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Yumuşak Kontakt Lens Bakımında Türkiye'deki Hastaların Tutumları ve Uyum Düzeyleri

Patient Attitudes and Level of Compliance to Soft Contact Lens Care in Turkey

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ÖZ

GİRİŞ ve AMAÇ: *Kontakt lens kullanımına uyumu değerlendirmek, kontakt lens kullananların demografik profillerini ve temel uyumsuz davranışlarını belirlemek.*

YÖNTEM ve GEREÇLER: *257 kontakt lens kullanıcısı, bir anket formu kullanılarak tek bir göz doktoru tarafından değerlendirildi. Sorular kontakt lens kullanıcılarının, kontakt lens hijyen davranışlarını, lens bakımına yönelik tutumlarını ve demografik özelliklerini ele aldı.*

BULGULAR: *Lens kullananların yaş ortalaması 29'du ve çoğunluğu kadınlardan oluşmaktaydı (% 78). Bildirilen başlıca uyumsuz davranışlar lenslerle uyumak (% 70.5), lenslerle su aktivitelerine katılmak (% 52.5), lens kaplarını düzgün bir şekilde temizlememek (% 44) ve lensleri önerilen lens değiştirme sıklığına göre değiştirmemekti (% 47,5). Katılımcıların kontakt lens kullanımına uyumu ile yaş, cinsiyet, kontakt lenslerin günlük kullanım süreleri, kontakt lens toplam kullanım süresi, göz muayenesi sıklığı, eğitim düzeyi, kontakt lens bakımı ile ilgili bilgi kaynağı arasında istatistiksel olarak anlamlı bir iliski tespit edilmedi.*

TARTIŞMA ve SONUÇ: *Lenslerle uyumak, lenslerle su aktivitelerine katılmak, lens kutularını düzgün bir şekilde temizlememek ve lensleri önerilen lens değiştirme sıklığına göre değiştirmemek, lens kullananlardaki yaygın uyumsuz davranışlardı.*

Anahtar Kelimeler: *kompliyans, kontakt lensler, demografik özellikler*

ABSTRACT

INTRODUCTION: *To identify the demographics profile of lens wearers, to evaluate compliance to contact lens use, and to determine major noncompliant behaviours.*

METHODS: *257 contact lens wearers were sequentially interviewed by a single ophthalmologist by using a questionnaire. The questions addressed the demographics of contact lens wearers, contact lens hygiene behaviors and attitudes towards lens care.*

RESULTS: *The mean age of lens wearers was 29 years with the majority of females (78%). Major reported forms of noncompliance were sleeping with lenses (70.5%), participating in water activities with lenses (52.5%), not cleaning lens cases properly (44%), and not replacing the lenses according to the recommended lens replacement frequency (47.5%). There was not statistically significant difference in compliance levels between participants in regard to age, gender, contact lens wearing hours per day, duration of contact lens use, frequency of eye examinations, education level, source of knowledge about contact lens care, and different types of contact lens purchase.*

DISCUSSION and CONCLUSION: *Sleeping with lenses, participating in water activities with lenses, not cleaning lens cases properly, and not replacing the lenses according to the recommended lens replacement frequency are the common noncompliant behaviors in lens wearers.*

Keywords: *compliance, contact lenses, demographics*

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INTRODUCTION

Contact lenses (CL) provide an advantageous way of correcting refractive error and the number of CL wearers increases day by day. However, despite the progression in CL materials and designs, fitting success has been jeopardized by the occurrence of complications. These complications range from mild discomfort to severe microbial keratitis including acanthamoeba keratitis (1,2). Although CL related complications are rare, and most can be managed without any serious side-effects, vision loss does occur (3).

Noncompliance with lens care has been shown to be associated with contact lens-related complications (4,5). Noncompliant behaviors include failure to adhere to recommended wear and replacement schedules, incorrect cleaning of lenses and lens storage cases, topping off solutions in lens cases rather than replacing them, exposure to non-sterile water, poor hand hygiene and sleeping with lenses (6-8).

