

## Association of Dermatological Conditions of External Ear with the Use of Cotton Buds

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### *Abstract*

**Background:** The habit of cleaning the external auditory canal with cotton buds is a common practice of the masses. It has strong association with neurodermatitis and contact dermatitis of the external ear. It is also associated with acute otitis externa, rupture of tympanic membrane causing bleeding and temporary hearing loss in some cases. In many cases the injury will heal but damage to minuscule bones deep inside the ear can cause permanent deafness. **Objective:** The objective of this study was to determine the association of dermatological condition of external ear with the use of cotton buds. **Materials and Methods:** This case control study was done from January to October 2012 in the Ear Nose Throat Department of Pakistan Level III Hospital, Darfur, Sudan. Sixty seven patients with dermatological diseases of external ear were cases and 83 subjects without dermatological diseases of external ear were selected as controls. **Results:** Among 67 cases, 58 were cotton bud users and among 83 controls only 29 were cotton bud users. Different types of dermatological diseases were neurodermatitis (34.32%), otitis externa (28.36%), contact dermatitis (26.87%) and wax impaction (8.95%). Ninety three percent of cotton bud users were ignorant of harmful effects of this bad habit. **Conclusion:** There is a strong association of dermatological diseases of external ear with the use of cotton bud which should be discouraged by fortifying the warning by manufacturers and health education at various educational levels.

**Key words:** Cotton bud use; External ear; Dermatological diseases

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### **Introduction**

We have heard the old saying “Never put anything smaller than your elbow in your ear”. We should all heed this sage advice because many people injure their ears with cotton tip swabs.<sup>1</sup> Cotton buds were developed in 1923 by Leo Gerstenzang. After observing his wife using wads of cotton on toothpicks to clean his baby's ears, he developed a cotton-tipped swab that he considered safer.<sup>2</sup> Cotton buds are commonly used to clean the ears, remove wax, in case of itching in the ear, for aural toileting in discharging ears and sometimes as

a habit. Cotton buds are used not only by adults but also are commonly used in pediatric population either by children themselves or by parents. Insertion of cotton buds is not only unnecessary but also potentially dangerous. Ear injuries caused by cotton buds are commonly seen in ENT practice.<sup>3,4</sup> The first instances of medical concern over the use of cotton buds were in 1972 with reports of tympanic membrane perforation, otitis externa and cerumen impaction.<sup>2</sup> A large number of patients report daily to doctors and otolaryngologists

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with the complaint of itching and urge to scratch their external ears. Majority of them are the users of cotton buds. Use of cotton buds is a dangerous habit of the masses of the world population and is having strong association with neurodermatitis and contact dermatitis of the external ear. Cotton bud is also associated with acute otitis externa, rupture of tympanic membrane and perichondritis in few patients.<sup>5-8</sup> This study was done to determine the association of dermatological condition of external ear with the use of cotton buds and also to convey the message to the community to avoid the use of cotton buds.

**Materials and Methods**

This case control study was conducted at Ear Nose Throat Department, Pakistan Level III Hospital which is the largest hospital of the United Nations in Darfur, Sudan from January 2012 to October 2012. Permission from Hospital Ethical Committee was obtained. Consent from the study subjects were taken before filling the questionnaire for study. All the patients having dermatological diseases of external ear were included as cases after being examined and diagnosed by the otolaryngologist. Controls were selected from the dependants of United Nations personnel of Darfur. Patients having middle ear and nasal diseases were excluded from the study. Odds ratio of the risk (using of cotton buds to clear the ears) was calculated. Frequencies of the variables were calculated by using descriptive statistics of SPSS version 17.0.

**Results**

Total number of subjects in this study was 150 with the mean age  $35.01 \pm 7.90$  years (19–51 years). Out of them 137 were male and 13 were female. Sixty seven patients were cases and 83 were the controls. Among the cases 58 were cotton bud users and among the controls it was 29. Odds ratio was 12 (Table I).

