

KNOWLEDGE, ATTITUDE, PRACTICE AND EYE PROBLEMS FROM CONTACT LENS USE IN STUDENTS AT CHULALONGKORN UNIVERSITY 2010

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ABSTRACT: The aim of this cross-sectional study was to assess knowledge about contact lens, attitude, practice and eye problems from contact lens use in students at Chulalongkorn University, Bangkok. Data were collected by using self-administered questionnaires. 340 participants were selected by convenience sampling technique, contact lenses users among students at Chulalongkorn University (CU). The result indicated that more than 70 % of respondents had high knowledge level about eye problems protection from contact lens. More than 80 % had knowledge about washing hand, sleeping and swimming with contact lenses can lead to an increased risk of eye infection. More than 75% of them had moderate attitude level about contact lens use and good practice level about the proper contact lens use and care. Most of them (71%) agree that wearing contact lenses make them look more beautiful. One-third of respondents used to rinse contact lenses with tap water and swim with contact lenses. More than a half used to sleep with contact lenses. 73.2% had high knowledge about eye problems protection from contact lens. 93.5% knew that washing hands thoroughly with soap and drying well every time before touching contact lenses can protect eye infection. 95.3% knew that sleeping while wearing contact lenses can lead to an increased risk of severe eye infection. 80.3% knew that they should not swimming while wearing contact lenses. 79.1% of them had a moderate attitude about contact use. Most of the respondents (70.9%) agree that wearing contact lenses make them look more beautiful. 77.1% had good practice about the proper contact lens use and care. It was found that 26.8% used to rinse contact lenses with tap water. 56.8% used to sleep when wearing contact lenses. 95.3% never swap contact lenses with another person. 36.2% used to swim while wearing contact lenses. About 50% of respondents in this study had eye problems from contact lens use such as, (There were many eye problems from contact lens use in this study such as) red eye, discomfort, pain, dry eye, blurred vision, light phobia, infection, many tear and discharge. Furthermore, the knowledge level was associated with hometown living, monthly income and field of studies ($p < 0.05$). The practice level was associated with sex, age, study level and monthly income ($p < 0.05$). Knowledge and practice score regarding to eye problem protection from contact lens had a positive correlation (correlation coefficient of 0.316). In addition, knowledge score had a statistically significant correlation with practice score ($p < 0.001$). This study proposed recommendations and guidelines to control and reduce eye problems from contact lens use.

Keywords: knowledge, attitude, practice, eye problems, contact lens, university students

INTRODUCTION

In the United States and throughout the world, prevalence of myopia is increasing. In 2009, there was a report saying that prevalence of myopia in the United States increased from 25 percent (in 1971-1972) to 41.6 percent (in 1999-2004) [1]. In Asian countries such as Taiwan the number of myopic school children is approximately 80 percent [2].

Contact lens is one of the choices to correct myopia. Each year, there is increasing number of people who use contact lenses, both of corrective and decorative (cosmetic) lenses that change color or appearance of eyes.

About 125 million people in the world wear contact lenses [3] Improper use of contact lenses can cause

numerous complications [4].

In 2006, a New Zealand man lost his eye vision due to eye infection after wearing contact lenses for three days as a consequence of using borrowed decorative contact lenses [5]. At that time, the Thai Food and Drug Administration (FDA) only controlled and monitored corrective, but not decorative contact lens import. In addition, decorative contact lenses were distributed not only in eyeglasses (optician) shops or clinics but also at stalls in many fashion centers and on the Internet. Furthermore, advertising over the Internet allowed consumers to buy decorative contact lenses more easily. The FDA identifies all contact lens types to be as medical devices which manufacturers and importers have to apply for permission. Moreover, the FDA specifies that all product leaflets must have a clear warning, contraindication, and precaution in order to make sure manufacturers and importers of

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contact lenses meet the standards and quality for the consumers' safety. In Thailand, the trend for wearing decorative contact lens to have "Big Eye", like Japanese or Korean stars, is very popular among teenagers, especially students, and young adults. In 2011 teenage patients were admitted to hospital because they suffered from microbial corneal infection by *Pseudomonas aeruginosa* as a consequence of wearing decorative contact lenses purchased from market stalls or the Internet. The purpose of this research was to investigate the prevalence of eye problems from contact lens uses, knowledge, attitude and practice of contact lens use and factors associated with eye problems among students at Chulalongkorn University who are educated, knowledgeable and very frequent contact lens users. They are able to buy them easily because Chulalongkorn University campus is a vast area in downtown Bangkok, close to the popular teenagers' hangout of Siam Square and MBK department store with many stalls selling this product. This present study may help to determine an appropriate guideline to control and reduce eye problems from contact lens use.

