

Self-Ear Cleaning Practice And The Associated Risk Of Ear Injuries And Ear-Related Symptoms In Saudi Arabia

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Abstract

Introduction: Most people who self-clean their ears believe that removing excessive earwax is crucial for maintaining good ear health. Overcleaning could lacerate the ear canal's epidermal lining, which could lead to infection, discomfort, and a disruption of normal physiological function. Self-ear cleaning has not been thoroughly investigated yet in Saudi Arabia when concerning the risk of ear injuries and symptoms among the public. This research aims to determine the prevalence of self-ear cleaning in Saudi Arabian society as well as the associated hazards. **Methods:** The relevant data were gathered from January to March 2022 through an online survey using a cross-sectional approach. Moreover, respondents must meet specific criteria including minimum age of 18 years old and residing in Saudi Arabia. Ethical approval and consent were taken before using a prepared questionnaire which was built on prior research. A descriptive analysis based on the frequency and percentage distribution was performed for each variable including participants' biographical data. The use of two-tailed tests was applied to all statistical analyses and a P-value of 0.05 was considered significant. Additionally, chi-square tests were utilized to compare several categorical variables. **Results:** A total of 450 individuals have completed the study questionnaire. 194 people (43.1%) believed that self-ear cleaning is a useful method while 109 people (24.2%) believe it is bad. The most often reported technique for cleaning ears was using a cotton bud (65.2%). Furthermore, cleaning is done every day by 27.6% of men as opposed to 19.8% of women ($P=0.001$). Lastly, 65.4% of participants in the 18 to 20 age group consider self-ear cleaning as advantageous behavior. **Conclusion:** Most participants clean their ears by themselves once a week. Self-ear cleaning is common among young adults, which raises the risk of ear damage and related symptoms. Having health education, public awareness, and training programs are appropriate to limit the possibility of ear injuries.

1. Introduction

The habit of self-ear cleaning can be defined as the insertion of an object into a person's ear canal to clean it ^(1,6). Nearly everyone cleans their ears on their own making the majority of the population susceptible to negative outcomes. To the public, it is not well-known why self-ear cleaning is not recommended by physicians. Instead, the mistaken notion that self-ear cleaning is advantageous is widespread ⁽¹⁾. The morbidity associated with ear injuries used to be a neglected public health problem ⁽⁵⁾.

Self-ear cleaning is quite prevalent in a variety of countries including Malaysia, England, and the United States. 90% of survey participants in Nigeria self-clean their ears. Many people think that getting rid of extra earwax is essential for ear healthcare ⁽¹⁾. However, it is commonly known that Cerumen (earwax) production occurs normally in humans' ears ⁽⁷⁾. The cerumen serves as a mechanical barrier against dirt, lubrication, and has an immunological function ^(8,10). It is generally advisable to avoid cleaning the ear canal. Overcleaning can cause epidermal lining laceration leading to infection, irritation, and impairment of normal physiological function ^(10,11).

Many morbidities arising from ear damage require immediate medical attention such as tympanoplasty or the use of instruments to remove any retained objects. One of them is hearing loss which could be a lifelong consequence. Nevertheless, the insertion of foreign materials could affect the ear's natural pH (potential of hydrogen), function, and anatomical structure leading to perforation. Cotton buds, tree sticks, towel tips, roller pen points or their coverings, and fingers are frequently introduced into the ear canal ⁽²⁷⁾.

Accumulation of earwax is the most common complaint seen in otology clinics ⁽¹²⁾. The prevalence of cerumen impaction is 6% in the general population ^(1,15). Other studies have reported a prevalence reaching 17.6% ⁽⁵⁾. Both the lack of public awareness regarding self-ear cleaning and the lack of active practice by health professionals has resulted in an increased habitual self-ear cleaning practice ⁽¹⁵⁾. The awareness about the risks of self-cleaning habit is generally poor. A Nigerian study showed that 93.4% of young-educated adults performed habitual self-ear cleaning ^(1,2,11).

