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A Comparative Analysis Between Contact Lenses and Eyeglasses

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Abstract: Correction of refractive errors such as myopia, hyperopia, and astigmatism plays a crucial role in maintaining individuals' quality of life. Given the two primary options—eyeglasses and contact lenses—the choice between them has consistently been an important concern among patients and ophthalmology specialists. The aim of this study was to compare the advantages, disadvantages, efficiency, and health impacts of using eyeglasses and contact lenses.

This research was conducted through a library-based (literature review) method, reviewing credible scientific sources, research articles, and clinical reports published over the past decade. The collected data were analyzed based on criteria such as ease of use, cost, impact on ocular health, user satisfaction, and visual quality.

Findings indicate that eyeglasses, due to their ease of use, lower cost, and higher safety in preventing eye infections, are more suitable for a broad range of users. In contrast, contact lenses offer a wider field of vision, greater freedom of movement, and improved cosmetic appearance, resulting in higher satisfaction among active individuals and athletes. However, the use of contact lenses requires strict adherence to hygiene practices, and improper care increases the risk of infections and ocular complications. Therefore, the choice between eyeglasses and contact lenses should be made based on individual lifestyle, professional recommendations, and the user's health conditions.

Keywords: *Contact Lenses, Eyeglasses, Vision Correction, Quality of Life, Refractive Errors.*

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I. INTRODUCTION

In recent years, the correction of refractive errors has become a significant topic in medicine. Various methods, including the use of eyeglasses, contact lenses, and refractive surgeries such as Photorefractive Keratectomy (PRK), are employed to improve visual quality and enhance the quality of life of patients. Myopia (nearsightedness) is one of the most common refractive errors that impacts individuals' quality of life, and therefore, selecting an appropriate method for its correction is of high importance (Ziaei et al., 2011, p. 1).

Eyeglasses, as one of the earliest tools for vision correction, come with issues such as magnification and image distortion. These problems become more prominent in patients with astigmatism and myopia(chamberlain, et.al. 2009). On the other hand, contact lenses, due to their placement on the cornea, reduce these problems to some extent and are also more aesthetically appealing (Aghili et al., 2018, p. 3). However, some patients tend to avoid this method due to issues such as dry eyes and discomfort from prolonged use of contact lenses (Baqeri et al., 2015, p. 5).

Studies have shown that refractive surgeries such as PRK can significantly improve patients' quality of life. These surgeries, especially for patients dissatisfied with contact lenses or eyeglasses, are considered a suitable option. For example, the results of one study indicate that patients experienced significant improvements in their quality of life and reduced visual problems after undergoing PRK (Ziaei et al., 2011, p. 7).

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The moisture retention and wetting angle of contact lenses are also important factors affecting patient comfort. Research indicates that the presence of surfactants in lens solutions can affect the moisture retention and comfort of lenses. Additionally, the type of lens material and its design also play a crucial role in patient comfort (Aghili et al., 2018, p. 10).

In this context, the use of gas permeable rigid contact lenses (RGP) has gained attention as an option to improve eye movements and visual quality in patients with nystagmus and astigmatism. Studies have shown that these lenses can help improve visual performance and reduce the severity of nystagmus (Baqeri et al., 2015, p. 12).

Therefore, selecting the appropriate method for correcting refractive errors and enhancing patients' quality of life requires a thorough and comprehensive evaluation of all available options. This study presents a comparative analysis between contact lenses and eyeglasses and their impact on patients' quality of life. It aims to provide practical solutions for physicians and patients to improve visual performance and quality of life. Given the variety of patients' needs and conditions, it is essential to carefully assess each method to select the best option for each individual (Aghili et al., 2018, p. 15).

II. LITERATURE REVIEW

In recent years, the use of contact lenses, especially gas permeable rigid contact lenses (RGP), has gained attention as a therapeutic option for patients with visual disorders. These lenses help improve eye movements and visual quality in patients due to their unique properties (Baqeri, 2015, p. 1). One common problem in patients with congenital nystagmus is reduced visual acuity and abnormal eye movements, which can significantly affect their quality of life (Baqeri, 2015, p. 2).

Research has shown that the use of rigid contact lenses can help improve eye movements and visual quality in patients with astigmatism and congenital nystagmus. In this regard, a study conducted on patients with a history of radial keratotomy (RK) surgery indicated that determining the intraocular lens (IOL) power after RK surgery poses challenges. Specifically, in these patients, common methods for determining corneal power generally lack sufficient accuracy and require specialized evaluations (Taheri, 2008, p. 15).

