

"HABITUAL SELF-CLEANSING OF EARS WITH THE COTTON EAR BUDS AND ITS OTOLOGICAL IMPACT"

ENT

Dr. Suhas. S S Senior resident Department of ENT MIMS, Mandya

Dr. Ravi.D Associate professor, Department of ENT, MIMS, Mandya

Dr. Prasad. M. H Professor & HOD, Department of ENT, MIMS, Mandya

Dr. Ravi Ambewadi S Junior resident, Department of ENT, MIMS, Mandya

Dr. Balaji N. K Assistant professor, Department of ENT, MIMS, Mandya

ABSTRACT

Self cleaning of ears is a widely practised habit across the globe. We have analysed the demerits caused secondary to use of cotton buds among 1000 patients presented with the ear complaints. Each patient was examined in detail and was asked to answer a set of preformed standard questions. 919 individuals gave positive history of use of cotton buds with 33.4% used it for removal of ear wax. Majority of the patients used company manufactured cotton buds with 38 % of them used it on daily basis. Even though various otological diseases were identified there was definite statistical significance between cotton bud user and individuals diagnosed with impacted wax and localized otitis externa with p value <0.05. We recommend that public awareness of cotton-bud related complications and the notion of the 'self-cleaning' ear needs to be raised.

KEYWORDS

Introduction

Self-cleaning of the ears is a common practice done casually among majority of the population in India. History of use of cotton buds dates back from 1900, Leo Gerstenzang¹ observed his wife using wads of cotton on toothpicks to clean his baby's ears, he came up with the idea use of cotton-tipped swab also known as 'Q-tips'. Over the years, diverse changes have occurred in the making of cotton buds including its sterility. Even though manufacturers of this product stand firm on its hygiene, the day to day use of these sterile ear buds are questionable. Only few studies done across globally have conclusively said, cotton buds is the culprit for various otological diseases and is responsible for causing injury to the ear.

In our study we analyze the demerits and diseases caused by the use of cotton ear buds in patients presenting to us in the outpatient department of a tertiary care hospital. This study has implications for public health and primary care as commonly we have come across majority of the patients presenting to us with the ear complaints giving an affirmative history of frequently cleaning their ears. The awareness of not to use the cotton buds lacks in the community, hence in our study we have identified the detrimental effects caused by use of cotton buds.

Materials and methods

We have included all the patients presenting to us with the ear complaints fulfilling the criteria as mentioned in table 1. We did a prospective study wherein we have assessed the use of cotton buds among 1000 individuals over a period of one year. Initially patients were examined by the senior consultants and fellow colleagues who were blindfolded in the study then the subjects were requested to answer our pre-formed tested modified questionnaire in the language they understand. In case of minors, questionnaire was made to answer by the guardians or the care givers. Each individual underwent detailed clinical examination including otoendoscopic examinations and examination under microscope if required. Previously treated patients who underwent treatment for their respective ear disease and who came for follow up were also included in this study.

Table no.1:

Inclusion criteria:

1) Age group 1-80 years
2) Both male and female
3) All Patients presenting with ear complaints to ENT OPD at our hospital
4) Patients undergoing treatment for the ear disease

Exclusion criteria: Not willing to participate in the study

Statistical analysis

All data was entered in excel software and was analysed using SPSS

software (version 19.0). The incidence of the cases was expressed in terms of mean, proportion and percentage. Chi-square test was done for categorical variables. The *P* value 0.05 or less will be considered statistically significant.

Results

In our study among 1000 individuals who came with ear complaints, 919 individuals gave positive history of use of cotton buds as represented in figure: 1. among which 51.9% constituted male and 48.1 % female. Age group between 20-40 years of age represented major portion of the study group making unto 52.01% as depicted in table 2.

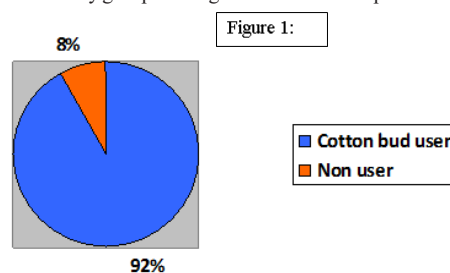
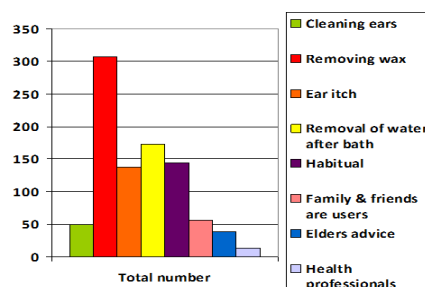


Table 2:

Age group Years	Cotton bud		Total
	User	Non user	
0-20	117	8	125
20-40	478	36	514
40-60	216	28	244
60-80	108	9	117
Total	919	81	1000

Major group of people i.e. 33.4% used cotton buds for removal of wax in the ear followed by 18.8% of people used cotton buds for removal of water from ear after bath. Other reasons for the use of cotton buds is represented below in the bar diagram.