To this date, there are no published local studies about self-ear cleaning and its related risks. The current study aims to estimate the prevalence of this habit among the general population of Saudi Arabia. Additionally, the associated risk of acquiring ear injuries and ear-related symptoms will be discussed.

2. Methods

2.1. Study design: The present study used a cross-sectional design, and data were collected through an internet-based survey from January to March 2022.

2.2. Study Population: The target population was the general public. Non-probability convenience sampling technique was used and a total of 450 participants were involved in the study. Those who consented to participate and had filled the survey within the time period while meeting the inclusion criteria were eligible. The criteria were minimum age of 18 years, and residency in Saudi Arabia.

2.3. Ethics approval: The ethical approval was obtained from the Research Ethics Committee, College of Medicine in King Faisal University before data collection. Anonymity and confidentiality of data were maintained. As the survey was answered online, written consent was not sought. All investigators respected the requirements of data protection and secrecy.

2.4. Pilot study: A pilot study was performed for 10 participants who were later excluded from the main study sample. Accordingly, the post-piloting survey form was improved to meet the compatibility of local settings and respondents' standards.

- 2.5. Survey instrument:** The questionnaire was designed based on previous studies (1). After getting approval from the main authors, it was translated to the Arabic language in a certified translation center. The elements of the questionnaire included the study participants' demographics, perception toward self-ear cleaning, frequency of self-ear cleaning, reasons of self-ear cleaning, methods of self-ear cleaning, and ear related symptoms. Upon completion the questionnaire, participants received facts regarding hearing impairment and cochlear implants.
- 2.6. Data collection:** The survey was electronically shared, and data were collected voluntarily. It was disseminated via social media platforms like Facebook, Twitter, WhatsApp, and Instagram through invitation links. The consent statement and brief description of the study were incorporated at the beginning of the questionnaire. All participants were bound to express their willingness to participate. It was sought by giving them options of “Yes” and “No”. Choosing “Yes” allowed them to access the detailed questionnaire while selecting “No” prevented them from proceeding further. Lastly, participants were given the right to withdraw at any time if they change their willingness.
- 2.7. Data processing and statistical analysis:** The collected Data were revised and coded using statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analyses were done using two tailed tests. A P-value less than 0.05 was considered standard for statistical significance. Descriptive analysis based on frequency and percentage distribution were made for all variables. They contained participants personal data, self-ear cleaning frequency, used methods, reasons and associated symptoms. Participants’ attitudes towards self-ear cleaning were also graphed. On the other hand, cross tabulation was used to assess factors associated with participants’ frequencies of self-ear washing as well as their perceptions. Relations between different categorical variables were tested using Pearson chi-square tests while small frequency distributions were tested using Fisher's exact tests.

3. Results

A total of 450 participants have completed the study questionnaire. They were distributed from different regions in Saudi Arabia. Exactly, 276 people (61.3%) were from the Eastern region; 65 people (14.4%) were from Western region; 63 people (14%) were from Central region; 37 people (8.2%) were from Southern region; and 9 people (2%) were from Northern region. Participants age ranged from 18 to 60 years with mean age of 26.6 ± 12.9 years old. In gender comparison, there was nearly equal percentages as male participants were 228 (50.7%). As for educational levels, 285 (63.3%) were university graduates while 100 (22.2%) had secondary school levels. 230 (51.1%) were students; 126 (28%) were workers in the governmental sector; 60 (13.3%) were workers in the private sector; and 34 (7.6%) were freelancers (table 1).

Table 1. Personal data of study participants, Saudi Arabia

Personal data	No	%
Region		
Central region	63	14.0%
Eastern region	276	61.3%
Northern region	9	2.0%
Western region	65	14.4%

