Knowledge, Attitudes, and Practices of Self-ear cleaning among the General Population in KSA

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Abstract

Introduction: Cerumen or ear wax is a normal secretion from sebaceous and ceruminous glands found in the external auditory canal with an antimicrobial effect. Self-ear cleaning practice is reported among different populations with different tools that may be harmful to the ear.

Aim: The current study aimed to assess knowledge, attitudes, and practices of self-ear cleaning among the general population in KSA.

Methods: A descriptive cross-sectional survey based on an online structured questionnaire distributed over Saudi Arabia's different regions was conducted during the period from August to October 2023. The ýnal questionnaire was uploaded online using social media platforms till no more responses were added. The ýrst section concerns demographic characteristics such as gender, age, education, and income. The second section is continuing questions about self-ear cleaning and awareness. The third covered data about self-ear cleaning practices and complications.

Results: A total of 503 eligible participants completed the study questionnaire, 210 (41.7%) from the western region, 147 (29.2%) from the central region, 78 (15.5%) from the southern region, and others from other regions. Participants' ages ranged from 18 to about 60 years with a mean age of 27.5 ± 12.9 years old. A total of 304 (60.4%) participants were females. A total of 324 (64.4%) of the participants had an overall good knowledge and perception of self-ear cleaning. Exactly 420 (83.5%) practice self-ear cleaning, and most of them (95.5%) do it for both ears; ear sticks were the most commonly used tools (61.9%) followed by tissues (28.8%).

Conclusion: The study has shown that the public is highly aware of the risks, methods, and tools used in self-ear cleaning. More than three-quarters of people surveyed reported using ear sticks to clean their ears, and the majority of them experienced no negative symptoms or complications after cleaning.

Keywords
Self-ear cleaning, practice, knowledge, awareness, prevalence, attitude, complications, Saudi Arabia.

Introduction

The human ear is a crucial organ that requires proper care. It is made up of external and internal parts, with the outer third of the external auditory canal containing ceruminous and sebaceous glands that produce a natural secretion called cerumen, or ear wax [1, 2]. Cerumen is a natural defense mechanism for the ear against infection, water, and insects. It also helps lubricate and clean the inner ear canal and the skin around the ear [3, 4]. Furthermore, cerumen is made up of various components such as Glycopeptides, lipids, hyaluronic acid, sialic acid, lysosomal enzymes, and immunoglobulins [5, 6]. These components have antibacterial properties that help keep the ear clean and reduce the risk of infections [7]. Its high acidic pH (between 4 and 5) is unfavorable to organisms and helps lower the incidence of ear canal infection [8].
The ear canal cleans itself through a process called epithelial migration, aided by jaw movement [9]. However, some people may produce excessive earwax, which can accumulate over time and cause blockages that prevent sound from reaching the eardrum. This can result in a condition called impacted cerumen [10]. This can happen due to the use of hearing aids, persistent use of earplugs or headphones to listen to music or reduce noise, or attempting to clean the ears with cotton swabs or other objects. Some common symptoms of a build-up of cerumen include discomfort, hearing loss, tinnitus, dizziness, and a chronic cough. Additionally, it can contribute to otitis externa [11, 12]. Up to 6% of the population has been found to have cerumen impaction [13].

Self-ear cleaning is deýned as the act of inserting different objects into the ear to remove earwax. Unfortunately, it is a standard general practice that can compromise the integrity of the ear as a natural, self-cleaning mechanism [14, 15].

Many people practice self-ear cleaning by using various objects to remove earwax to maintain ear hygiene. However, improper self-cleaning of the ears can result in damage, otitis externa, and cerumen impaction [16, 17]. The most common ENT procedure done in primary care centers is earwax removal [18]. So, our study aims to analyze the knowledge, attitude, and practice of individuals from the general Saudi Arabian community in light of the signiýcance of self-ear cleaning in daily life.

Methodology

A descriptive cross-sectional study based on an online structured questionnaire was distributed over the Saudi population in different regions of Saudi Arabia. The study was conducted during the period from August.to October 2023. All adult Saudis aged 18 years or more who agreed to participate in the study were included. On the other hand, non-Saudi, and those aged less than 18 years were excluded. Consent was obtained from the participants ýrst. After that, answering an online questionnaire was requested. The questionnaire was designed in Arabic and contains three sections. The ýrst section was about the socio-demographic data and monthly income. The second section included questions about participants' knowledge and perception of self-ear cleaning and reasons for not doing it. The third section focused on participants' practice of self-ear cleaning and associated symptoms and complications. The study questionnaire was initiated by the study authors after an intensive literature review of the related topic and after an expert's consultation for content validity. A pilot study containing 50 participants was conducted to assess the questionnaire's clarity and reliability with an estimated Ŭ-Cronbachîs of 0.78. The ýnal study questionnaire was uploaded online using social media platforms till no more new participants were recorded.