Various otological diseases were identified among patients examined during our study period and the list of the diseases diagnosed is as mentioned in table (3). The most common clinical condition identified was impacted wax (14%) followed by chronic otitis media (13%) and localized otitis externa (12%). It was found there was statistical significance between cotton bud user and individuals diagnosed with impacted wax and localized otitis externa with p value <0.05.

Table.3

Ear diseases	No.of Cotton bud user	Non user	Total
Localised otitis externa	115	2	123
Diffuse otitis externa	91	9	100
Traumatic perforation of TM	19	4	20
Traumatic injury to EAC	71	4	72
Acute otitis media	97	11	108
Chronic otitis media	111	15	126
Impacted wax	124	2	135
Keratitis obturans	45	8	53
Presbycusis	27	12	30
Perichondritis	33	0	33
Herpes oticus	10	0	10
Secretory otitis media	14	2	16
ET dysfunction	35	3	38
Otomycosis	39	4	43
Foreign body ear	45	2	47
Myringitis bullosa hemorrhagica	19	1	20
Granular myringitis	16	1	17
Eczematous otitis externa	8	1	9
Total Patients	919	81	1000

The depth of use of cotton buds was also taken into consideration and data is shown in table5. A larger group of patients mentioned the use of cotton buds limited only to canal opening and pinna. Remaining patients gave the history using cotton tipped ear buds deep into the ear canal.

Table5:

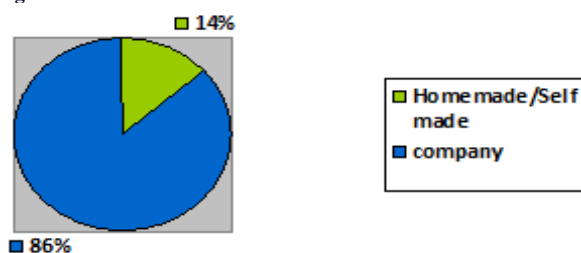
Depth of use of cotton buds	Total No of People	Percentage
Till the opening of external auditory canal	616	67.0
Deep into the canal	303	33.0
	919	100.0

The frequency of use cotton buds is depicted as shown in below Table6. Thirty eight per cent of the people used cotton buds on daily basis constituting the dominant portion among the other bud users.

Frequency of use	Total No	Percentage
Twice daily	135	14.7
Once daily	347	37.8
Once in 2-3 days	198	21.5
Once in 4-6 days	119	12.9
Once a week	77	8.3
Once /twice a month	30	3.3
Very Rarely (once in two months)	13	1.4

Figure2 represents the type of use of cotton buds. Majority of the patients used company made cotton buds which are available in packs of 25, 50, 75 and 100 at local medical & general stores. Only 13.7% of people used cotton buds which were prepared by self or other family members using cotton tipped small wooden sticks, plastic sticks, and toothpicks.

Figure2:



When questioned about previous ear surgeries, it was found that 97 % of patients had no history of any ear surgeries in their life time. Only 3% of patients had ear surgeries (including Tympanoplasty type I, type II and modified radical mastoidectomy) previously for chronic ear disease.

Discussion

Over half of patients seen in otolaryngology clinics, regardless of their primary complaint, admit to cotton-swab usage to clean their ear canals. Based on patient symptomatology and their habit of using ear buds prove a definitive role of cotton buds in predisposing ear infections.

Macknin ML et.al studied about the approach to ear wax and the association between the use of cotton tipped swabs and impaction of the cerumen. Population group aged 2weeks -20 years were followed up and were asked to answer the questions preformed. It was found atleast 75% of people with impaction of wax gave a positive history of using cotton ear swabs. They concluded that use of cotton tipped swabs may lead to cerumen accumulation.²

A study conducted in Israel by Moshe Nussinovitch et.al has explained the leading risk factors involved in causing otitis externa among paediatric age group (from 3.5–12 years of age). They have highlighted the common practice of cleaning children's ears with cotton-tip applicators either by the parents or by the child

him/herself and its deleterious predisposition to many ear infections. Concluding the use of cotton tipped applicators as the lead culprit for causing otitis externa in their study, refrain their use to clean ears or remove wax has been suggested.³