Southern region	37	8.2%
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Age in years		
18-20	39	8.7%
21-30	264	58.7%
31-40	52	11.6%
41-50	30	6.7%
51-60	65	14.4%
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Gender		
Male	228	50.7%
Female	222	49.3%
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Educational level		
Below secondary	65	14.4%
Secondary	100	22.2%
University / above	285	63.3%
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Work		
Student	230	51.1%
Governmental sector	126	28.0%
Private sector	60	13.3%
Freelancers	34	7.6%
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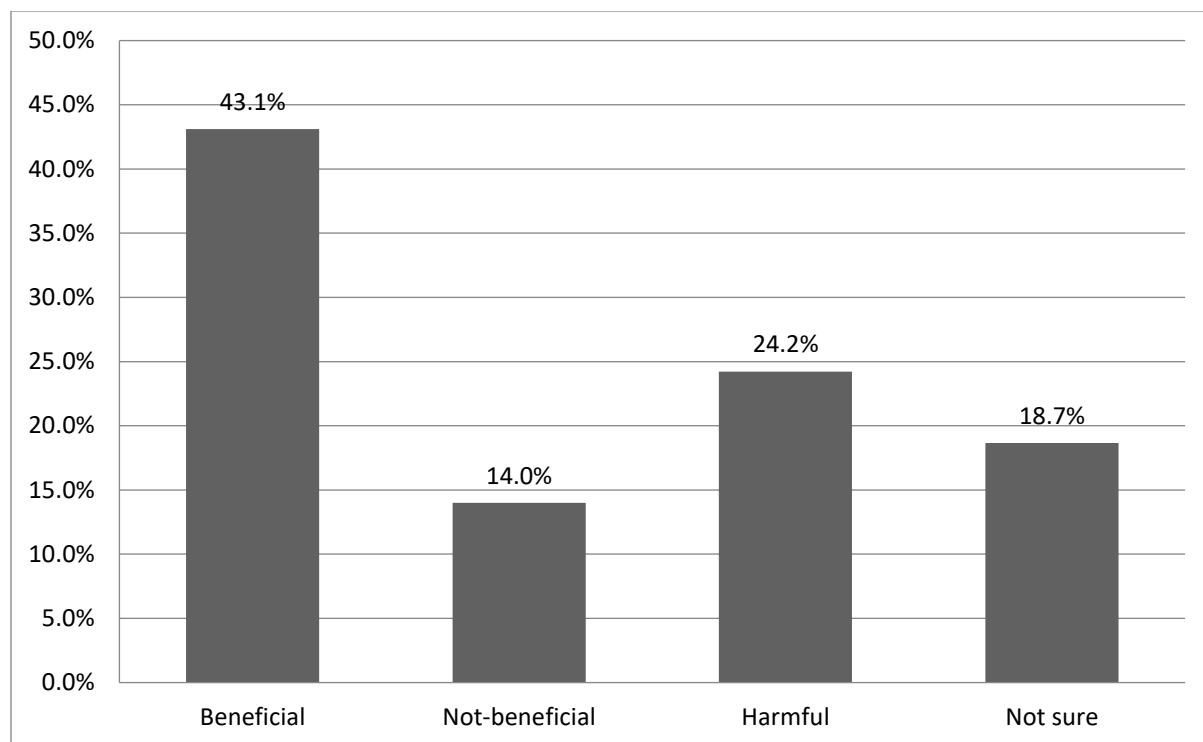


Figure 1. Participant's attitude and perception of self-ear cleaning practice, Saudi Arabia.

A total of 194 (43.1%) think it is beneficial practice; 109 (24.2%) think that it is harmful; 63 (14%) see it is non-beneficial while 84 (18.7%) had a neutral position.

Table 2. Self-ear cleaning practice among the study participants, Saudi Arabia

Ear cleaning	No	%
Frequency of self-ear cleaning		
> 1 time / day	23	5.1%
1 time / day	84	18.7%
> 1 time / week	66	14.7%
1 time / week	123	27.3%
> 1 time / month	15	3.3%
1 time / month	58	12.9%
1 time / year	24	5.3%
Others	57	12.7%
Reasons of self-ear cleaning		
Ear wax	296	65.8%
Dirt	206	45.8%
Itchiness	178	39.6%
Difficult hearing	49	10.9%
Ear pain	38	8.4%

