Indo-MathEdu Intellectuals Journal

p-ISSN: 2808 – 5604
e-ISSN: 2808 – 5078
Volume. 5, No. 1, 2024

ANALYSIS OF HEALTH BENEFITS OF LENSES: A LITERATURE REVIEW

Ainur Rahman Efendi[1], Maimon Sumo[2], Pu'adi[3], Nur Fadilah[4], Wilda Musyarrofah[5], Syifaul Aini Mulyadi[6]

[1, 2, 3, 4, 5, 6]Universitas Islam Madura, Jl. PP Miftahul Ulum Bettet, Pamekasan, Indonesia
Email: maimonshadiyanto@gmail.com

Article History

Received: 22-12-2023

Revision: 11-01-2024

Accepted: 15-01-2024

Published: 17-01-2024

Abstract. This research was conducted to determine the benefits of lenses on health; the aim of this article includes an in-depth understanding of the benefits of using lenses on eye health, identified through potential risks or health problems related to lens use, as well as investigations depending on the latest innovations or developments in lens technology that can improve eye well-being. In this descriptive research, the researcher uses a method in the form of a literature study that aims to observe, find out, assess, identify, analyze, and determine the topic of related research. The results of data analysis concluded that lenses have significant benefits for health, especially eye health. Lenses also help correct vision problems such as nearsightedness, farsightedness, and astigmatism. Lenses have significant health benefits, including protecting the eyes from dust and UV rays, aiding vision correction, reducing exposure to blue radiation, preventing dry eyes, and improving the quality of life for those with visual impairments. In various forms, lenses help maintain and improve eye health for overall comfort and well-being. Lenses can also help in particular situations, such as providing clarity of vision for athletes or physically active people and facilitating proper medical examinations and eye surgery procedures.

Keywords: Lens on Health

Abstrak. Penelitian ini dilakukan untuk mengetahui manfaat lensa pada kesehatan, tujuan artikel ini mencakup pemahaman mendalam tentang manfaat penggunaan lensa terhadap kesehatan mata, yang diidentifikasi melalui potensi resiko atau masalah terhadap kesehatan terkait penggunaan lensa, serta penyelidikan tergantung inovasi atau perkembangan terbaru dalam teknologi lensa yang dapat meningkatkan kesejahteraan mata. Dalam penelitian deskriptif ini, peneliti menggunakan suatu metode yang berupa studi literatur yang bertujuan untuk mengamati, mengetahui, menilai, mengidentifikasi, menganalisis serta menentukan topik dari penelitian yang terkait. Hasil analisis data menyimpulkan bahwa lensa memiliki manfaat besar pada kesehatan, terutama pada kesehatan mata. Lensa juga membantu dalam memperbaiki gangguan penglihatan seperti rabun jauh, rabun dekat, dan astigmatisme. Lensa memiliki manfaat kesehatan yang signifikan, termasuk melindungi mata dari debu dan sinar UV, membantu koreksi penglihatan, mengurangi paparan radiasi biru, mencegah mata kering serta meningkatkan kualitas hidup bagi mereka dengan gangguan penglihatan. Dalam berbagai bentuknya, lensa membantu menjaga dan meningkatkan kesehatan mata untuk kenyamanan dan kesejahteraan secara keseluruhan. Lensa juga dapat membantu dalam situasi khusus seperti memberikan kejernihan penglihatan bagi atlet atau orang yang aktif secara fisik, serta memfasilitasi pemeriksaan medis dan prosedur operasi mata yang tepat.

Kata Kunci: Lensa pada Kesehatan

How to Cite: Efendi, A. R., Sumo, M., Pu'adi., Fadilah, N., Musyarrofah, W., & Mulyadi, S. A. (2024). Analysis of Health Benefits of Lenses: a Literature Review. *Indo-MathEdu Intellectuals Journal*, 5 (1), 399-410. http://doi.org/10.54373/imeij.v5i1.691

