

KNOWLEDGE LEVEL OF CONTACT LENS USERS REGARDING EARLY SYMPTOMS OF OCULAR COMPLICATIONS IN JOGJA GLASSES

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ABSTRACT

The increasing use of contact lenses as visual aids and aesthetic aids needs to be balanced with good knowledge of the early symptoms of ocular complications. Lack of user knowledge of early signs such as red eyes, dry eyes, pain, sensitivity to light, and blurred vision can lead to delayed treatment and increase the risk of more serious complications, including keratitis and corneal ulcers. The purpose of this study was to determine the level of knowledge of contact lens users regarding the early symptoms of ocular complications including subjective symptoms, objective symptoms, visual disturbances, initial serious conditions, risk factors, initial actions. This type of research is quantitative with a cross-sectional design. The population in this study were all contact lens users who were still actively using contact lenses at Kacamata Jogja. Sampling was carried out using a purposive sampling technique of 67 people. Data collection used a questionnaire. Data analysis used frequency distribution and percentage analysis. The results showed that the level of knowledge of contact lens users regarding the early symptoms of ocular complications was mostly in the good category (79,1%). Respondents' knowledge of subjective symptoms of ocular complications was also mostly in the good category (67,2%), objective symptoms of ocular complications (71,6%), visual impairment due to contact lens use (70,1%), initial serious conditions of ocular complications (80,6%), risk factors for contact lens use (62,7%), and initial actions when symptoms of ocular complications appeared (73,1%). Based on the results of the study, it can be concluded that the majority of contact lens users have a good level of knowledge regarding the initial symptoms of ocular complications due to contact lens use, but further research is needed with a larger sample size and examining lens use behavior.

Keywords: Knowledge, Contact Lenses, Early Symptoms Of Ocular Complications.

INTRODUCTION

Contact lens use is increasing, especially among teenagers and college students, for both vision correction and aesthetic purposes. However, improper use can lead to various ocular complications, ranging from minor complaints to serious conditions such as corneal infections. (Gowidjaya et al., 2024). Many contact lens wearers lack adequate knowledge about the early signs of complications, often delaying action. Symptoms such as dry eyes, redness, or blurred vision are often dismissed as minor, but they can be early signs of more serious conditions such as keratitis.

Contact lenses are a visual aid widely used as an alternative to glasses. In addition to correcting refractive errors, contact lenses are also widely used for cosmetic and aesthetic purposes (Fakhrudin et al., 2025). The use of contact lenses continues to increase, especially among adolescents and young adults, as they are considered more practical, comfortable, and can enhance appearance. Among adolescents and adults, the use of contact lenses is quite popular, especially soft contact lenses and colored contact lenses.

However, contact lens use carries the risk of eye health problems if not used and cared for properly. According to the Centers for Disease Control and Prevention, approximately 45 million people in the United States wear contact lenses, but most users have risky habits such as sleeping with their lenses in, not changing their cleaning solution regularly, and not maintaining good hand hygiene when inserting contact lenses. These habits can increase the

risk of eye infections and ocular complications (Hayati, 2024).

Knowledge of contact lens users regarding complications remains a problem in various countries. Research by Althomali et al. showed that of 386 adult respondents in Saudi Arabia, 62.7% had a high level of knowledge, 16.6% had a moderate level of knowledge, and 20.7% had a low level of knowledge. Furthermore, misconceptions regarding contact lens hygiene and risk factors for complications persisted. The study also showed that women and employed respondents had higher levels of knowledge ($P < 0.05$) (Althomali et al., 2025).

Another study by Alzahrani et al. (2021) in Riyadh, Saudi Arabia, found that knowledge and practice of contact lens use were still lower than expected. Many respondents used non-contact lenses solely for cosmetic purposes. Dry eyes were the most commonly reported complication, while education and income were associated with knowledge of contact lens complications (Alzahrani et al., 2021).

In addition to knowledge, risk is also influenced by contact lens wear behavior. Athavina et al. (2025) through a systematic review stated that the main risk factors for microbial keratitis in contact lens wearers include wearing them beyond the recommended wear time, excessive wear, including while sleeping, bathing, or swimming with contact lenses, non-compliance with lens care procedures, and the use of cleaning solutions that are not recommended (Athavina et al., 2025).

