

Knowledge, Attitudes and Practices of Self-Ear Cleaning Among Medical Students, Majmaah University, Saudi Arabia

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ABSTRACT

Background: Wax is the normal and healthy substance that has several functions, the quantity of production differs between individuals. Also, its components vary according to race. Most of the individuals of the population are unaware of the disorders that occur as a result of the unhygienic maintenance of ears. Using cotton buds to clean ears is very common, the insertion of these buds is unnecessary as it causes several complications such as trauma, retention of cotton buds and impacted ear wax.

Aim: To assess the knowledge, attitude, and practice of medical students regarding self-ear cleaning.

Methods: This is an institutional based cross-sectional study which was conducted at Majmaah University in Majmaah city. The study included students from 2nd to 6th year of the College of Medicine. A questionnaire was used to investigate demographics of participants, knowledge, attitude, and practice regarding self-ear cleaning.

Results: The present study included 258 students, 71.7% of them were males, and 28.3% were females. There were 44.6% of students had good knowledge, while 55.4% had poor knowledge. Regarding attitude, 65.5% of students were cotton bud users, the most common reason for self-ear

cleaning was hygiene 40.7%. Regarding practice, there were 88.2% of students had low-risk practice.

Conclusion: There was poor knowledge about self-ear cleaning among students, while there were a positive attitude and excellent practice. Awareness programs are required to be applied.

Keywords: Cotton Bud, Self-Ear Cleaning, Saudi Arabia, Medical Students.

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INTRODUCTION

The habit of cleaning the external auditory canal (EAC) with cotton buds and other objects is a common practice.¹ Anecdotally among the lay public, it is believed that the ear needs to be cleaned frequently to rid it of dirt in the form of ear wax. This is usually achieved by the insertion of objects into one's own ears most often with Q-tips also known as cotton buds.² This common practice called Self ear-cleaning, has been reported to be very common in several places including Malaysia, England, and the United States.³ The wax resulted from combined secretions of the ceruminous and sebaceous glands and desquamated epithelium from the tympanic membrane and skin lining the external auditory canal form the ear wax,¹ well established that earwax (cerumen) protects, cleans, and lubricates the skin of the ear canal and that

the normal canal has a self-cleansing mechanism (a "conveyor belt" process of epithelial migration, aided by jaw movement) and does not need to be cleaned. By this process, cerumen in the canal is moved outward along with dirt, dust, and particulate matter within the ear canal. Eventually, the epithelium reaches the outside of the ear and flakes off.³ The most common object used for self ear cleaning by majority of the population is the cotton bud. In a survey involving 239 responders in Southeast England, 68% admitted to using cotton buds in their ears while in Kaduna and Osun states in Nigeria, 90% and 93.4% of respondents respectively used cotton bud for self-ear cleaning.² Cotton buds or cotton swabs consist of a small wad of cotton wrapped around one or both ends of a short rod, usually made of either wood,

rolled paper, or plastic. The cotton swab was invented in 1923 by Leo Gersternzang who observed his wife to have attached wads of cotton on toothpicks to clean his baby's ear.⁴ Some of the reasons given for this practice include; ear itchiness, irritation, ear blockage, ear pain and discharge while others see it as normal habit.⁵ Medical concerns over the use of cotton buds and consequent complications were first reported in 1972, with reports of tympanic membrane perforation, otitis externa, and cerumen impaction. Nowadays, cotton bud related injuries have become a common reason for attendances at ear, nose, and throat clinics.² Insertion of cotton buds inside ears is not only unnecessary but also potentially dangerous and has widely been condemned worldwide by otolaryngologists. This is due to well documented complications, including trauma, impacted ear wax, infection and retention of the cotton bud.⁴ Otitis externa and cerumen impaction are thought to be associated with self-ear cleaning. Otitis externa is an infection of external ear with potentially serious implications for hearing. Acute otitis externa is one of the most common infections encountered by clinicians. The annual incidence is between 1:100 and 1:250 of the general population with regional variations based on age and geography, and a lifetime incidence of up to 10%. Cerumen impaction is defined as an accumulation of cerumen that causes symptoms, prevents a needed assessment of the ear canal/tympanic membrane, audiovestibular system, or

