Original Article

Knowledge, Attitudes, and Practices of Self-ear Cleaning in Makkah Region, Cross-sectional Study

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ABSTRACT

Background and aim: Cerumen or ear wax is a normal secretion from sebaceous and ceruminous glands found in the external auditory canal. Wrong self-ear cleaning attempts may lead to cerumen impaction, injuries, and otitis externa. we have concluded this study to assess the local community's knowledge about ear-cleaning, attitudes toward ear care, and self-ear cleaning practices.

Methods: Cross-sectional online survey performed in May 2021 among general population to assess knowledge, attitudes, and practices of self-ear cleaning. We included all people aged between 18 to 90 years who live in Makkah region, also we excluded health care workers and who had previous ears, nose, and throat injuries.

Results: A total of 544 participants responded to the survey, 351 (64.5%) were males and 193 (35.5%) were females, age between 18 to 55. Forty-four (8.1%) of participants thought that it is harmful to self-clean your ear. In contrast, 274 (50.4%) thought that we do not have to remove the wax from our ears constantly. About 32% of them clean to remove the dirt and 29.30% clean to improve their ear hygiene.

Conclusion: Self-ear cleaning is a widespread practice, and most respondents showed a lack of knowledge regarding ear-cleansing mechanisms. In order to rectify the erroneous views, more public health education is needed to dissuade people from practicing self-ear cleaning and teach them about the function of cerumen and problems associated with self-ear cleaning.

Keyword: Knowledge, Attitude, Practice, Self-ear Cleaning, Ear wax.

Introduction

Cerumen or ear wax is a normal secretion from sebaceous and ceruminous glands found in the external auditory canal. Cerumen protects the external auditory canal's skin via maintaining high acidic pH between 5.2-7, which is unfavorable for organisms and helps reduce infection risk. It also has a lubricating effect on the canal [1-3]. It moves typically outward through a self-cleaning mechanism known as the conveyor belt process of epithelial migration and does not need to be cleaned; this movement is aided by mandible movement during chewing.

By this process, the canal's cerumen is moved outward along with dirt, dust, and particulate matter within the ear canal [4].Self-ear cleaning is defined 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 [5,6]. Wrong self-ear cleaning attempts may lead to cerumen impaction, injuries, and otitis externa. Cerumen impaction is described as an accumulation of cerumen resulting in symptoms or inability to assess the ear canal or

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tympanic membrane [7-9]. Cerumen impaction is present in up to 6% of the population [10], and the most common otolaryngology procedure performed in primary care is cerumen removal [11]. Cotton buds are considered one of the most preferred objects used for self-ear cleaning, and some people use a finger, biro pen cover, feather, broomstick, and matchstick [1]. We believe that with good education to the community and more efforts to raise public awareness about the suitable options for ear-cleaning and the possible complications of these unprofessional practices, we will have some improvement at the level of public awareness. Therefore, we have conducted this study to assess the local community's knowledge about ear cleaning, attitudes toward ear care, and self-ear cleaning practices.

Methods

A cross-sectional online survey performed in May 2021 among general population to assess knowledge, attitudes, and practices of self-ear cleaning. Sampling technique used in this study was convenience sampling technique to select the participants. We included all people aged between 18 to 90 years who live in Makkah region, also we excluded health care workers and who had previous ears, nose, and throat injuries. We used software Epiinfo version 3.0 to calculate the accurate size considering the population size in Makkah regions which is about 8.8 million inhabitants. The confidence interval (CI) level at 95%, and the anticipated % of frequency considered as 50%. Sample size was calculated to be 385 participants. In case of data loss, a total sample size of 400 participants was required. However, in our study we included 546 participants. Our survey was conducted after reviewing previously published studies and developed by the author. Our survey was conducted online and designed by Google forms (R), then it was distributed electronically via social media apps. The questionnaire covered the demographical data of the participants, questions regarding the knowledge, practice of self-ear cleaning and attitudes of self-ear cleaning. To assess the level of knowledge participants needed to get more than 60% of the answers right, each right answer was given a score of one, participant who got 4 or more considered having good knowledge. The language of the survey was translated to Arabic and then, it was translated back to English for analysis and publication. We used Statistical Package for the Social Sciences (SPSS) version 23 to do the data analysis of the study. Absolute frequencies and percentages were used to describe the categorical variables. Chi-square tests were used to compare the proportion of categorical data. Also, a student t-test of independence was performed to compare the numerical data of the study. Statistical significance was set at $P < 0.05$ and CI was set at 95%.