MATERIALS AND METHODS

A cross-sectional study was conducted in students at CU. The sample size was calculated based on a previous study in Malaysia [6] which found that 30% of students had problems from contact lens use. The minimum sample size was 323 students with 5 % added to account for incomplete or missing data, the total sample size was 340 subjects. Convenient

sampling was used by finding students who use contact lenses at CU - such as classes, the cafeteria, library, or other public areas of the college. Data were collected by using self-administration-questionnaires on knowledge, attitude, proper use of contact lens, eye care practice and eye problems from contact lens use. The data were analyzed using SPSS version 17, Chi-square test with the p value of <0.05 was used to indicate statistical significance. Ethical Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University approved the study. The researchers consulted professor of the college of Public health Science, professor of Pharmaceutical, Chulalongkorn University and Senior professional pharmacist from Medical Device Control Division, Food and Drug Administration for questionnaire validity and the questionnaires had Cronbach's alpha coefficient of 0.673.

RESULTS

The total number of subjects in this study was 340 students at CU. Table 1 shows the number and percent distribution of respondents by field of study.

Table 2 shows socio-demographic characteristics such as sex, age, study level, monthly income and hometown if origine.

Contact lens information of respondents such as reason to used contact lens, recommendation by ophthalmologist/expert before use contact lens, time to use contact lens are presented in Table 3.

Table 1 The number and percent distribution of respondents by field of study

Faculty	Estimate number of subject	Number (N) of subject	Percentage (N/340)
Health Science Field		(N=72, 21.2%)	
Medicine	25	20	5.9
Dentistry	10	12	3.5
Pharmaceutical Sciences	11	19	5.6
Veterinary Science	10	11	3.2
Allied Health Sciences	9	10	2.9
Science Field		(N=42, 12.4%)	
Science	42	42	12.4
Engineer Field		(N=40, 11.8%)	
Engineering	47	40	11.8
Art Field		(N=22, 6.5%)	
Architecture	13	17	5
Fine and Applied Arts	7	5	1.5
Social Field		(N=164, 48.2%)	
Arts (languages, history, literature)	17	32	9.4
Communication Arts	10	15	4.4
Political Science	14	7	2.1
Law	18	10	2.9
Commerce and Accountancy	46	69	20.3
Economics	12	18	5.3
Education	32	13	3.8
Total	323	340	100

Table 2 Distribution of respondent by socio-demographic characteristics (N=340)

Socio-demographic Characteristic	Number	Percentage (%)
Sex		
Male	68	20.0
Female	272	80.0
Age (Year)		
17 – 20	145	42.6
21 – 24	159	46.8
> 24	36	10.6
Mean = 21.5, S.D = +2.9 , Range = 17 - 37		
Study level		
Bachelor	298	87.6
Master/ Doctor of philosophy (PhD)	42	12.4
Monthly income		
< 5,000	83	24.4
5,000 - 10,000	207	60.9
> 10,000 - 15,000	50	14.7
Hometown		
Bangkok	229	67.4
Other	111	32.6

Table 3 Contact lens information (N=340)

Contact lens information	Number	Percentage (%)
Reason to use contact lens		
Correct vision	197	57.9
Cosmetic	34	10.0
Both	109	32.1
Recommendation before ophthalmologist/expert		
No	157	46.2
Yes	183	53.8
Time to use contact lens (Year)		
Less than 1	18	5.3
1	53	15.6
2	57	16.8
3	49	14.4
4	44	12.9
5	38	11.2
6	35	10.3
More than 6	46	13.5

Table 4 Eye problems from contact lens use

Eye Problem	Number	Percentage (%)
Redeye	128	34.3
Dry Eye	43	11.5
Pain	44	11.8
Blurred vision	37	9.9
Discharge	2	0.5
Discomfort	85	22.8
Light phobia	11	2.9
Many tear	3	0.8
Infection	10	2.7
Complication infection	0	0.0
Other	10	2.7
Total	373	100.0

Eye problems from contact lens use are presented in Table 4.

The level of respondents' knowledge, attitude and practice of contact lens use are shown in Table 5. Respondents' knowledge, attitude and practice were classified in 3 levels, "good, moderate and poor".

The cut-off point for "Good" is 80%-100% of total scores, "Moderate" is 60% to 79% of total scores and "Poor" is less than 60% of total scores. About 73% of respondents had good knowledge, 79% had moderate attitude and 77% had good practice of contact lens use.

