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AWARENESS OF CONTACT LENS WEAR AND CARE AMONG FEMALE MEDICAL STUDENTS IN TAIBAH UNIVERSITY, MEDINAH, SAUDI ARABIA

Hanan A. Neyaz[1], Hana A. Aboauf*[1], Reham M. Kharabah[1], Sarah K. Alrasheed[1], Mohammed A. Kareem[1], Marwa M. Zalat[2]

[1]Medical Interns from Taibah University.
[2]Assistant Professor of Community Medicine, Taibah University.

Corresponding Author: Hanan A. Neyaz

Medical Interns from Taibah University.

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ABSTRACT

Introduction: Recently, contact lenses have become quite popular as a source of an optical correction especially among Saudi females. **Objectives:** This study aims to assess awareness of contact lens wear, and to identify the most common complications of improper contact lenses use among female medical students in Taibah University, Medinah, Saudi Arabia **Subjects and Methods:** A cross sectional study was carried out at medical college of Taibah University in Al-Madinah Al-Monawarah, Kingdom of Saudi Arabia from May 1st to May30th 2016 using semi structured questionnaire. **Results:** Most participants (41%) were using contact lens for cosmetic reasons, (29%) for a refractive errors and the remaining for both reasons. Concerning contact lens use and care, about 64.8 % of the participants prefer wearing contact lenses, compared to 35.2% prefer wearing glasses. 9.3% are often using it weekly and 16.7% are using it daily. Regarding the daily usage 56.8 % of the whole studied sample are wearing contact lens for <8 hs per day, 39.5 % among 8-12 hs and only 3.7% are using it for more than 12 hours. Regarding hygienic practices, majority of the respondents 96.3% clean their contact lenses by lens solution comparing to 3.7% using only tap water. About 75.9% of the participants mentioned that they buy contact lens from the optical shops, 19.8 % from cosmetic center and only 4.3% are buying it from hospitals. Acknowledging about contact lenses complications, a total of 80.9% answered that chronic inflammation of ocular surface and lids is a risk factor for developing complications, comparing to 3.7% who answered no and the rest 15.4% answered I don't know. **Conclusions:** this study concludes that majority of participants did not have the proper knowledge nor the appropriate practice toward the using of contact lens, and majority of participants had chronic inflammation of ocular surface and lids which is a risk factor for developing complications, thus further educational programs and national campaigns are needed to increase the public awareness toward the proper use of contact lens.

KEYWORDS: Awareness, Female, Contact Lens, Saudi Arabia.

INTRODUCTION

Contact lenses are considered one of the optical devices worn on the eye, placed directly on the surface of the cornea.[1] Several types of hard and soft contact lenses are available and can be used to correct refractive errors, cosmetic or therapeutic reasons in some conditions such as keratoconus and damage to the cornea caused by injury or infection.[2,3] Recently, contact lenses have become quite popular as a source of an optical correction especially through Saudi females because they provide a convenient way of correcting refractive errors and have more advantages when compared with spectacles.[4]

Improper use and insufficient care of contact lenses may lead to an infection and inflammation of cornea or conjunctiva by various types of microorganisms in the presence of reduced tissue resistance.[5]

One of the major factors that causes contact lens complications is noncompliance to the practitioner's instructions on the use of contact lenses and care products.[6] these complications include dryness of the eye, giant papillary conjunctivitis, corneal abrasion, corneal edema, corneal ulcer, keratitis andneovascularization.[7]

Problems caused by wearing contact lenses can be prevented by Ocular health education especially knowledge in the right and careful practice related to contact lens. Person's conception regarding her own knowledge and practice of wearing contact lens can be assessed.[8]

So, this study aims to assess awareness of contact lens wear and to identify the most common complications of improper contact lenses use among female medical students in Taibah University, Medinah, Saudi Arabia.

SUBJECTS AND METHODS

I- Study design and setting

A cross sectional study was carried out at Taibah University in Al-Madinah Al-Monawarah, Kingdom of Saudi Arabia.