Data analysis

The data were collected, reviewed, and then fed to Statistical Package for Social Sciences Version 21 (SPSS: An IBM Company). All statistical methods used were two-tailed with an alpha level of 0.05 considering signiýcance if P value was less than or equal to 0.05. Regarding knowledge, each correct answer was given a 1-point score. Overall knowledge level regarding self-ear cleaning was assessed by summing up discrete scores for different correct knowledge items. If the total score was 60% or more of the total possible score, the level of knowledge was considered to be good. Scores less than 60% were considered poor. Descriptive analysis was done by prescribing frequency distribution and percentage for study variables including participants' data, work, and monthly income. Also, participants' knowledge and practice regarding self-ear cleaning were tabulated while the overall knowledge level was graphed. Cross tabulation for showing the distribution of participants' overall knowledge level by their data and other factors using Pearson chi-square test for signiýcance and exact probability test if there were small frequency distributions was done.

Results

A total of 503 eligible participants completed the study questionnaire, 210 (41.7%) from the western region, 147 (29.2%) from the central region, 78 (15.5%) from the southern region, and others from other regions. Participants' ages ranged from 18 to about 60 years with a mean age of 27.5 ± 12.9 years old. A total of 304 (60.4%) participants were females, 293 (58.3%) were university graduates and 96 (19.1%) had a post-graduate degree. Monthly income less than 3000 SR was reported among 287 (57.1%) respondents, but 115 (22.9%) had monthly income exceeding 10000 SR. A total of 212 (42.1%) were students, 173 (34.4%) were employees and 78 (15.5%) were unemployed (Table 1).

Table 1. Personal characteristics of study participants, Saudi Arabia

Personal data	No	%
Region		
Western region	210	41.7%
Middle region	147	29.2%
Northern region	26	5.2%
Southern region	78	15.5%
Eastern region	42	8.3%
Northern region	26	5.2%
Age in years		
18-24	212	42.1%
25-30	114	22.7%
30-35	40	8.0%
> 35	137	27.2%
Gender		
Male	199	39.6%
Female	304	60.4%
Educational level		
Below high school	16	3.2%
High school	98	19.5%
University graduate	293	58.3%
Post-graduate	96	19.1%
Monthly income		
< 3000 SR	287	57.1%
3000-4999 SR	34	6.8%
5000-9999 SR	67	13.3%
> 10000 SR	115	22.9%
Employment		
Unemployed	78	15.5%
Student	212	42.1%
Employee	173	34.4%
Retired	40	8.0%

A total of 19.1% of the respondents think that self-cleaning ears is harmful, 62.6% reported that it should not constantly remove earwax, but only 25.4% know that ruptured eardrums did not usually require surgery. The vast majority of the respondents (74.6%) know that loud sound harms their hearing, and also 97.6% know that they need to consult a doctor if they have difýculty hearing and 96.6% know that changes in altitude can cause earache. A total of 44.1% disagree that cotton swabs should be used to clean the ears, 35.4% disagree that wet towels should be used to clean the ears, and 27.9% agree that water only is used to clean the ears. Only 18.3% agreed that it is better not to clean the ears, but 68% know that cotton swabs cause ear infections and 73.4% know that cotton swabs cause eardrum perforation. On the other hand, 41.4% agreed that cotton swabs are effective in removing earwax.

Table 2. General population awareness and perception about self-ear cleaning, Saudi Arabia