In Indonesia, research by Pongtuluran et al. (2024) on medical students showed that 94% of respondents had good knowledge and 83% had good behaviors regarding contact lens use. However, these results differ from research by Husna et al. (2021) on high school students, which showed that eye complaints persisted among contact lens users, with the most common complaint being a sensation of a foreign object in the eye (41.3%) (Husna et al., 2021).

Ocular complications from contact lens use can include mild irritation, redness, dry eyes, conjunctivitis, keratitis, corneal abrasions, and even sight-threatening corneal ulcers. Contact lens wear is a major risk factor for microbial keratitis, particularly when lenses are worn while sleeping or if hygiene is poor. The incidence of microbial keratitis in soft contact lens wearers is estimated at 2-20 cases per 10,000 wearers per year.

Most eye complications begin with recognizable symptoms, such as pain, itching, redness, watering, sensitivity to light, and blurred vision (Chandra et al., 2022). However, contact lens users' lack of awareness of the early symptoms of ocular complications often leads to delayed treatment. Many users continue to wear their contact lenses despite experiencing symptoms or attempt self-treatment without consulting a healthcare professional.

Research by the National Center for Biotechnology Information reports that more than 50% of young contact lens wearers do not know the proper procedures for cleaning their lenses, and most are unaware that sleeping with contact lenses in can significantly increase the risk of corneal infection. Another study among college students showed that approximately 30–40% of respondents had insufficient knowledge about the complications of contact lens use (Budiana, 2026).

In conclusion, among teenagers and adults, contact lens use is often influenced by fashion trends, social media, and peer groups. However, knowledge regarding safe use, risk factors, warning signs, and initial action in the event of eye problems is often inadequate. Contact lens users tend to purchase lenses freely through online stores or social media without an eye examination or education from a healthcare professional. This can increase the risk of inappropriate use. This research is important to understand the knowledge of adolescent and adult contact lens users, thus providing a basis for developing eye health

education programs, preventing complications, and improving safe contact lens use behavior. The research question is: What is the level of knowledge of contact lens users at Kacamata Jogja regarding the early symptoms of ocular complications?

This study generally aims to determine the level of knowledge of contact lens users regarding the early symptoms of ocular complications. Specifically, this study aims to determine the level of knowledge of contact lens users regarding the early symptoms of ocular complications, including subjective symptoms, objective symptoms, visual disturbances, initial serious conditions, risk factors, and appropriate initial actions.

This research is expected to provide benefits to science as additional insight and scientific references regarding eye health and the use of contact lenses, for the public as a source of information to increase awareness of early symptoms of ocular complications and encourage appropriate action, and for researchers as a means to increase knowledge, experience, and skills in conducting research in the field of eye health.

The eye is a sensory organ that functions to receive light stimuli and convert them into nerve impulses that are then transmitted to the brain, resulting in visual perception. Anatomically, the eye is composed of several important parts, namely the cornea, iris, pupil, lens, aqueous humor, vitreous humor, retina, and optic nerve. The cornea functions as the primary refracting medium for light entering the eye, while the iris regulates the amount of light entering through the pupil. The lens of the eye plays a role in focusing light so that the image falls precisely on the retina. The retina contains photoreceptor cells in the form of rods and cones that function to convert light energy into electrical impulses. These impulses are then transmitted through the optic nerve to the visual cortex in the brain, allowing a person to see objects clearly (Guyton AC, Hall JE., 2021).

The process of vision begins when light reflected from an object enters the eye through the cornea. The cornea and lens refract light, focusing the beam on the retina. After reaching the retina, light is received by photoreceptor cells and converted into electrical impulses through a process called phototransduction. These impulses are then transmitted through the optic nerve to the visual cortex in the occipital lobe of the brain, where they are interpreted into a recognizable image. The image formed on the retina is real, inverted, and reduced in size, and is then processed by the brain to produce a true visual perception. The accuracy of this light refraction process and the health of the eye's structure significantly determine the quality of a person's vision (Tortora GJ, Derrickson B., 2021).

Contact lenses are a visual aid commonly used for several purposes, including correcting refractive errors, for cosmetic purposes, or as a therapeutic option for corneal pathological conditions (Diassanti, 2023). Contact lenses are increasingly popular today due to their practicality and affordability. Contact lenses are visual aids worn directly on the cornea to correct refractive errors such as myopia, hyperopia, astigmatism, and presbyopia. They are widely chosen because they provide a wider field of vision, are less prone to fogging, and offer a superior aesthetic appeal compared to glasses. However, contact lens use requires special care and proper hygiene to prevent eye irritation and infection.