INTRODUCTION

One of the physics concepts widely used in events in the universe is waves, and students need to master the concept of waves. An effort can be made to use learning media (Hikmawati et al., 2023). The basic concepts of waves include frequency, wavelength, amplitude, superposition, and others. These concepts are the basis for learning in advanced physics, such as electromagnetic waves, sound waves, light waves, quantum mechanics, etc. (Mapau et al., 2022). Light, as an electromagnetic wave, is a branch of electromagnetism in the form of visible light. Visible light is part of electromagnetic waves with a wavelength between 400 nm (purple) and 700 nm (red) (Qadar et al., 2019). Visible light has wave and particle properties, expressed by the duality theory of light. The visible light spectrum consists of colors that humans can see, and light can also undergo refraction and reflection. Light consists of tiny particles called photons, which have the properties of matter and waves (Fitriana, 2022). With that, photons can also exhibit wave behavior in various situations, such as interference and diffraction, which are quantum phenomena that demonstrate the wave-particle duality like light.

Optics is a branch of physics explaining the behavior and properties of light and matter with light interactions, consisting of geometric, physical, and quantum optics. Geometric optics is a branch of optics that discusses light based on its straight propagating properties, light refraction, and light reflection. It is essential for applying optical tools using mathematical approaches, especially geometry and trigonometry, in geometric optics problems. Physical optics is a branch of optics that studies light based on wave theory and diffraction, interference, and polarization of light. Phenomena related to light, changes in energy, and mass are studied in quantum optics (Saprudin, 2018).

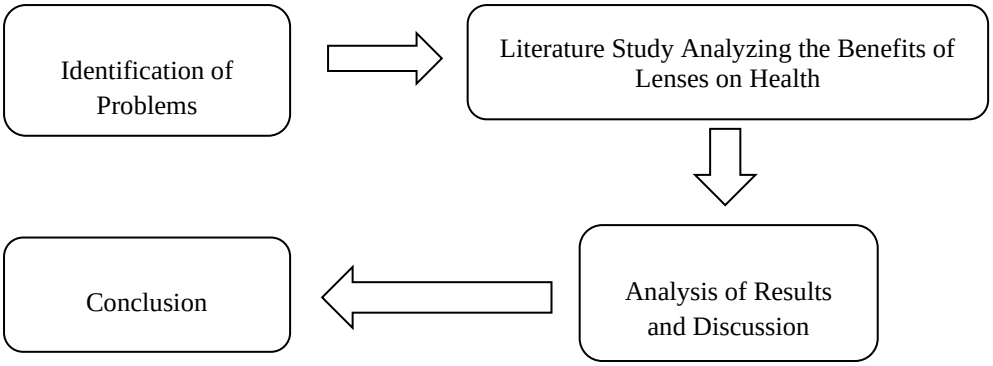
Meanwhile, according to (Nasution et al., 2021), optics is the science of physics that explains light; the interaction between light and objects is also studied in optics, where optics is divided into 2, namely geometric optics and physical optics, explanation from Geometric optics is how to treat light into a ray using several geometric rules which aim to discuss the process of ray travel, while physical optics only treats light as a wave. According to (Muhammad et al., 2023), an optical instrument is a device that can utilize the properties of light and all devices that use lenses or light include optical instruments, such as glasses and others. The science of tools utilizes light's reflection and refraction properties to make it easier for us to see our optical tools, such as lenses, binoculars, and microscopes (Yolanda, 2022).

If you have poor or suboptimal vision but are not comfortable wearing glasses or there are obstacles such as job demands that prohibit wearing glasses, the solution is contact lenses. If you want to look different, contact lenses can change and support your appearance because

they are colorful. Contact lenses can make your eyes look more beautiful and attractive (Corina, 2020). Contact lenses also have benefits or uses, namely being used as a treatment that aims to protect and heal the cornea, as a cosmetic that aims to change the color of the eyeball or can improve the appearance and cover abnormalities that occur in the eye (Suryanta, 2022). Many people use contact lenses because they are more practical to wear and have good cosmetic value (Kesehatan et al., n.d.). According to the American Optometric Association, people prefer to use contact lenses over glasses because contact lenses can follow the movement of the eyeball. The field of vision is not disturbed, so the quality of vision is excellent and not disturbed (Inayatullah et al., 2019). Based on the description above, an analysis of the benefits of lenses on health is carried out: a literature study to include an in-depth understanding of the impact of using lenses on eye health, identifying potential risks or health problems related to lens use, as well as investigating the latest innovations or developments in lens technology that can improve eye well-being.

