Knowledge, attitudes, and practices of self-ear cleaning among the general population in Riyadh, Saudi Arabia

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Abstract

Many people practice placing various things in their ears to remove earwax, known as self-ear cleaning. This study aimed to determine the knowledge, attitudes, and practices of self-ear cleaning of the community in Riyadh, Saudi Arabia.

Method: This cross-sectional study was carried out for more than six months. After institutional research ethics approval was obtained for the study, a structured self-response questionnaire was provided to the participants.

Results: 631 (70%) participants completed the study questionnaire. More than 42% of the participants agreed or strongly agreed that cotton buds should be used to clean the ears. Most participants disagreed with the statement that it is best not to clean the ears. More than two-thirds (75.8%) of the participants knew that cotton buds could cause ear infections, 78.9% knew that cotton buds could cause eardrum perforation, and 85.6% knew that cotton buds could push ear wax deeper into the ear. Considering the tool used for self-ear cleaning, almost two-thirds (68.6%) re-ported using cotton buds. No complications due to self-cleaning of the ear were reported in 65%, while 16.2% reported pain because of self-cleaning, while 16% of the participants reported otitis externa.

Conclusion: The general population in the Riyadh region had a moderate to a good level of knowledge about self-ear cleaning and its complications. However, a low attitude towards cleaning with a cotton bud was the primary tool used to clean the ear. About two-thirds (65%) of the participants reported complications due to self-cleaning. 16.2% reported having pain due to ear self-cleaning.

Keywords: Cotton Bud; Ear wax; Self-Ear Cleaning; Saudi Arabia.

Introduction

Ear wax is a natural and healthy material that serves a variety of tasks. It collects dirt, repels water, cleans, lubricates, and protects the lining of human ears. It usually degrades on its own and falls out of the ears in small flakes (1). Many people produce excessive cerumen, accumulating over time, which can become impacted, impeding sound transmission to the eardrum (2,3). Cerumen obstruction, also known as cerumen impaction, is a blockage of the ear canal that causes ear pain, itching and hearing loss (4). Cerumen impaction affects around 6% of the general population [4,5]. Physicians know the external auditory canal has an adequate self-cleaning mechanism (5). Cotton-bud-related medical problems were first described in 1972, including cases of perforation of the tympanic membrane, external otitis, and cerumen impaction. Cotton bud-related injuries are typical for ear, nose, and throat clinic visits (6). Many practices place various things in their ears to remove ear wax, known as self-ear cleaning. Some people believe that it is beneficial to ear hygiene and that it is necessary to remove extra ear wax (6,7). According to experts, manual ear cleaning increases the risk of perforating the eardrum, affecting delicate bones in that area, and increasing the odds of introducing this wax material into an intense place, which can cause itching, discomfort, and tinnitus (8). The use of ear-cleaning sticks is one of the leading causes of eardrum perforation, requiring surgery (9). Although ear diseases and injuries are major life events that cause morbidity and mortality, they are a neglected public health concern, particularly in underdeveloped countries (10,11). This ubiquitous technique, known as self-ear cleaning, is widespread in several countries (12,13). Various objects are placed into the ear of adults and children, either by the children or their parents. Wax impaction, ear infection, facial nerve palsy, dizziness, eardrum perforation, perilymphatic fistula, damage to the ear canal damage, and deafness are all linked to the unintentional and regular use of cotton buds, according to a growing body of research (4,14–18). The researchers found that more than 90% of people at the Aminu Kano Teaching Hospital, Kano, Nigeria, believe that ears should be cleaned to remove wax and that 76.3% of people use cotton buds once a day (12). Furthermore, in Nigeria, 68% reported using cotton buds in their ears, while 90% and 93.4% of respondents in the Kaduna and Osun states used cotton buds for self-ear cleaning (19). Increasing public awareness of the value of natural cerumen, the self-cleaning system, and the dangers of complete removal of cerumen can help to minimize the prevalence of these problems and enhance aural health care (20). Therefore, this study aimed to determine community-based knowledge, attitudes, and practices of self-ear cleaning in Riyadh, Saudi Arabia; furthermore, to investigate the knowledge level among the Saudi community about the hazards associated with using cotton buds when cleaning ears.

Materials and Methods

1. Study Design

A self-administered cross-sectional survey study was carried out on the general population of Riyadh, Saudi Arabia, from April 9 to April 25, 2022.

2. Study subjects

The study population consisted of Riyadh residents aged 18 10 to 65 years. Participants under 18 10 years and older than 65 years, and those who are not residents of the city of Riyadh were excluded. Purposive sampling was performed according to the subject's eligibility criteria. Participation was voluntary, and no incentives were used.