Contact lenses have the following functions:

- 1) Visual aids

Corrective lenses are designed to correct refractive errors and other eye disorders, thus improving vision similarly to glasses. Some conditions that can be corrected with contact lenses are myopia, hyperopia, and astigmatism (Hartono, 2022).

- 2) Cosmetics

Cosmetic contact lenses are designed to change the color and appearance of the eye. They can also improve vision. However, the design and color of these lenses can sometimes cause blurry or unclear vision. Non-corrective contact lenses for cosmetic purposes are often

called decorative contact lenses or plano cosmetic. Although contact lenses are used for cosmetic purposes, their biocompatibility must still be considered, as with other conventional contact lenses, because cosmetic contact lenses typically allow less oxygen to reach the eye than corrective contact lenses. This can be irritating and cause damage to the cosmetic eye.

3) Therapist

Contact lenses are often used for the treatment and management of non-refractive eye conditions. They can protect a diseased or injured cornea from friction caused by constant blinking. They are also useful in the treatment of conditions such as corneal ulcers, corneal erosions, dry eyes, corneal edema, descemetocelles, corneal ectasis, Mooren's ulcers, anterior corneal dystrophy, bullous keratopathy, and neurotrophic keratoconjunctivitis. They also deliver developed eye medications.

Ocular complications are eye disorders or abnormalities that can occur due to improper contact lens use (Izza, 2024). Complications can range from mild irritation to severe infection. Some common complications include conjunctivitis, keratitis, dry eye syndrome, corneal abrasion, corneal hypoxia, and corneal ulcers. The risk of complications increases if contact lenses are worn for too long, if hygiene is poor, or if they are worn while sleeping.

Contact lens insertion should be performed according to proper procedures to reduce the risk of infection and ocular complications. Before inserting contact lenses, wash your hands with soap and dry them with a clean towel. Next, ensure the contact lens is clean, untear, and inverted. Then, place the lens on the tip of your index finger. Open the upper and lower eyelids using different hands, then gently place the contact lens on the cornea while looking forward or slightly upward. Once inserted, blink several times to ensure the lens is positioned correctly and comfortably. Contact lenses should be removed before bed, unless specifically designed for continuous wear as recommended by an eye care professional. After use, lenses should be cleaned, rinsed, and stored using a special solution. The lens case should be replaced regularly and no old solution should be used.

According to Notoatmodjo, knowledge is the result of human sensing, or the result of a person's knowledge of an object through their senses (eyes, nose, ears, and so on). Knowledge is a variety of things obtained by a person through the five senses. Knowledge is a result of human knowledge resulting from the combination or collaboration between a knowing subject and the object being known (Nurroh, 2017).

According to Fitriani in Yuliana (2017), the factors that influence knowledge are as follows:

1) Education

Knowledge is closely related to education, where someone with a higher education is expected to have broader knowledge.

2) Mass Media / Information Sources

Technological advances provide a variety of mass media that can influence a person's knowledge about new innovations.

3) Socio-Cultural and Economic

If a region has a culture of maintaining environmental cleanliness, it is highly likely that the surrounding community will have a mutual commitment to maintaining environmental cleanliness. Social status is a societal condition that is constantly changing through social processes. Economic status, on the other hand, is a state or reality seen or felt by human senses regarding the condition of parents and their ability to meet their needs.

4) Environment

The environment influences the process by which knowledge enters the minds of individuals within that environment. This occurs through reciprocal interactions, which are

then responded to as knowledge by each individual.

5) Experience

An experience is an event that someone has experienced while interacting with their environment. A person tends to try to forget a bad experience, but a pleasant experience can leave a lasting impression that deepens their emotions, leading to a positive attitude.

6) Age

Age influences a person's perception and way of thinking. As one ages, their comprehension and thought patterns develop, resulting in a greater understanding of the knowledge they acquire.