METHOD

In this descriptive research, the researcher uses a method in the form of a literature study that aims to observe, find out, assess, identify, analyze, and determine the topic of related research (Hamilton et al., 2021). The health benefits of lenses were analyzed from sources such as journals and books. Several literature study methods can include observing, analyzing, identifying, and providing interpretations, as well as several evaluations of research that has been carried out (Nistrina, 2021). It is relevant to the topic that has been determined to answer the research question by providing additional learning material to look for research gaps that have been carried out previously so that it can provide benefits for further research (Ariyanto et al., 2021). A total of 16 publications and articles obtained from various domestic sources can be investigated in this research. The journals and texts used were obtained between 2018-2023. Researchers search for, organize, and collect information to conclude from the results of qualitative research by using literature study research methodology



The initial stage of research focuses more on identifying a problem that occurs. The second stage involved reviewing up to 16 publications and national articles explaining the Analysis of the health benefits of lenses published between 2018 and 2023. The third stage of the research methodology is Analysis; the researcher does this after reading several existing articles and books and then continues to discuss the results. Researchers make conclusions based on the findings and Analysis in the fourth step by reading and understanding related articles and books (Arzak & Prahani, 2023).

RESULTS

In researching the literature on the benefits of lenses on health, this article details findings from various sources, including journals and related articles. The article's primary focus is on aspects of waves and optics, and the authors exhaustively discuss significant references from a few journals covering diverse perspectives in the table attached to the article. Thus, this research entitled The Benefits of Lenses for Health, studies literature from several sources that have been found in several scientific articles, which have been reported in the following table.

Table 1. Benefits Of Lenses on Health

No	Publication Year	Title of article/Book	Authors	Name of Journal/Publisher
1	2023	*Practicality of Augmented Reality Books in Physics Learning: A Literature Review*	Kirana Aureola Arzak, Binar Kurnia Prahani	Jurnal penelitian pendidikan sains
2	2023	Sosialisasi pengenalan penggunaan alat optik pada peralatan diagnostik mata di rumah sakit umum daerah Dr. Zainoel Abidin Banda Aceh	Muhammad dkk	Jurnal Abdi Masyarakat
3	2023	Analisis ketuntasan hasil belajar ranah kognitif mahasiswa pada perkuliahan gelombang dan optik dengan menggunakan media simulasi PhET	Hikmawati dkk	Jurnal of Classroom action Research
4	2022	Analisis penguasaan konsep gelombang peserta didik MAN 2 Kota Makassar di masa pandemi covid-19	Oktaviana Beferly Mapau dkk	Jurnal sains dan pendidikan fisika
5	2022	Perbandingan produksi air mata pengguna dan non pengguna lensa kontak lunakpada mahasiswa Universitas Bakti Tunas Husada	Itmam Milataka dkk	Jurnal kesehatan Bakti Tunas Husada: jurnal ilmu keperawatan, analisis kesehatan dan farmasi
6	2022	Dampak pemakaian dan perawatan lensa kontak lunak di optik mandiri Padang	Dolly Imam Suryanta	Jurnal ekonomi manajemen dan bisnis (JEMB)

7	2022	Analisis keterampilan proses sains fisika mahasiswa materi alat-alat optik	Yaspin Yolanda	Jurnal penelitian dan pembelajaran MIPA
8	2022	Analisis efek panjang gelombang cahaya terhadap karakteristik arus tegangan sel surya menggunakan simulasi berbasis Finite Element Method	Fitriana	JTE UNIBA
9	2021	Pembuatan alat laboratorium untuk praktikum optik geometri tingkat SMA berbasis laser dioda	Alexander Nasution dkk	Komunikasi fisika indonesia
10	2021	Penerapan Augmented reality dalam media pembelajaran	Khilda Nistrina	Jurnal sistem informasi
11	2021	*Immersive virtual reality as a pedagogical tool in education: a systematic literature review of quantitative learning outcomes and experimental design*	*D. Hamilton dkk*	J. Comput. Educ.
12	2021	Analisis metode respresentasi teks untuk deteksi interelasi kitab Hadis: *Systematic Literature Review*	Amelia Devi Putri A dkk	Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)
13	2020	Dampak pemakaian lensa kontak lunak yang tidak sesuai standart bagi kesehatan mata pasien remaja di Aceh Optical Banda Aceh	Febbry Corina	Ensiklopedia of journal
14	2019	Hubungan perilaku penggunaan lensa kontak terhadap kejadian mata merah pada pelajar Sekolah Menengah Atas Negeri di Kecamatan Tanjung Karang Pusat	Shafa Inayatullah dkk	Medula
15	2019	Optika	Riskan Qadar dkk	Penerbit Mulawarman Unversity PRESS
16	2018	Analisis kesiapan dan strategi monitoring evaluasi program pengembangan perkuliahan gelombang dan optik berbasis game	Saprudin	JIPFRI (Jurnal Inovasi Pendidikan Fisika dan Riset Ilmiah)