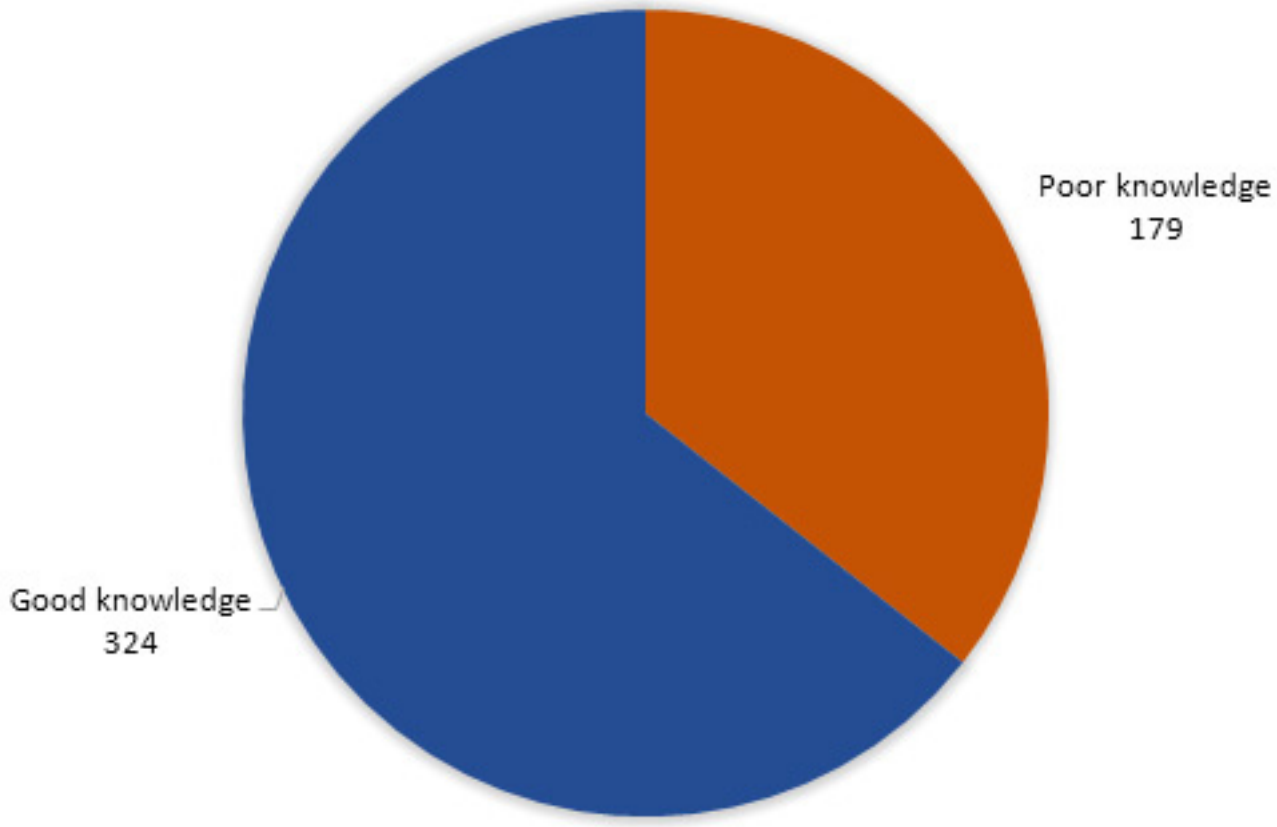
Self-ear cleaning		No	%
What do you think about self-cleaning ears?	Harmful	96	19.1%
	Not sure	98	19.5%
	Useful	240	47.7%
	Useless	69	13.7%
Should I constantly remove earwax?	Yes	188	37.4%
	No	315	62.6%
Does a ruptured eardrum require surgery?	Yes	375	74.6%
	No	128	25.4%
Can loud sounds harm your hearing?	Yes	463	92.0%
	No	40	8.0%
Do I need to consult a doctor if I have difficulty hearing?	Yes	491	97.6%
	No	12	2.4%
Can highs and lows cause earache?	Yes	486	96.6%
	No	17	3.4%
Should cotton swabs be used to clean the ears?	Strongly disagree	93	18.5%
	Disagree	129	25.6%
	Neutral	141	28.0%
	Agree	116	23.1%
	Strongly agree	24	4.8%
Should I use a wet towel to clean the ears?	Strongly disagree	54	10.7%
	Disagree	124	24.7%
	Neutral	152	30.2%
	Agree	148	29.4%
	Strongly agree	25	5.0%
Should only water be used to clean the ears?	Strongly disagree	66	13.1%
	Disagree	142	28.2%
	Neutral	155	30.8%
	Agree	116	23.1%
	Strongly agree	24	4.8%
Is it better not to clean the ears?	Strongly disagree	129	25.6%
	Disagree	187	37.2%
	Neutral	95	18.9%
	Agree	72	14.3%
	Strongly agree	20	4.0%
Are cotton swabs effective in removing earwax?	Strongly disagree	146	29.0%
	Disagree	0	0.0%
	Neutral	149	29.6%
	Agree	190	37.8%
	Strongly agree	18	3.6%
Can cotton swabs cause ear infections?	Strongly disagree	16	3.2%
	Disagree	39	7.8%
	Neutral	106	21.1%
	Agree	234	46.5%
	Strongly agree	108	21.5%
Can cotton swabs cause eardrum perforation?	Strongly disagree	18	3.6%
	Disagree	37	7.4%
	Neutral	79	15.7%
	Agree	250	49.7%
	Strongly agree	119	23.7%