According to Arikunto (2018), knowledge can be measured using a questionnaire, where subjects or respondents are asked about the content of the material to be measured. The depth of a person's knowledge to be ascertained or measured can be adjusted to these levels. The quality of knowledge at each level can be determined through scoring, as follows:

- 1) The level of knowledge is said to be good if the results or values are in the range of 76-100%.
- 2) The level of knowledge is said to be sufficient if the results or values are in the range of 56-75%.
- 3) The level of knowledge is said to be insufficient if the results or scores are <56%.

METODE PENELITIAN

Jenis penelitian adalah kuantitatif dengan pendekatan cross sectional. yaitu pengumpulan data variabel independen dan dependen dilakukan secara bersamaan dalam satu waktu. Desain ini digunakan untuk mengetahui hubungan antara penggunaan lensa blue light filter dengan keluhan penglihatan pada pengguna smartphone tanpa melakukan intervensi terhadap subjek penelitian. Pendekatan cross-sectional dinilai efektif untuk penelitian epidemiologi karena mampu menggambarkan hubungan antar variabel dalam populasi secara cepat dan efisien, terutama pada kondisi dengan keterbatasan waktu dan sumber daya (Sugiyono, 2020).

Penelitian dilaksanakan Optik Socco Jogja, alamat Jl. Dr. Soepomo, No. 49, Warungboto, Umbulharjo, Yogyakarta. Waktu pelaksanaan penelitian ini dilakukan pada bulan Mei 2026. Penentuan lokasi dan waktu penelitian merupakan bagian penting dalam metodologi penelitian untuk memastikan bahwa proses pengumpulan data dapat dilakukan secara efektif dan efisien (Notoatmodjo, 2018).

Variable dalam penelitian ini meliputi variable independen dan variable dependen. Variabel independen adalah penggunaan lensa blue light filter, yaitu penggunaan kacamata yang memiliki kemampuan menyaring cahaya biru dari perangkat digital. Variabel dependen adalah keluhan penglihatan yang dialami oleh pengguna smartphone, yang mencakup gejala seperti mata lelah, mata kering, penglihatan kabur, dan sakit kepala.

Populasi merupakan keseluruhan subjek penelitian yang memiliki karakteristik tertentu sesuai dengan tujuan penelitian. Dalam penelitian ini, populasi adalah pengguna smartphone. Sampel adalah sebagian dari populasi yang dijadikan sebagai subjek penelitian. Sampel penelitian diambil menggunakan teknik probability sampling, yaitu simple random sampling. Jumlah sampel sebanyak 45 sampel pengguna smartphone yang datang ke Optik dalam periode tertentu atau pelanggan yang pernah membeli kacamata blue light.

Definisi operasional dalam penelitian ini terdiri atas dua variabel, yaitu penggunaan lensa blue light filter dan keluhan penglihatan pada pengguna smartphone. Penggunaan lensa blue light filter didefinisikan sebagai penggunaan kacamata dengan lapisan khusus yang berfungsi menyaring cahaya biru saat menggunakan smartphone. Variabel ini diukur

menggunakan kuesioner tertutup dengan skala data nominal, dengan kategori 1 = menggunakan dan 2 = tidak menggunakan. Sementara itu, keluhan penglihatan pada pengguna smartphone didefinisikan sebagai gejala yang dirasakan pada mata akibat penggunaan smartphone dalam waktu lama (digital eye strain). Variabel ini diukur menggunakan kuesioner termasuk dalam skala data ordinal. Hasil pengukuran dikategorikan berdasarkan skor total, yaitu 1 = ringan, 2 = sedang, dan 3 = berat.

Instrumen yang digunakan adalah kuesioner. Data yang diperoleh diolah untuk mengetahui distribusi penggunaan lensa blue light filter dan keluhan penglihatan dalam bentuk frekuensi dan persentase, kemudian dilanjutkan dengan uji Chi-Square untuk mengetahui hubungan antara kedua variabel.

RESEARCH METHODS

This research is a quantitative study using a cross-sectional approach, meaning variables are measured at a single point in time. This design was chosen because it provides an objective picture of performance differences between methods without interfering with the variables being studied. The cross-sectional approach is widely used in health services research because it is time- and cost-efficient and can produce relevant data in a short time.

This research was conducted at the Jogja Eyewear Store. The research location was selected based on the researcher's ease of access to obtain respondents who met the research criteria, namely adolescent and adult contact lens users. Furthermore, the Jogja Eyewear Store was chosen because of the high number of customers who use contact lenses, both for aesthetic needs and vision correction. The research is planned to be conducted in May 2026, according to the established research schedule.

