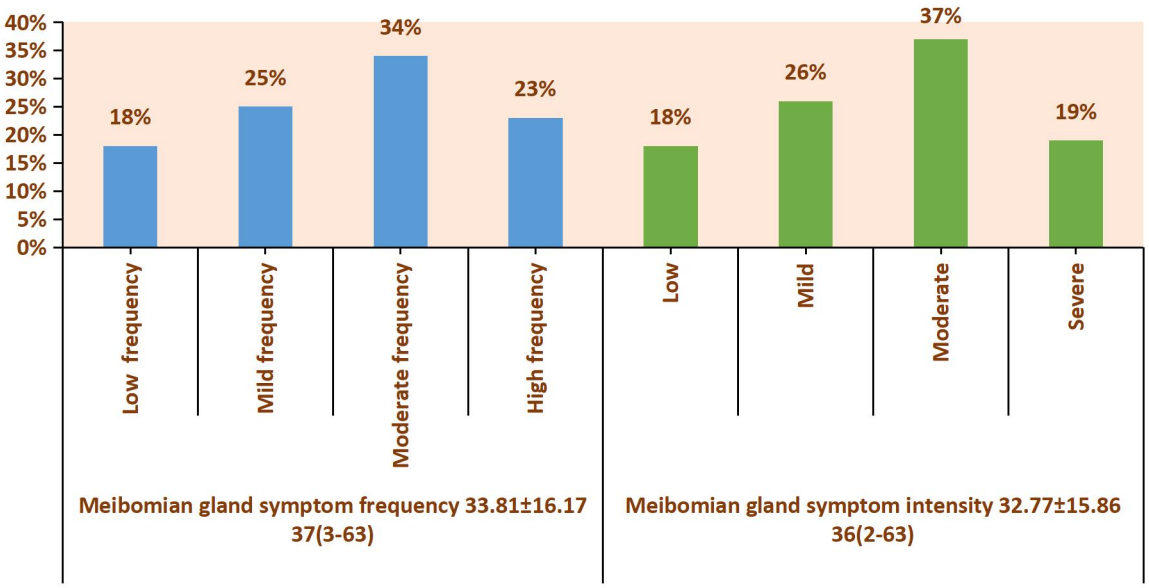

Fig.1. Meibomian gland symptom frequency and intensity of the elderly patients (N=100)

Table 2. Ocular Surface Disease Index (OSDI) of the elderly patients (N=100)

Variables	N	%
OSDI	21.69±9.66	
Mean± SD	22(4-44)	
Median(range)		
Normal	19	19.0
Mild	42	42.0
Moderate	32	32.0
Severe	7	7.0

Table 3. Dry Eye–Related Quality-of-Life Score (DEQS) of the elderly patients (N=100)

Variables	N	%
DEQS frequency	12.86±6.49	
Mean± SD	13(1-24)	
Median(range)		
Low frequency	23	23.0
Mild frequency symptom	24	24.0
Moderate frequency	28	28.0
High frequency	25	25.0
DEQS severity	12.58±5.01	
Mean± SD	12.5(4-24)	
Median(range)		
Low	20	20.0
Mild	30	30.0
Moderate	40	40.0
Severe	10	10.0
Impact frequency	18.72±10.5	
Mean± SD	18(1-36)	
Median(range)		
Low frequency	19	19.0
Mild frequency symptom	26	26.0
Moderate frequency	28	28.0
High frequency	27	27.0
Impact severity	20.04±8.38	
Mean± SD	18(6-36)	
Median(range)		
Mild	44	44.0
Moderate	34	34.0
Severe	22	22.0

Table 4. Correlation matrix of the studied variables

Variables		MGD Specific Symptom score	MGD Specific intensity score	OSDI	DEQS symptom	DEQS severity of symptom	DEQS disability	DEQS severity of disability
MGD specific intensity score	r	**.968****	1					
	p	0.0001						
OSDI	r	.**748****	.**755****	1				
	p	0.0001	0.0001					
DEQS symptom	r	**.761****	.**755****	**.650****	1			
	p	0.0001	0.0001	0.0001				
DEQS severity of symptom	r	**.644****	.**648****	.**616****	.**735****	1		
	p	0.0001	0.0001	0.0001	0.0001			
DEQS disability	r	**.780****	**.775****	.**708****	.**864****	.**751****	1	
	p	0.0001	0.0001	0.0001	0.0001	0.0001		
DEQS severity of disability	r	.**692****	.**708****	.**678****	.**667****	.**749****	.**783****	1
	p	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	
Patients' age per years	r	**.321****	.**323****	**.249***	.**345****	.**320****	.**400****	.**414****
	P	0.001	0.001	0.013	0.0001	0.001	0.0001	0.0001