3. Sample size

The sample size was calculated using Raosoft (Raosoft Inc., Seattle, Washington, USA) based on a confidence interval of 95% and a 5% margin of error to meet the standard approximation assumption, which resulted in a sample size of 600 volunteer adults.

4. Study questionnaire

The questionnaire was validated by a pilot study on about 15 participants to recognize any issues with the questions and the language to help modify and improve the content. The questionnaire was obtained and collected from Alshehri et al. (21), Amutta et al. (22), and Hobson and Lavy (23). The questionnaire evaluated various aspects, including information regarding sociodemographic factors such as age, sex, and employment status. Other information obtained includes the knowledge, practices, and complications of self-cleaning the ears. Depending on their age, participants were classified into five groups: '10 -20, 20-30, 30-40, 40-50, ≥50". Educational levels were grouped as "Illiteracy," Elementary/intermediate, Secondary education, University degree, Higher education." To assess their knowledge in a Likert scale grading, participants were asked about the duration of cotton buds, frequency of using cotton buds for ear cleaning, and tools used for self-ear cleaning, to assess practices and attitudes. In addition, participants were asked if they had ever had complications with a cotton bud. For example, 'Otitis externa, Pain, Bleeding, Other, No complication". Nine hundred (900) targeted participants were emailed and reminded to participate. Participants were informed about the purpose of the study and given instructions on completing the questionnaires. Information confidentiality was also ensured. After voluntarily signing the informed consent form, participants were requested to complete the study questionnaire.

5. Data Analysis

MS Excel was used for data entry, cleaning, and coding. In contrast, the statistical package for social science (SPSS) version 26 was used for data analysis with the help of a data analysis expert. Data were expressed by frequency table, percentage, pie charts, and bar charts. Categorical variables were described as frequency and percent, while mean and standard deviation were used to describe continuous variables. The Five Likert scale was coded as strongly disagree (1), disagree (2), neutral (3), agree (4),

and strongly agree (5). The T-test and the chi-test were used to analyze the difference between the demographic variables considering knowledge. All statements were considered significant if the p-value was lower than or equal to 0.05.

Results

Out of the 900 randomly invited to participate in the survey, two-thirds (71.5%) were women, and 36.8% were aged between 21 and 30, while 25.4% were younger between 10 and 20. Furthermore, 92.6% of the participants were Saudi citizens, 51.2% reported having a university degree, and 46.9% were students at the study time (Table 1).

Table 1: The demographic factors of the participants

		Count	Column N %
Gender	Male	180	28.5%
	Female	451	71.5%
Age	10-20	160	25.4%
	21-30	232	36.8%
	31-40	61	9.7%
	41-50	64	10.1%
	> 50	114	18.1%
Nationality	Saudi	584	92.6%
	Non-Saudi	47	7.4%
Education	Elementary/intermediate	16	2.5%
	Secondary education	233	36.9%
	University degree	323	51.2%
	Higher education	59	9.4%
	Student	296	46.9%
Employment status	Unemployed	106	16.8%
	Retired	79	12.5%
	Employed	150	23.8%

Considering the knowledge of self-cleaning among the participants, we found that 31.5% agreed and 9.7% strongly agreed that cotton buds should be used to clean the ears. Furthermore, we found that 39.3% of them agreed, 15.4% strongly agreed that a damp towel or flannel should be used to clean the ears, while 35.5% disagreed and 10% strongly disagreed that water should be used for cleaning the ears. Additionally, we found that most participants disagreed with the statement that it is best not to clean the ears; however, 26.6% disagreed that cotton buds are effective in removing ear wax. Furthermore, 75.8% of the participants knew that cotton buds could cause ear infections, 78.9% knew that cotton buds could cause eardrum perforation, and 85.6% knew that cotton buds could push ear wax deeper into the ear (Table 2).

Considering the knowledge 31.5% agreed and 9.7% strongly agreed that cotton buds should be used to clean the ears. Furthermore, we found that 39.3% of them agreed, 15.4% strongly agreed that a damp towel or flannel should be used to clean the ears, while 35.5% disagreed and 10% strongly disagreed that water should be used for cleaning the ears. Additionally, we found that most participants disagreed with the statement that it is best not to clean the ears; however, 26.6% disagreed that cotton buds are effective in removing ear wax. Furthermore, 75.8% of the participants knew that cotton buds could cause ear infections, 78.9% knew that cotton buds could cause eardrum perforation, and 85.6% knew that cotton buds could push ear wax deeper into the ear (Table 2).

