Original Article

Knowledge, Practice, and Attitude of MBBS Doctors Regarding Ear Hygiene: A Cross-Sectional Study

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Abstract

Objective: To assess the knowledge, practice, and attitude of medical doctors regarding ear hygiene and analyse the statistical association with their clinical specialty and duration of professional experience.

Methods: This cross-sectional analytical study was conducted at the Department of Otorhinolaryngology, Niazi Welfare Foundation Teaching Hospital, from October 2024 to March 2025, after obtaining ethical committee approval. A structured questionnaire was distributed to 520 MBBS doctors, who were recruited through convenience sampling. Data were analysed using SPSS version 23. Descriptive analysis was conducted for all variables, and one-way analysis of variance was used to explore statistical associations between the knowledge, attitude, and practices (KAP) of MBBS doctors and their clinical specialty and experience.

Results: Among the 520 study participants (mean age, 33.2 ± 9.9 years; 59.2% women), 77.7% correctly recalled the curved anatomy of the ear canal, but only 52.7% acknowledged the immunological function of cerumen. More than half (56.9%) of the study participants confessed to using cotton swabs, with 51.5% cleaning their ears more than twice a week. Itching was identified as the most common (38.5%) stimulus for inserting objects in the ear canal, and 12.3% had a history of self-inflicted ear injury. Only 47.7% referred to ENT specialists for ear problems. Clinical specialty showed a significant positive association with KPA ($p < 0.05$), except for parental habits ($p = 0.66$).

Conclusion: A significant knowledge gap was identified among many MBBS doctors, reflecting their unsafe ear cleaning practices. Educational intervention is prudent to promote knowledge of ear hygiene and evidence-based counselling in clinical practice.

Keywords: Cerumen, External Ear, Health behaviour, IgA, Physicians.

Introduction

The Human ear is the organ of hearing and balance. The external auditory canal is a curved structure. It is lubricated by a natural secretion in its outer cartilaginous part, i.e., cerumen (earwax), which also plays an essential role by providing local immunity through immunoglobulin A. Nature has designed a self-cleaning system for human ears via movements of the jaw, disregarding the need for manual cleaning under normal circumstances. However, despite this, self-ear-cleaning practices remain widespread across the globe.

Historical accounts from various ancient civilisations, such as China, Egypt, and Korea, reveal the use of different tools, including spoons, bamboo sticks, blades, and hooks, for presumed maintenance of ear hygiene. In modern times (2021), Lukolo et al. recorded the average prevalence of self-ear cleaning practices as 76.6%, and cotton swabs were identified as the most commonly misused object for this purpose (69.6 %).

Various mistaken beliefs are recorded in the literature on this topic, such as the misapprehension about the need for ear cleaning; many people adopt it as a habit, sometimes to soothe an itch in the canal, and disregard the need for a specialist clinic visit. These practices can cause various complications, such as dizziness, vagal stimulation, which may induce a cough or even syncope, trauma to the ear canal, tympanic membrane perforation, and even ossicular injury.[1] Healthcare professionals, particularly MBBS doctors, through their knowledge, behaviour, and attitude, significantly influence community awareness and can help reduce morbidity secondary to self-induced ear cleaning practices.

Although otorhinolaryngology is part of the curriculum for undergraduate medical students, in many regions, it offers limited exposure. This condition may lead to a lack of awareness among practitioners (not working in the field of otorhinolaryngology) about common ear, nose, and throat (ENT) disorders. Moreover, superficial core concepts with minimal hands-on practice may provoke vague recall of applied anatomy and physiology of a specific region, such as the ear canal. Thus, there is a possibility that a physician may underestimate the risks of unsafe health behaviours. Studies have reported fickle advice given to patients, indicating an incongruity between knowledge and practice. Only a few studies exist on this topic in the last 05-year data. Additionally, to the author's knowledge, data from Pakistan on the comprehensive assessment of MBBS doctors' awareness, routine practices, and professional attitude regarding ear care do not exist.

The rationale of this study was to consider the knowledge, practice, and attitude (KPA) of MBBS doctors relevant to ear hygiene in a structured manner and to identify common disparities in personal and clinical practice. This will help medical educationists and policymakers to identify areas where knowledge reinforcement is needed and to ensure the effective provision of patient education strategies by primary care physicians.

The objective of the study was to assess the knowledge, attitude, and practice of MBBS doctors regarding ear hygiene and analyse its relationship with their working speciality and duration of clinical experience. This would help identify the gaps between evidence-based guidelines and the current behaviours of doctors.