Methods used for ear cleaning		
Cotton bud	253	56.2%
Towel	204	45.3%
Hand finger	130	28.9%
ENT clinic	53	11.8%
Matchstick	9	2.0%
Others	30	6.7%
Symptoms you experience after self-ear cleaning		
Itching	87	19.3%
Ear pain	87	19.3%
Feeling of fullness	71	15.8%
Tinnitus	47	10.4%
Ear discharge	28	6.2%
Vertigo	20	4.4%
Ear bleeding	12	2.7%
Nothing	267	59.3%
Visited ENT clinic after self-ear cleaning		
Yes	89	19.8%
No	361	80.2%

As for frequency of self-ear cleaning, 123 (27.3%) reported doing self-cleaning for 1 time / week; 84 (18.7%) do self-cleaning for 1 time / day; and 66 (14.7%) do it for more than once / week. Considering reasons of self-ear cleaning, the most reported ones were earwax (65.8%), dirt (45.8%), itchiness (39.6%), Difficult hearing (10.9%), and ear pain (8.4%). On the other hand, the used methods for self-ear cleaning were cotton bud (65.2%), towel (45.3%), hand finger (28.9%), and Otorhinolaryngology (ENT) clinic washing (11.8%). Additionally, the associated symptoms after self-ear cleaning reported to be itching (19.3%), followed by earache (19.3%), feeling of fullness (15.8%), tinnitus (10.4%), and ear discharge (6.2%). Nevertheless, asymptomatic participants represented 59.3% while 19.8% reported visiting ENT clinic after self-ear cleaning.

Table 3. Factors affecting participants' perceptions of self-ear washing

Personal data	Perception of self-ear cleaning								p-value
	Beneficial		Not-beneficial		Harmful		Not sure		
	No	%	No	%	No	%	No	%	
Age in years									
18-20	22	56.4%	6	15.4%	3	7.7%	8	20.5%	.011*\$
21-30	107	40.5%	43	16.3%	78	29.5%	36	13.6%	

31-40	24	46.2%	5	9.6%	9	17.3%	14	26.9%	
41-50	15	50.0%	4	13.3%	4	13.3%	7	23.3%	
51-60	26	40.0%	5	7.7%	15	23.1%	19	29.2%	
Gender									
Male	98	43.0%	28	12.3%	56	24.6%	46	20.2%	.668
Female	96	43.2%	35	15.8%	53	23.9%	38	17.1%	
Educational level									
Below secondary	32	49.2%	10	15.4%	9	13.8%	14	21.5%	.456
Secondary	43	43.0%	16	16.0%	26	26.0%	15	15.0%	
University / above	119	41.8%	37	13.0%	74	26.0%	55	19.3%	
Work									
Student	100	43.5%	38	16.5%	60	26.1%	32	13.9%	
Governmental sector	55	43.7%	15	11.9%	34	27.0%	22	17.5%	.022*
Private sector	28	46.7%	5	8.3%	9	15.0%	18	30.0%	
Freelancers	11	32.4%	5	14.7%	6	17.6%	12	35.3%	

A total of 65.4% of participants aged 18-20 years think that self-ear cleaning is beneficial compared to 40% of others aged 51-60 years. There was a noted statistical significance ($P=0.011$). Also, 46.7% of workers in the private sector think it is beneficial in comparison to 32.4% of free workers ($P=0.022$).

Table 4. Factors associated with participants' frequency of self-ear washing

Personal data	Frequency of self-ear cleaning								p-value
	Daily		Weekly		Monthly		Annually / others		
	No	%	No	%	No	%	No	%	
Age in years									
18-20	13	33.3%	21	53.8%	4	10.3%	1	2.6%	.010* ^{\$}
21-30	59	22.3%	115	43.6%	47	17.8%	43	16.3%	