Based on the results of a research study written by Oktaviana Beferly Mapau et al. in her article entitled Analysis of the mastery of wave concepts at MAN 2 Makassar City students during the Covid-19 pandemic, it is stated that various basic wave concepts include frequency, wavelength, superposition amplitude and so on. Other. Meanwhile, other concepts include electromagnetic waves, sound waves, light waves, quantum mechanics, and others. Table no. 8, results of a literature review with the research title Analysis of the effect of light wavelengths on the current-voltage characteristics of solar cells using Finite Element Method-based simulations explaining that light consists of small particles called photons, which also have

material and wave properties as written by Fitriana. Based on table no. 2 with the title Socialization of the Introduction to the Use of Optical Instruments in Eye Diagnostic Equipment at Dr. Zainoel Abidin Banda Aceh Regional General Hospital, written by Muhammad et al., explains that a device that can utilize the properties of light and use lenses or use light is called an optical instrument like glasses and so on.

In Table no. 6, entitled the impact of using and caring for soft contact lenses at Optik Mandiri Padang, that the benefits or uses of contact lenses can also be used as therapy to protect the cornea and as a cosmetic to modify the color of the eyeball to improve the appearance and disguise abnormalities. Eyes, published by Dolly Imam Suryanta in her article. Khilda Nistrina explains in her article entitled Application of Augmented Reality in Learning Media that the sources obtained from the benefits of lenses on health are in the form of journals and books using several methods from literature studies, namely observing, analyzing, identifying, providing interpretations and several evaluations of research, which has been done.

DISCUSSION

Light is energy in the form of visible electromagnetic waves (which do not require a medium) with a wavelength of approximately 380-750 nm, which aims to propagate so that light can propagate without a medium (Renostini Harefa, 2019). Light is a type of energy that moves in the form of electromagnetic waves, which uniquely can travel without depending on any medium. This wavelength allows it to propagate freely without a medium, like an event in the world of waves and energy. Light diffraction is a phenomenon where waves bend (bend) when passing through a narrow gap whose dimensions are smaller than the wavelength passing through it; in other words, the wavelength and width of the gap must have the same phase (Marwoto et al., 2022). This phenomenon occurs because the bending light waves create a distinctive light intensity distribution pattern around the obstacles or gaps, they pass through. The existence of constructive or destructive interference between light waves containing the same phase also affects the distribution pattern of light in the surrounding area.

Light is a widespread phenomenon in physics because almost all living creatures have known about it since birth and use it to understand their environment. However, although light helps us see the world around us, light is complicated and unclear to the human imagination (Balta et al., 2022). Light is not just a widespread physical phenomenon but is also an integral part of the life experience of every creature. With all its charm, light is the main means for living creatures to explore and interact with the world around them. However, its complex nature often leaves humans affected and contemplative, creating curiosity about the deeper

aspects of the miracle called light. The different wavelengths of light that our eyes can see allow us to see colors without light that would be difficult to see with our eyes, except for the eyes of nocturnal animals, which have a different structure (Yolanda, 2022).