Contributions:
MZK - Conception, Design
JH SMS - Acquisition, Analysis, Interpretation
MNAK MR - Drafting
SB - Critical Review

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

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Materials And Methods

This study had an analytical cross-sectional design. It was conducted at the Department of Otorhinolaryngology of the Niazi Welfare Foundation Teaching Hospital from 1st October 1, 2024, to 31st March 31, 2025. Approval was obtained before the study from the Institutional Ethical Review Committee. The sample size of 520 participants was calculated using the formula for cross-sectional studies with a presumed prevalence of 50%, a 95% confidence level (Z = 1.96), keeping the margin of error at 5%. All healthcare professionals holding a degree of MBBS (Bachelor of Medicine and Bachelor of Surgery) were included in the study after obtaining informed consent. The participants were recruited regardless of their gender and race through convenience sampling. The exclusion criteria were non-MBBS health care providers and incomplete proformas. A self-structured questionnaire was circulated among the study participants, comprising basic profiles and questions assessing the knowledge, practice, and attitude of study participants, after obtaining informed consent. All data were recorded and analysed using SPSS version 23. Descriptive analysis was performed for all study variables. A one-way ANOVA test was done to assess the statistical significance of various study variables. The principles of the Declaration of Helsinki were followed throughout the study.

Results

A total of 520 participants, with a mean age of 33.2 ± 9.9 years (range, 19–65 years), were enrolled in the study, including 59.2% females and 40.8% males. House officers comprised the largest group (25.4%, n = 132). The other participants were specialists in medicine and allied fields (23.1%, n=120), general practitioners (17.7%, n = 92), surgeons and allied specialists (14.6%, n = 76), otorhinolaryngologists (12.3%, n = 64), paediatricians (3.1%, n=16), gynaecologists (2.3%, n=12), and ophthalmologists (1.5%, n=8). The mean duration of clinical experience of the study participants was 7.66±9.20 years (ranging between < 1 month of experience for freshly enrolled house officers to a maximum of 44 years). In assessing the knowledge of MBBS doctors (Table I) regarding the applied anatomy and physiology of the human ear, the majority (77.7%) correctly identified the shape of the ear canal as curved, the site of cerumen secretion (58.9%) at the outer cartilaginous part of the external ear canal, and the natural mode of cerumen expulsion (58.9%) through jaw movements. Concerning the immunological properties of cerumen, only 52.7% recognised that immunoglobulin A (IgA) is secreted in the ear canal.

Table 1: Knowledge assessment of MBBS Doctors about the Human ear and its cleaning mechanism (n=520)

Factors assessing Knowledge	N=Number of Responses (Percentage)
Ear Canal Shape:	
*** (√) Curved**	404 (77.7%)
*** (X) Straight**	116 (22.3%)
Wax Secretion Site:	
*** (√) Outer cartilaginous part**	304 (58.9%)
*** (X) Inner bony canal.**	124 (24%)
*** (X) Middle ear.**	76(14.7%)
*** (X) External source**	12 (2.3%)
Natural Wax Expulsion Mode:	
Through jaw movement.	304 (58.9%)
Through perspiration	76(14.7%)
Need to be self-cleaned	124(24%)
Antibody Secretion in Ear Wax:	
Ig A	272(52.7%)
Ig M	32(6.2%)
None	140(27.1%)
Both	72(14%)

*√ refers to the correct answer
*X refers to the wrong answer

The analysis of self-induced ear cleaning habits among MBBS doctors (Table II) revealed that up to 51.5% practiced risky ear cleaning behaviour more than twice a week, and 56.9% confessed to the habit of inserting cotton buds in their ears. A smaller proportion (8.5%) claimed that they used to insert fingers in their ears, particularly while performing the act of ablution. Up to 24.6% of the study participants believed that their ear cleaning practice was attributed to their habits, 23.7% believed that it was affected by their professional knowledge, and 13.3% believed that both factors equally affected them.

Table 2: Assessment of Practice of MBBS Doctors regarding Ear hygiene (n=520)

Factors assessing Practice	N=Frequency of answers (Percentage)
Frequency of Self-Ear Cleaning	
Daily	68(13.1%)
Often (> twice a week)	268 (51.5%)
Rarely	120(23.1%)
Never	64(12.3%)
Tools Misused for Self-Ear Cleaning	
Cotton buds	296 (56.9%)
Keys	12(2.3%)
Pens	8(1.5%)
Metallic pins	4(.8%)
Others	44(8.5%)
Nil	156(30%)
Factors Influencing Individual Ear Hygiene Behaviour	
Based on professional knowledge	123(23.7%)
Habitual behavior	128(24.6%)
Both	69(13.3%)
None of the above	200(38.5%)
Self-Reported Justifications for Ear Self-Cleaning	
Itchy Ears	336 (64.6%)
Adopted in childhood	116 (22.3%)
Based on professional knowledge	No response received
None of the above	68(13.1%)
Reported Family Members with Self-Ear Cleaning Habits	156(30%)
Parents	164(31.5%)
Siblings	76(14.6%)
Spouse	56(10.8%)
Children	116(22.3%)
Nil	144(27.7%)
Do not know	
H/O Ear injury from Self-Ear Cleaning	
Yes	64 (12.3%)
No	400(76.9%)
Not applied	56(10.8%)
Impact of Clinical Experience on Ear Hygiene Practices	
Yes	212(40.8%)
No	152(29.2%)
May be	116(22.3%)
Not applied	40(7.7%)
Specialist-guided Ear-cleaning history	
Yes	80(15.4%)
No	364(70%)
Not applied	76(14.6%76)