II- Study population

Undergraduate female medical students (from the 1st to the 5th year)of Taibah University during their study period of May 1st to May30th 2016.

III- Sample size

Any female medical student (from the 1st to the 5th year)who has ever worn contact lenses for any period of time and for whatever reason was invited to participate in the study. The total respondent were 294 students from total 374 with response rate 78.6%.

IV- Data collection tools and instruments

Data was collected by pre-tested semi structured questionnaire which prepared by the research team. The questionnaire includes three parts:

Part I: questions on ***socio-demographic*** information as age, residence, marital status, educational level/years in university.

PartII: questions focusing on ***knowledge, attitude, and practice*** of contact lens wear and daily care.

Part III: questions on ***awareness toward common complication*** that may arise from malpractice of contact lens use and improper hygienic care.

The questionnaire was sent by e-mail to all female medical students of each year through the student leader of each year.

V- Pilot study:

Before the start of the study, the semi-structured questionnaires was pre-tested on 10 students to explore if there is any ambiguity or items leading to misunderstanding in the questionnaire in order to reach to its current final form. These 10 students weren't included in the main survey.

VI- Validity and reliability of the questionnaire

The items in the questionnaire were obtained from numbers of validated questionnaires and validity was completed by reviewing it by 3 experts. The questionnaire was re-administered after a week to the same sample of the pilot study to check test-retest reliability.

VII- Data management

Data was coded, entered, and analyzed using the Statistical Package for Social Science (SPSS) version 21.0 (SPSS, Chicago, IL, USA).

VIII- Ethical considerations

Official permission was obtained from the scientific ethical committee of the colleagues. Informed consent was obtained from all the participants after describing the aim of the study. Privacy and confidentiality was assured.

Financial Support: This research was funded totally by the authors.

RESULTS

A total 294 female medical students were included in the study. One hundred and sixty two (55.1%) students were using contact lenses as shown in figure 1. Table1 shows the socio-demographic data of all the responders, about154 (95.1%) students who said yes for wearing contact lenses were from urban region compared to8 students (4.9%)from rural region. Highest percentage of using contact lenses was among 4th years medical students 41 (25.3%).

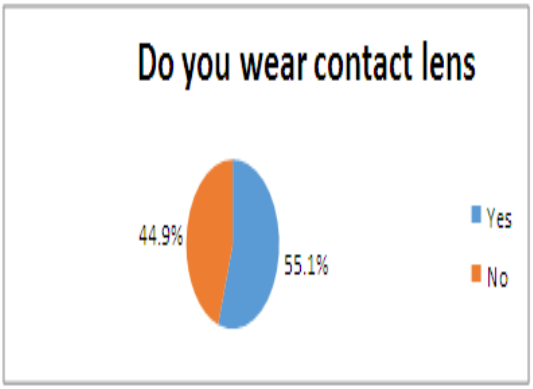

Figure1 Percentage of the students who used contact lenses

Table 1: The socio demographic characteristics of the studied medical students

Do you wear contact lenses				
	Yes		No	
Mean ages	**21.82+1.5**		**21.56+2.7**	
Residency urban	154	95.1%	120	90.9%
Rural	8	4.9%	12	9.1%
Education level 1st year	32	19.8%	15	11.4%
2nd years	22	13.6%	23	17.4%
3rdyears	28	17.3%	39	29.5%
4th years	41	25.3%	28	21.2%
5th years	39	24.1%	27	20.5%
Total	162		132	

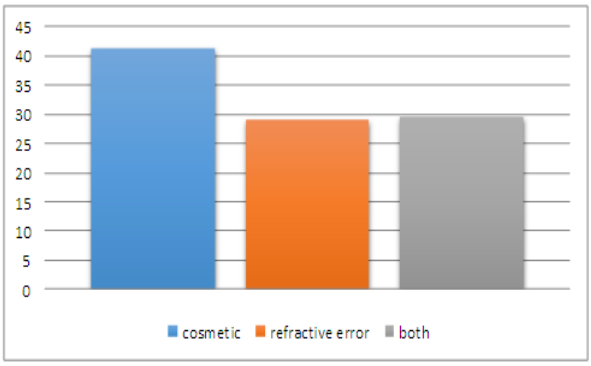

Figure3: Percentage of the reasons for using contact lenses

Forty one percent of the participants claimed using contact lenses for cosmetic reasons, 29% for refractive error and 29.6 % are wearing it for both reasons.