To improve patient compliance, it is important to understand patients' knowledge and attitudes towards CLs. To our knowledge, there is no study about patient compliance in CL wearers in Turkish population. This study aims to investigate patients' knowledge and awareness about CL, effects of practitioner-patient relationship on patient compliance, and negative consequences of poor CL use in Turkey.

METHODS

Between January and May 2017, consecutive soft lens wearers attending to a private hospital clinic were invited to participate in this survey. All participants who had worn contact lenses for less than one month or for therapeutic purposes and patients under the age of 18 years were excluded from this study. Informed consent was obtained from all the participants.

Each participant underwent CL examination and comprehensive ophthalmologic examination, including review of medical history, corrected distance visual acuity, slit-lamp microscopy, and funduscopic examination. The questionnaire was developed regarding lens wear habits and hygiene behaviors by revising questionnaire used in previous studies (9-12). The revised questionnaire was interviewed by the same ophthalmologist before the examination procedure. Demographic data were collected, including gender, age, and education level. Duration and average hours of lens use, practitioner's recommended wearing modality, replacement schedule of the lens, lens type, previous complications related to CL, and eye examination frequencies were noted. Participants were asked about modifiable compliant behaviors. The questions and distribution of answers are shown in table 1. There were 10 components with 4 response categories ranging from 1 to 4 with higher scores indicating better hygiene behavior and compliance. For statistical analysis, scores 1 and 2 were considered as noncompliant, whereas scores 3 and 4 were considered as compliant behavior. Overall compliance was determined to be good for 9-10 compliant behavior, average for 7-8 compliant behavior and poor with 6 or less.

Table 1. Questionnaire regarding modifiable behaviors.

Question	Response	Number of answers
Hand washing before lens insertion practice	Always (4) Sometimes (3) Rarely (2) Not at all (1)	213 (82.8%) 35 (13.6%) 9 (3.5%) 0
Hand washing before removal of contact lenses	Always (4) Sometimes (3) Rarely (2) Not at all (1)	210 (81.7%) 38 (14.7%) 9 (3.5%) 0
Use soap while hand washing with lens insertion and removal	Always (4) Sometimes (3) Rarely (2) Not at all (1)	211 (82.1%) 29 (11.2%) 15 (5.8%) 2 (0,7%)
Cleaning lens cases with solution after putting CLs in the eyes	Always (4) Sometimes (3) Rarely (2) Not at all (1)	47 (18.2%) 97 (37.7%) 92 (35.7%) 21 (8.1%)
Storage of lenses in fresh solution (No topping off)	Always (4) Sometimes (3) Rarely (2) Not at all (1)	87 (33.8%) 95 (36.9%) 54 (21.0%) 21 (8.1%)
Rinsing contact lenses with water	Never (4) Occasionally (3) Frequently (2) Usually (1)	210 (81.7%) 19 (7.3%) 21 (8.1%) 7 (2.7%)
Water activities with lenses (Swimming, shower)	Never (4) Occasionally (3) Frequently (2) Usually (1)	42 (16.3%) 80 (31.1%) 41 (15.9%) 94 (36.5%)
Sleeping with lenses	Never (4) Occasionally (3) Frequently (2) Usually (1)	27 (10.5%) 49 (19.0%) 63 (24.5%) 118 (45.9%)
Lens replacement according to recommended replacement frequency	Always (4) Sometimes (3) Rarely (2) Not at all (1)	100 (38.9%) 35 (13.6%) 81 (31.5%) 41 (15.9%)
Change lens case every three months	Always (4) Sometimes (3) Rarely (2) Not at all (1)	104 (40.4%) 81 (31.5%) 42 (16.3%) 30 (11.6%)

Many of CL wearers in Turkey learn CL usage from their friends or internet. To find out its consequences, participants are asked about the source of their knowledge in CLs. They are also questioned whether practitioners in previous examinations give information about how to wear contact lenses and possible complications.

Statistical Analyses

Statistical analysis was performed using SPSS (Statistical Package for the Social Sciences) for Windows (Version 16; SPSS, Inc). Some data are expressed as the mean ± standard error of the mean. A t test was used to compare variables between parameters in the CL wearers. The categorical variables between the parameters and association between compliance and parameters were analyzed by using Chi-square test. A P value of less than 0.05 was considered significant.