According to Sloane's 2004 article (Kesehatan et al., n.d.)the eye is an optical system that focuses light and photoreceptors, which convert light energy into nerve impulses. As an extraordinary optical system, the eye plays a vital role in visual perception. The eye focuses light with the help of a lens to create an image that is interpreted by photoreceptors. Photoreceptors convert light energy into nerve impulses, which are then transferred to the brain through complex and precise mechanisms; the eyes function as optical devices that condition light to produce clear and detailed images in our brains. Our eyes function when light is transmitted through the eye's lens to produce an image of an object. Then the retina of the eye captures the image, and it is then sent to the brain via the optic nerve to be processed into an image that we can see clearly (Yolanda, 2022). In addition, the iris regulates the amount of light entering the eye, while the cornea helps focus light into the lens. With the help of the ciliary muscles, the eye's lens can change shape to adjust the focus on different objects. This process allows us to experience visions and perceive the world around us.

Our eyes have a minimal ability to see; they cannot see small objects or objects that are very far away and cannot correctly record what they see. Therefore, our eyes must be assisted with optical devices such as glass. Magnifiers, cameras, microscopes, and binoculars whose applications in optics are also widely used by humans, such as mirrors and lenses (Renostini Harefa, 2019). These optical tools have changed how we understand and interact with the world. The use of mirrors or lenses as part of the field of optics not only fulfills practical needs but also gives rise to discoveries and knowledge. The combination of human intelligence and optical tools has opened the door to profound research and exploration, expanding the boundaries of our vision to things previously unreachable by the human eye. According to (Corina, 2020), the eye is one of the human sense organs that plays a role in vision; it is an organ that can influence life and determine the quality of human life. With good care, the eyes can maintain health and minimize the risk of vision problems. A healthy diet, adequate rest, and the use of eye protection when carrying out activities in environments that have the potential to damage vision can provide more support for eye health.

The eye organ as a visual aid can face many problems, ranging from blindness and organ disease to refractive disorders, which can be caused by many factors (Corina, 2020). Conjunctivitis, blepharitis, and dry eye syndrome can also affect eye comfort. Environmental factors, such as excessive exposure to computer screens or mobile devices, can cause eyestrain.

Adopting a healthy lifestyle, wearing glasses or contact lenses, and protecting your eyes from UV rays can help prevent some of these problems. Understanding proper eye care and getting medical attention is essential if you experience worrisome symptoms. As a vital organ of vision, it is highly recommended to maintain eye health because the eye is one of the body organs easily attacked by organic diseases, refractive errors, blindness, and other diseases (Suryanta, 2022). Precautions such as getting enough rest, avoiding staring at the screen for too long, consuming foods that are good for the eyes, and using protective eyeglasses when carrying out risky activities can help maintain eye health.

Refractive disorders in the eye lens reduce the eye's ability to function as a visual system. Refractive disorders are light refraction disorders that cause the refraction of light to not focus on the retina, causing light to focus in front of or behind the retina or at two refractive points (Novitasari, 2019). Refractive disorders of the eye lens can be divided into three main types: myopia, hyperopia, and astigmatism. Myopia occurs when light is focused in front of the retina, while hyperopia occurs when light is focused behind the retina. Astigmatism involves the uneven curvature of the eye's lens, causing variable light focusing. This disorder can be corrected with glasses or contact lenses to restore the focus of light on the retina, improving visual acuity.

According to Wong et al., 2021 article (Sasia et al., 2021), myopia or nearsightedness is a condition where a person's eyes are unable to see distances clearly and sharply; common causes include: a) the length of the ball of the eye (axial length) is longer than usual, or b) the refractive power of the eye's refractive media (cornea, fluid, aqueous humor, lens, and vitreous humor) is unable to refract incoming objects so that light directly stimulates the retina (yellow dot). According to Sutrisno 1979 in the article (Renostini Harefa, 2019), glasses are a much-needed vision aid for hyperopia sufferers. However, not all glasses with any lens can be used, especially drinks with convex (positive) lenses; this is because, for sufferers of light, hyperopia does not fall directly on the retina but falls behind the retina, so the patient must wear glasses with a convex lens because the convex lens collects light so that the light that initially falls behind the retina will be collected so that it is directly on the retina and can see objects. Astigmatism is a common eye problem that causes blurred or distorted vision; this condition occurs when the cornea (the transparent layer at the front of the eye) or the lens (the inside of the eye that is the focus of the eye) is shaped differently than usual (Panjaitan et al., 1825).