Table 2: Knowledge assessment of ear self-cleaning

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Cotton buds should be used to clean the ears	10.0%	23.5%	25.4%	31.5%	9.7%
A damp towel or flannel should be used to clean the ears	4.1%	18.4%	22.8%	39.3%	15.4%
Only water should be used to clean the ears	10.0%	35.5%	25.7%	18.7%	10.1%
It is best not to clean the ears	25.7%	44.5%	17.3%	9.2%	3.3%
Cotton buds are effective at removing ear wax	10.8%	26.6%	25.7%	30.3%	6.7%
Cotton buds can cause infection of the ear	0.8%	5.5%	17.9%	42.2%	33.6%
Cotton buds can cause a perforation (hole) of the eardrum	0.5%	5.9%	14.7%	39.1%	39.8%
Cotton buds can push ear wax deeper into the ear	1.0%	3.0%	10.5%	37.7%	47.9%

Taking into account the practices of self-cleaning the ear among the participants, we found that 54.7% of the participants reported cleaning both outside and inside the ear. In comparison, 42.5% reported cleaning the outside of the ear only. Furthermore, 93.0% of them reported cleaning both ears equally. In 65% of the participants, complications due to self-cleaning were reported in 65%, while 16.2% reported pain because of ear self-cleaning, while 16.0% of the participants reported otitis externa. Considering the tool used for self-ear cleaning, most participants (68.6%) reported using cotton buds. Furthermore, 62.4% of the participants reported using cotton buds for more than five years, and 76.2% of them reported occasionally using cotton buds for ear cleaning, while 19.4% used them daily (Table 3).

Table 3: Practices and attitude assessment of ear self-cleaning

		Count	Column N %
Practices ear self-cleaning:	Only clean the outside of the ear only	268	42.5%
	Clean inside of the ear only	18	2.9%
	Clean both the outside and inside of the ear	345	54.7%
Which ear is frequently cleaned	Clean both the ears equally	587	93.0%
	Clean the right ear more	35	5.5%
	Clean the left ear more	9	1.4%
Tools used for self-ear cleaning	Cotton bud	433	68.6%
	Key	6	1.0%
	Matchstick	5	0.8%
	Feather	4	0.6%
	Other objects	183	29.0%
Which complication do you have due to ear self-cleaning	Otitis externa	101	16.0%
	Pain	102	16.2%
	Bleeding	5	0.8%
	Other	13	2.1%
	No complication	410	65.0%
Duration of use of cotton bud (years)	Less than five years	163	37.6%
	More than five years	270	62.4%
Frequency of using cotton buds for ear cleaning:	Occasionally	330	76.2%
	Once-daily	84	19.4%
	Twice daily	7	1.6%
	At least thrice daily	12	2.8%

In a comparison of knowledge between the participants according to their demographic factors, we found that gender does not have a significant effect on most knowledge items; however, females tended to agree to accept that cotton buds should be used to clean the ears more than males (P=0.044). Being older, participants tend to agree that they should not clean their ears by themselves (P=0.000). Participants between 20-30 years were the highest group stating cotton buds could cause ear infections. Furthermore, it was found that the educational level of the participants did not significantly affect their level of knowledge (Table 4).

Table 4: The relation between the knowledge of the participants and their demographic factors

		Cotton buds should be used to clean the ears Mean	It is best not to clean the ears Mean	Cotton buds can cause infection of the ear Mean	Cotton buds can cause a perforation (hole) of the eardrum Mean	Cotton buds can push ear wax deeper into the ear Mean
Gender	Male	2.93	2.08	4.11	4.12	4.31
	Female	3.13	2.25	3.99	4.12	4.27
	P- value	0.044*	0.073	0.141	0.953	0.628
Age	10-20	3.16	1.96	3.98	4.01	4.33
	21-30	2.95	2.11	4.18	4.19	4.33
	31-40	3.30	2.33	3.85	4.05	4.02
	41-50	3.08	2.55	3.87	4.13	4.22
	> 50	3.09	2.46	3.94	4.16	4.31
	P-value	0.228	0.000*	0.017*	0.319	0.095
Education	Elementary / intermediate	3.19	2.19	4.19	4.00	4.31
	Secondary education	3.07	2.09	4.00	4.10	4.30
	University degree	3.05	2.28	4.05	4.17	4.30
	Higher education	3.17	2.20	3.93	3.95	4.15
	P- value	0.881	0.178	0.653	0.315	0.655

*The difference is significant with a p-value <0.05.

Discussion

The ear as an organ is responsible for the function of hearing and balance mechanism with a lubricating and immune system that is present as ear wax. Nevertheless, many people tend to self-clean ear wax at home for many reasons that may lead to further problems. In the present study, we assess the knowledge, attitude, and practice of self-ear cleaning among the general population in the Riyadh region, Saudi Arabia.