A research variable is anything that becomes the object of observation in a study and has varying values between respondents. In this study, the single variable is the level of knowledge of contact lens users regarding the early symptoms of ocular complications at Kacamata Jogja.

The population in this study was all contact lens customers at the Kacamata Jogja store who used contact lenses at the research location during the study period. The target population was all contact lens users who were still actively using contact lenses at the time of the study and met the established criteria of 200 customers at Kacamata Jogja.

A sample is a portion of a population taken as research respondents and considered representative of the population. Sampling techniques can use purposive sampling, which is the selection of respondents based on certain criteria, such as adolescent and adult customers who wear contact lenses, are willing to be respondents, and complete the questionnaire. The sample size is determined based on an appropriate formula of 67 respondents with a descriptive cross-sectional research design or adjusted to the population size available at the research location.

Operational definitions in this study were used to provide clear boundaries for each variable studied. The level of knowledge of contact lens users regarding the early symptoms of ocular complications was defined as the respondent's ability to know, understand, and recognize the early symptoms of ocular complications due to contact lens use, such as red eyes, pain, itching, blurred vision, watery eyes, sensitivity to light, and discomfort. This variable was measured using a questionnaire with an ordinal scale and categorized as good knowledge if it obtained a score of 76–100%, sufficient 56–75%, and poor <56%.

The research instrument used in this study was a structured questionnaire compiled based on the research objectives and theoretical studies regarding contact lens use and early symptoms of ocular complications. Univariate analysis was used to describe the frequency distribution of respondent characteristics such as age, gender, class, duration of contact lens use, source of information, and level of respondent knowledge, which are presented in the form of frequency distribution tables and percentages.

RESULTS AND DISCUSSION

Table 1. Frequency Distribution of Respondent Characteristics

Respondent Characteristics	Frequency (f)	Percentage (%)
Age		
17 years	4	6.0
19 years old	2	3.0
20 years	13	19.4
>20 years	48	71.6
Gender		
Man	21	31.3
Woman	46	68.7
Education		
JUNIOR HIGH SCHOOL	1	1.5
High School/Vocational School	19	28.4
Bachelor/Diploma	47	70.1
Duration of Contact Lens Use		
<1 year	21	31.3
1–2 years	6	9.0
>2 years	40	59.7
Source of Information about Contact Lenses		
Health workers	8	11.9
Parents/family	7	10.4
Friend	28	41.8
Social media/internet	14	20.9
Optical seller/shop	9	13.4
Other	1	1.5
Total	67	100.0

Based on the results of the study of 67 respondents, the majority of respondents were over 20 years old, namely 48 respondents (71.6%). Furthermore, respondents aged 20 years were 13 respondents (19.4%), 17 years old were 4 respondents (6.0%), and 19 years old were 2 respondents (3.0%).

Based on gender, the majority of respondents were female, namely 46 respondents (68.7%), while 21 respondents were male (31.3%). Based on education level, the majority of respondents had a Bachelor's/Diploma education, namely 47 respondents (70.1%), followed by high school/vocational school (19 respondents (28.4%)), and junior high school (1.5%).

Based on the length of contact lens use, the majority of respondents had used contact lenses for more than 2 years, namely 40 respondents (59.7%). Respondents who had used contact lenses for less than 1 year were 21 respondents (31.3%), while those who had used contact lenses for 1-2 years were 6 respondents (9.0%).

Based on the sources of information regarding contact lenses, the majority of respondents obtained information from friends, namely 28 respondents (41.8%). Furthermore, respondents obtained information from social media or the internet as many as 14 respondents (20.9%), optical sellers or shops as many as 9 respondents (13.4%), health workers as many as 8 respondents (11.9%), parents or family as many as 7 respondents (10.4%), and other sources as many as 1 respondent (1.5%). This shows that the source of information regarding the use of contact lenses is obtained more from friends than health workers or other sources.

Table 2. Frequency Distribution of Knowledge Level

Level of Knowledge	Frequency (f)	Percentage (%)
Good	53	79.1
Enough	14	20.9
Total	67	100.0

Based on the results of a study of 67 respondents, it was found that the majority of respondents (53 respondents (79.1%)) had a good level of knowledge regarding the early symptoms of ocular complications due to contact lens use. Meanwhile, 14 respondents (20.9%) had a sufficient level of knowledge. No respondents had a level of knowledge categorized as poor.