The study was approved by the Ethics and Research Review Committee of Umm Al-Qura University, Faculty of Medicine (Approval number: HAPO-02-K-012-2021-4-673), Date of approval was on 25/4/2021.

Results

A total of 544 participants responded to the survey, 351 (64.5%) were males and 193 (35.5%) were females. The age of participants was between 18 to 55 with a mean of 23.4. Most of the responses were from Makkah city with 264 (48.5%) followed by Jeddah city with 208 (38.2%). Regarding the educational level of participants, most of them have a university degree with 440 (80.9%) and only 3 (0.3%) participants who only had primary school degrees. When we asked about the income of the participants, 354 (65.1%) of them had an income of less than 1 thousand Saudi Riyal. Regarding practicing self-ear cleaning, 389 (71.5%) participants practice self-ear cleaning (Table1). Out of 544 participants 109 (20%) scored more than 60% which was considered the base line of good knowledge (Figure1). To assess the level of knowledge of participants toward self-ear cleaning, we have asked multiple questions and the data revealed that only 44 (8.1%) of participant thought that it is harmful to self-clean your ear. While 274 (50.4%) thought that we do not have to remove the wax from our ears constantly. Regarding, surgery if the ear drum rupture 223 (41.0%) thought it is not necessary to do the surgery, around 478 (87.9%) responded that high pitch sound can damage hearing (Table2). When participants were asked about the reason of performing self-ear cleaning 31.60% of them clean to remove the dirt and 29.30% clean to improve their ear hygiene (Figure2). 31.10% of the participant clean their ear once a week, and 66% of participants who clean their ear they use cotton bud (Table 3). Out of the 389 participant who practice self-ear cleaning 381 (97.9%) clean both ears, 70 (18.0%) of them had itching after cleaning their ears and 249 (64.0%) did not have any symptoms. 13 (3.3%) had otitis externa as a complication after cleaning their ears (Table3). Participants also were asked about their attitude regarding self-ear cleaning, 370 (68.1%) of them believe that they will consult a doctor if they experience pain in the ear, however 49 (9%) will use herbals if pain occurs. Participants who do not practice self-ear cleaning were asked for the reason they avoid it, 67 (12.3%) answers due to the fear of having wax

impaction as a consequence (Table 4).The next section of the survey was concerning the association between knowledge and demographic factors, the result showed that the gender was significant to the knowledge of self-ear cleaning, however the age, city, education, and income had no significant association with the knowledge (Table 5). Relationship between practice of self-ear cleaning and demographic factors was also analysed, no significant value was found between practicing self-ear cleaning and age, education, income. Nevertheless, significant value was found between city and gender when linked with practicing self-ear cleaning (Table 6).

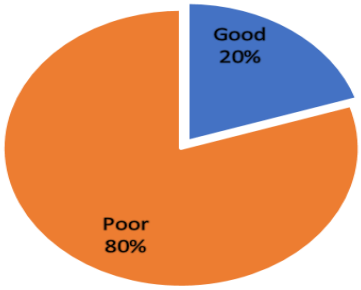

Figure 1 Level of knowledge of self-ear cleaning and it is complication.

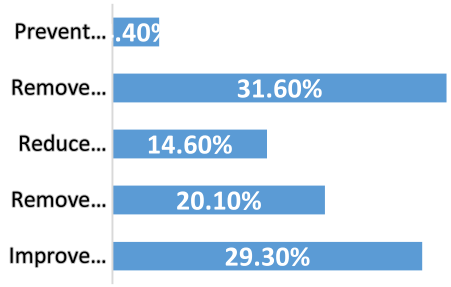

Figure 2 Distribution of reason of cleaning of ear as described by participants.

Table 1: Demographic data.

Variable	Category	Frequency (%)
Age *(years)mean, SD (median [IQR]*)	23.4, 6.22 (22[20-24])	
Age	18 - 24	412 (75.7%)
	25 – 30	89 (16.4%)
	31 – 40	21 (3.9%)
	More than 40	22 (4.0%)
Gender	Male	351 (64.5%)
	Female	193 (35.5%)
City	Makkah	264 (48.5%)
	Jeddah	208 (38.2%)
	Taif	68 (12.5%)
	Qunfudhah	3 (0.6%)
	Leith	1 (0.2%)
Education	Primary	3 (0.3%)
	Secondary	0 (0.0%)
	High	101 (18.6%)
	University	440 (80.9%)
Income	Less than 1K	354 (65.1%)
	1K – 3K	65 (11.9%)
	3K – 5K	37 (6.8%)
	5K – 10K	42 (7.7%)
	10K – 20K	34 (6.3%)
	More than 20K	12 (2.2%)
Practice self-ear cleaning	Yes	389 (71.5%)
	No	155 (28.5%)

Table 2: Knowledge regarding self-ear cleaning.