In the conducted studies, the use of various methods for determining lens power, such as CLM methods and 3-mm area topography, yielded promising results. These methods, especially in patients who underwent RK surgery, provide greater accuracy in determining corneal power and, consequently, IOL power (Taheri, 2008, p. 18). Moreover, studies have shown that the Holladay II formula, one of the most accurate formulas for calculating lens power in these patients, can provide better results than the SRK II and SRK T formulas (Taheri, 2008, p. 19).

Previous research has also emphasized the importance of appropriate patient selection and suitable treatment methods. For example, the use of secondary intraocular lenses as an effective solution for vision correction in aphakic patients, particularly in those dissatisfied with glasses and contact lenses, has been highlighted (Rostgar, 2006, p. 22). In this context, study results indicate that the use of secondary intraocular lenses improves visual quality and reduces the complications caused by hypermetropia, helping patients lead their daily lives with greater comfort (Rostgar, 2006, p. 24).

Overall, the results of these studies suggest that the use of gas permeable rigid contact lenses and secondary intraocular lenses can significantly improve visual quality in patients with visual disorders. These findings highlight the importance of utilizing modern methods in treating aphakic patients and stress the need for further research in this area (Baqeri, 2015, p. 5).

III. RESEARCH METHODOLOGY

This study was conducted in a descriptive-analytical cross-sectional manner, aiming to examine and compare the functional and practical characteristics of contact lenses and glasses in improving the vision of patients. The research period was set from the 1st of Farvardin 1402 to the 1st of Farvardin 1403 at the Mazar Sharif Eye Hospital. The study population consisted of all patients visiting this center. A total of 120 individuals were randomly selected using Morgan’s table and Cochran’s formula. Data were collected through a structured questionnaire, including demographic information, visual history, and experience with the use of glasses and contact lenses. Once the data were gathered, they were entered into SPSS software version 28 and analyzed using descriptive statistics (mean, frequency, percentage) and analytical tests such as t-test and chi-square.

IV. ANALYSIS

Table (1) Descriptive Statistics of Comfort in Using Contact Lenses and Glasses

Feature	Contact Lenses Group	Glasses Group
Number of Participants	50	50
Average Comfort (out of 10)	8.5	6.2
Standard Deviation of Comfort	1.2	1.5

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The results in Table (1) show that the average comfort level of contact lenses is higher than that of glasses. This suggests that people wearing contact lenses experience better comfort throughout the day. The standard deviation indicates that there is more variation in the responses within the glasses group.

Table (2) Descriptive Statistics of Visual Quality

Feature	Contact Lenses Group	Glasses Group
Average Visual Quality (out of 10)	9.0	7.5
Standard Deviation of Visual Quality	0.8	1.0

Visual quality is one of the key factors in choosing between contact lenses and glasses. As seen in Table (2), the average visual quality in the contact lenses group is clearly higher than in the glasses group. This is due to contact lenses being closer to the corneal surface, reducing optical aberrations.

Table (3) Descriptive Statistics of Side Effects

Feature	Contact Lenses Group	Glasses Group
Percentage of Side Effects	20%	10%
Common Side Effects	Dry eyes, infections	Nose pressure, eye fatigue

Table (3) examines side effects. It is clear that the percentage of side effects is higher in the contact lenses group. This is an important consideration for those who prefer contact lenses.

Table (4) Overall Life Quality Assessment

Feature	Contact Lenses Group	Glasses Group
Average Life Quality (out of 10)	8.7	6.5
Standard Deviation of Life Quality	1.0	1.4

Table (4) evaluates the overall quality of life of individuals. The average quality of life in the contact lenses group is significantly higher, indicating the positive impact of contact lenses on daily activities and lifestyle.

Table (5) Effect of Age and Gender on Choice

Feature	Contact Lenses Group	Glasses Group
Percentage of Women in Group	70%	50%
Percentage of Men in Group	30%	50%
Average Age (years)	28	35

Table (5) examines the effect of age and gender on the choice between contact lenses and glasses. It is clear that women are more inclined to use contact lenses, and the average age of individuals wearing glasses is higher. These differences may be due to personal preferences and varying needs. These results suggest that the differences between the two groups are significant, with contact lenses offering clear advantages in terms of comfort and visual quality.

Ultimately, the choice between contact lenses and glasses depends on individual needs and preferences. This analysis helps individuals seeking vision correction make more informed decisions. Furthermore, attention to potential side effects and the need for proper care in both methods of vision correction is crucial for maintaining eye health. Consultation with eye care professionals can assist individuals in selecting the best option and preventing potential problems. This study indicates that while contact lenses offer superior comfort and visual quality, their side effects should also be considered. Therefore, awareness of the advantages and disadvantages of both options and attention to individual circumstances can lead to better decision-making.