both. It is one of the most common reasons that patients seek medical care for ear-related problems. It can affect up to 6% of the general population and a much higher percentage of the elderly and persons with cognitive impairment. Excessive or impacted cerumen is present in approximately 1 in 10 children, 1 in 20 adults, and 1 in 3 older adults. In the United States, cerumen accumulation leads to 12 million patient visits and 8 million cerumen removal procedures annually.³ In a study, from the United States cotton buds were associated with 75% of cerumen occlusion on the left side, but not on the Right side. More so, cotton bud-induced injury was reported to be common.² Also, cerumen removal is the most common ear, nose and throat (ENT) procedure performed in primary care.³ Awareness of cotton bud related complications is an important public health problem.²

METHODS

This was a community-based, cross-sectional study conducted at Majmaah University, Majmaah, Riyadh region in Saudi Arabia All male and female students from 2nd year to 6th year of the College of Medicine, Majmaah University were included in the study. Data were collected by a pre-tested questionnaire and analyzed by SPSS version 22. The ethical approval was obtained from Majmaah University ethics committee.

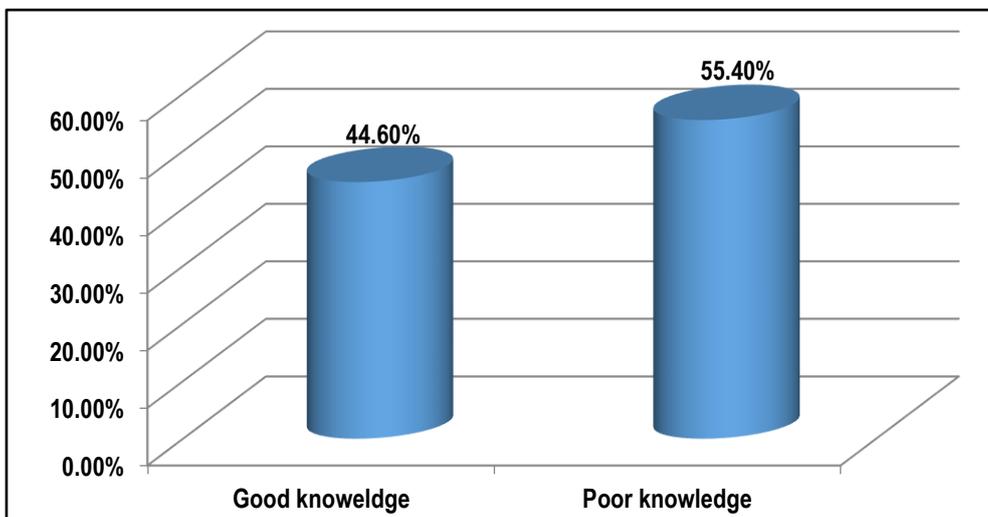


Fig 1: Prevalence of knowledge levels among medical students

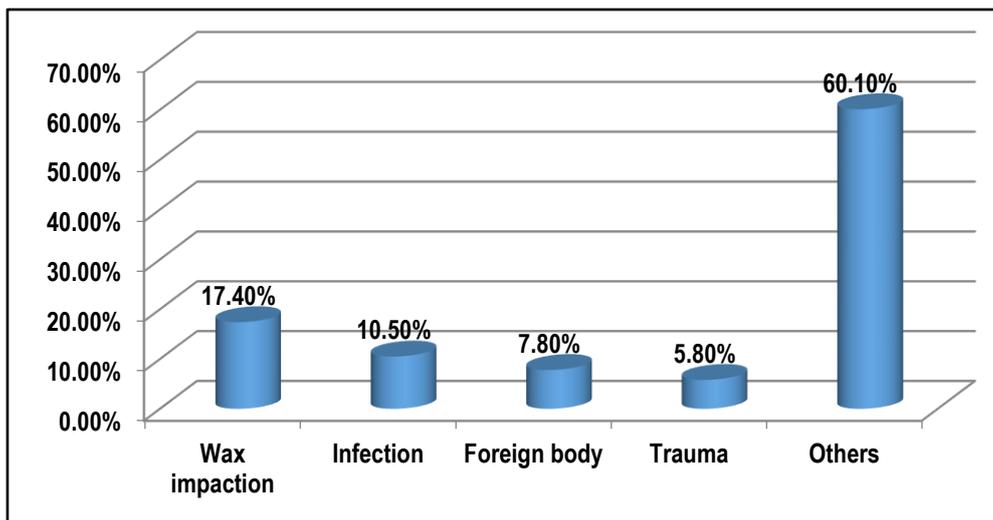


Fig 2: Reasons for visiting ENT clinic

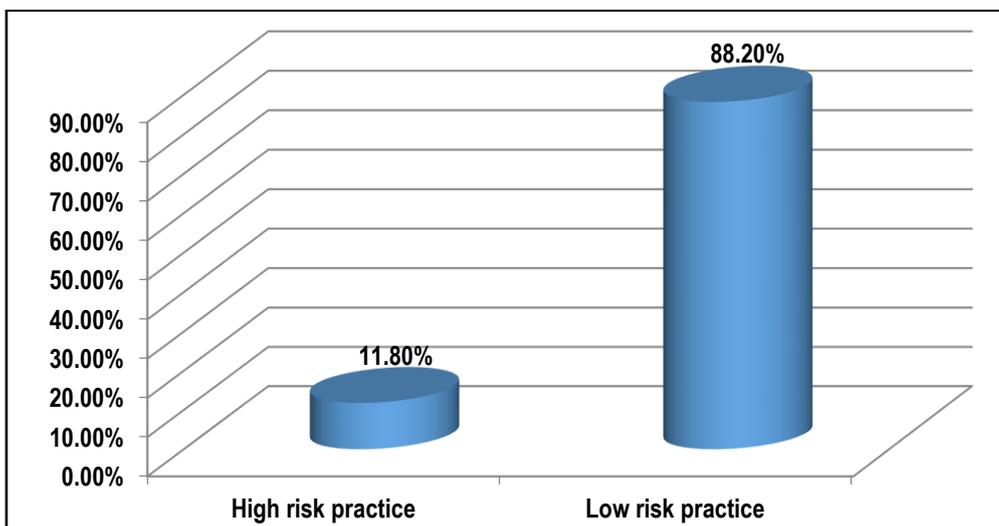


Fig3: Prevalence of practice among students

Table 1: Knowledge regarding use of cotton bud

Questions	Description (n=258)
Whether cotton bud can damage ear	
Yes	144 (55.8)
No	34 (13.2)
Not sure	80 (31)
Benefits of using cotton bud	
Yes	150 (58.1)
No	34 (13.2)
Not sure	74 (28.7)
Complications from use of cotton bud	
