ORIGINAL ARTICLE

Habits of Contact Lens Wearers Toward Lens Care in Malaysia

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SUMMARY

The purpose to do this research was to find out the habits of contact lens wearers towards lens care in this country, and to evaluate the compliance of contact lens wearers.

Methods: All respondents underwent an interview regarding questionnaire which was carried out at the Klang Valley and Sabah, Malaysia by trained bilingual optometrists. The questionnaire was obtained from a study by Yvonne Wu *et al.*, 2010. The questionnaire included information about respondents' demographics, contact lens hygiene behaviors and attitudes toward lens care. Comparison between groups and certain factors of lens care were analyzed.

Results: Within the 100 respondents, 74% were female. The majority used monthly disposable lens (53%, 53/100), 35% (35/100) wore daily lens, 3% (3/100) wore biweekly disposable lens, 8% (8/100) wore quarter-yearly (3 months) lens, and only a participant (1%) used conventional lenses. The major non-compliance aspect that found out from this research were poor lens case (46%), inadequate cleaning of lens before storing (38%) and wearers not remembering how often they were advised to return for an aftercare (24%).

Conclusion: The poor lens care hygiene, inadequate cleaning of lens before storing may due to lack of proper advice to the contact lens wearers during examination or lack of awareness of aftercare visit.

KEY WORDS:
Contact lens; Questionnaire; Aftercare; Disinfecting solution; Microbial keratitis

INTRODUCTION

Epidemiological studies of contact lens related complications provide information on their incidence, distribution and on their related risk factors. Even though contact lens complication is rare and has low incidence, it is necessary to identify the risk factors. According to the "International Contact Lens Prescribing in 2007", annual review of contact lens wears, 70% of contact lens wearers in Malaysia are female and 39% of respondents are new fits of contact lens [1]. With the increasing number of contact lens usage, the number of complications due to contact lens wear is increasing. A previous study by Tajunisah I *et al*. regarding knowledge and practice of contact lens wear and care among medical students of University of Malaya suggested a need for more education of the user about the contact lens care and complications related to contact lenses [2]. To reduce the risk of contact lens complications, habits of contact lens wearers towards lens care are vital. There are factors for good habits towards lens care, including: lens type, hygiene compliance, lens case cleaning, wearing duration, replacement schedule and solution system. Different types of contact lens can have different wearing duration, replacement schedule and solution system. Therefore, every contact lens wearer must understand the importance of good lens care system.

The general aim of this study is to determine the habits of contact lens wearers towards lens care in general population. It also helps to determine knowledge of contact lens users on contact lens and the compliance of contact lens wearers

MATERIALS AND METHODS

A questionnaire was used to obtain data to find out the habits of contact lens wearers towards lens care. The questionnaire was obtained from a study with title of "Contact lens user profile, attitudes and level of compliance to lens care" by Yvonne Wu *et al.,* 2010 [3]. The questionnaire includes information regarding contact lens wearer demographics, contact lens hygiene behaviours and attitudes toward lens care. All respondents underwent an interview regarding questionnaire which was carried out in the Klang Valley and Sabah, Malaysia by trained bilingual (English and Malay) optometrists and also ensuring that the contents and the meanings were preserved while interviewing in regional language i.e. Malay. This research sampling method was convenient sampling, respondents were recruited from shopping malls or other places that were convenient. Demographic data were obtained, including gender, age, race, occupation, income level and educational of respondents.

Statistical Analysis

SPSS 19.0 for Windows 7 and Microsoft Excel 2007 were used. To determine the associations between contact lens wearers demographic and habits towards lens care were calculated using cross tabulation.

RESULTS

One hundred soft contact lens wearers were invited to participate in this research by answering a questionnaire. In this research group, 75% were aged in group of 20 to 29 and 74% were female (74/100). Most of the respondents have

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Table I: Measurement of association between the factors for Contact lens hygiene and demographics