Table 5 Level of knowledge, attitude and practice of contact lens use

Item	Percentage		
	High	Moderate	Low
Level of knowledge	73.2	24.7	2.1
Level of attitude	0.9	79.1	20.0
Level of practice	77.1	22.0	0.9

Table 6 The frequency and percentage of proper contact lens use practice

Practice	[n(%)]			
	Never	Sometimes	Often	All the time
Use (Insertion and removal)				
- Wash hands thoroughly with soap and dry before handling contact lens	5(1.5)	49(14.4)	96(28.2)	190(55.9)
- Take the lens out, clean and rinse it well before insert contact lens to your eye	29(8.5)	63(18.5)	84(24.7)	164(48.2)
- Clean, rinse and sterilize contact lenses after remove the contact lenses	13(3.8)	52(15.3)	74(21.8)	201(59.1)

Table 7 The frequency and percentage of proper contact lens care and maintenance practice

Practice	[n(%)]			
	Never	Sometimes	Often	All the time
Contact lens care and maintenance				
- Use contact lens solution to clean contact lenses after used	9(2.6)	24(7.1)	53(15.6)	254(74.7)
- Rub, contact lenses with your fingers during cleaning	27(7.9)	61(17.9)	71(20.9)	181(53.2)
- Rinse contact lenses with tap water*	249(73.2)	70(20.6)	13(3.8)	8(2.4)
- Rinse contact lenses with solution after cleaning	5(1.5)	34(10.0)	75(22.1)	226(66.5)
- Use contact lens disinfecting solution to disinfect contact lenses	9(2.6)	38(11.2)	76(22.4)	217(63.8)
- Use saline solution to disinfect contact lenses*	198(58.2)	73(21.5)	37(10.9)	32(9.4)
- Store contact lenses in the recommended solutions when not wearing	19(5.6)	16(4.7)	47(13.8)	258(75.9)
- Store contact lenses in tap water*	286(84.1)	35(10.3)	13(3.8)	6(1.8)
- Reuse cleaning or disinfecting solutions?*	238(70.0)	77(22.6)	17(5.0)	8(2.4)
- Clean contact lens storage case with contact lens solution after every use	33(9.7)	102(30.0)	78(22.9)	127(37.4)

Table 8 The frequency and percentage of warning and recommendation

Practice	[n(%)]			
	Never	Sometimes	Often	All the time
Warning and recommendation				
- Put in contact lenses before applying any makeup or lotions to avoid contaminating contact lens?	17(5.0)	25(7.4)	62(18.2)	236(69.4)
- Wear contacts lenses longer than prescribed*	155(45.6)	143(42.1)	40(11.8)	2(0.6)
- Sleep in contacts lenses?*	147(43.2)	166(48.8)	25(7.4)	2(0.6)
- Swap contact lenses with another person?*	324(95.3)	11(3.2)	4(1.2)	1(0.3)
- Swim while wearing contact lenses*	217(63.8)	89(26.2)	24(7.1)	10(2.9)
- Replace contact lens storage cases on a frequent basis?	41(12.1)	126(37.1)	93(27.4)	80(23.5)
- If you have eye complication from contact lens, you will go to see the doctor immediately	67(19.7)	94(27.6)	72(21.2)	107(31.5)

* Wrong/bad practice

There were some harmful practices: 26.8% used to rinse contact lenses with tap water, 56.8% used to sleep when wearing contacts lenses, 4.7% swap contact lenses with another person and 36.2% used to swim while wearing contact lenses. (Table 6, 7, 8)

Table 9 shows that the knowledge level was associated with hometown living, monthly income and field of studies ($p < 0.05$). The practice level was associated with sex, age, study level and monthly income ($p < 0.05$) in Table 10.

Table 9 Association between Socio-demographic and knowledge of contact lens use

Socio-demographic Characteristic	Total Respondents (N=340)	Knowledge [n(%)]		p-value
		High	Moderate & Low	
Monthly income				
< 5,000	83	57(68.7)	26(31.3)	0.034*
5,000 - 10,000	207	148(71.5)	59(28.5)	
> 10,000 - 15,000	50	44(88.0)	6(12.0)	
Hometown				
Bangkok	229	159(69.4)	70(30.6)	0.023*
Other	111	90(81.1)	21(18.9)	
Field of study				
Health Science Field	72	63(87.5)	9(12.5)	0.002*
Science Field	42	35(83.3)	7(16.7)	
Engineer Field	40	23(57.5)	17(42.5)	
Art Field	22	17(77.3)	5(22.7)	
Social Field	164	111(67.7)	53(32.3)	