Table 3. Public awareness about ear protection methods, Saudi Arabia

Ear protection	No	%
Do you think exposure to loud noise causes deafness?		
Yes	325	64.6%
No	178	35.4%
Do you recommend using water while showering?		
Yes	120	23.9%
No	383	76.1%
Do you think ear piercing should be done as soon as possible from birth?		
Yes	270	53.7%
No	233	46.3%
Should you visit your ENT specialist at a certain period of time?		
Yes	323	64.2%
No	180	35.8%
Do you realize the importance of newborn screening for hearing status?		
Yes	466	92.6%
No	37	7.4%

A total of 64.6% think that exposure to loud noise causes deafness, 64.2% know they should visit an ENT specialist at a certain period, 53.7% think ear piercing should be done as soon as possible from birth, and 23.9% recommend using water to clean ears while showering. Most of the study respondents realize the importance of newborn screening for hearing status.

Figure 1. Overall public knowledge and perception of self-ear cleaning, Saudi Arabia.



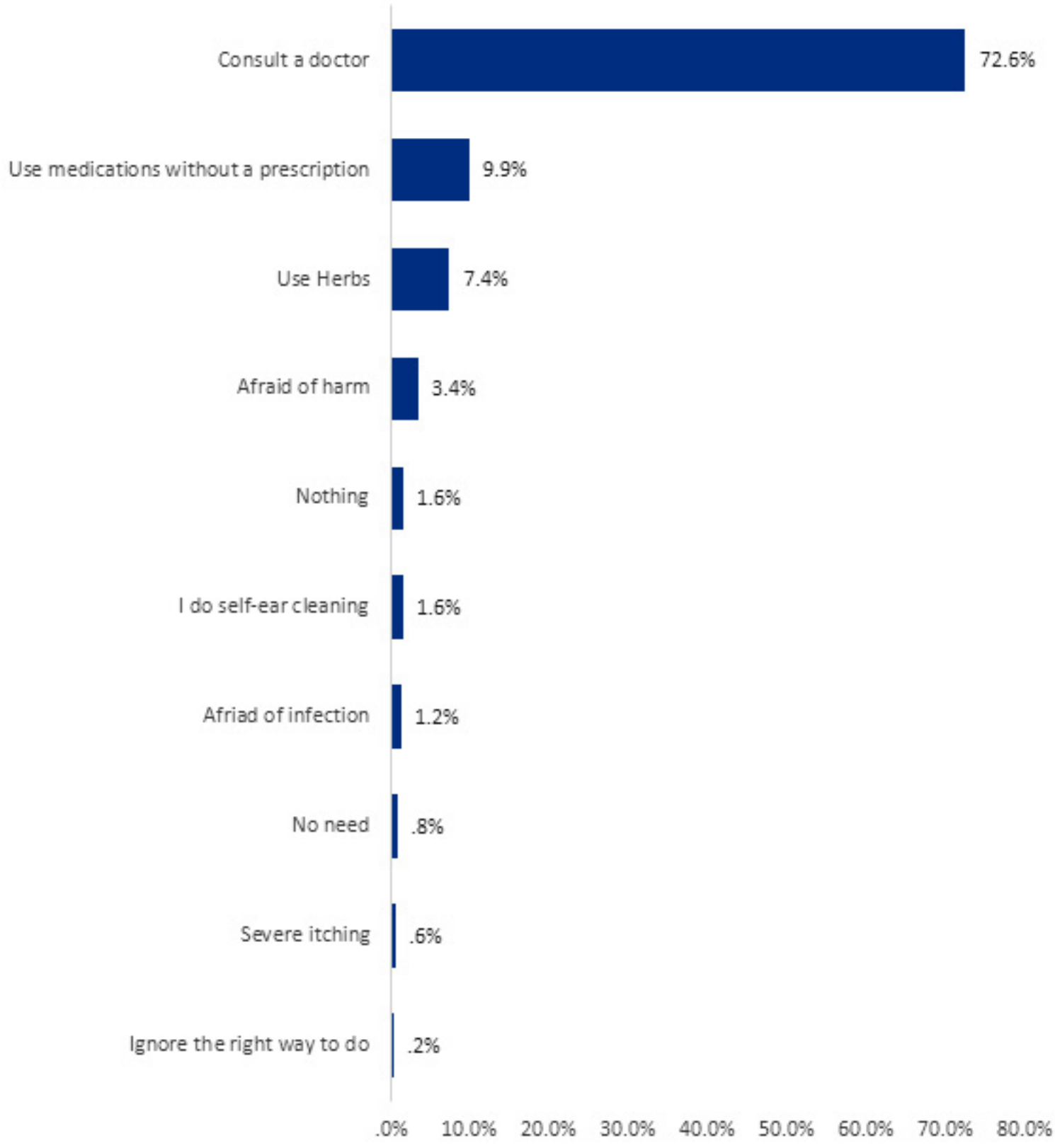
A total of 324 (64.4%) of the participants had an overall good knowledge and perception of self-ear cleaning while 179 (35.6%) had a poor knowledge level.