31-40	12	23.1%	21	40.4%	9	17.3%	10	19.2%	
41-50	11	36.7%	11	36.7%	4	13.3%	4	13.3%	
51-60	12	18.5%	21	32.3%	9	13.8%	23	35.4%	
Gender									
Male	63	27.6%	72	31.6%	39	17.1%	54	23.7%	.001*
Female	44	19.8%	117	52.7%	34	15.3%	27	12.2%	
Educational level									
Below secondary	11	16.9%	31	47.7%	12	18.5%	11	16.9%	.232
Secondary	30	30.0%	41	41.0%	18	18.0%	11	11.0%	
University / above	66	23.2%	117	41.1%	43	15.1%	59	20.7%	
Work									
Student	59	25.7%	102	44.3%	39	17.0%	30	13.0%	
Governmental sector	33	26.2%	46	36.5%	14	11.1%	33	26.2%	.011*\$
Private sector	12	20.0%	21	35.0%	15	25.0%	12	20.0%	
Freelancers	3	8.8%	20	58.8%	5	14.7%	6	17.6%	

Daily cleaning was reported among 33.3% of participants aged 18-20 years compared to 18.5% of others aged 51-60 years (P=0.010). Lastly, 27.6% of males do cleaning daily compared to 19.8% of females (P=0.001).

Discussion

In accordance with the results of the current study, self-ear cleaning is 43.1% prevalent. According to Amutta et al. ⁽²⁾, self-ear cleaning was a widespread practice among all racial and ethnic groups in Nigeria, with young individuals between the ages of 21 and 30 having the highest percentage. In Oladeji et al. ⁽⁷⁾ study, a sizable proportion (94%) of healthcare professionals express concern about the necessity of safe and healthy ear cleaning techniques. Based on a study done in Nigeria ⁽⁶⁾, 76.3% of physicians regularly clean their own ears for hygienic reasons. As per the study's findings, young people were also observed to engage in the behavior commonly.

People who believed the practice is useful, were more likely to perform self-ear cleaning. it was done to get rid of wax, dirt, and debris as well as to reduce irritation ^(1,7,15). Although the intensity of the symptoms and harm vary across research, the causes of self-ear cleaning are universal. As reported by most of the participants, who concur with Lee et al. (2004) ⁽³⁾ and Gadanya et al. (2016), ear wax, dirt, and itching were the main causes of their self-ear practices ⁽⁶⁾. However, Olajide et al. (2015) ⁽⁷⁾ indicated that itching was the primary motive for self-ear cleaning whereas Amutta

et al. ⁽²⁾ stated that filth, itchy ears, and wax were the key motivations. These three reasons were consistent across all the studies.

Self-ear cleaning has been found to impair the ear's structural integrity ⁽²⁾. This activity should be avoided since, according to Afolabi et al. (2009) ⁽¹¹⁾, it is a slow-acting otologic toxin that may have negative effects such as perforations or ear drainage ⁽¹⁶⁾. This shows that self-ear cleaning education is essential for health education, especially at the primary healthcare level. It is crucial to remember that ear wax is not the same as dirt, rather it is a naturally occurring substance that guards the ear against infection and foreign objects ^(1,5).

Other studies have pointed out that females clean their ears more commonly than males when it comes to the frequency of ear cleaning ^(1,7). The association between the recurrence of ear cleaning and gender was not statistically significant in this study, while it was highly significant ($P=0.004$) in the study of Oladeji et al. (2015) ⁽⁷⁾. Likewise, there is a statistically significant association between the regularity of self-ear cleaning and age as well as type of work.

In a study carried out in Abha, Saudi Arabia, a statistically significant difference was noticed between the medical and non-medical students ⁽⁵⁾. In comparison, the level of education is not evident in the current study. A total of 194 (43.1%) of participants believe self-ear cleaning to be a good practice while Abha study showed 55.1% believe that cleaning one's ears is helpful.

As seen in multiple studies, many participants frequently cleaned their ears more than once per week ^(2,11) and they used mostly cotton buds. These results closely matched those of studies done in Nigeria ^(1,2,7,15) and Pakistan ⁽¹⁷⁾. Cotton buds were the most often utilized item for ear cleaning (77.7%) and (69.6%) of the participants in the Namibian study ⁽¹¹⁾. Furthermore, consequences from this technique including perforation, retained foreign bodies, and otitis externa affect 75.6% of the respondents. In contrast to the individuals in Abha study ⁽²¹⁾, they did not experience any difficulties regarding their practices.