The results of this study align with those of Pongtuluran et al., 2024, which reported that 94% of college students who wear contact lenses have a good level of knowledge regarding their use. This good knowledge relates to understanding how to use, care for, and recognize the symptoms of complications that can occur during contact lens wear. The higher a person's knowledge, the more likely they are to practice safe contact lens use, thereby minimizing the risk of ocular complications.

In addition, research (Ardella et al., 2023) found that the level of knowledge of contact lens users was significantly related to the risk of corneal ulcers. Individuals with better knowledge tend to understand the importance of recognizing early symptoms of complications and immediately seeking medical help if eye complaints arise. On the other hand, a lack of knowledge can cause delays in treatment, thereby increasing the risk of more serious complications, including corneal infections which have the potential to cause permanent vision problems.

Knowledge of the early symptoms of complications is a crucial foundation for developing preventative behaviors, as users who understand the warning signs are more likely to discontinue contact lens use, maintain lens hygiene, and seek medical attention promptly if symptoms arise. Therefore, the high level of knowledge among respondents in this study is a valuable asset in preventing ocular complications from contact lens use (Fakhrudin, 2024).

Table 3. Knowledge Indicator regarding Subjective Symptoms

Subjective Symptoms	Frequency (f)	Percentage (%)
Good	45	67.2
Enough	17	25.4
Not enough	5	7.5
Total	67	100.0

Based on the results of research on 67 respondents, in the aspect of knowledge about subjective symptoms, the majority of respondents had a good category of 45 respondents (67.2%), followed by a sufficient category of 17 respondents (25.4%), and a less than adequate category of 5 respondents (7.5%). These results indicate that the majority of respondents understood the subjective symptoms of ocular complications resulting from contact lens use, such as itching, burning, pain, burning, watering, and discomfort when wearing lenses. A good understanding of subjective symptoms is expected to help users recognize early signs of complications and take appropriate action to prevent more serious complications.

Subjective symptoms are complaints directly felt by contact lens users and are often an early sign of eye problems (Kartika, 2023). A good understanding of subjective symptoms is crucial because it can help contact lens users recognize complications early and enable prompt preventive and treatment measures. The results of this study align with those of Husna et al. (2021), who stated that the most common complaint among contact lens users was a sensation of a foreign object in the eye. This complaint is a subjective

symptom frequently experienced by contact lens users due to irritation or dryness of the eyes.

A relatively good understanding of subjective symptoms is likely influenced by personal experience wearing contact lenses as well as information obtained from social media, friends, and optical retailers. However, some respondents still consider mild symptoms such as redness or sore eyes to be normal, which can lead to delayed treatment. Therefore, increased education is needed for adolescent contact lens wearers regarding the importance of recognizing subjective symptoms as early signs of ocular complications to prevent more serious complications.

Table 4. Indicator Knowledge of Objective Symptoms

Objective Symptoms	Frequency (f)	Percentage (%)
Good	48	71.6
Enough	17	25.4
Not enough	2	3.0
Total	67	100.0

In terms of knowledge about objective symptoms, the majority were in the good category, namely 48 respondents (71.6%), while 17 respondents (25.4%) were in the sufficient category and 2 respondents (3.0%) were in the poor category. These results indicate that the majority of respondents have a good understanding of the objective signs of ocular complications resulting from contact lens use, such as redness, swelling, discharge, and other directly observable signs. A good understanding of objective symptoms is expected to help users recognize complications early, allowing them to immediately discontinue contact lens use and seek medical attention if necessary.

Objective symptoms are visible signs of complications in the eye and typically arise from irritation, infection, or improper contact lens use. Knowledge of objective symptoms is crucial because they can be early indicators of eye health problems that require immediate treatment. The results of this study align with those of Althomali et al. (2025), who stated that misconceptions persist regarding contact lens hygiene, factors, and the risk of complications. Lack of knowledge about lens hygiene can increase the risk of objective symptoms such as red eyes and irritation.

