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Source / Izvornik: *Collegium Antropologicum*, 2013, 37, 175 - 178

Journal article, Published version

Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:105:394470>

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Download date / Datum preuzimanja: **2024-08-21**



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# Lens Replacement Habits in Soft Contact Lens Wearers

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## ABSTRACT

*The aim of this paper was to assess soft contact lens replacement habits of patients of Contact Lens Clinic, Zagreb University Hospital Department of Ophthalmology, Zagreb, Croatia. During spring of 2010, a survey was conducted in Contact Lens Laboratory, Zagreb University Hospital Department of Ophthalmology, Zagreb, Croatia. 47 completed surveys were collected and analyzed. The results of the survey have shown that the majority of soft contact lens wearers wear them longer than recommended by the manufacturer. It also showed that they eventually replace the lenses in regular intervals, indicating that they base their lens replacement on constant criteria. The main reasons for the eventual lens replacement were increased blur or discomfort while wearing lenses. Since it is obviously impossible to convince all lens wearers to replace their lenses as recommended by the manufacturer, it is up to the contact lens practitioners to find the way to reduce the risks of lens overwear. It may be achieved by introducing a method that will enable each soft contact lens wearer to choose an optimal lens replacement regimen without risking their eye health.*

**Key words:** contact lenses, hydrophilic, patient compliance

## Introduction

As anything else, soft contact lenses have expiry date. It depends on several factors, chiefly on the fact that lens micropores get clogged with tear proteins and lipids during wear, which eventually cannot be removed with any cleaning method<sup>1</sup>.

Soft contact lenses do not float in the air – they are on the wearer's eye. This seemingly so obvious fact very frequently gets overlooked. In other words, soft contact lens forms dynamic interactive system with its wearer: his/her tear film, cleaning regimen, lifestyle, lens handling and other factors.

All soft contact lenses are marketed with their manufacturer's recommendation when to replace them. It is notable that recommended wear time is getting ever shorter: from yearly replacement to tri-monthly, monthly, bi-weekly, weekly and finally to daily replacement. Manufacturer's reasoning behind wear shortening is that more frequent replacement protects lens wearer from overwear complications – that more frequent replacement is healthier. Despite the fact that this argu-

ment may be valid, it is also true that by more frequent lens replacement lens manufacturers speed up their sale. Economic aspect of contactology should be always borne in mind, as lens manufacturers are commercial enterprises which are by definition driven by profit.

We, as eye care practitioners, should be primarily concerned with our patients' health and well being. However, it is also the fact that modern medicine is evidence-based. Therefore, is it really necessary to replace soft contact lenses exactly as recommended by their manufacturers, and on what evidence is such recommendation based?

The lens sits on the ocular surface: is every lens-eye system exactly the same? Does every lens wearer use up his/her lens after exactly the same period? Actually, is it not that the recommendation that every lens wearer should replace the lenses at exactly the same time resembles recommendation that the same pair of shoes should be worn for exactly the same period, and then thrown away? Are all feet and all shoe wearers exactly the same?

When we became aware of this problem, we contacted regional representatives of two major lens manufacturers with the same question: based on what studies are lenses marketed as yearly, monthly, weekly or daily replacement? The answer was interesting, especially so because both representatives answered using the same phrase: lens replacement interval is only the recommendation of the manufacturer, and it is up to the lens dispenser what to recommend to his/her patient. Also, it is interesting that none of the companies was willing to present any study on which they based lens replacement schedule recommendation.

We are left to conclude that lens dispensers are required to simply believe manufacturer's recommendation, as no studies that actually back up such recommendation are available.

Papers that deal with lens replacement habits are rather scarce, and most recommend more frequent replacement as solution to patient non-compliance. Also, most of them focus on how to achieve better compliance and on causes for non-compliance. However, none paid attention to the eventual reasons for (non-compliant) lens replacement, whether that schedule was regular, did patients develop their own regular lens replacement schedule, and if so, on what principle was it based?

## Methods

This situation has led us to conduct a survey regarding lens replacement habits. The aim of this survey was not only to find out how many soft contact lens wearers are non-compliant, but also what were the reasons for non-compliance, as well as the reasons for eventual lens replacement.

Survey was anonymous and was conducted in Zagreb University Hospital Department of Ophthalmology Contact Lens Laboratory during spring of 2010. The questionnaire was voluntary and was offered to all eligible patients who came for the regular contact lens examination.