Taking into account the knowledge about self-cleaning of the ear among the participants, we found that 75.8% knew cotton buds could cause ear infections. In comparison, 78.9% knew cotton buds could cause eardrum perforation, and 85.6% knew cotton buds could push ear wax deeper into the ear. In a previous study carried out by Alwassel et al. about the knowledge of any complications that occur due to the use of cotton buds in the cleaning of the ears, the authors found that 28% of the participants think there are complications, and 72% deny any complications (24). Furthermore, in another study, the authors found that 55.8% knew cotton buds could damage the ear, and 51.6% knew that it had complications (25). In another study by Gabriel et al., it was found that 22.5% of the participants knew that cotton buds could cause complications, and almost half of the sample knew that they could cause damage.

In comparison, 61.2% of them reported that the use of cotton buds had some benefits (26). Furthermore, almost two-thirds of the sample thought cleaning the ear was better, and 37% thought cotton buds effectively removed the ear wax. In a previous study by Alshehri et al., the authors found that 55.1% believed self-cleaning is beneficial (21). Furthermore, in another study, 55.1% to 74.2% of the participants thought self-ear cleaning is not helpful and may even be harmful (18,25,27).

Taking into account the practices of self-cleaning the ear among the participants, we found that 54.7% of the participants reported cleaning both outside and inside of the ear, and 93.0% of them reported cleaning both ears equally. This finding is similar to the researchers' observations in previous studies (6,22,28,29). In a previous study by Adegbiji, the authors found that in 51.1% of cases, both ears were cleaned. In 29.6% of cases, the right ear was more prevalent than the left ear, which was seen in 19.3% of patients (16).

Considering the tool used for self-ear cleaning, most participants (68.6%) reported using cotton buds. This is similar to a previous study conducted among university students at King Khalid University in the Kingdom of Saudi Arabia that showed that the most commonly used instrument was a cotton bud (77.7%) (21). Furthermore, another study conducted by Aldawsari et al. at Majmaah University found that 65.5% of participants reported using cotton buds for self-cleaning (25). Moreover, another study by Adegbiji among patients in a tertiary hospital in Sub-Saharan Africa found that cotton buds were the most common material used in ear cleaning at 44.5% (16).

Furthermore, in our study, we found that 62.4% of the participants reported using cotton buds for more than five years, 76.2% reported occasionally using cotton buds for ear cleaning, and 19.4% used them daily. In a previous study by Adegbiji, the authors found that the frequency of ear cleaning among the participants was daily at 49.3%, weekly at 17.1%, monthly at 13.3%, and occasional at 20.4% [11]. Furthermore, a study by Amutta found that some respondents frequently cleaned both ears daily (22).

Cotton buds have been condemned as they cause several complications, including affected ear wax, infection, and trauma (23). In our study, no complications due to self-cleaning were reported in 65%, and 16.2% reported having pain due to self-cleaning of the ear. In comparison, otitis externa was reported in 16.0% of the participants. In a previous study, common complications associated with using cotton buds for self-cleaning were assessed as external auditory canal injury in 28.9%, foreign body in 25.6%, and traumatic perforated tympanic membrane in 6.2%. Therapy was moderate clinical treatment in 71.1% and unfamiliar body expulsion in 17.5% (13). However, the previous study was conducted among patients in a tertiary hospital, explaining the high prevalence of complications. Furthermore, in a previous study conducted by Alrajhi et al., the authors found that (18%) of the respondents had complications (and 41.2%) reported ear wax impaction as the most common complication, followed by ear pain (39.7%) (30).

Other studies have alluded to gender differences in the frequency of ear cleaning, with more women cleaning more frequently than men (16,31). In this study, gender does not affect the attitude or knowledge of students about ear self-cleaning; however, gender has a significant effect on practicing ear self-cleaning, as females cleaned more frequently than males. In our study, we found that the educational level did not significantly affect knowledge; however, in a previous study, students with a greater level of education had higher knowledge and less practicing (21).

This study had some unavoidable limitations. One of these limitations is the dependence on self-reported behavior of current and previous practices (i.e., ear self-cleaning), which can be easily influenced by social desirability and recall bias. Also, this study was conducted in a single region; therefore, we cannot generalize these results across the country. However, more studies should be conducted to assess the knowledge and practices of self-cleaning in different kingdom places.

Conclusions

The general population in the Riyadh region had a relatively good level of knowledge on self-ear cleaning and its complications. Nevertheless, we found a poor attitude toward cleaning with cotton buds as the primary tool for cleaning the ears. In 65% of the participants, complications due to self-cleaning were reported in 65%, while 16.2% reported pain because of ear self-cleaning, while 16% of the participants reported otitis externa.

Limitations

This study may have limitations. A potential for recall bias exists with self-reported information elicited from respondents. Thus, the method used cannot be guaranteed to be generalizable. This study may have limitations.

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