Pearson' correlation coefficient (r) ** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 5. Multiple linear regression to predict Dry Eye– Quality of Life Score disability (DEQS) of the elderly patients (N=100)

Predictors	Unstandardized Coefficients		T	Sig.
	B	SE		
(Constant)	-11.78			
Ocular Surface Disease Index (OSDI)	.253	.098	2.593	.011
Meibomian gland symptom	.301	.060	5.022	.0001
Model	r= 0.83 R^2 =0.78 F =51.3 P=0.0001*			

β = regression coefficients, SE: standard error, R2: R square, f test *significant P<0.05

Discussion

Dry eye disease, a prevalent ocular surface disease, can compromise eye discomfort-related quality of life and vision due to tear film instability **(Kitazawa et al., 2022)**. The current study included one hundred elderly participants, whose mean age ± SD was 68.61±7.79 years. According to the study, the prevalence of MGD elevates with age (p<0.01). Numerous studies conducted globally produced comparable results. With a mean age of 63.4±14.5 years, the prevalence of MGD

elevated with age in North Western Spain **(Viso et al., 2012)**.

Studies in Austrian, Singapore, Japan, and Western India revealed similar subjects' mean ages **(Arita et al., 2019, Rabensteiner et al., 2018, Siak et al., 2012, & Shah et al., 2015)**. In both the Taiwan eye study (mean age of 72.2 years) and the Korean dry eye study (mean ± SD age of 72.0±5.9 years), the study population's mean age was found to be higher **(Han et al., 2011 & Lin et al., 2003)**.

Age, MGD, and DED symptoms were found to be strongly correlated in most previous studies by **Schaumberg et al. (2011), Chatterjee et al. (2020),** and **Hashemi et al. (2021)** that discovered an increase in the prevalence of MGD with age. There are a number of reasons why the symptoms of dry eyes get worse as people age. The role of oxidative stress is one theory that could explain this trend **(Dogru et al., 2018)**, which changes as one ages. Furthermore, lifetime exposure to pollutants, UV light, and eye drops is known to raise ocular surface inflammation and oxidative stress, which may facilitate the development of DED **(Seen & Tong, 2018)**.

Based on a study by **Nien et al. (2011)**, in California aging reduces peroxisome proliferator-activated receptor γ signaling, which in turn reduces meibocyte differentiation and cell cycling, ultimately leading to acinar atrophy and MGD. **Alghamdi et al. (2016)**, report that MG dysfunction is commonly seen in the elderly population. Additionally, **Stapleton et al. (2017)** found that residing in a rural area and being older were associated with a higher prevalence of DED in conjunction with an MGD.

However, a dissimilar study by **Badian et al. (2021)** that examined 900 participants who had been evaluated for DED discovered that MGD was extremely common in over 93% of patients, and that prevalence was unrelated to age or gender.

A significant correlation between dry eye symptoms and age was confirmed. These findings are compatible with certain studies in the literature but not with others. A Norwegian study **(Nøland et al., 2021)** revealed a significant correlation between getting older and higher OSDI scores, which is consistent with our findings. In addition, **Mehta et al. (2022)** in India noted a significant increase in the severity of dry eye with age. **Zhao et al. (2023)**, in contrast to our research, discovered that there was no relationship between age and the burning, stinging, or itching sensations associated with dry eyes. Furthermore, **Lekhanont et al. (2006)** discovered that there was no significant correlation between age and dry eye symptoms in their study of 550 Thai subjects.

Less than one fifth of the elderly patients had low frequency and intensity of MGD symptoms, while over one-third of them had moderate-grade symptoms within the study's findings. According to **Sloesen et al. (2023)**, fewer participants had Meibomian gland dysfunction and mild to severe dry eye disease, but a higher prevalence of participants had moderate DED and MGD symptoms and severity. A number of factors, including interethnic differences, meibomian gland age-related changes, temperature, and relative humidity may have contributed to the higher frequency and intensity of MGD symptoms in this study compared to study groups from earlier studies.