Yes	133 (51.6)
No	40 (15.5)
Not sure	85 (32.9)
Has Information on use of cotton bud	146 (56.6)
Information source	
Health talk in hospital	53 (36.3)
Friends/ neighbor	41 (28.1)
Media (radio/TV)	35 (24)
Publication/journal	17 (11.6)

RESULTS

The present study included 258 medical students, 81 (31.4%) of them were in the 2nd academic year, while 51 (19.8%), 42 (16.3%), 55 (21.3%) and 29 (11.2%) were in the 3rd, 4th, 5th and 6th academic years respectively. Most of students 200 (77.5%) were in the age range of 21-24 years old, while 49 (19%) and 9 (3.5%) were in the age range of <20 years old and >25 years old respectively. All of them were singles, and the majority was males 185 (71.7%), while there were 73 (28.3%) females. 145 (56.2%) were from Majmaah area, 66 (25.6%) were from Riyadh area, while 47 (18.2%) were from other areas. 72 (27.9%) of students had GPA less than 3.4, 74 (28.7%) had 3.5-3.9 of GPA, 50 (19.4%) and 62 (24%) had GPA of 4-4.5 and 4.6-5 respectively. The overall knowledge of participants was investigated, 115 (44.6%) of students had good knowledge with ≥60% of the total score, while 143 (55.4%) had poor knowledge with <60% of total

knowledge score, figure 1. There were 144 (55.8%) of students reported that cotton bud could danger ear, while 34 (13.2%) said no and 80 (31%) weren't sure. 150 (85.1%) mentioned that there were benefits for cotton bud, whereas 34 (13.2%) denied that and 74 (28.7%) weren't sure. 133 (51.6%) reported that there were complications result from the cotton bud, 40(15.5%) and 85 (32.9%) denied that and weren't sure respectively. 146 (56.6%) of students had information on using of the cotton bud, the most common source was health talk in hospital 53 (36.3%), followed by friends and neighbors 41 (28.1%), the media and publications 35 (24%) and 17 (11.6%) respectively, table 1.