Factors		Gender		Chi square	p (value)	Income		Chi square	p (value)	Education		Chi square	p (value)
		male	female			no	yes			below bachelor degree	bachelor degree and above		
Rinse the contact lens before insert	yes	21 (26.2)	59 (73.8)	0.013	0.909	54 (67.5)	26 (32.5)	1.099	0.295	19 (23.8)	61 (76.2)	1.052	0.305
	no	5 (25)	15 (75)			11 (55)	9 (45)			7 (35)	13 (65)		
Rinse the contact lens before store	yes	15 (31.2)	33 (68.8)	0.362	0.548	36 (75)	12 (25)	0.664	0.415	14 (29.2)	34 (70.8)	1.795	0.18
	no	4 (23.5)	13 (76.5)			11 (64.7)	6 (35.3)			8 (47.1)	9 (52.9)		
Rub the contact lens before store	yes	10 (25)	30 (75)	0.9	0.343	28 (70)	12 (30)	0.277	0.599	13 (32.5)	27 (67.5)	0.084	0.772
	no	9 (36)	16 (64)			19 (74)	6 (24)			9 (36)	16 (64)		
Rinse the case, after taking out of contact lens	yes	15 (30.6)	34 (69.4)	0.184	0.668	39 (79.6)	10 (20.4)	5.275	0.022	14 (28.6)	35 (71.4)	2.474	0.116
	no	4 (25)	12 (75)			8 (50)	8 (50)			8 (50)	8 (50)		
Rub the case, after taking out of contact lens	yes	6 (20)	24 (80)	2.295	0.13	22 (73.3)	8 (26.7)	0.029	0.864	12 (40)	18 (60)	0.942	0.332
	no	13 (37.1)	22 (62.9)			25 (71.4)	10 (28.6)			10 (28.6)	25 (71.4)		

education of bachelor degree level or above. Sixty five percent (65/100) were without income which means they were not working such as students and housewives.

Seventy (70/100) of respondents reported that contact lenses used to correct myopia, 5% (5/100) hyperopia, 15% (15/100) astigmatism, 5% (5/100) not sure of what lenses they used and 5% (5/100) used coloured contact lenses to alter eye colour.

There were 59 respondents (59%) who wore lenses for more than 8 hours a day and none of the respondents wore lens for more than 1 day. Thirty five percent (35/100) wore lenses for less than once per week, 34% (34/100) wore lenses for 1 to 4 days per week and those who wore lenses for more than 4 days per week consisted of 31% (31/100).

Only 16 persons (16%) have been a contact lens wearer for less than 1 year, others had experience of contact lens wear for more than 1 year and the most have experience of 3 to 5 years of lens wear, 29% (29/100).

In 35 daily disposable lens wearers, 4 (11.43%) daily lens wearers soaked their lenses in saline and reused the lens while 6 (17.14%) persons soaked the lens in disinfection solution and reused.

The majority used monthly disposable lens (53%, 53/100), 35% (35/100) wore daily lens, 3% (3/100) wore bi-weekly disposable lens, 8% (8/100) wore quarter-yearly (3 months) lens, and only 1 participant (1%) used conventional lenses.
Ninety one percent (91/100) of participants purchased their lenses directly from an optometrist's practice or optical outlet, 4% (4/100) by pre-arrangement with an optometrist via postage or email, and 3% (5/100) via internet from online contact lenses website.

Most of the participants had their routine contact lens check up within 1 to 30 days ago, 28% (28/100). 69% (69/100) had their last check up within 1 year before the day of questionnaire given, 16% (16/100) did not have eye check for the last 2 years.

A question regarding how often they were advised to have contact lens check up, 53% (53/100) reported that they cannot remember (24/100, 24%) or no advice given (29/100, 29%). Only 2 persons (2%) been advised to have aftercare visit every 2 years.

Concerning hand hygiene, 98% (98/100) of participants reported that they did wash their hands before handling lenses.

Seventy eight point forty six percent (51/65) used disinfecting solution every time they reuse their lenses whereas 21.54% (14/65) used sometimes. 13.85% (9/65) reported that they reused the disinfecting solution and 9.23% (6/65) topped up the disinfecting solution in lens case. One daily lens user admitted reusing his/her lenses by put back into foil packet and reused.

Seventy three point eighty five percent (48/65) of participants reported that they rinsed their lens, 61.54% (40/65) rubbed their lenses before storing, and 56.92% (37/65) did both rub and rinse lenses before storing.

Forty nine participants (75.38%, 49/65) did rinse the lens case after took out lens for insertion, 11/49 (22.45%) rinsed the case with water. Less than half (46.15%, 30/65) did rub the case and 69.23% (45/65) air-dried the lens case. There were 4/65 (6.15%) used their lens case for more than 3 months.