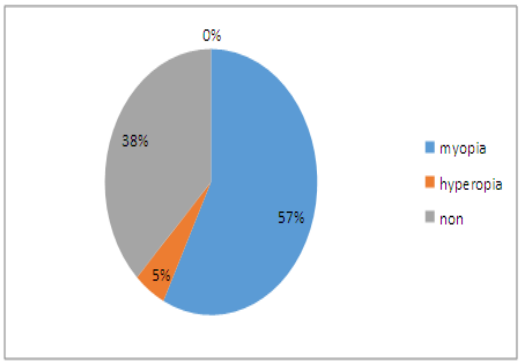

Figure2: Percentage of refractive error type

Around half of the studied sample 57.4 % are myopic and only 4.9 % are hyperopic and the remaining 37.7% are normal.

Table 2: knowledge of the students who used contact lenses

Knowledge	Numbers	Percentage
When contact lens expired		
after 6 mon	19	11.7
after 8 mon	143	88.3
When contact solution expired		
after3mon	41	25.3
after6mon	24	14.8
after8mon	5	3.1
after12mon	19	11.7
I don't know	73	45.1
From where you get yours information (n= 198)*		
Family	60	37.0
Net media	83	51.0
Eye care provider	55	34.0
Organism (responders could choose more than one answer)		
Pseudomonas aeruginosa	67	41.4
Acanthamoeba castellani	37	22.8
Chlamydia trachomatis	19	11.7
Neisseria gonorrheae	6	3.7
Staphylococcus aureus	34	21
Adenoviruses	6	3.7
Total	162	55.1

*****(as responders could choose more than one answer)
One hundred forty three students 88.3% of the participants were thinking that contact lens expired after 8 months and 11.7% of them though that it expires after 6 months. About 45.1% of the students did not have knowledge on the duration of solution used for cleaning contact lens, 25.3% thought it expired after 3months andabout14.8% after 6 months, while11.7% were favoring 12 months. Fifty- one (51%) of the studied group get their knowledge from the net media, 37% from family members and only 34% of them from eye care provider were they had the option to choose more than one. Regarding which organism cause infection among CL user pseudomonas and Acanthameoba were thought to be the most organism causing ulcer with 41.4% and 22.8% respectively, as shown in Table (2)

Table 3:Attitude of the students who used contact lenses

Attitude	Numbers	Percentage
Prefer		
Contact lens	105	64.8
Glasses	57	35.2
Did you ever use contact lens for ≥ 6months		
yes	84	51.9
no	78	48.1
Contact lens solution more than 3 months		
Yes	106	65.4
No	56	34.6
How long have you been using contact lens		
<6months	37	22.8
6months to 1 year	20	12.3
>1years to 2 years	24	14.8
>2years	81	50
How long often used		
Daily	27	16.7
Weekly	15	9.3
In parties and special occasion	120	74.1
How long often used daily		
<8hs	92	56.8
8-12hs	64	39.5
>12hs	6	3.7
From where often buy it		
Cosmetic center	32	19.8
Optical shop	123	75.9
Hospital	7	4.3
CL worth wearing		
Yes	90	55.9
No	23	14.2
I don't know	49	30.2
No point from this question can we deleted		
Do you recommend contact lens		
Yes	73	45.1
No	50	30.9
I don't know	39	24.1
Water as storage solution		
Yes	134	82.7
No	13	8.0
I don't know	15	9.3
Total	162	55.1

Table (3)shows the attitude of the studied sample toward contact lenses use and care. About 64.8% of the participants prefer wearing contact lenses, compared to 35.2% prefer wearing glasses. About 51.9% of the participants use contact lenses for 6 months or more, whereas 48.1% are not. 56.4% are using contact lens solution for more than 6 months.