Table 3: Assessment of Attitude of MBBS Doctors regarding Ear hygiene (n=520)

Factors assessing Practice	N=Frequency of answers (Percentage)
Perceived Benefits of Ear Cleaning:	
Sooth Itching	200(38.5%)
Fades Sticky sensation	60(11.5%)
Maintain a clean ear	92(17.7%)
Prevent Specialist intervention	68(13.1%)
No perceived benefits	100(19.2%)
Recommends Self-Ear-Cleaning to Patients:	
Yes	160(30.8%)
No	360(69.2%)
Recommendations for patients regarding ear-cleaning	
Refer to an ENT consultant	248(47.7%)
Suggested using cotton buds.	140 (26.9%)
Nothing	100(19.2%)
Wipe with clothes	4(0.8%)
Use tap water	4(0.8%)
Prescribe medicines	8(1.5%)
Use dry tissue	4(0.8%)
Use fingers	4(0.8%)
Use a piece of a wet cloth	4(0.8%)
Belief in Self-Induced Ear Injury Risk	
Yes	443 (85.2%)
No	27(5.2%)
May be	50 (9.6%)

Of the reasons cited for self-ear-cleaning, the most common response was the presence of itching (64.6%), followed by habits adopted in childhood (22.3%). Regarding family influence, doctors reported observing self-cleaning behaviours among siblings (31.5%), parents (30%), spouses (14.6%), and children (10.8%).

Additionally, 22.3% repudiated such behaviours within the family, while 27.7% were unaware of their relatives' practice.

Regarding adverse outcomes, 12.3% of the doctors reported a history of self-induced ear injuries, but a smaller proportion (15.4%) admitted that they needed professional care for ear cleaning because of their self-induced ear cleaning habits.

When assessing the attitudes of MBBS doctors toward ear hygiene (Table III), 38.5% perceived self-induced ear cleaning as a way to soothe itching, 17.7% believed it helps maintain a clean ear, 13.1% thought it prevents the need for a doctor's intervention, and 11.5% considered it effective for removing sticky sensations.

Only 30.8% of the doctors reported advising patients to clean their ears themselves. A total of 47.7% of the participants referred their patients to an ENT specialist for ear cleaning. However, 26.9% still suggested that their patients use cotton swabs. A very small percentage recommended alternative practices such as wiping with clothes, using normal water, dry or soft tissues, a finger, or prescribing medicine (each ranging between 0.8% and 1.5%).

Most (85.2%) believed that self-ear cleaning could lead to injuries, 5.2% denied this, and 9.6% were uncertain.

A one-way analysis of variance (ANOVA) test was used to assess the statistical significance of the depth of knowledge, practice, and attitude of doctors about the specialty and duration of their clinical significance. Table IV demonstrates all the results showing significant statistical relationships, except for the habit of parents practising unsafe-ear-hygiene, which did not show a significant statistical value (p=0.66) in relation to the specialty.

Table 4: Statistical significance of various study variables about Speciality and Duration of clinical experience via One-way ANOVA test

Parameters	Specialty	Duration of experience
Knowledge		
Ear Canal Shape:	P=0.000	P=0.000
Natural Wax Expulsion Mode:	P=0.000	P=0.000
Natural Wax Expulsion Mode:	P=0.000	P=0.000
Antibody Secretion in Ear Wax	P=0.026	P=0.000
Practice		
Frequency of self-ear cleaning	P=0.000	P=0.000
Objects misused	P=0.000	P=0.000
Factors Shaping Personal Ear Cleaning Habits	P=0.000	P=0.000
Reported Family members self-cleaning ears		
Parents	P=0.66	P=0.000
Spouse	P=0.000	P=0.000
Siblings	P=0.011	P=0.000
Children	P=0.000	P=0.000
Effect of clinical experience	P=0.000	P=0.000
Need for Specialist-guided ear cleaning	P=0.000	P=0.000
Attitude		
Perceived Benefits of Ear Cleaning:	P=0.000	P=0.000
Ear-Hygiene Advice to Patients	P=0.002	P=0.000
Belief in Injury Risks from Ear Cleaning	P=0.000	P=0.000

Discussion

A total of 520 MBBS doctors participated in this study, with a female predominance and a mean age of 33.2 ± 9.9 years. The major participation of junior doctors, including house officers and newly licenced general practitioners, reflected the interest of young doctors in engaging in educational activities. Regarding specialty, the majority of the participants belonged to the field of medicine and allied medicine, followed by general practitioners, and other specialties also made minor contributions.