Regarding attitude toward ear cleaning with cotton bud, there were 169(65.5%) of participants were cotton bud users, the most common reason for self-ear cleaning was hygiene 105 (40.7%) followed by other reasons 84 (32.6 %) and ear wax removal

46(17.8%) then being a habit, itchiness, blockage, and irritation; 14 (5.4%), 12 (4.7%), 4 (1.6%) and 2 (0.8%) respectively. The students reported several reasons to go to ENT clinic, figure 2, including wax impaction 45 (17.4%), infection 27 (10.5%), foreign

body 20 (7.8%), trauma 15 (5.8%) and other reasons 155 (60.1%). In practice part, it was found that there was low-risk practice ($\geq 60\%$ of total practice score) 149 (88.2%), whereas high-risk practice ($< 60\%$ of total practice score) was 20(11.8%), figure 3.

Table 2: Practice and behavior regarding using of cotton buds

Questions	Description (n=169)
Duration of use of cotton bud (years)	
< 10 years	79 (46.7)
> 10 years	90 (53.3)
Frequency of using cotton bud for ear cleansing	
Occasionally	128 (75.7)
Once daily	32 (18.9)
Twice daily	3 (1.8)
> Twice daily	6 (3.6)
Ear frequently cleaned with cotton bud	
Clean both ears equally	154 (91.1)
Clean right ear more	12 (7.1)
Clean left ear more	3 (1.8)
Ownership of cotton buds	138 (81.7)
Objects used for self-ear cleaning*	
Cotton bud	142 (84)
Key	10 (5.9)
Matchstick	6 (3.6)
Feather	1 (0.6)
Other objects	17 (10.1)
Overall Practice	
High-risk practices ($\geq 60\%$ of total practice score)	20 (11.8)
Low-risk practices ($< 60\%$ of total practice score)	149 (88.2)

Table 3: Correlations between knowledge and demographics of students

Demographics	Overall Knowledge		P value
	Good (n=115)	Poor (n=143)	
Age			
< 20 years	20 (17.4)	29 (20.3)	0.643
21-24	92 (80)	108 (75.5)	
25+	3 (2.6)	6 (4.2)	
Gender			
Male	74 (64.3)	111 (77.6)	0.019
Female	41 (35.7)	32 (22.4)	
Residence			
Majmaah	66 (57.4)	79 (55.2)	0.916
Riyadh	28 (24.3)	38 (26.6)	
Others	21 (18.3)	26 (18.2)	
Academic year			
2nd year	31 (27)	50 (35)	0.694
3rd year	23 (20)	28 (19.6)	
4th year	20 (17.4)	22 (15.4)	
5th year	26 (22.6)	29 (20.3)	
6th year	15 (13)	14 (9.8)	
GPA			
<3.4	28 (24.3)	44 (30.8)	0.178
3.5-3.9	39 (33.9)	35 (24.5)	
4-4.5	25 (21.7)	25 (17.5)	
4.6-5	23 (20)	39 (27.3)	

Table 4: Correlations between Attitude and demographics of students

Demographics	Attitudes towards ear cleaning with a cotton bud		P value
	Users of Cotton Bud (n=169)	Non users of Cotton Bud (n=89)	
Age			
< 20 years	29 (17.2)	20 (22.5)	0.460
21-24	133 (78.7)	67 (75.3)	
25+	7 (4.1)	2 (2.2)	
Gender			
Male	122 (72.2)	63 (70.8)	0.812
Female	47 (27.8)	26 (29.2)	
Residence			
Majmaah	89 (52.7)	56 (62.9)	0.066
Riyadh	51 (30.2)	15 (16.9)	
Others	29 (17.2)	18 (20.2)	
Academic year			
2nd year	50 (29.6)	31 (34.8)	0.151
3rd year	37 (21.9)	14 (15.7)	
4th year	28 (16.6)	14 (15.7)	
5th year	40 (23.7)	15 (16.9)	
6th year	14 (8.3)	15 (16.9)	
GPA			
<3.4	49 (29)	23 (25.8)	0.824
3.5-3.9	49 (29)	25 (28.1)	
4-4.5	30 (17.8)	20 (22.5)	
4.6-5	41 (24.3)	21 (23.6)	
Overall Knowledge			
Good	62 (36.7)	53 (59.6)	<0.001
Poor	107 (63.3)	36 (40.4)	