Table I: Risk of use of cotton buds of external ear

| Risk                               | Disease Outcome                                 |  | Total |
|------------------------------------|---|--|-------|
|                                    | Dermatological diseases of external ear (cases) | No dermatological disease of external ear (controls) |       |
| Cotton bud users (Exposed)         | 58  | 29   | 87    |
| Cotton buds non-users (Nonexposed) | 9   | 54   | 63    |
| Total                              | 67  | 83   | 150   |
| Odds ratio                         | $58 \times 54 / 29 \times 9 = 12$               |  |       |

Table II shows that among the 87 cotton bud users, 81 (93%) were not aware of harmful effects of use of cotton bud to clean ear. Only 6 (7%) persons were aware of bad effects, but they were compelled to do this due to the urge to clean their ears. Of the cotton bud users, 62 (71.2%) used to clean both ears and 25 (28.73%) persons used to clean one ear only. Table III shows the different types of diseases of the cases.

Table II: Association between awareness about the effects of cotton bud and habit of cotton bud using (n=87)

| Awareness about cotton bud use | Using in both ears | Using in one ear |
|--------------------------------|--------------------|------------------|
| Without awareness              | 58 (66.67%)        | 23 (26.43%)      |
| With awareness                 | 4 (4.60%)          | 2 (2.30%)        |
| Total                          | 62 (71.27%)        | 25 (28.73%)      |

Table III: Types of diseases of external ear of the cases (n=67)

| Diseases                      | Number | Percentage |
|-------------------------------|--------|------------|
| Neurodermatitis               | 23     | 34.32      |
| Otitis externa                | 19     | 28.36      |
| Contact dermatitis            | 18     | 26.87      |
| Wax impaction                 | 6      | 8.95       |
| Tympanic membrane perforation | 1      | 1.5        |

**Discussion**

Otitis externa is inflammation of the external auditory meatus (EAM) skin, which includes the visible ear and the portion of the ear canal that leads up to the eardrum without extending to the middle ear.<sup>9</sup> A number of factors including infection, allergy, dermatological disease and trauma are related. Among them acute bacterial infection is the most common.<sup>10</sup> Common symptoms and signs include otalgia, itching, aural fullness, tenderness of the tragus and pinna, ear canal edema, hearing loss, erythema, and otorrhea.<sup>11</sup> Repeated local trauma like ear bud abuse and picking the ear with cotton bud is a popular theory for benign necrotizing otitis externa. Several studies revealed that neurodermatitis, contact dermatitis, wax impaction, perichondritis and tympanic membrane rupture are associated with the habit of using cotton bud to

clean ear.<sup>7,8,12,13</sup> This study showed that a person with dermatological diseases of external ear was 12 times more likely to have been exposed to the risk factor (using the cotton buds) than a person without ear disease. Afolabi et al conducted a survey on 372 individuals and found that majority of subjects used cotton buds to clean their ears from wax. They concluded that the habit of self ear cleaning should be discouraged.<sup>14</sup> Hobson and Lavy conducted a survey on 325 individuals and observed that majority of cotton bud users were ignorant about the injurious effects and warning of the manufactures must be fortified.<sup>2</sup> In our study 93% of cotton bud users were ignorant of harmful effects of cotton buds. Our study showed a strong association of this bad habit with different ear diseases. This risk association strongly recommends further studies and meta-analysis in future. Other studies assessed the characteristics of assumed accidental ear injury in children and the commonest mechanism was cotton bud induced injury.<sup>15,16</sup> We could not include the pediatric population in our study as our medical facilities were for adult employees of United Nations and Darfur which is a non-family station.

There is a strong association of dermatological diseases of external ear with the use of cotton buds. This bad habit must be discouraged by fortifying the warning by manufactures, health education at various educational levels and short community awareness lectures of otolaryngologists at electronic media. We recommend further studies to show association of this risk with dermatological diseases of external ear in different groups of population.

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