Survey consisted of the following questions:

1. Gender
2. Age
3. The length of lens wear
4. The type of soft contact lens (yearly, tri-monthly, monthly, bi-weekly, weekly, daily or extended wear)
5. Has the ophthalmologist explained when lenses should be replaced?
6. Did patient understand when he should replace his/her lenses?
7. Does patient replace his/her lenses exactly as recommended?

If the answer to the previous question was NO, patient proceeded with answering the following questions:

8. State the reason for non-compliance:
  - a. I do not see the reason why I should replace the lenses I have no problem with

- b. It is cheaper
  - c. It is more convenient as it requires less frequent visits to the ophthalmologist or optician
  - d. I forget to replace them
9. What makes you to eventually replace your lenses?
    - a. I wear them until I feel the eyesight becomes more blurry
    - b. I wear them until I begin to feel them in the eyes
    - c. I wear them until my eyes become red
    - d. Other:
  10. I wear my lenses approximately \_\_\_\_ days longer than recommended
  11. Do you replace your lenses in roughly the same intervals?
  12. Did you ever have more serious contact lens-related eye inflammation?

## Results

A total of 47 questionnaires were available for analysis. Out of that number, 12 were male lens wearers, and 35 female. 26 of them were non-compliant, and 21 compliant. Most of non-compliant lens wearers were monthly lens wearers (20), then tri-monthly (9), bi-weekly (8) and yearly (3), while the rest of them (7) wore some other lens type. The average age of compliant lens wearers was 28.2 (14–56), they have been wearing their lenses on the average for 8.7 years (1–20), and 14 of them were women. Non-compliant wearers were on the average 33.5 years old (15–63), have been wearing their lenses on the average for 10.7 years (1–34), and 21 of them were women. All compliant lens wearers reported that the ophthalmologist explained them when their lenses should be replaced, and that they understood the recommendation. Of all non-compliant lens wearers (26), only one patient reported that the ophthalmologist did not explain to him when to replace the lenses and that consequently he did not understand when he should replace them. Of all non-compliant lens wearers, the majority of them (10) stated that they saw no reason to replace the lenses they had no problems with, while nine of them stated that they overwear their lenses because they forget to replace them.

Regarding reason for eventual lens replacement, 8 patients reported that they replace the lenses when their vision becomes more blurry, while the same number of patients (8) stated that they replace their lenses when they begin to feel them in the eyes. Three patients reported that they replace their lenses in regular intervals which are longer than recommended.

Non-compliant lens wearers wore them on the average 12 (3–45) days longer. Also, the huge majority of non-compliant wearers, 24 out of 28 have stated that they replace the lenses in roughly the same intervals. Two compliant and three non-compliant lens wearers had lens-related eye inflammation.

## Discussion

From presented data it is evident that the majority of soft contact lens wearers are non-compliant. Lens replacement non-compliance is a widely recognized fact<sup>2-6</sup>. Jones et al have reported that 43% of biweekly soft contact lens wearers were non-compliant, as well as 33% of monthly lens wearers<sup>4</sup>. Dumbleton et al have shown that the non-compliance was most frequent among bi-weekly lens wearers (50% in Canada and 52% in the USA), as well as 33% in Canada and 28% in the USA among monthly lens wearers<sup>7</sup>. Most frequent reasons for non-compliance were forgetting when to replace the lenses and cost reduction.

The results of our survey did not show that patients who were older or wore their lenses for longer were more compliant. On the contrary: non-compliant wearers were older, and with on the average two years longer lens wear experience than compliant wearers. Also, contact lens-related eye inflammation was not frequent and rather similar in frequency in both groups: 2 among compliant and 3 among non-compliant.

However, the most interesting results of the survey dealt with the reasons of non-compliance and the reasons for eventual lens replacement. 19 out of 26 non-compliant patients see no reason to replace lenses they have no problems with (10), or they forget to replace them (9). In simple words, they do not replace lenses because they feel comfortable with them. It is interesting that the study by Dumbleton et al stated that having no problems with lenses was much less frequent reason (9%) than forgetting when lenses need to be replaced (53%)<sup>7</sup>. But, don't patients forget to replace the lenses precisely because they feel no problems with them? If they had any problems with the lenses, they would surely have replaced them.

When they eventually replaced their lenses, the equal number of patients (8) replaced them when eyesight became blurry or when they started to feel them in the eye. Also, 24 out of 26 non-compliant lens wearers replace their lenses in regular intervals. That means that they developed their own personal replacement routine, which is permanent and which evidently works fine for them.