Table 5: Correlations between practice and demographics of students

Demographics	Overall Practice		P value
	High Risk (n=20)	Low Risk (n=149)	
Age			
< 20 years	5 (25)	24 (16.1)	0.016
21-24	12 (60)	121 (81.2)	
25+	3 (15)	4 (2.7)	
Gender			
Male	13 (65)	109 (73.2)	0.445
Female	7 (35)	40 (26.8)	
Residence			
Majmaah	12 (60)	77 (51.7)	0.635
Riyadh	6 (30)	45 (30.2)	
Others	2 (10)	27 (18.1)	
Academic year			
2nd year	9 (45)	41 (27.5)	0.245
3rd year	4 (20)	33 (22.1)	
4th year	4 (20)	24 (16.1)	
5th year	1 (5)	39 (26.2)	
6th year	2 (10)	12 (8.1)	
GPA			
<3.4	3 (15)	46 (30.9)	0.052
3.5-3.9	7 (35)	42 (28.2)	
4-4.5	1 (5)	29 (19.5)	
4.6-5	9 (45)	32 (21.5)	
Overall Knowledge			
Good	6 (30)	56 (37.6)	0.509
Poor	14 (70)	93 (62.4)	

There were 79 (46.7%) of students used cotton buds for less than ten years, while 90 (53.3%) used it for more than ten years.

Majority of students 128 (75.7%) used cotton buds for ear cleaning occasionally, 32 (18.9%) used it once daily, 3 (1.8%) used it twice daily, and 6 (3.6%) used it more than twice daily. The large majority of students 154 (91.1%) reported cleaning both ears equally, while 12 (7.1%) and 3 (1.8%) reported cleaning right ear more and left ear more respectively. 138 (81.7%) own cotton buds. However 142 (84%) used cotton buds for self-ear cleaning, 10 (5.9%) used key, 6 (3.6%) used matchstick, 1 (0.6%) used a feather, and 17 (10.1%) reported using other objects, table 2.

The correlations between demographics with knowledge, attitude, and practice were investigated. Regarding knowledge, the only significant correlation (P -value=0.019) was found between gender and knowledge, where male tended to have poor knowledge than females, table 3. Other demographics including age, residence, academic year and GPA had no significant effect on the knowledge level, table 3.

Regarding attitude, there was only one significant correlation (P -value<0.001) which was between attitude and knowledge level and attitude, the users of cotton buds had poor knowledge 107 (63.3%), while those who didn't use buds had good knowledge 53 (59.6%), table 4. All studies demographics had no significant effect on the attitude of students, table 4.

Regarding practice, the age was significantly (P -value=0.01) correlated with practice, the students with age range of 21-24 years old tended to report high and low practice 12 (60%) and 121 (81.2%) respectively, table 5. Other demographic had no significant effect on practice. Also knowledge level had no significant effect on practice, table 5.

DISCUSSION

In the present study we assessed knowledge, attitude and practice of self-ear cleaning among medical students. Regarding knowledge of students, there were 55.8% knew that cotton buds could damage the ear and 51.6% knew that it had complications, however higher percent 58.1% reported that using of cotton buds had benefits. The main source of information about cotton bud was health talk in hospital (36.6%), while publication represented the least source of information (11.6%). The overall knowledge was represented either good or poor, there was poor knowledge of knowledge, where higher percent 55.4% had overall poor knowledge, while 44.6% had overall good knowledge.