Table 10 Association between Socio-demographic and practice of contact lens use

Socio-demographic Characteristic	Total Respondents (N=340)	Practice [n(%)]		p-value
		High	Moderate & Low	
Sex				
Male	68	45(66.2)	23(33.8)	0.017*
Female	272	217(79.8)	55(20.2)	
Age (Years)				
17-20	145	114(78.6)	31(21.4)	0.018*
21-24	159	127(79.9)	32(20.1)	
> 24	36	21(58.3)	15(41.7)	
Study level				
Bachelor	298	235(78.9)	63(21.1)	0.035*
Master/PhD	42	27(64.3)	15(35.7)	
Monthly income				
< 5,000	83	65(78.3)	18(21.7)	0.022*
5,000 - 10,000	207	166(80.2)	41(19.8)	
>10,000 - 15,000	50	31(62.0)	19(38.0)	

Knowledge and practice score regarding to eye problem protection from contact lens had a positive correlation (correlation coefficient of 0.316). In addition, knowledge score had a statistically significant correlation with practice score ($p < 0.001$).

DISCUSSION

In this study, most of students who used contact lenses were female (80.0%), because they wanted to have better looking, wearing glasses make them look learned or plain students. Similarly, the study in Malaysia showed that majority of the contact lens users were female [6]. The majority (46.8%) of respondents were in the age range 21-24 years like in the Malaysia study [6] because both studies took place in university. More than half of respondents (60.9%) had monthly income of 5,000-10,000 baht, living with their parents – more than half of them in Bangkok (67.4%). These findings suggest that the participants have to bear fewer living expenses and may have more money for purchasing lenses. More than half of respondents used contact lenses to correct vision (57.9%) unlike in the Malaysia study where the main reason for contact lens use was cosmetic [6]. Eye problems in this study were much lower than in a similar study report from India which stated about 80% of contact lens users had eye problems, with 47.7% for discomfort, 38 % dry eye, watering eye 31.5%, red eye 19.4% [7]. Most of respondents (70.9%) agreed that wearing contact

lenses make them more beautiful. This finding is consistent with the finding in Malaysia [6]. About 68% participants agreed that wearing contact offer more comfort than glasses as found in Malaysia [6] and India [7]. About 71% participants had “Good practice” and 56% washed hands thoroughly with soap and drying before handling contact lenses all the times, a percentage much lower than in a similar study report by Tajunisah [6]. Given that in our study 44% of participants did not wash hands all the times we should strongly promote washing hands before handling contact lens all the times. This practice is the first step to prevent eye problems from contact lens. A Thai study about contact lens related Microbial keratitis found that keratitis was related to practicing non proper contact lens care such as using drinking water for lens cleaning or wearing contact lenses while swimming and overnight [8]. These findings are confirmed in our study. Only 31.5% saw the doctor all the time for eye problems, 19.7% never saw a doctor. Other than seeing a doctor, the commonest practice to relieve eye problems is stopping usage of contact lens until eye problems cleared. The knowledge

level and socio-demographic characteristic showed that hometown, monthly income and field of studies was statistically significant associated with knowledge about eye protection from contact lenses problems (Chi-square, $p < 0.05$). The students who lived in Bangkok and had high monthly income maybe had high knowledge about eye problems protection from contact lens more than students who lived outside Bangkok and had low monthly income because in Bangkok there are more eyeglass shops and hospitals than out of Bangkok. Students with more money are more likely to buy contacts lenses in eye shops and hospitals and receive information about contact lens use and eye care more easily from these shops and hospitals. Students from Health Science field had higher knowledge than other fields because Health Science deals with health care more than other fields. The results of the study show that sex, age, study level and monthly income were statistically in significant association with the proper contact lens use and care practice (Chi-square, $p < 0.05$). Females probably have better practice than males. Students who are older, study in high level and have high monthly income may be have better practice than students who younger, study in low level and have low monthly income because age, education level and income may be associated with good hygiene.

It found that knowledge and practice score regarding to eye problem protection from contact lens had a positive correlation in this study so knowledge about contact lenses is very important for having good eye and contact lenses care.

In general wearing contact lenses can help correction of myopia or hypermetropia or astigmatism and, also to improve look appearance and self-imaging. Before purchasing contact lenses the buyer must:

1. Consult a doctor and find out the indication for wearing contact lenses.
2. Search information and learn from doctors, opticians and other reliable sources about contact lens such as type, eye care contact lens care and maintenance, warning and recommendation.

3. Always adhere to proper contact lenses use practice related to insertion, removal, care and maintenance.

Practicing the above advices will help controlling and reducing eye problems from contact lens use.

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