Regarding the duration of contact lens usage, 22.8 % are using it for less than 6 months, 12.3% from 6 months to 1 year, 14,8% from >1 year to 2 years and the remaining 50% are using it for more than 2 years. About74.1% are using contact lens in parties and special occasion, 9.3% are often using it weekly and 16.7% are using it daily. Regarding the daily usage 56.8% of the whole studied sample are wearing contact lens for <8 hs per day, 39.5% among 8-12 hs and only 3.7% are using it for more than 12 hours.

About 75.9% of the participants claimed that they are buying contact lens from the optical shops, 19.8% from cosmetic center and only 4.3% are buying it from hospitals.

134 used water as storage solution while only 13 did not .Regarding if they were going to recommend Contact lens 73 said yes while 50 said no and the reminder 39 said they don't know.

Table 4The contact lens user hygienic practice

Hygiene	Numbers	Percentage
Clean contact lens by		
Tap water	6	3.7
Contact lens solution	156	96.3
How often clean it		
Always	43	26.5
Usually	33	20.4
Sometimes	32	19.8
Rarely	6	3.7
Only when you use	48	29.6
Clean hands before use contact lens		
Yes	128	79
No	10	6.2
sometimes	24	14.8
Remove contact lens before sleeping		
Yes	9	5.6
No	29	17.9
Sometimes	124	76.5
Remove contact lens before Swimming		
Yes	142	87.7
No	4	2.5
Sometimes	16	9.8
Total	162	55.1

The vast majority of the contact lens users 96.3% (156) claimed that they clean their contact lenses by lens solution. It was found that 29.6% of participants cleaned their contact lenses only when they use them and 26.5% replied with always when asked about how often they clean their contact lenses, the remaining replied with usually, sometimes and rarely 20.4%, 19.8% and 3.7%, respectively.

The study has shown that nearly three fourth of the participants 79% (128) cleaned their hands before using the contact lenses. Among the studied sample only 5.6% (9) removed the contact lenses before sleeping, while the majority 76.5% (124) sometimes removed them and the remaining 17.9% (29) slept while wearing the contact lenses. On the contrary 87% (142) removed the contact lenses before swimming, 9.9% sometimes removed them and 2.5% (4) did not, as shown in Table (4).

Table 5The contact lens user complications

Complication	Numbers	Percentage
Chronic inflammation of ocular surface and lid risk for complication		
Yes	131	80.9
No	6	3.7
I don't know	25	15.4
Allergy due to wearing CL		
Yes	41	25.3
No	114	70.4
I don't know	7	4.3
Corneal ulcer due to wearing CL		
Yes	26	16
No	129	79.6
I don't know	7	4.3
Conjunctivitis due to wearing CL		
Yes	28	17.3
No	120	74.1
I don't know	14	8.6
Eye redness due to wearing CL		
Yes	113	69.8
No	42	25.9
I don't know	7	4.3
Corneal opacities due to wearing CL		
Yes	19	11.7
No	128	79
I don't know	15	9.3
Complication can cause loss of vision		
Yes	98	60.5
No	27	16.1
I don't know	37	22.8

Regarding complications about 131 thought that chronic inflammation of ocular surface and lids is a risk factor for developing complications,6 did not think so and 25 said it I don't know could be risk. 41 of CL wearer developed allergy while 114 did not. Regarding corneal ulcer only 26 of user developed it while 126 did not and the rest (7) said they don't know. Only 28 acquired conjunctivitis due to contact lens while 120 did not and 14 don't know if they had acquired it or not . Most of the responders 113 suffered from eye redness and 42 did not while only 7 did not know if they ever suffered. About 19 of the user had corneal opacification, 128 didn't and 16 didn't know if they had it. 98 believed that CL can cause blindness, 28 didn't while 49 didn't know if they can cause it .