A Prospective survey was done by Steele BD and Brennan PO among 111 children with presumed accidental ear injuries presenting to paediatric accident and emergency department. The presumption of accidental injury depended on the consistency of history and injury. In spite of mechanism of injury being variable, the cotton bud induced ear injury was common and was identified as a preventable injury. It was also noted that multiple other objects inserted to ear included pencils, match sticks, and wires.⁴

Lee LM et al, in their study reported that cotton bud was the most common object used to clean the ear canal (92%); other objects such as towel were seldom used. A small percentage also used metal probe to clean the ear canal. Only 6% of the subjects used a cotton bud to remove water from the ear canal. Sixteen percent of the subjects used a cotton bud to scratch the ear canal when it is itchy. The response to loose tip cotton bud was poor. Only 24% agreed to change their cotton bud to a loose tip one after showing them a sample, despite being told that it is safer and better. They concluded that 36% of the subjects cleaned their ear canals one or more times every day. The most common reason to clean the ear canal was to remove earwax from the ear canal. Only 6% of the subjects used it to absorb water or fluid from the ear canal. The majority of the public believes that earwax needs to be removed from the ear canal using a cotton bud. A loose tip cotton bud was not well accepted by the respondents to absorb water from the ear canal.⁵

A Study conducted by Hobson JC and Lavy JA reported 325 patients with 173 males and average age 41 years (range 9–92). In 232 patients the symptoms were ear-related, in 40 nasal, in 31 throat and in 22 other. 171 (53%) respondents said they used cotton buds to clean their ears, and the frequency in those with ear symptoms was about the same in those with other complaints. Concerning the potential complications of cotton bud use, the numbers expressing ignorance ('strongly disagree' or 'disagree') were: 'can cause infections of the ear' 64, 'can cause a perforation of the eardrum' 51, 'can push ear wax deeper into the ear' 47. Most cotton bud users, when asked why they did it, merely said 'it seems like a good idea' or family and friends use them. Fortunately, only a small number had been advised to do so by medical professionals.⁶

A study was conducted by Kumar S and Ahmed S with 100 patients where 58 were males and 42 females. Mean age was 38.5 years and range from 07 years to 73 years. The common complications / effects were unspecified itching in the ear in 34, otitis externa in 23, otomycosis in 15, trauma / injury to the external auditory canal in 9, impacted wax medially resulting in decreased hearing in 6 and cotton

tip foreign body 5. Four patients developed boil and traumatic tympanic membrane perforation occurred in four cases. Over all 22% patients developed decreased hearing.⁷

Nagala S conducted a study in which Ages ranged from 17 to 87 years, with a mean of 41.1 years. There were 144 (60%) female and 95 (40%) male responders. An alarming 68% admitted using cotton buds in their ears, with 76% of users using them at least weekly, if not more frequently. The primary reason (96%) given for using cotton buds was to remove earwax. Cotton-bud users were aware of 52% of the potential complications, whereas non cotton-bud users were aware of 59% of potential complications. There was no significant association between awareness of complications and cotton-bud use ($\chi^2 = 2.23$, $df = 3$, $P = 0.53$). He concluded that awareness of cotton-bud related complications is an important public health issue.⁸

In a study done by Zeenath ameen et.al in USA over the use of pediatric cotton-tip applicator and its related ear injury treated in emergency departments during 1990-2010 showed highest rate of injury (32.2 per 100 000 for age 0-3 years) in young children. It was found that ear cleaning was the major reason for the injury caused (73.2%), and most of the parents themselves used the cotton tip applicators (76.9%) to clean the ears of their kids. Foreign body sensation (39.2%) and bleeding (34.8%) were the common reasons for visiting the ED. The presence of a foreign body (29.7%) and tympanic membrane perforation (25.3%) constituted as most common diagnoses.⁹

Even though we came across multiple ear diseases among the individuals who are in habit of use of cotton buds for their ear problems, only the conditions like impacted wax and localized otitis externa was found statistically significant. The basis of otitis externa secondary to use of cotton buds may occur due to the direct pressure exerted on skin/mucosal lining by the cotton tip and by maceration of the epithelial lining of the external auditory canal. The major portion of patients in our study group gave positive history of use of company manufactured sterile cotton buds but in our perspective, the sterility of these packed cotton ear buds still remains a debatable question. The concernment of keeping the cotton buds in a hygienic manner was also very much lacking among the individuals.

Conclusion

As aforementioned in our results diseases caused by the use of cotton buds are uprising and alarming. We recommend that public awareness of cotton-bud related complications and the notion of the 'self-cleaning' ear needs to be raised. The public needs to be informed that cotton bud is not an appropriate object to remove earwax from the ear canal. The habit of using cotton buds by the parents to clean their child's ear has to be discouraged. Efforts should be taken by the treating doctor to educate each individual regarding the demerits caused by the use of cotton buds.

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