Visual impairment means a person must use vision aids to ensure clear vision; people use various methods such as using glasses, contact lenses, and even laser surgery; glasses are often used to help human vision and prevent eye weakness due to myopia or other causes of vision

(Suryanta, 2022). Vision aids are tools used to improve vision and help the eye's working system; vision aids include glasses and contact lenses. According to Hasyim 2012, glasses are a visual aid in the form of lenses and frames that function to normalize and sharpen vision and are used to help the eye achieve normal vision, while contact lenses, according to the Ministry of Health 2008, are an aid made from fragile plastic material with various colors that are attached to the front tissue, cornea, and sclera to improve vision (Novitasari, 2019). In addition, glasses can also have various protective coatings, such as anti-UV or anti-reflection, to increase comfort and protect the eyes from sunlight and reflected light. Meanwhile, contact lenses provide freedom of movement without frame restrictions. Both provide solutions to vision problems and enable people to achieve better vision.

Using glasses and contact lenses as assistive devices is one method for correcting refractive errors. Refractive eye diseases such as myopia, hyperopia, presbyopia, and astigmatism can be treated by wearing glasses or contact lenses (Novitasari, 2019). Glasses and contact lenses help improve the focus of light so that vision is more precise. The choice between glasses and contact lenses can be tailored to individual preferences and needs. Apart from that, the comfort of use is also an important consideration when choosing between glasses and contact lenses. Some eye experts believe that people with refractive errors should wear glasses than contact lenses because glasses are safer than contact lenses. There is a greater risk of corneal infection with contact lenses; this is caused by errors in the use and storage of contact lenses (Novitasari, 2019). Also, glasses provide direct physical protection to the eyes from dust, dirt, or other foreign objects that can cause irritation or injury. Although contact lenses provide more natural vision and do not restrict vision like glasses, strict care and hygiene are essential to reduce the risk of infection or irritation of the eyes.

With the development of science and technology, many alternatives have been found to overcome vision problems (Corina, 2020). Apart from glasses, contact lenses can also be used as a vision aid, namely as a treatment to protect or heal the cornea. The use of contact lenses is more popular than the use of glasses because contact lenses follow the movement of the eyeball compared to glasses, so contact lenses are more widely used in everyday life. -day (Pramesti, 2022). According to Khan et al., 2013 article (Aresya et al., 2021), Common complications associated with contact lens wear include dry eyes, pancreatitis, neovascularization, giant papillary conjunctivitis, corneal abrasions, corneal edema, corneal ulcers. In addition to the complications mentioned previously, some additional complications that can be associated with the use of contact lenses include eye infections, irritation, allergies to lens materials, the

formation of deposits on the lenses, and changes in the shape or position of the lenses that can cause discomfort or impaired vision.

Contact lenses are a solution for those whose vision is not optimal but are not comfortable wearing glasses or work demands that do not allow wearing glasses (Corina, 2020). Contact lenses can provide freedom of movement without the constraints of eyeglass frames, making them suitable for an active lifestyle. They also do not obstruct peripheral vision and provide a more natural visual experience. A trial lens set helps measure the eye with minus lenses, plus lenses, prism lenses, and cylinder lenses of the eye to be examined and also to determine the level of eye abnormalities so that it can be easy to determine the type of eyeglass lens if the corrected lens requires correction lenses (Muhammad et al., 2023). Trial lenses can include up to 266 lenses, including 1) spherical lenses, including minus and lenses, generally starting from 0.12 D, 0.25 D, and multiples of 0.25 up to a certain point. 2) Cylindrical lenses have various strengths, including plus cylindrical and minus cylindrical lenses. Adding cylindrical lenses mostly begins with adding a cylindrical lens with a strength of 0.25 D. 3) Accessory lenses used for special tests such as prism lenses, filter lenses, occluders, pinholes, etc.

Doctors have long recognized that contact lenses are essential in caring for patients with eye diseases. Therefore, contact lenses have medical uses other than correcting refractive errors. Over the decades, these medical uses have expanded frequently with advances in contact lens materials and designs. Recognition of the role of lenses in stabilizing the surface of the eye, eliminating reflex abnormalities, and improving visual function, as well as awareness of potential complications and how to avoid them, has resulted in a wealth of experience and literature regarding the medical use of contact lenses (Orsborn & Dumbleton, 2019). With that, the development of contact lens technology continues to expand the possibilities of eye care, increasing the comfort of use and providing customized solutions for certain eye conditions. Awareness of these medical benefits is increasingly helping in designing more effective solutions for patients with various vision problems.