DISCUSSION

Up to our knowledge, this is the first study to evaluate the level of knowledge, attitude and practice of contact lens wear and care among female medical students in Taibah University, Medinah, Saudi Arabia.

The person's perception regarding his own knowledge of contact lens wear is very crucial in order to prevent complications resulting from the inappropriate use of contact lenses.

Similar to a previous study done by **(Reem .A. Alasiri et al,2015**), our study demonstrated higher prevalence of medical students using contact lens (55.1%) and majority were using it for cosmetic purpose (41%) compared to (29%) for refractive errors.

On the other hand, lower prevalence of contact lens wear was demonstrated in other previous studies by **(Khan et al, Giri et al, and Vidotti et al**), which were (9.8%, 17.1%, 27.4% respectively).

The possible explanation for the high prevalence of contact lens usage in the present study may be attributed to the fact that all our participants were female and the wide range of contact lens availability nowadays than in the past.

When we asked about the source of Knowledge, (51%) got their knowledge from the Net media, and (34%) got it from their eye care provider. This percent indicates that further educational programs should be held to increase the contact lens wearers' knowledge.

In the present study only (35.2%) preferred wearing glasses while the majority (64.8%) liked contact lenses. This may be related to the fact that majority of the responders wear contact lenses for cosmetic reasons.

In study conducted by (**Yee and his colleague**)(68%) of the contact lens users interviewed used 1-3 month disposable contact lenses. In the present study (51.9%) change their contact lenses after 6 months and (48.1%) were wearing contact lenses for less than 6 months most likely this is because changing contact lenses after 6 months is cost effective, also the students in this study wore contact lenses in parties and special occasion so they may forget to change it once in a while.

There is no universal recommendation approved for the actual duration for validity of contact lens solution, however most companies manufacture recommended to be replaced at least every 90 days after opening and the same recommended by most of ophthalmologist as well as for replacement of lens case. In our study (45.1%) of the students did not have knowledge regarding validity duration of solution used for cleaning contact lens ,which was also observed in a study by (**Mahadevan et al**) in which (46.03%) of the students did not have knowledge on the duration of solution used for cleaning contact. This may put them at risk of ocular complications secondary to infections.

Using contact lens solution beyond the discard date could result in contamination of the solution. In our study (65.4%) used contact lens solution for more than 3 month similar to (**Reem .A.Alasiri's et al**) study which stated that (71.7%) used the solution for more than 3 month . In another study by (**Giri et al**)Only (37.93%) students were aware that the lens solution can be used only for 3 months, once the seal of the solution bottle is broken. This is could be due to lack of knowledge regarding contact solution expiration duration among the participants.

Individuals who practiced prolonged wear of contact lens were more prone to Pseudomonas and Acanthamoeba infections 16. In our study (16.7%) were daily user while (9.3%) weekly and (74.1%) wore it in parties and special occasion. This is similar to the result in a study conducted by (**Reem .A.Alasiri et al**) and her colleagues among these students mostly were occasional users of contact lenses(69.3%), while few were daily users (30.7%).

Most of our students were wearing contact lenses for less than 8 hours in a day(56.8%) which is higher compared to study by (**Yee et al**) in which (35.2%) wore the contact lenses for (4-8 hours/day) .The average use of contact lenses for more than 12 hours in a day was only (3.7%)which is much less compared to study by (**Giri et al and Mahadevan et al**) in which (65.52%-24%) wore contact lenses for (10-15 hours / day) respectively .