RESULTS

The study population consisted of 200 (78%) females and 57 (22%) males. All the subjects were wearing daily soft CLs. The average age for women was 29.5 and average age for men was 28 years. The average lens wearing hours distribution for men and women is shown in figure 1. The overall compliance level was found good in 48 (18.6%) participants, average in 147 (57.2%) participants, and poor in 62 (24.1%) participants. There was no statistical significant difference in terms of age, wearing hours and compliance level between genders.

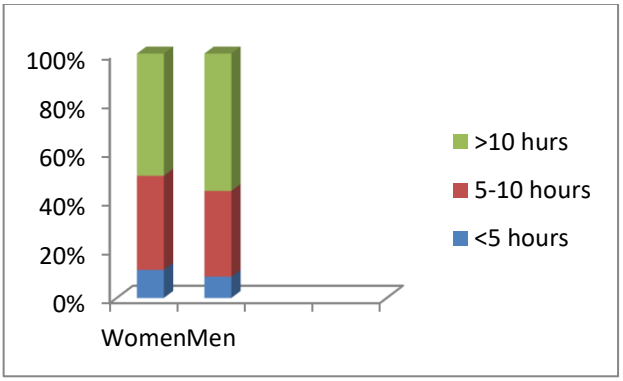

***Figure 1**. The average lens wearing hours distribution.*

207 (80.5%) participants were using spherical daily lenses, 38 (14.7%) participants were using toric daily lenses, and 12 (4.6%) participants were using colored cosmetic lenses.

Compliance level distributions according to duration and average hours of CL use in these subjects are shown in figure 2 and 3. Compliance level was better with short wearing hours per day and short duration of CL wear, but it did not reach statistical significance.

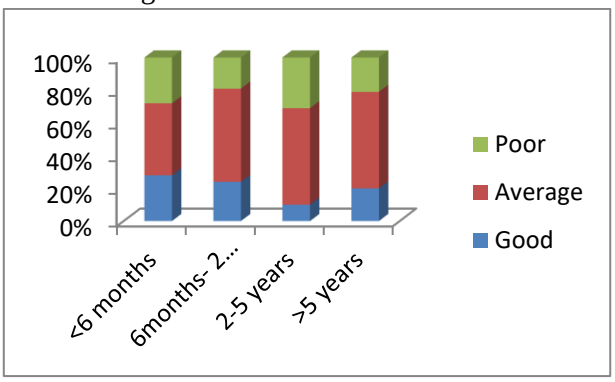

***Figure 2.** Compliance level distribution according to duration of CL wear.*

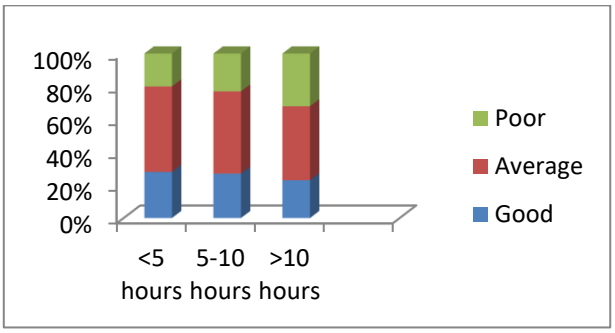

***Figure 3.** Compliance level distribution according to wearing hours.*

The level of education and compliance level in these patients are shown in figure 4. Compliance level was better with higher education, but it didn't reach statistical significance.

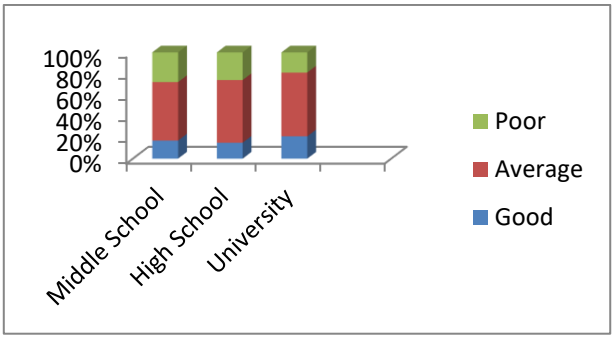

***Figure 4.** Compliance level distribution according to education level.*

The most noncompliant behaviors were sleeping with lenses, participating in water activities with lenses, not cleaning lens cases

properly, and not replacing the lenses according to the recommended lens replacement frequency. 122 (47%) patients were noncompliant in regard to proper lens replacement. The reason for noncompliance was forgetting for 88 (72%) patients and cost of lenses for 34 (28%) patients.