Most respondents likely didn't understand that red and swollen eyes are not normal after contact lens use. This could be due to a lack of education about the signs of ocular complications and improper contact lens wear habits. Therefore, increased eye health education for adolescent contact lens wearers regarding the objective symptoms of ocular complications is needed so that respondents can more quickly recognize warning signs and initiate appropriate treatment.

Table 5. Indicator Knowledge about Visual Impairment

Visual Impairment	Frequency (f)	Percentage (%)
Good	47	70.1
Enough	14	20.9
Not enough	6	9.0
Total	67	100.0

In terms of knowledge about visual impairment, the majority of respondents were in the good category, namely 47 respondents (70.1%), followed by the sufficient category, namely 14 respondents (20.9%) and the poor category, namely 6 respondents (9.0%). These results indicate that the majority have a good understanding of the visual impairments that can occur due to contact lens use, such as blurred vision, decreased visual acuity, or other visual disturbances. A good understanding of visual impairments is expected to help users recognize early symptoms of complications, allowing them to immediately discontinue

contact lens use and obtain appropriate treatment to prevent more serious complications.

Visual disturbances are one sign of ocular complications that can occur due to improper contact lens use (Hartono, 2022). These disturbances can include blurred vision, glare, sensitivity to light, and decreased visual acuity. Knowledge of visual disturbances is crucial because they can be an early sign of corneal problems or eye infections.

The results of this study align with those of Alzahrani et al. (2021), which found that contact lens wearers' knowledge of complications was lower than expected. The study also showed that most respondents were only aware of minor complications, such as dry eyes, compared to more serious vision problems.

Respondents' lack of understanding of vision impairment may be influenced by a lack of information about the effects of improper contact lens use. Some respondents may have considered temporary blurred vision to be a normal condition and therefore did not seek an eye examination immediately. Therefore, increased education regarding vision impairment caused by contact lens use is needed so that adolescent contact lens wearers can be more alert to the early signs of ocular complications and seek prompt, appropriate treatment.

Table 6. Indicator Knowledge of Early Serious Conditions

Initial Serious Condition	Frequency (f)	Percentage (%)
Good	54	80.6
Enough	12	17.9
Not enough	1	1.5
Total	67	100.0

In terms of knowledge about initial serious conditions, the majority of respondents were in the good category, namely 54 respondents (80.6%), while the sufficient category was 12 respondents (17.9%) and the less category was 1 respondent (1.5%). These results indicate that the majority of respondents have a good understanding of the early signs of serious ocular complications that require immediate treatment, such as severe pain, decreased vision, or signs of eye infection. A good understanding of these early signs is expected to encourage users to immediately discontinue contact lens use and seek medical attention, thereby minimizing the risk of more serious complications.

Early signs of serious ocular complications can include severe eye pain, severe redness, swelling, and decreased visual acuity, all of which require immediate treatment (Alzahrani et al., 2021). Knowledge of early signs of serious ocular complications is crucial for contact lens wearers to recognize the warning signs and seek prompt medical attention to prevent more serious complications.

The results of this study support research by Athavina et al. (2025), which states that improper contact lens use can increase the risk of microbial keratitis and other serious complications. Prolonged contact lens wear, sleeping with contact lenses in, and poor lens hygiene are factors that can worsen eye conditions.

Most respondents likely don't understand that conditions such as severe pain and decreased vision are signs of serious complications that require immediate treatment. This lack of understanding can lead to delays in examination and treatment, increasing the risk of permanent vision impairment. Therefore, more intensive education is needed regarding the early signs of serious ocular complications in contact lens users so that adolescents are more aware of these warning signs and can take appropriate action immediately.

Table 7. Indicator Knowledge of Risk Factors

Risk Factors	Frequency (f)	Percentage (%)
Good	42	62.7
Enough	11	16.4
Not enough	14	20.9
Total	67	100.0

In terms of knowledge about risk factors, the majority of respondents were in the good category, namely 42 respondents (62.7%), followed by the sufficient category, namely 11 respondents (16.4%) and the poor category, namely 14 respondents (20.9%). These results indicate that the majority of respondents have a good understanding of factors that can increase the risk of ocular complications due to contact lens wear, such as wearing contact lenses beyond the recommended time, poor hand hygiene, wearing lenses while sleeping, or improper lens care. However, some respondents still have a low level of knowledge, so education regarding the risk factors of contact lens wear still needs to be improved to prevent ocular complications.