Many contact lens wearers see contact lens solely as a cosmetic item and not as a medical device(9) . This attitude leads to the purchase of contact lens from the cosmetic shops that offer them a popular companies products without prescription. Contact lenses obtained from cosmetic centers and optical shops are more found to be associated with more ocular complications comparing to that prescribed from hospitals 17. In our study, (75.9 %) of students purchased their contact lenses from optical shop while (19.8%) had obtained their lenses from cosmetic centers and only (4.3%) got them prescribed by an optometrist in hospitals. Similar to observation made by (**Abahussin et al**) where the main purchasing locations were optical shops (51%), beauty salons (38%), and pharmacies (11%).

On the other hands (67%- 52%) purchased their contact lenses from cosmetic centers in study constructed by (**Reem .A.Alasiri et al**) and (**Yousef. Aldebasi et al**) respectively. In another study by **Kumar** and his majority (52%) got their contact lens from cosmetic center too, followed by optical shop with (38%) and only (8%) got the lens prescribed from hospital.

Although CDC reported that water can cause soft contact lens to change shape, swell, stick to the eye and is dangerous practice as they could be at risk for acanthamoeba infections as these organisms are commonly found in tap water18.In our study there was higher prevalence (82.7%) of medical student use water as storage solution. In controversially a study by (**Giri et al**)only (20.68%) used water as storage solution. This practice might be related to the fact that contact lens solution is more costly in addition to lack of their awareness towards this kind of ocular complication.

In our study (3.7%) used tap water to clean their contact lenses and (96.3%) used contact lens solution which is similar to study conducted by (**Yee et al**) in which (94.4%) used lens solution to wash their lens.

Approximately (26.5%) of respondents in this study always clean their contact lenses, (20.4%) usually clean it ,(19.8 %) sometimes try to clean their contact lenses , (3.7 %)rarely clean it and the majority of the participants (29.6%) clean their contact lenses only when they use it as most of them occasionally wore lenses in parties and special occasion , while regarding **Hickson** study (33%) reported cleaning monthly or less often.

Poor hand hygiene is one of the well-established risk factors for CL-related complications 20-21. (79%) of student in our study cleaned their hands before using contact lenses. Similar results were observed in studies conducted at different regions of Saudi Arabia; in Jeddah , (**Reem .A.Alasiri**) and her colleagues and in Riyadh (**Abahussin et al**) reported that(71.7), (89.4%) respectively of participants cleaned their hands before using contact lens.

In our study, (17.9%) of the students were sleeping with the contact lenses similar to a study conducted in India by (**Giri et al**), stated that (18.96%) of medical student didn't remove their lenses during sleep In Riyadh, (**Abahussin et al**) , reported that (7.7%) admitted to

occasional overnight wear of their CL ,while in study conduct in Malaysia by (**Yee et al**) only (1.6%) keep wearing contact lens while sleeping . Most of contact lens wearer who sleep with their contact lens had refractive error and in our study only (29%) used it for this purpose this may explain the low prevalence of this practice.

Although in our study (2.5%)remove their contact lenses before swimming and(9.9%)sometimes remove it before swimming , on the other hand ,study of (**Jennifer et al**) in united states observed that (61%) wearing contact lenses during swimming. This might be due to the lack of swimming sport among females in our society.

There are some common ocular complications a contact lens user may experience including; dry eye, red eye, excessive tearing, pain in the eyes, photosensitivity , allergic conjunctivitis, and corneal ulcer (9,18). The students in this study mainly faced less severe complications; red eye (69.8%), some experienced corneal ulcer (16%) at some point during their usage. Only (12.2%)of the participants had corneal ulcer in a study conducted by (**Reem.A. Alasiri et al**). Education must be given that removal of contact lens at the first hint of eye symptoms is absolutely vital for early recovery from the complications.

CONCLUSION

In conclusion our study showed that majority of participants did not have the proper knowledge nor the appropriate practice toward the using of contact lens, most of the students wore them for cosmetic purposes and got them from optical shops and used tape water as solution to store the contact lens which can lead to serious ophthalmic complications

we also found that the majority obtained their information and knowledge from net media thus further educational programs and national campaigns are needed to increase the public awareness toward the proper use of contact lens.

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