In our results, a significant knowledge gap was found among the MBBS doctors, although most (77.7%) correctly identified the shape of the ear canal as curved; nearly half of the participants incorrectly recalled the applied physiology of cerumen(Table I).

A Saudi study recorded a significant gap in basic otorhinolaryngology knowledge among doctors in internal medicine (52.5%), pediatrics (55.4%), and family medicine (62.9%), with particularly higher scores noted among those who had participated in otolaryngology clinical rotations during medical school (79.7%) and residency (26.3%), underscoring the need to reinforce otolaryngology training in primary care education ($p < 0.001$).

Koirala et al.stated that 49.67% of the medical students believed that wax had to be removed manually, and 24.5% of them were using multiple objects for this purpose.

In our results, the primary reasons for unsafe ear cleansing practices (Table II) were described as itching and childhood habits, with a noteworthy impact from siblings and parents. Despite 12.3% reporting ear injuries from self-cleaning and 15.4% seeking professional care, 40.8% of doctors believed their clinical experience influenced their ear hygiene practices.

These statistics point towards the sociocultural transmission of health behaviours and raise concerns about a potentially dangerous disconnect between theoretical training and personal practice.

In a Saudi study conducted to assess the KAP of health care professionals, 46.9% of doctors participated; impacted cerumen was found more commonly among doctors, although they were less likely to use cotton buds (62.2%) than non-physicians (88.3%); in addition, doctors reported more itchy ears (21.4%) and ear injuries (13.3%) than non-doctor participants (4.5%).
We did not find much data in the last 5 years' references, particularly related to MBBS doctors, to compare our results.
Comparing our results with a community-based study, up to 42% of participants believed cotton swabs were required for manual ear cleaning; hitherto, 75.8% acknowledged the risks, including eardrum perforation (85.6%) and wax impaction (85.6%), despite 68.6% continuing to use cotton swabs, with complications such as pain (16.2%) and otitis externa (16%) reported.
A significant mix of misconceptions and risky behaviours was identified in our results; the majority of the participants considered the benefits of self-ear-cleaning for personal comfort, such as alleviating itching (38.5%) and preventing medical intervention (13.1%).
Similarly, a Nepali study involving medical students found that 60.5% considered manual ear cleaning as a way of maintaining ear hygiene; however, 59.9% understood it as risky behaviour for complications, with reported complications including pain, bleeding, and otitis externa.
Interestingly, a study of the general population in Mecca found that 50.4% believed that earwax did not need to be routinely removed.
In contrast, a population-based study in Karachi found that 100% of participants with otitis externa used cotton swabs, 76.5% had continued this practice for more than a year, and 100% were unaware of the risks associated with this malpractice. Additionally, 46.5% of adults used cotton swabs to clean their children's ears.
In our results, many participants (69.2%) denied suggesting self-cleaning of the ear at home, and many suggested it (47.7%) to visit an ENT specialist for professional ear care, reflecting responsible behaviour in patient management. Coordination between primary and specialty care is essential for timely and effective treatment. Gaps in decision-making, information flow, and referral processes can hinder the delivery of quality health services.
Our results showed that most doctors (85.2%) acknowledged the potential for self-ear cleaning to cause injury; however, unsafe practices remain prevalent. Similarly, a study conducted by Alshehri et al. stated that although 80.4% of students acknowledged that self-ear cleaning is harmful, 51.2% of them continued to practice it habitually, considering it necessary for hygiene (45%).
One-way ANOVA test showed the positive association of depth of knowledge, various factors of practice (excluding the influence of parental habits), and the attitude of doctors with their duration of clinical practices and their speciality (Table IV). Comparing our results with those of a Pakistani study, the influence of parents (2.1%) on unsafe ear hygiene practices was lower than that of siblings (4.2%). Babalol et al. also recorded a significant positive association between the influence of the education level and job role on management practices and clinical decision-making in otology clinics.
Mahfouz et al. evidenced that senior medical students and those who completed an otolaryngology course had significantly better knowledge about self-induced ear cleaning ($P = 0.001$).
One limitation was the limited generalisability of the data, given that this was a regional study. The cross-sectional design limited the recording of changes in data trends. Moreover, the self-reported data may involve bias. Longitudinal studies should be conducted to assess the reasons behind knowledge gaps in depth, and regional variations should be recorded from various parts of the country.

Conclusions

The gaps identified in the knowledge, practice, and professional attitude of MBBS doctors highlight the need to strengthen ENT training at all levels. Bridging knowledge-practice gaps, addressing ethnic factors, and encouraging patient counselling are vital to promote safe ear hygiene.

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