12(5%) participants buy their lenses via internet all the time and 37 (14%) participants have history of internet purchases of their lenses. Internet purchase was not found to be effective on compliance levels.

29(11%) participants have their eye examinations every 6 months, 145 (56%) participants have every 1 year, and 83 (32%) have every 2 years. There was no significant compliance difference in these participants.

35(14%) participants told they learnt CL wearing and care from their friends, 62 (24%) from opticians, 19 (7%) from internet, and 141 (55%) from ophthalmologists. Level of compliance was not different in these participants.

201(78%) participants reported they were informed by their practitioner about how to wear CL and the possible complications of CL wearing. Compliance level was better in informed participants, but it didn't reach statistical significance.

The most common complaint with CL wearing was foreign body sensation which was seen in 17 (7%) participants. 7 (41%) out of these participants had poor compliance levels. The other problems with CL use were itching, infection, redness and corneal abrasion. Compliance level was not associated with previous problems.

DISCUSSION

Despite that Turkey is a big market for CLs and has a large number of CL users, there is a lack of knowledge about patients' practices. In this study, the demographics of lens wearers and compliance with respect to practitioner recommended wear and care procedures were investigated. The questionnaire was conducted in a private hospital in Izmir, where socio-economic status is relatively higher than other cities in Turkey. Majority of participants were young females with higher level of education. Therefore, we think that the study has the capability of reflecting CL users in Turkey considering the fact that, the larger part of lens wearers is from higher socio-economic classes who can afford high contact lens costs (8,13,14). Similar to previous studies, female rate among CL users was higher in our study. Sokol et al. reported poorer compliance in males compared to females (13). In this study, there was no difference between the two sexes which is in agreement with Yeung et all (15).

207(80.5%) participants were using spherical daily lenses. 38 (14.7%) participants were using toric daily lenses and 12 (4.6%) participants were using colored cosmetic lenses. Only a few patients were using daily disposable lenses which don't require lens care, so these patients were not included to this study. As opposed to the study of Abahussin et al. which mentioned the main reason for CL use in Saudi Arabia to be cosmetic reasons (63.3%), in this study only 12 (4.6%) participants were using colored lenses and 11 (4.2%) of them had also spherical values (10). We think that this difference is a result of cultural characteristics and very easy access to the cosmetic lenses in Saudi Arabia as mentioned in Abahussin's study. In terms of compliance level, there was no difference between spherical, toric and cosmetic lens wearers.

This study reveals that 48 (18.6%) participants have good compliance, 147 (57.2%) participants have average compliance and 62 (24.1%) participants have poor compliance. This result was similar to previous studies. Bui et al. found good compliance in 32%, average compliance in 44%, and noncompliance in 24% in general CL wearers (9). Kuzman et al. found total compliance to be 21% of their asymptomatic CL wearing subjects (16). Sapkota found good compliance in 36%, average compliance in 49% and poor compliance in 15% in the study which is conducted to determine compliance in medical doctors and they didn't find statistically significant difference between medical doctors and age matched CL wearing normal subjects (11). The most noncompliant behaviors were failing to replace the lens cases and lenses according to the recommended replacement schedule, water activities with lenses, topping off solutions, and sleeping with lenses.