According to the American Optometric Association, the reason people prefer to use contact lenses over glasses is that contact lenses can follow the movement of the eyeball, and the field of view is not disturbed, resulting in excellent and uninterrupted vision quality (Inayatullah et al., 2019). Contact lenses are an easy way to correct refractive errors by eliminating the prism effect and widening the field of view; apart from helping to increase the aesthetic value, contact lenses also have significant advantages over rimmed glasses and have become a new way to correct refractive errors, collecting refractive errors, a trend for the younger generation (Aresya

et al., 2021). Thus, contact lenses provide a practical solution for vision and open up opportunities for lifestyle and aesthetic exploration.

Therefore, awareness and recommended practices are essential to optimize contact lens safety and reduce potential complications (Aresya et al., 2021) by implementing good hygiene to evaluate eye health. In addition, make sure to always clean contact lenses according to the instructions and use the recommended cleaning solution. Remember to keep your hands clean before touching contact lenses to prevent infection.

CONCLUSION

The article concludes that lenses have significant benefits for health, especially eye health. Lenses also help correct vision problems such as nearsightedness, farsightedness, and astigmatism. Lenses have significant health benefits, including protecting the eyes from dust and UV rays, helping with vision correction, reducing exposure to blue radiation, preventing dry eyes, and improving the quality of life for those with vision impairment. In various forms, lenses help maintain and improve eye health for overall comfort and well-being. Lenses can also help situations, such as providing clarity of vision for athletes or physically active people and facilitating proper medical examinations and eye surgery procedures. Lenses are essential in various aspects of eye health and daily activities.

REFERENCE

Arzak, K. A., & Prahani, B. K. (2023). Kepraktisan Buku Augmented Reality dalam Pembelajaran Fisika: Tinjauan Literatur. *Jurnal Penelitian Pendidikan Sains*, 140.

Balta, N., Japashov, N., Glamocic, D. S., & Mesic, V. (2022). Development of the High School Wave Optics Test. *Journal of Turkish Science Education, 19*, 304.

Corina, F. (2020). Dampak Pemakaian Lensa Kontak Lunak Yang Tidak Sesuai Standar Bagi Kesehatan Mata Pasien Remaja Di Aceh Optical Banda Aceh. *Ensiklopedia of Journal, 2*, 257.

Fitriana. (2022). Analisis efek panjang gelombang cahaya terhadap karakteristik arus-tegangan sel surya menggunakan simulasi berbasis finite element method. *JTE UNIBA, 6*, 229.

Hamilton, D., McKechnie, J., Edgerton, E., & Wilson, C. (2021). Realitas virtual yang mendalam sebagai alat pedagogis dalam pendidkan: tinjauan literatur sistematis tentang hasil pembelajaran kuantitatif dan desain eksperimental. *J. Komputasi. Mendidik*, 5.

Harefa, A. R. (2019). Peran ilmu fisika dalam kehidupan sehari-hari. *Jurnal warta edisi : 60*, 5-6.

Hikmawati, Kosim, & Ayub, S. (2023). Analsis Ketuntasan Hasil Belajar Ranah Kognitif Mahasiswa Pada Perkuliahan Gelombang dan Optik Dengan Menggunakan Media Simulasi PhET. *Journal of Clasroom Action Research, 5*, 362.

Inayatullah, S., Yusran, M., & Sari, M. I. (2019). Hubungan Perilaku Pengguna Lensa Kontak Terhadap Kejadian Mata Merah Pada Pelajar Sekolah Menengah Atas Negeri Di Kecamatan Tanjung Karang Pusat. *Medula, 9*, 116.

M. Panjaitan, V. C., Vandela, S. A., Angeline, D. J., Elisabeth, D. R., Himayani, R., & Ayu, P. R. (2023). Astigmatisma. *Journal of Medula, 13*, 215.