Risk factors for contact lens wear include prolonged contact lens wear, sleeping with contact lenses in, poor hand and lens hygiene, inappropriate use of cleaning solutions, and wearing contact lenses while showering or swimming (Mujiono et al., 2026) . Lack of knowledge about these risk factors can increase the likelihood of irritation, infection, and serious eye complications.

The results of this study are in line with research by Athavina et al. (2025) which stated that the main risk factors for microbial keratitis in contact lens users are wearing contact lenses beyond the replacement time, wearing contact lenses while sleeping, bathing, or swimming, and non-compliance with contact lens care. Furthermore, research by Althomali et al. (2025) also found that there are still misconceptions regarding contact lens hygiene and risk factors for ocular complications. This indicates that knowledge about risk factors for contact lens use remains a problem for contact lens users.

Respondents' lack of knowledge regarding risk factors may be influenced by a lack of eye health education and a lack of accurate information regarding safe contact lens use. Some adolescents also tend to use contact lenses solely for cosmetic purposes without understanding the potential risks. Therefore, increased education regarding the risk factors of contact lens use is needed so that adolescent contact lens wearers can better understand the importance of maintaining cleanliness and using contact lenses properly to prevent ocular complications.

Table 8. Indicator Knowledge of Initial Actions

Initial Action	Frequency (f)	Percentage (%)
Good	49	73.1
Enough	11	16.4
Not enough	7	10.4
Total	67	100.0

In terms of knowledge about initial actions, the majority of respondents were in the good category, namely 49 respondents (73.1%), followed by the sufficient category, namely 11 respondents (16.4%) and the less than adequate category, namely 7 respondents (10.4%). These results indicate that the majority of respondents understood the appropriate initial actions to take when symptoms of ocular complications due to contact lens use appear, such as immediately discontinuing contact lens use, not insisting on re-wearing the lenses, and immediately consulting a healthcare professional if symptoms persist or worsen. However, some respondents still had sufficient and some had insufficient knowledge, so education regarding the initial management of ocular complications still needs to be improved so that all contact lens users can take appropriate action when symptoms appear.

Appropriate initial action is crucial to prevent more serious ocular complications (Basri et al., 2024) . These measures include temporarily discontinuing contact lens use, maintaining eye hygiene, avoiding the use of over-the-counter eye drops, and immediately seeking medical attention if symptoms persist.

The results of this study align with those of Pongtuluran et al. (2024), which showed

that good knowledge about contact lens use can influence wearer behavior in maintaining eye health. Lack of knowledge about initial actions can lead to wearers continuing to wear contact lenses even after developing eye complaints.

Respondents' lack of knowledge regarding initial action is likely influenced by a lack of education regarding the management of symptoms of ocular complications. Some respondents may have assumed that mild symptoms, such as redness or soreness, would resolve on their own, leading them to fail to take appropriate action immediately. Furthermore, the fact that information about contact lens use is more often obtained from social media and friends than from healthcare professionals may also influence respondents' understanding of the correct initial actions to take when complications arise. Therefore, increased eye health education regarding appropriate initial actions for contact lens users is needed to enable adolescents to receive prompt and appropriate treatment when symptoms of ocular complications arise, thereby preventing the risk of more severe vision impairment.

CONCLUSION

Based on the results of the study on the level of knowledge of contact lens users regarding the early symptoms of ocular complications in adolescents at Toko Kacamata Yogya, it can be concluded that this study has achieved its objective of determining the level of knowledge of respondents regarding subjective symptoms, objective symptoms, visual disturbances, early serious conditions, risk factors, and early actions of ocular complications. The results of the study indicate that the knowledge of respondents in all aspects is mostly in the good category, with the highest percentage of knowledge regarding the early serious conditions of ocular complications at 80.6%, while the lowest percentage is knowledge regarding risk factors at 62.7%. These findings indicate that most respondents have a good understanding in recognizing the early signs and symptoms of ocular complications and know the actions that need to be taken when experiencing complaints due to contact lens use. However, there are still respondents with sufficient and insufficient levels of knowledge, especially regarding risk factors, so that it is necessary to improve education regarding the proper use and care of contact lenses. The results of this study can be used as evaluation material for opticians and health professionals in improving education for contact lens users as an effort to prevent ocular complications and maintain eye health.

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