

# Description of Dry Eyes among Contact Lens Users: A Case Study of Medical Students at Udayana University's Faculty of Medicine

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## ABSTRACT

Contact lenses are one of many tools used to assist in correcting refractive errors in the eyes. However, the use of contact lenses is not devoid of various risks that impact the eyes, one of which is dry eye syndrome. One quick and easy way to describe the condition of dry eyes is through a questionnaire, such as the CLDEQ-8 questionnaire. This study is descriptive observational cross-sectional research, with primary data from 35 samples. The sampling technique employed was total sampling in two different year groups of medical students at Udayana's Faculty of Medicine. The respondents were given the CLDEQ-8 questionnaire to fill out. By combining the scores from each question, a final score was obtained, allowing us to assess their dry eye condition based on the CLDEQ-8 baseline score. While most respondents obtained a "good" score on the CLDEQ-8, some also received "poor" to "dry eye" scores. This variation can be attributed to various internal and external factors, as well as the subjective nature of dry eyes for everyone, highlighting the need for a more comprehensive diagnosis and treatment.

**Keywords:** Contact Lens, Dry Eyes, CLDEQ-8

## INTRODUCTION

Based on the estimation from WHO (2013), there are more than 153 million people suffering from refractive errors, a condition where incoming light into the eyes cannot be focused clearly, resulting in blurred or unclear vision. Refractive errors can be managed with various methods or tools, one of which is contact lenses.<sup>[1]</sup> Contact lenses are thin, curved lenses placed on the surface of our corneas. Aside from correcting refractive errors, contact lenses can also serve as accessories.<sup>[2,3]</sup> Compared to other tools like glasses, contact lenses offer numerous advantages such as a more natural vision, less susceptibility to fogging, no pressure on the nose and ears, and many more. However, contact lenses are not without drawbacks such as the need for regular replacement of certain types of lenses, resulting in relatively higher costs, discomfort due to careless use, and dry eyes.<sup>[4]</sup>

Dry eye syndrome is one of the main reasons why people choose to stop using contact lenses. Dry eye syndrome is a multifactorial disease of the tear film and ocular surface, resulting in symptoms such as redness, burning sensation, foreign body sensation, photophobia, itching, and more.<sup>[5-7]</sup> Dry eye syndrome has a broad and subjective definition for each individual, thus requiring a comprehensive diagnosis involving interviews, tear film tests, ocular

surface staining, Schirmer tests, and examinations of eyelids and meibomian glands.<sup>[8,9]</sup> Not everyone can afford a comprehensive diagnosis due to various reasons, but there are still some alternatives to help describe the condition of dry eyes, one of which is a questionnaire. CLDEQ-8 or Contact Lens Dry Eyes Questionnaire consists of eight items or questions which can provide an overview of the overall symptoms and treatments often experienced by dry eye sufferers.

Based on the background above, the author is interested in researching the depiction of dry eyes among contact lens users among medical students at Udayana University, Bali.

## MATERIALS & METHODS

### Study Design

This study is descriptive observational cross-sectional research, with primary data from 35 samples. The sampling technique employed was total sampling in two different year groups of medical students at Udayana's Faculty of Medicine. The sampling process was conducted manually, with researchers first collecting data on students who had used contact lenses in the past two weeks and were willing to participate as respondents.

### Samples

Data collection was conducted by sending a Google Form link, which contained the CLDEQ-8 questionnaire and other questions. The CLDEQ-8 questionnaire used in this study was not created by the author.

### Statistical Analysis

The data that had been collected were then processed and analysed descriptively using the IBM SPSS Statistic Version 27 application and presented in the form of tables with narrative descriptions.

## RESULT

### Characteristics of Respondents

This study involved 35 students from the 2022-2023 cohort at the Faculty of Medicine, Udayana University. Below are

the results of the frequency distribution of respondent characteristics in the study.