Based on the OSDI scores for symptomatic dry eye, this study demonstrated that fewer than half of the elderly MGD patients had mild symptomatic dry eye. This finding aligns with the findings of **Aapola et al. (2022)** in Finland, who found that among the elderly subjects under study, mild symptomatic dry eye

accounted for the highest percentage of OSDI scores. However, in the Ghana dry eye study **(Abu et al., 2022)**, where the mean ± SD was 18.09±16.21, severe OSDI scores were highly prevalent (62; 1.9%), and in the USA eye study, 37.7% of the study population had severe DED symptoms **(Garcia-Alfaro et al., 2021)**. The occurrence and severity of dry eyes in the elderly are more common due to hormonal fluctuations, changes in the tear glands with age, and environmental factors. Moreover, increased usage of digital devices has led to digital eye strain that may cause ocular symptoms **(Kaur et al., 2022)**.

MGD is substantially correlated with symptomatic dry eye (OSDI scores), according to the current study's findings. In a similar vein, **Viso et al. (2011)** found that meibomian gland dysfunction affects almost half of the participants in their dry eye study in Spain. In agreement with the findings of **Rabensteiner et al. (2018)**, who explained that ocular discomfort is primarily caused by dysfunction of the meibomian gland. Another Ghanaian study found that nearly all clinical measures of DED were significantly correlated with MGD. Therefore, the risk of developing DED was nearly twice as high for patients with MGD **(Abu et al., 2022)**. Moreover, age was found to be substantially connected with both the severity of MGD and dry eyes, according to an Indian study. According to **Mehta et al. (2022)**, there was a correlation between the severity of dry eye and higher MGD ratings.

The current study provided an explanation for the relationship between older adults' lower quality of life and higher scores on the ocular surface disease index and meibomian gland symptoms. One explanation for this result could be that a greater proportion of the elderly people under study had a basic education. More precisely, people without formal education and people in lower occupational classes may be more susceptible to losing the literacy skills needed to deal with medical conditions as they age.

According to **Labetoulle et al. (2019)**, the symptoms of MGD can hinder patients from performing daily tasks that depend on vision, such as reading, driving, and using digital devices. This can greatly impact the quality of life for patients in physical, emotional, and social aspects. In the same vein, further studies discovered an inverse relationship between dry eyes and a decreased quality of life **(Paulsen et al., 2014, Benítez-del-Castillo et al., 2017, Sun et al., 2017, Uchino, 2018, Sayegh et al., 2021, Tan and Tong, 2023)**, and it has a negative impact on functional abilities, such as the capacity to read **(Mathews et al., 2017 & Van Landingham et al., 2014)**. Comparable to the outcomes of this research, a comparative cross-sectional study found that the severity of dry eye syndrome was significantly associated with a decline in vision-related quality of life **(Le et al., 2014)**. Studies conducted by **Chan et al. (2021), Garcia-Alfaro et al. (2021), and Lim et al. (2022)** supports the notion that the severity of dry eye disease (DED) and ocular symptoms leads to a decreased quality of life. These conclusions align with their respective research. Another Japanese study by **Inomata et al. (2020)** discovered a significant association between DEQS (Frequency and Degree) and OSDI score.

Conclusion

Dry eye symptoms related to meibomian gland dysfunction have a negative impact on the quality of life of older patients with dry eye, predominantly characterized by mild dry eye symptoms, moderate meibomian gland dysfunction, and moderate impairment of quality of life. Furthermore, older age was associated with both the frequency and severity of meibomian gland dysfunction and symptomatic dry eye.

Recommendation

Public education initiatives on eyelid health, dry eye disease, and its consequences on the daily life of older adults are pivotal necessitated, especially considering the increased life expectancy and the demands of modern lifestyles such as extensive digital devices usage. Moreover, additional insights into how early identification, timely intervention, targeted, cost-efficient therapy, and addressing dry eye conditions can improve the quality of life for patients. Further investigation utilizing advanced technology is essential for diagnosing and treating dry eye in elderly individuals.

Limitations

A few patients were not cooperative and thought the researcher would help them to speed up the waiting time of the procedures

Abbreviations:

DED: dry eye disease, DEQS: dry eye–related quality of life score, MGD: Meibomian gland dysfunction, OSDI: Ocular Surface Disease Index, CAPMAS: Central Agency for Public Mobilization and Statistics.

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