Questions	Frequency	(%)
What do you think of self-ear cleaning?		
Beneficial	238	43.8
Non-beneficial	26	4.8
Harmful *	44	8.1
Not sure	236	43.4
Do I have to remove ear wax constantly?		
Yes	270	49.6
No *	274	50.4
Rupture ear drum needs surgery?		
Yes *	321	59.0
No	223	41.0

High pitch sound can cause damage to your hearing?		
Yes *	478	87.9
No	66	12.1
I need to consult a doctor if I have hearing difficulty?		
Yes *	215	39.5
No	329	60.5
High and low attitude can cause earache?		
Yes *	467	85.8
No	77	14.2

Table 3: Practice of self-ear cleaning.

Characteristics of Ear cleaning	Frequency	(%)
Which ear do you clean?		
Both	381	97.9
Right	5	1.3
Left	3	0.8
What tools do you use for self-ear cleaning?		
Cotton bed	326	66.1
Fingers	96	19.5
Tissues	45	9.1
Keys	13	2.6
Others	13	2.6
What symptoms did you have after cleaning your ear?		
Itching	70	18.0
Pain	31	8.0
Discharges	17	4.4
Fullness	9	2.3
Dizziness	2	0.5
Difficulty hearing	11	2.8
None	249	64.0
How frequent do you practice self-ear cleaning?		
Once a day	95	17.5
More than once a day	34	6.3
Once a week	121	22.2
More than once a week	95	17.5
Monthly	44	8.1
Since when you use cotton to clean your ear		
Less than 5 years	68	17.5
more than 5 years	259	66.6
I do not use cotton buds	62	16.0
Complications you have experienced after ear cleaning		
Otitis externa	13	3.3
Pain	38	9.5
Bleed	5	1.3
None	342	85.9

Table 4: Attitude of participants regarding self-ear cleaning.

Questions	Frequency	(%)
What are the reasons that make you avoid self-ear cleaning?		
Use herbal	49	9
Consult a doctor	370	68.1
Use over the counter medications	125	23
What would you do if you experience ear pain & discharge?		
Foreign body	56	10.3
Infection	32	5.9
Wax impaction	67	12.3
Not applicable	389	71.5

Table 5: Association between knowledge and demographic data.

Variable	Knowledge of self-ear cleaning		P VALUE
	Good (%)	Poor (%)	
Age			
Less than 30	101 (20.2%)	400 (79.8%)	0.764
30 - 40	3 (14.3%)	18 (85.7%)	
41 and above	5 (22.7%)	17 (77.3%)	
Gender			
Male	59 (16.8%)	292 (83.2%)	0.014 F
Female	50 (25.9%)	143 (74.1%)	
City			
Makkah	50 (18.9%)	214 (81.1%)	0.823
Jeddah	44 (21.2 %)	164 (78.8%)	
Taif and others	15 (20.8%)	57 (79.2%)	
Education			
Primary	1 (33.3%)	2 (66.7%)	0.846
high	20 (19.8%)	81 (80.2%)	
University	88 (20.0%)	352 (80.0%)	
Income			
Less than 3K	87 (20.8%)	332 (79.2%)	0.275
3 – 5	3 (8.1%)	34 (91.9%)	
5 – 10	8 (19.0%)	34 (81.0%)	
More than 10	11 (23.9%)	35 (76.1%)	

Table 6: Association between practice of self-ear cleaning and demographic data.

Variable	Practice self-ear cleaning		P VALUE
	Yes (%)	No (%)	
Age			
Less than 20	296 (71.8%)	116 (28.2%)	0.337
20 – 30	60 (67.4%)	29 (32.6%)	
30 – 40	14 (66.7%)	7 (33.3%)	
More than 40	19 (86.4%)	3 (13.6%)	
Gender			
Male	225 (64.1%)	126 (35.9%)	0.000 F
Female	164 (85.0%)	29 (15.0%)	
City			
Makkah	202 (76.5%)	62 (23.5%)	0.022
Jeddah	145 (69.7%)	63 (30.3%)	
Taif	40 (58.8%)	28 (41.2%)	
Qunfuthah	1 (33.3%)	2 (66.7%)	
Leith	1 (100.0%)	0 (0.0%)	
Education			
Primary	2 (66.7%)	1 (33.3%)	0.717
Secondary			
high	69 (68.3%)	32 (31.7%)	