Mapau, O. B., Helmi, & Haris, A. (2022). Analisis Penguasaan Konsep Gelombang Peserta Didik Man 2 Kota Makassar Di Masa Pandemi Covid-19. *Jurnal Sains dan Pendidikan Fisika*, 278.

Marwoto, P., Hakim, L., Wahyuni, S., Astuti, B., Mutiarani, A., & Nafisah, D. (2022). Eceng gondok (Eishhornia Crassipes) sebagai alternatif kisi difraksi sederhana berbahan alam. *Unnes Physics Education Journal, 11*, 36.

Milataka, I., Fitriani, N. Z., Husna, H. N., & Ardi, A. K. (2022). Perbandigan Produksi Air Mata Pengguna dan Non Pengguna Lensa Kontak lunak pada mahasiswa Universitas Bakti Tunas Husada. *Jural kesehatan bakti tunas husada : jurnal lmu keperawatan,analisis kesehatan dan farmasi, 22*, 122.

Muhammad, Nurdin, A., Basri, S., Hidayattullah, M., Karma, T., Rahmiza, S., . . . Arisfa, N. (2023). Sosialisasi Pengenalan Penggunaan Alat Optik Pada Peralatan Diagnostik Mata Di Rumah Sakait Umum Daerah Dr. Zainoel Abidin Banda Aceh. *Jurnal Abdi Masyarakat, 1*, 150.

Najmee, N. A., & Roszili, R. A. (2021). Contact Lens Use and Practice Among Health Sciences and Business Manegement Students: A survey. *Healthscope, 4*, 145.

Nasution, A., Shiddiq, M., Farma, R., & Ningsih, S. A. (2021). Pembuatan Alat Laboratorium Untuk Praktikum Optik Geometri Tingkat Sma Berbasis Laser Dioda. *Komunikasi Fisika Indonesia, 18*, 138.

Nistrina, K. (2021). Penerapan Augmented Reality Dalam Media Pembelajaran. *Jurnal Sistem Informasi, 3*, 3.

Novitasari, Y. (2019). Pengaruh kenyamanan mata, keamanan mata, harga, dan gaya hidup terhadap pemilihan alat bantu penglihatan kacamata dan softlens . *Jurnal Perkotaan, 11*, 162-163.

Orsborn, G., & Dumbleton, K. (2021). Eye Care Professonals' Perceptions of the benefits of daily disposable silicone hydrogel contact lenses. *Contact Lens and Anterior Eye, 44*, 289.

Pramesti, N. (2022). Pembaruan informasi terkini dan panduan tentang pengelolaan miopia. *Jurnal Ilmah Kesehatan Sandi Husada, 11*, 33.

Putri, A. D., Fatichah, C., & Arifin, Z. A. (2021). Analisis Metode Respresentasi Teks Untuk Deteksi Interelasi Kitab Hadis: Systematic Literature Review. *JURNAL RESTI (Rekayasa Sistem dan Teknologi Informasi)*, 993.

Qadar, R., Haryanto, Z., & Syam, M. (2019). *Optika.* Samarinda: Mulawarman University Press.

Rahmawati, I. (2019). Pengaruh Penggunaan Lensa Kontak, Kelembapan, dan Pengetahuan terhadap Dry Eyes Syndrome. *Jurnal Keperawatan Muhammadiyah, 4*, 59.

Saprudin. (2018). Analisis Kesiapan dan Strategi Monitoring Evaluasi Program Pengembangan Perkuliahan Gelombang dan Optik Berbasis Game. *Jurnal Inovasi Pendidikan Fisika dan Risert Ilmiah, 2*, 28 - 29.

Sasia, K., Iriani, F., Doringin, F., & Budiana, M. W. (2021). Edukasi dan Pemeriksaan Kesehatan Mata Sejak Dini untuk Mengatasi Peningkatan Kasus Miopia Pada Siswa SMA Di Jabodetabek. *Buku Prosiding*, 104.

Suryanta, D. I. (2022). Dampak pemakaian dan perawatan lensa kontak lunak di optik mandiri. *Jurnal ekonomi manajemen dan bisnis (JEMB), 1*, 33.

Yolanda, Y. (2022). Analisis keterampilan proses sains fisika mahasiswa materi alat-alat optik. *Jurnal peneltian dan pembelajaran MIPA, 7*, 3-4.