Table 4: Self-ear cleaning practice among the general population, in Saudi Arabia

Self-ear cleaning	No	%
Do you practice ear self-cleaning?		
Yes	420	83.5%
No	83	16.5%
Which ear do you clean?		
Right	12	2.9%
Left	7	1.7%
Both	401	95.5%
What tools do you use for self-cleaning ears?		
Ear sticks	260	61.9%
Tissue	121	28.8%
Others	29	6.9%
A key	5	1.2%
Matchstick	5	1.2%
How often do you practice ear self-cleaning?		
Twice daily	18	4.3%
Once daily	60	14.3%
Once weekly	122	29.0%
Once monthly	48	11.4%
Irregularly	172	41.0%
What symptoms did you experience after cleaning your ear?		
No symptoms	237	57.0%
Itching	107	25.7%
Pain and itching	39	9.4%
Pain	39	9.4%
Difficulties in hearing	38	9.1%
Blockage	31	7.5%
Dizziness	14	3.4%
What complications do you experience as a result of self-cleaning the ear?		
No complication	271	64.5%
Pain	62	14.8%
Others	44	10.5%
Ear infection in external ear	39	9.3%
Bleeding	4	1.0%

Exactly 420 (83.5%) practice self-ear cleaning, and most of them (95.5%) do it for both ears; ear sticks were the most commonly used tools (61.9%) followed by tissues (28.8%). Exactly 122 (29%) do self-ear cleaning once weekly but 172 (41%) do it irregularly. As for post-cleaning symptoms, most of them had no symptoms (57%) but 25.7% complained of itching, 9.4% had pain with itching and also 9.4% had pain. Considering complications experienced as a result of self-cleaning the ear, the most reported were pain (14.8%) and ear infection in the external ear (9.3%) but 64.5% had no complications.

Figure 2. Participants' attitude and reasons for avoiding performing self-ear cleaning.



The most reported reasons were consulting a doctor (72.6%), using medications without a prescription (9.9%), using herbs (7.4%), being afraid of harm and injury (3.4%), and being afraid of infection (1.2%).

Table 5. Factors associated with public knowledge and perception of self-ear cleaning

Factors	Overall knowledge level				p-value
	Poor		Good		
	No	%	No	%	
Region					
Eastern Region	16	38.1%	26	61.9%	.707^
Middle Region	46	31.3%	101	68.7%	
Northern Region	9	34.6%	17	65.4%	
Southern Region	27	34.6%	51	65.4%	
Western Region	81	38.6%	129	61.4%	
Age in years					
18-24	71	33.5%	141	66.5%	.049*
25-30	34	29.8%	80	70.2%	
30-35	15	37.5%	25	62.5%	
> 35	59	43.1%	78	56.9%	
Gender					
Male	72	36.2%	127	63.8%	.822
Female	107	35.2%	197	64.8%	
Educational level					
Below high school	7	43.8%	9	56.3%	.351^
High school	40	40.8%	58	59.2%	
University graduate	95	32.4%	198	67.6%	
Post-graduate	37	38.5%	59	61.5%	
Monthly income					
< 3000 SR	94	32.8%	193	67.2%	.216
3000-49999 SR	13	38.2%	21	61.8%	
5000-9999 SR	22	32.8%	45	67.2%	
> 10000 SR	50	43.5%	65	56.5%	
Employment					
Unemployed	28	35.9%	50	64.1%	.095
Student	65	30.7%	147	69.3%	
Employee	66	38.2%	107	61.8%	
Retired	20	50.0%	20	50.0%	
Do you practice ear self- cleaning					
Yes	160	38.1%	260	61.9%	.008*
No	19	22.9%	64	77.1%	

Exactly 70.2% of participants aged 25-30 years had an overall good knowledge about self-ear cleaning versus 56.9% of others aged above 35 years with recorded statistical signiýcance (P=.049). Also, 77.1% of those who did not practice self-ear cleaning had an overall good knowledge about the practice compared to 61.9% of those who did (P=.008).