**Table 1. Characteristics of Respondents**

Age	Amount	Percentage (%)
17 years	3	8,57
18 years	14	40
19 years	18	51,43
<b>Total</b>	<b>35</b>	<b>100</b>

Gender	Amount	Percentage (%)
Men	3	8,57
Women	32	91,43
<b>Total</b>	<b>35</b>	<b>100</b>
School Year		
2022	19	54,29%
2023	16	45,71%
<b>Total</b>	<b>35</b>	<b>100</b>

**Table 2. Water Content of Contact Lens**

Water Content	Amount	Percentage (%)
Low <40%	4	11,42%
Medium 40%-60%	24	68,57%
High >60%	7	20%
<b>Total</b>	<b>35</b>	<b>100</b>

Based on the data from the questionnaire, most respondents were 19 years old (51.43%). Additionally, there were 14 respondents (40%) who were 18 years old, and 3 respondents (8.57%) who were 17 years old. Most contact lens users were female, with a total of 32 individuals (91.43%), while male respondents numbered 3 individuals (8.57%). Based on the cohort year, many respondents were from the 2022 cohort, totalling 19 individuals (54.29%), while the remaining 16 individuals (45.71%) were from the 2023 cohort.

### Description of respondents based on the water content of contact lenses.

Based on the water content, there are 3 groups: "Low," which refers to contact lenses with water content less than 40%, "Medium," which refers to contact lenses with water content between 40-60%, and "High," which refers to contact lenses with water content more than 60%.

Based on Table 5.2, it was found that most respondents use contact lenses with "medium water content" of 40-60%, with 24

individuals (68.57%). There are 7 individuals (20%) who use contact lenses with “high water content”. The lowest distribution is in contact lenses with “low water content” (<40%), with only 4 individuals (11.42%).

### Description of Contact Lens Users Based on Frequency of Use

The researcher grouped the frequency of use into 4 categories: once every 2 weeks, once every week, more than once a week, and daily.

**Table 3. Contact Lens's Frequency of Use**

Frequency of Use	Amount	Percentage (%)
Once every 2 weeks	16	45,71
Once a week	4	11,42
More than once a week	11	31,42
Every day	4	11,42
<b>Total</b>	<b>35</b>	<b>100</b>

Based on Table 5.3, the majority of respondents based on the frequency of contact lens use are those who use it “once every 2 weeks”, totalling 16 individuals (45.71%). This is followed by the use “more than once a week” by 11 individuals (31.42%), followed by, with the fewest respondents using it “once a week” and “daily”, with 4 individuals (11.42%) for each option.

### Description of Dry Eyes Among Contact Lens Users Based on CLDEQ-8 (Contact Lens Dry Eye Questionnaire - 8).

Here is an overview of dry eye complications among contact lens users based on CLDEQ-8 scores. Questions from CLDEQ-8 cover various aspects such as eye discomfort, dryness, changes in vision, and desire to remove contact lenses.

**Table 4. Description of Dry Eyes Among Contact Lens Users Based on CLDEQ-8**

Question	Frequency						
	0	1	2	3	4	5	6
During a typical day in the past 2 weeks, how often did your eyes feel discomfort while wearing your contact lens?	2	13	10	9	1		
When your eyes felt discomfort with your contact lenses, how intense was this feeling of discomfort at the end of your wearing time?	2	10	12	6	5	0	
During a typical day in the past 2 weeks, how often did your eyes feel dry?	1	15	11	8	0		
When your eyes felt dry, how intense was this feeling of dryness at the end of your wearing time?	1	10	12	6	5	1	
During a typical day in the past 2 weeks, how often did your vision change between clear and blurry or foggy while wearing your contact lenses?	5	15	9	6	0		
When you vision was blurry, how noticeable was the changeable, blurry, or foggy vision at the end of your wearing time?	5	9	11	6	3	1	
During a typical day in the past 2 weeks, how often did your eyes bother you so much that you wanted to close them?	11	14	6	3	1		
How often during the past 2 weeks, did your eyes bother you so much while wearing your contact lenses that you felt as if you needed to stop whatever you were doing and take your contact lenses?		21	10	2	2	0	0

The shaded areas in table 4 indicate that there are no answer options for those questions. Each respondent will receive their own score, and the total score is obtained by summing the answers from each question, each of which has its own value.