In agreement with our findings, a study by Gabriel et al.⁴ showed that 22.5% of participants knew that cotton bud cause complications and 44.9% knew it causes damage, however 61.2% reported that using cotton buds had benefits, There were 25.9% only had information about cotton buds and this was lower than our rate, the main source of information was reported to be health talk in hospital (18.3%), while publication as a source of information was the least and this was in agreement with our study.⁴

One study from Nigeria showed that 55.1% reported that using of cotton bud wasn't beneficial², while another study³ 74.2% of respondents thought it was beneficial. Globally, the use of cotton buds has been condemned as it causes several complications including impacted ear wax, infection and trauma.⁶ Also individuals use not only cotton buds, but also pins and other tools which can cause penetration for the tympanic membrane.⁷ In the

current study, regarding the attitude of students, it was found that high percent of students 65.5% were users of cotton bud and the most common reason for using it was hygiene and the least reason was irritation (0.8%), removal of ear wax and itchiness represented 17.8% and 4.7% respectively, 5.4% of students reported that it was a habit and 1.6% said they cleaned their ears as they felt they are blocked, while 32.6% mentioned other reasons. The most common reason for visiting the ENT clinic was different reasons (60.1%), while the most common reason mentioned was wax impaction 17.4% followed by infection 10.5%, then foreign bodies 7.8% and trauma 5.8%.

Different rates of using cotton buds were reported by several studies, a study from England showed that 68% were using cotton buds⁸, while in Kaduna⁹, Osun states³ and northwestern Nigeria² reported using rate of 90%, 93.4% and 44.9% respectively. The study from northwestern Nigeria² revealed that the main reason for using cotton buds was hygiene and this was in agreement with our findings. A study from Nigeria showed that 92.8% were using cotton buds and the reasons for using cotton buds were itching representing 57.8% as the main reason, followed by being a habit (15.6%) then irritation (10.5%), blockage (7.8%) and discharge (6.6%), while pain represented the least reason (1.9%).⁴

Several previous studies also reported high percent of individuals using cotton buds^{3,9,10}, also they reported that the reason of using cotton buds was ear wax removal.^{3,10} Previous studies^{11,12} demonstrated that removing ear wax was the main reason for using cotton buds. Hobson et al.⁶ the main reason for using cotton bud in their study was to remove wax. Another study reported that ear wax removal represented the main reason with a rate of 96%.⁸ By investigating the practice of our participants, there was an excellent low risk practice (88.2%). Majority of students 53.3% were using cotton bud for less than 10 years, also the majority 75.7% practiced it occasionally, and 91.1% were cleaning their ear equally. Although 81.7% reported that they own cotton bud, higher percent 84% used it for cleaning, there were several objects used for ear cleaning including the key (5.9%), matchstick (3.6%) and feather (0.6%). A study from India^[13] showed that 84% of rural participants and 74% of urban participants used several objects to clean their ears.

Hobson et al.⁶ reported that 68% of patients in their study were using cotton buds. A study from Nigeria reported that 76.3% used cotton buds for self-ear cleaning, and 52.2% were using it for less than 10 years, the large majority 88.9% practiced it occasionally and 91% were cleaning their ears equally, also 57.6% had their own cotton buds.² These findings were in agreement with ours. Several previous studies^{14,15} reported that the majority of their participants cleaned their ears equally. A previous study from Kaduna reported that one-third of participants had practiced self-ear cleaning for more than 10 years.⁹ This study revealed only 3 significant correlations; regarding knowledge, the gender significantly affected the overall knowledge, the number of female who had good knowledge was more than those who had poor knowledge, while the number of males who had poor knowledge was larger than that of males who had good knowledge, this shows that females had more knowledge than males. Attitude was significantly influenced by the knowledge of participants, but not the demographics. Most of cotton bud users had poor knowledge, while most of non-users had good knowledge. The practice in our study was significantly affected by the age of students, where

those of age range 21-24 years old were more prone to have both high and low risk practice, however this dominance of this age group regarding practice groups can be explained by the fact that this age group is the most dominant among all other age groups.

CONCLUSION

The present study showed that knowledge about self-ear cleaning was poor, while there was a positive attitude and excellent low-risk practice. Females tended to have good knowledge than males. The attitude was affected by the knowledge of participants; as there was a poor knowledge, there was a positive attitude. The practice was affected by the age group. Further studies are recommended to include different sections of society and awareness programs are required.

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