There was no association between the participants demographics with factors like rinse and rub of the contact lens before store, rub and rinse of the case after taking out of contact lens, rinse the contact lens before insertion. Only there was association of participant's income with rinse of the case, after taking out of contact lens ($p = 0.022$) (Table I)

Thirty-five percent (35/100) of participants ever shower with their lens in. Twenty five percent (25/100) did swam with lens in and 20/25 (80%) swam in public pool. Thirty six percent (9/25) did not wear their swimming goggles during swimming.

DISCUSSION

This research has shown the major non-compliance aspect is poor lens case. Rub and rinse of the lens cases are to remove the deposits that left in lens cases. Poor lens care and contaminated lens cases are among contact lens wearers with microbial keratitis. Bacterial contamination of lenses and cases cause ocular infection or corneal ulceration [4-8]. Contamination of soft contact lenses may be a result of a contaminated case, contaminated solutions, using old, expired solutions, failing to disinfect solutions, topping off solutions, and/or poor hand hygiene [9]. Cleaning the lens case without topping up the disinfecting solutions can reduce the risk of contaminated case that lead to complication. We also found out that the demographic gender and education level have no different level of compliance and the participant's income was only associated with rinse of the case, after taking out of contact lens.

Daily disposable lens wearers are supposed to discard their lenses after the day. We found out that 28.57% persons reused their lenses. Contact lens wearers are recommended to follow the replacement schedule. Cleaning, rinsing, and disinfecting regimens do not completely neutralise many of the pathogens that can contaminate soft contact lenses [10]. Frequent replacement of soft contact lenses reportedly reduces the probability of infection, ocular discomfort, and other wear-related complications [11, 12].

Only a few respondents reported that they did not wash their hands before handling lenses. Although this is a small percentage, in lens care, hand hygiene is very important as it can reduce the risk of harm to the eyes, therefore it is better to have all contact lens wearers wash their hands before handling lenses. Stapleton et al. (2008) showed that one of the risk factors with lens care complications which can lead to ocular complication is poor hand cleaning [13].

In this study, there were 63% of questionnaire participants who reported that they wore their lenses for more than 8 hours a day. Previous studies stated that it is important that contact lens wearers follow the instructions when using disposable and replacement contact lenses, but cases of eye disorders caused by excessive wear are increasing and it is critical to improve the compliance of contact lens wearers [14, 15]. The extended wear of disposable lenses remains associated with an increased risk of infection [16].

There were 26% of participants who were using replacement lenses such as bi-weekly disposable, monthly disposable and quarter-yearly disposable lenses who did not rinse their lenses and 38% did not rub their lenses before storing. Previous studies have shown that protein deposits form on soft contact lenses within minutes of wear [17, 18]. Lipid and mucin also adhere to the contact lens surface, and combinations of the these deposits are associated with a variety of complications, including decreased visual acuity, ocular irritation, allergic reaction, and microbial infection [19-21]. To minimise the deposits of microbial stayed on lenses, contact lens users are suppose to rinse the lenses before storing and better with rubbing of lenses [22-24].

Routine check up is strongly recommended to every contact lens wearer as it can detect early abnormalities or changes and proper contact lens fitting assessment. It also must be done before the purchase or dispense of contact lenses to reduce the risk of disease burden. Twenty four percent of respondents did not remember how often they were advised to return for an aftercare and 29% said that there was not advice given of how often to have contact lens check up. Aftercare is required as it allows for early detection of ocular physiological changes and provides an opportunity to revisit lens wearers compliance [3]. Therefore, practitioners should give proper advices not only on lens care but also on duration of after care for contact lens wearers.

An equal demographic distribution and greater diversity of respondents could have added additional value to this study. Future studies can be carried out with different assessment protocol for compliance as in this study the assessment of compliance was based on subjective responses so the level of compliance may be over-estimated.

CONCLUSION

Contact lens care is very important in contact lens wear as it can affect the success of contact lens wear and also patient's satisfaction. The poor lens case hygiene, inadequate cleaning of lens before storing may due to lack of awareness regarding aftercare and theses factors increase the risk of complication associates with contact lens wear. There is a need for more education and knowledge to the contact lens wearer about the contact lens care and complications related to contact lenses. This helps to decrease the risk for contact lens related complication.

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