**Table 5. Baseline Status Score of CLDEQ-8**

Baseline Status Score	Eye Condition	Frequency	Percentage (%)
≤ 6	Excellent	2	5,71
7-9	Very Good	7	19,44
10-13	Good	11	31,42
14-17	Enough	5	13,88
≥ 18	Dry Eyes/Bad	10	29

Based on the scores from the questionnaire, the majority of contact lens users, totalling 11 individuals (31.42%), obtained scores in the range of 10-13, indicating "good" eye condition. This is followed closely by a thin distribution in the "Dry Eyes/Poor" category with a score range of 18. Furthermore, there are 7 individuals (19.44%) who achieved a score range of 7-9, indicating "very good" eye condition. This is followed by the "fairly good" condition with a score range of 14-17, with 5 individuals (13.88%). The distribution of scores in the "perfect" eye condition category, with a score range of 6, is the smallest, comprising only 2 individuals (5.71%).

## **DISCUSSION**

Contact lens users in this study are predominantly female compared to male, with a total of 32 individuals (91.43%), which is consistent with previous research findings.<sup>[10,11]</sup> Most respondents are 18 years old and come from the PSSK 2022 cohort. Contact lenses with "medium" water content of 40-60% have the highest number of users, totalling 24 individuals (68.57%). There are many factors that can influence this, but availability is the primary determinant, followed by preference.<sup>[12]</sup>

Based on the frequency of use, most respondents use contact lenses once every 2 weeks, totalling 16 individuals (45.71%). This may be influenced by factors such as respondent preferences, such as preferring to use contact lenses for specific events or activities. However, although not as common as once every 2 weeks, using contact lenses more than once a week can be considered quite frequent, with a total of 11 individuals (31.42%). This indicates that there are quite a few people who use contact lenses regularly for daily wear.

Based on the red eye complications from CLDEQ-8, most respondents obtained eye scores in the range of 10-13, categorized as good. Many respondents suffer from the same symptoms, namely dry eyes and discomfort. This is consistent with the findings of Reddy's research (2016), where

73.5% of contact lens users experience dry eyes and 62.6% suffer from discomfort, in line with the results from the CLDEQ-8 questionnaire.<sup>[13]</sup>

It should be noted that there are many factors that can affect the condition of dry eyes in an individual, both from the individual themselves and external factors such as air pollution, weather, and others.<sup>[14]</sup>

One factor that can affect the condition of respondents' eyes is the use of artificial tears. The use of artificial tears can help lubricate the ocular surface, provide comfort, and rehydrate contact lenses. Artificial tears can also help reduce friction between the cornea when removing contact lenses. The longer contact lenses are worn, the drier and tighter they become, so the use of artificial tears can facilitate safer contact lens removal.<sup>[15]</sup>

The definition of dry eyes is very broad and subjective, and the diagnosis of dry eyes cannot be made solely through tools such as questionnaires. A comprehensive test is required, starting from interviews, tear film breakup tests, ocular surface staining, Schirmer's test, and examination of tear glands to obtain a definite diagnosis.<sup>[8,9]</sup>

## **CONCLUSION AND SUGGESTION**

Based on the research on Dry Eye Syndrome among Contact Lens Users among Medical Students at Udayana University, it is found that most contact lens users are female. The most common water content is medium, between 40-60%. The most frequent usage frequency is once every 2 weeks. Based on CLDEQ-8 scores, most students obtain a good score with a score range of 10-13, indicating the absence of dry eyes.

The majority of participants have reported minor pain and dryness while wearing contact lenses over the previous two weeks, as evidenced by their scores of "2" for comfort and dryness intensity. Moreover, many responders rated the level of visual changes such as fogging or blurriness at "3"; these occurrences have been rare during this time. Respondents have also said that they

frequently choose to close their eyes when their contact lenses cause them discomfort. A sizable percentage of participants never feel the need to take out their contact lenses because they are uncomfortable.

The researchers recommend respondents who obtain a Dry Eye or dry eye score to consult an eye doctor for further treatment.

#### **Declaration by Authors**

**Ethical Approval:** This research was approved by the Ethics Committee of the Faculty of Medicine Udayana University (No: 2507/UN14.2.2.VII.14/LT/2023)

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