As per a study of 50 individuals between the ages of 15 and 74, a many of (92%) of them (36%) cleaned their ears daily, much more than once a day, and 54% cleaned them once or more every week ⁽¹⁵⁾. In comparison, Amutta et al. ⁽²⁾ found that 91.2% of people clean their ears with cotton buds; 1.9% with feathers; 1.3% with broomsticks; 1.3% with fingers; and 0.6% with matchsticks. Adebijei et al. ⁽⁵⁾ study of 385 adults aged 17 and older revealed that 80% of them used objects to practice self-ear cleaning; 74.4% of them used soapy water during a bath. Only 8% were knowledgeable of the ear's self-cleaning mechanism. In the present study, 56.2% of participants clean their ears with cotton buds, 45.3% with a towel, 28.9% with a hand finger, 11.8% in an ENT clinic, and 2% with a matchstick. As per Kumar and Ahmed (2008) ⁽²⁶⁾, using cotton buds is unnecessary and can result in serious complications.

The most frequent ear injuries in ENT practices are cotton buds and matchstick ends caught in the ear canal in an attempt to soothe irritation ⁽²¹⁾. According to Olajide et al. ⁽¹⁵⁾, 74.1% of people were unaware of the risk associated with using cotton buds to clean their ears, and they knew very little about ear self-cleaning mechanism. Hobson and Lavy ⁽²⁰⁾ estimate that up to 93% of research participants were unaware of the dangers of cotton bud usage. Regardless of the purpose, using a cotton bud can irritate, deteriorate, traumatize the ear canal, and increase the risk of infection ^(15,18). Following a study by Ahmed et al. ⁽¹⁷⁾, there were approximately 34.3% of neurodermatitis cases, 28.3% of otitis externa, 26.8% of contact dermatitis, 8.9% of impacted cerumen, and 1.5% of perforations in the tympanic membrane.

Education and information should be raised and broadly distributed across all age groups. The cerumen can be removed by using cerumenolytic, topical therapy, irrigation, suctioning, syringing, and other manual removal techniques ⁽²³⁾. Cerumen management is practiced by only 36% of professionals and audiologists in South Africa ^(24,25) as opposed to 87% of audiologists and 69% of medical professionals in the United States ⁽²⁶⁾.

In this study, ear itch and earache were reported by 19.3% of the participants; ear fullness by 15.8%; tinnitus by 10.4%; otorrhea by 6.2%; vertigo by 4.4%; and ear bleeding by 2.7%. Five participants in a previous study described cotton-bud-related injuries including perforations, which are frequent cause to visit ENT clinics ⁽¹⁵⁾. Other research showed that 2-5% of people have ear damage, including external auditory canal bleeding and bruising ^(11, 16). A Malaysian study by Lee et al. ⁽³⁾ showed a 2% injury rate. However, up to 25% of individuals in the Amutta et al. study ⁽²⁾ encountered issues. Although the present study did not specify which ear was injured, Adedeji et al. ⁽¹⁹⁾ found that the right ear was at higher risk due to the right-hand dominance of the population. Itchiness and earache seemed to be the most common side effects of self-ear cleaning, which is consistent with prior research ^(11,15,17).

The majority of respondents had been cleaning their ears since childhood, due to the influence of their parents and siblings. Thus, parents and caregivers need to be involved in any initiatives to modify this habit ^(1,4,18). In this study, there was no statistically significant difference in ear-related symptoms between cotton-bud users and non-users. This illustrates that while those who use cotton buds repeatedly may not experience any symptoms, they may be at a higher risk for injury. This is however not definitive, and more studies are required to prove the relationship between these variables.

Conclusion

Most participants practice self-ear cleaning once per week. the most common reasons were ear wax, dirt, and itchiness. The risk of ear injury is high among young adults since they self-ear clean frequently. The fact about how the ear naturally cleans itself is usually not well known by the public. Dealing with itching, wax impaction and other ear symptoms are also not comprehended. As such, Cerumen management must be performed by qualified personnel to avoid any damage. Finally, medical knowledge is required to minimize the risk of ear injuries and ear symptoms. This goal can be achieved through proper health education, public awareness, and training programs.

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