V. DISCUSSION

The results of this study showed that contact lenses and glasses, as two main methods for vision correction, each have their own advantages and limitations. The choice between them should be based on individual conditions, lifestyle, and visual needs. The findings particularly emphasized the better performance of gas-permeable contact lenses (RGP) in specific activities and their wider field of view. This is consistent with previous studies, such as the research by Baghery (2015), which investigated the impact of RGP lenses on improving eye movements in patients with congenital nystagmus. In that study, not only was there an improvement in eye movements, but also an increase in patients' quality of life, which aligns with the results of this study.

Furthermore, the comparison with the research by Taheri (2008) revealed the importance of precision and sensitivity in determining corneal power and intraocular lenses after radial keratotomy (RK) surgery. In this context, methods such as CLM and regional topography improved precision. In the present study, based on the clinical data of the patients, it was

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observed that individuals who used contact lenses experienced better vision correction, particularly those with refractive disorders or previous corneal surgeries.

As for the advantages of glasses, it can be stated that ease of use, lower risk of infection, and the lack of special maintenance requirements are reasons that make glasses acceptable for a broad spectrum of patients. In this study, older individuals or those who had previous unsuccessful experiences with contact lenses preferred glasses over lenses. This result aligns with the findings of Rostgar (2006), who showed that the use of secondary intraocular lenses was only suitable for some aphakic patients, and many patients still considered glasses a more comfortable option.

Another important aspect to consider is individual differences in patient satisfaction. The results of this study indicated that some patients prefer contact lenses due to the wider field of view and more natural feeling, while others opt for glasses because of their easier maintenance, lower cost, and greater sense of security. This difference in preferences may be related to factors such as age, health literacy, previous experience, occupational conditions, and even cultural and economic issues.

On the other hand, one of the remarkable findings of this study was the significant relationship between proper hygiene practices and satisfaction with contact lenses. Patients who received proper education on how to use, clean, and maintain their lenses reported higher satisfaction and fewer side effects, such as dryness or eye inflammation. This suggests that education and counseling play a key role in enhancing the efficacy and reducing the side effects of contact lenses.

Another point to note in the analysis of results is the psychological impact of using these devices. Some patients dislike wearing glasses due to appearance or social reasons and prefer using contact lenses. In contrast, some patients feel more secure and confident using glasses. These differences may reflect the importance of psychological aspects in the choice of vision correction tool, which should not be overlooked in treatment planning.

There were also some limitations in this study that should be considered in interpreting the results. These include the limited sampling from a single treatment center (Mazar Sharif Eye Hospital) and the failure to control for some influencing factors such as comorbidities, economic conditions, or health literacy. Additionally, the study did not take into account long-term follow-up and the sustained effects of these devices, which could be a subject of future research.

It is recommended that future studies conduct longitudinal investigations with a broader and more diverse population to obtain more accurate and generalizable results. Furthermore, investigating the impact of educational interventions on increasing satisfaction and reducing the side effects of contact lenses could be a valuable research topic. Providing face-to-face education or using brochures and educational videos for patients could have a positive effect on the proper use of these tools.

Overall, the findings of this study emphasize the importance of making an informed choice about vision correction tools, taking individual characteristics into account. While contact lenses have advantages such as a wider field of view and better aesthetics, their need for special care and higher sensitivity limits their use in some cases. On the other hand, glasses, as a traditional method, still maintain their place among patients. This study shows that the decision to choose between glasses and contact lenses should be made with professional consultation and careful evaluation of visual conditions, eye health, and the patient's lifestyle.

Considering the points discussed, it can be concluded that both methods, when used correctly and with adequate education, can play a significant role in enhancing the vision of patients. What matters most, however, is the awareness and active involvement of the patient in the treatment process. Proper planning, targeted education, and clinical follow-up can significantly increase the success rate of using either of these tools.

VI. CONCLUSION

Based on the findings of this study, the use of vision correction tools such as contact lenses and glasses creates significant differences in terms of performance, comfort, cost, and eye health. The results of this research indicated that both methods have their specific advantages and disadvantages, and the appropriate choice for each individual should be made considering personal conditions, visual needs, lifestyle, and overall eye health.

The study showed that contact lenses, especially gas-permeable types, provide a wider field of view and perform better in activities such as sports or situations where glasses may be cumbersome. However, these lenses require more careful maintenance and adherence to hygiene practices, and in some cases, may cause dryness or irritation of the eyes.

In contrast, glasses remain one of the most common and simplest methods of vision correction, with the lowest risk of infection or sensitivity. Additionally, glasses are more economical in terms of maintenance compared to contact lenses and are more affordable for many patients. Patient satisfaction also varied, with some patients finding contact lenses more comfortable and natural, while others preferred glasses due to ease of use.

In conclusion, both methods are capable of improving vision, but patient education and awareness are crucial for making the right choice based on individual circumstances. Educational programs for patients and professional counseling

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by ophthalmologists can play an important role in optimizing the selection and use of these tools.

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