In the current study 52.5 percent of the participants followed the recommended wearing

time. Kuzman et al. found that 63.5% of the participants were compliant with proper lens replacement as compared to 48% in Robertson and Cavanagh et al (16,17). Petricek et al. mentioned that the majority of soft CL wearers wear them longer than recommended time where they specifically studied lens replacement habits (18). In a study, it is shown that overwear of the lenses significantly increased the amount of protein bound on the CLs and causes upper lid conjunctival hyperemia, limbal congestion, reduced noninvasive break up time and visual acuity (19). Lam et al. investigated behaviors of 58 patients with contact lens related infectious keratitis in Singapore and they found CL overwear was the major noncompliant behavior (20). Given the importance of compliance with proper lens replacement, we need to increase patients' awareness about that. In this study, 88 (72%) participants mentioned that the reason for their noncompliance in proper lens replacement is forgetfulness, so it could be very important to encourage CL wearers to use reminders.

Studies have shown that microbial contamination is common in lens storage cases and age of the lens case has been identified as a predisposing factor in microbial contamination (21,22). According to the current recommendations, lens case should be replaced at least once every 3 months. In this study, 72% of participants were compliant with lens case replacement. 11.6% were replacing them only when the lens case is damaged or lost. In previous studies, the compliance level for lens replacement was similar, between 53% and 78% (9,11). Besides replacement, it is very important to clean lens cases properly. Inadequate lens case hygiene is associated with an increased risk for microbial keratitis (23). There are not comprehensive recommendations about the cleaning of lens cases in terms of rinsing, rubbing, leaving them for air dry, and air dry positioning. Only 18.3% of our participants mentioned that they are always cleaning their lens cases with solution after they put their lenses in the eyes. The majority of our participants were using tap water for cleaning lens cases. Tap water use for cleaning CLs or their storage cases is associated with acanthamoeba keratitis (24). Since there are not standardized recommendations for lens case hygiene, this issue could be underemphasized by health care providers or there could be a misconception by health care providers. When participants were asked about tap water use for CL cleaning, 81.7% mentioned that they never use tap water. The huge difference between tap water use for cleaning CLs, and lens cases suggests that, there could be a lack of awareness about the risk of tap water use in lens case cleaning. It could be a good idea to update health care providers about this issue.

When these low compliance levels on lens case replacement and cleaning are considered, it is very critical to have standardized recommendations. Yung et al. conducted a study to see effects of a compliance enhancement strategy (25), and they found that clear written instructions to the users may significantly improve lens case hygiene. Health care providers may give a short and clear written instruction when they prescribe contact lenses.

Besides cleaning lens cases with tap water, the other situations which may cause water exposure are swimming and showering with lenses. These activities may play a significant role in microbial contaminations including acanthamoeba (26). 36.5% of participants had answered that they usually wear contact lenses while showering or swimming. Previous studies have also shown a high number of lens wearers engaging in water activities while wearing lenses (8,13,17). Thai et al. reported that almost one third of patients have the opinion that swimming has no effect on the risk of infection (9). High rates of noncompliance may be a result of this lack of awareness.

Topping off solutions are associated with keratitis and there are publications which report fungal keratitis outbreaks related to contact lens solutions (27,28). In this study, 29.2% of the subjects were noncompliant about topping off the solutions. Robertson et all. reported a huge disparity in the understanding and perception of lens care cleaning regimens, (17) as 90% of patients in their study indicated the significance of using fresh solution daily, but failed to recognize the importance of removing pre-existing solution prior to adding new. This is also an area which health care providers should increase the knowledge and

awareness.

70.4 percent of the participants in our survey were found to be noncompliant in terms of sleeping with lenses. None of them were prescribed overnight wear. Overnight wear of contact lenses is a controversial topic. Despite some manufacturers advise overnight wear with their products, sleeping with lenses is demonstrated as a risk factor for microbial keratitis and corneal infiltrates in previous studies (23,26,29).

Participants were specifically asked from whom they first learned how to use CLs when they have started CL use. The compliance level was better in the group who learnt CL use from physicians, but it did not reach statistical significance. The compliance level in regard to water activities with lenses was statistically significantly better in participants who learned CL use from physicians and worst in CL users who learned from opticians.

In conclusion, our study indicates that the most conspicuous noncompliant behaviors were failing to replace the lens cases and lenses according to the recommended replacement schedule, not cleaning lens cases properly, water activities with lenses, and sleeping with lenses in Turkey. In Turkey, the strategy should be developed to understand the reasons for noncompliance and take measures for these reasons.

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