What is the reason for blurry vision through the contact lens? When lens micropores become clogged with tear film proteins and lipids, lens wetting becomes compromised – lens surface becomes drier more quickly between blinks, and blurry interblink periods become longer as lens surface gets drier more quickly. Soft contact lens wearers are more than aware of this phenomenon at the end of the day, when lens becomes more coated with tear film deposits, visual acuity becomes more blink-dependent: they have to blink more frequently to keep their vision clear. That is particularly true when their lenses are approaching replacement time.

Another effect of lens clogging is compromised corneal oxygenation – less oxygen gets through the lens via water to the cornea<sup>1</sup>. Decreased corneal oxygenation may lead to subclinical or clinical corneal edema, to forming

of stromal microcysts or to neovascularisation in case of chronic hypoxia. In case of acute hypoxia, patient presents with Contact Lens-related Red Eye (CLARE). When patients begin to feel their lenses, the most probable reason for that is subclinical ocular surface inflammation triggered by inflammation mediator release. If patient continues to wear the same lens, subclinical inflammation will most probably progress into clinical, all the way to the full-blown CLARE. That should be avoided at all cost, lens must be replaced before that.

Patients that replace their lenses when their vision becomes more blurry probably do not risk more serious ocular inflammation yet, but those who wait until they begin to feel their lenses do.

Is it possible to convince all lens wearers to replace them as recommended? After all what was said, it is quite unrealistic to expect that. On the other hand, is it necessary at all? Do we know why lenses should be worn exactly as long as recommended? And, is patient taken into consideration as well?

Since so many lens wearers wear them longer than recommended, it is our duty to prevent unwanted complications. In that sense, would it not be more sensible to recommend wearers to wear lenses until vision gets blurry, and not until they begin to feel them? It would be of paramount importance to devise a system to instruct the patients how to define their own personal replacement routine, which will take into consideration him/her as well as the lens.

## Conclusion

It is evident that most soft contact lens wearers are non-compliant regarding lens replacement, despite all the efforts of lens manufacturers and eye care professionals. Also, the fact remains that the manufacturer recommendation regarding lens replacement remains recommendation only, since studies that back up such recommendations are not available to wider medical audience. Anyway, soft contact lens could not be regarded as an entity apart from its wearer. Lens-patient interaction is of paramount importance, and every such interaction is unique.

This survey showed that the majority of non-compliant lens wearers develop their own lens replacement routine, unique for them and constant. However, not all such routines are equally safe, some are potentially dangerous for the eye.

It is up to us, eye care professionals, to reduce potential contact lens wear complication to the minimum. Evidently, that could not be achieved by stubborn persistence in imposing lens replacement as recommended by lens manufacturers, since the majority of our patients would not listen to us.

The solution evidently lays in devising a lens replacement method optimal for each individual patient, which would reduce risk for the eye to the minimum.

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## PRAKSA ZAMJENE LEĆA U NOSITELJA MEKIH KONTAKTNIH LEĆA

### SAŽETAK

Cilj ovoga rada je procjena prakse zamjene leća u nositelja mekih kontaktnih leća među pacijentima Kabineta za kontaktne leće Klinike za očne bolesti KBC Zagreb, Hrvatska. Tijekom proljeća 2010. godine provedena je anketa u Kabinetu za kontaktne leće Klinike za očne bolesti KBC Zagreb. Sakupljeno je i analizirano 47 anketa. Rezultati ankete pokazali su da većina nositelja mekih kontaktnih leća svoje leće nosi dulje no što je preporučeno od strane proizvođača. Također je pokazala da ih oni na kraju zamjenjuju u pravilnim razmacima, što upućuje na činjenicu da oni zamjenu leća baziraju na stalnim kriterijima. Glavni razlozi za konačnu zamjenu leća bili su muniji vid ili nelagoda pri nošenju leća. Pošto je očigledno nemoguće uvjeriti sve nositelje mekih kontaktnih leća da ih zamjenjuju kako preporučuje proizvođač leća, na ordinarijusu je da pronađe najbolji način kako smanjiti rizike predugog nošenja leća. To se može postići uvođenjem u praksu metode koja bi omogućila svakome nositelju mekih kontaktnih leća izbor optimalnog režima zamjene leća koji ne bi ugrožavao zdravlje njegovih očiju.