Discussion

Self-ear cleaning, the practice of inserting objects into the ear to remove earwax, is commonly believed to promote ear hygiene and remove excess earwax [19, 20]. Also it is believed that cerumen is an infection indication or its impaction causing nuisance and pain for them [21, 22]. Unprofessional practices such as using cotton buds or matchsticks to remove earwax can cause complications like impaction and injuries to the ear or otitis externa having a high risk for hearing loss [23, 24].

The current study aimed to assess knowledge, attitudes, and practices of self-ear cleaning among the general population in KSA. Considering knowledge and perception of self-ear cleaning practice, the study showed that about two-thirds of the respondents had an overall good knowledge about the practice. In more detail, one-ýfth of the respondents think that self-cleaning ears may be harmful, and about two-thirds of them think it is not important to remove wax constantly. Different levels of agreement regarding the mechanism of self-ear cleaning either by using cotton swabs or using wet towels were poorly reported. Also, a very few percent agreed that it is better not to clean the ears. Regarding the consequences of self-ear cleaning, more than two-thirds of the participants agreed that cotton swabs cause ear infections and eardrum perforation. A study conducted by Ahmed A et al. [25] showed similar results as most of the respondents (55.1%) supposed that ear self-cleaning is beneýcial, while, on the other hand, 7.1% of them thought that ear self-cleaning is non-beneýcial, and 11.7% of them thought that it is a rather harmful process. Additionally, 26.1% of students were not sure about its beneýcial role.

Another study in the Makkah region showed that 8.1% of participants thought that it is harmful to self-clean your ear. In contrast, 50.4% thought that we do not have to remove the wax from our ears constantly [26]. Another study in Riyadh revealed that over 42% of the participants agreed or strongly agreed that cotton buds should be used for cleaning the ears. The majority of the participants disagreed with the statement that suggests not cleaning the ears at all. More than 75% of the participants were aware of the fact that cotton buds could cause ear infections, while 78.9% knew that they could lead to eardrum perforation. Additionally, 85.6% of the participants knew that using cotton buds could push ear wax deeper into the ear [27]. According to Khadka S et al. [28], 84.6% of people believe that wax is a normal substance present in the ear canal. However, 66.8% of students believed that using cotton buds could cause ear injury, while 47.5% thought that self-ear cleaning is beneýcial. Alruwaili H et al. [29] documented that the vast majority of Saudi adolescents (93.1%) were aware of and practiced ear self-cleaning regularly. Moreover, other studies revealed that 55.1% to 74.2% of the participants thought self-ear cleaning is not helpful and may even be harmful [30, 31].

Regarding self-ear cleaning practice, the current study showed that more than three-quarters of the participants practiced self-ear cleaning. Ear sticks were the most commonly used tools followed by tissues. It was done once weekly among nearly one-third of them but the highest percentage did it irregularly. As for post-cleaning symptoms, most of those who did have no symptoms in some cases complained of itching and pain. Considering complications experienced as a result of self-cleaning the ear, the most reported were pain and ear infection in the external ear which was infrequent, but 64.5% had no complications. Similarly, Abdulrahman KA et al, [27] found that 54.7% of the participants reported cleaning both the outside and inside of the ear, and 93.0% of them cleaned both ears equally. Haji AK et al. [26] found that nearly 32% of them cleaned to remove the dirt and 29.30% cleaned to improve their ear hygiene. Other studies showed similar self-ear cleaning practices among community participants [15, 32-34].

Considering attitude, it was clear that the most reported reasons were consulting a doctor, using medications without a prescription, using herbs, being afraid of harm and injury, and being afraid of infection.

Conclusions and Recommendations

In conclusion, the current study showed a high public awareness and perception regarding self-ear cleaning practices mainly its hazards, mechanisms, and tools used to impact on the ear. Also, more than three out of each four did self-ear cleaning mainly with ear sticks and most of them experienced neither post-cleaning symptoms nor complications. Also, the study revealed poor attitudes toward cleaning with cotton buds or wet towels. Health education of the public is required to improve safe ear self-cleaning practices, alongside conducting more extensive studies on the matter.

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