University	318 (72.3%)	122 (27.7%)	
Income			
Less than 1K	258 (72.9%)	96 (27.1%)	0.444
1K – 3K	40 (61.5%)	25 (38.5%)	
3K -5K	28 (75.7%)	9 (24.3%)	
5K – 10K	29 (69.0%)	13 (31.0%)	
10K – 20K	24 (70.6%)	10 (29.4%)	
More than 20K	10 (83.3%)	2 (16.7%)	

Discussion

This study aimed to assess the community's level of knowledge, self-reported practice, and attitude regarding self-ear cleaning. 80% of participants showed poor knowledge regarding self-ear cleaning, as only 8.1% appreciated the harmful effect of this habit, and 60.5% will not consult a doctor if they experienced hearing difficulties. This decreased level of awareness is a widespread issue. Different studies were conducted internationally to assess the communities' information and had similar results [6,8]. In this study, most of the participants practiced self-ear cleaning. Similarly, a study done in Nigeria found that 93.4% of educated young individuals practiced this habit, regardless of age, educational level, or income [5,12]. High prevalence was also noted in studies conducted in Saudi Arabia (75%) [12], Nigeria (80%) [6], Malaysia (92%) [13] and Bhutan (92.15%) [14]. Healthcare workers also did not have adequate knowledge and most of them perform matching practice [15,16]. It is as high as 94% in a study by Oladeji et al. that was conducted on health workers in a tertiary hospital, which raised concerns considering their role in public awareness [1]. Uniform high rates in all studies suggest high prevalence across communities. The most common reasons for performing self-ear cleaning were to remove dirt and to improve ear hygiene. Alshehri et al. described similar beliefs of what made people practice this habit [17]. Amutta et al. and Lee et al. reported that it is mainly performed to clean the wax as it is considered dirt [6,13]. Ear itchiness was the dominant reason of ear cleaning in a study done by Afolabi et al. on the African population [18]. Similarly, in other studies, the majority clean both ears once a week with cotton buds as the preferred tool [8,13,15,17,19]. Even though it can cause further cerumen accumulation [15], less preferred tools were tissues, feathers, and keys. Random attempts to clean the ears, especially if it was done with no direct visualization, or using foreign tools to clean the ears and remove wax, are the main causes of trauma and otitis externa [19]. About half of the participants did not complain of symptoms after cleaning their ears, and most did not have any complications. In another study done on a group of university students, a lower percentage (25.2%) of students reported no complaints of any related symptoms after ear cleaning [8]. In this study 18% suffered from ear itchiness, pain, discharges, and fullness (8%, 4.4% and 2.3% respectively). Reported injuries were external auditory canal abrasion as the commonest followed by tympanic membrane perforation and impaction of cerumen [15]. The association between demographic data and level of knowledge were assessed. A significant association was found between gender and level of knowledge, and male participants showed poor awareness compared to females with p-value<0.014. Similar results were obtained from other studies conducted by Aldawsari et al. and Alharbi et al. on the Saudi population [20,21]. A significant relation between gender and practicing self-ear cleaning was also detected as more females were involved in this habit. There was no significant relationship between age, geographic distribution, educational level and income with the level of knowledge regarding this topic. The ear protects and cleans itself by producing cerumen. The outward migration of the epithelium and trapping the dirt by the hair that lines the skin of the ear's outer part all play a role in maintaining the ears clean [18]. Kravitz et al. and Tunming et al. described the ignorant attitude of the communities to the offered bits of advice regarding the harmful consequences of inserting foreign objects into the ear canal [22,23]. The mistaken perception of the beneficial role of self-ear cleaning might be a factor encouraging this habit. Nevertheless, it is not the only influencing factor since 74.2% of the people who believed otherwise were performing self-ear cleaning [5]. This factor can be modified by raising public awareness.

Conclusion

Self-ear cleaning is a widespread practice, and most respondents showed a lack of knowledge regarding

ear-cleansing mechanisms. To rectify the erroneous views, more public health education is needed to dissuade people from practicing self-ear cleaning and teach them about the function of cerumen and problems associated with self-ear cleaning. This shows the important of public education to avoid complications that can be caused by self-ear cleaning. We recommend doing public campaigns teaching the general population to avoid self-ear cleaning and encourage them to visit doctors when having ear symptoms.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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