

Empowers SD Muhammadiyah Sapen students to strengthen ear health and improve knowledge

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ABSTRACT

The three parts of the ear are the external ear, middle ear, and inner ear. The ear contains cerumen, a natural material that protects the external ear canal. Proper ear hygiene and health are essential to prevent ear infections, ear ringing, hearing loss, and sudden deafness. In addition to improper ear cleaning, other factors might contribute to ear disorders, including the misuse of personal listening devices. SD Muhammadiyah Sapen students would be educated on the significance of maintaining ear health through this service project. This community service activity is conducted online via mini-webinars or counseling using zoom meetings, presentations, educational films, and brochures on how to maintain ear health. This extension is quasi-experimental, with a pre-and post-test design involving a single group, utilizing the Paired Samples T-Test model for data analysis. The activity commences with a pre-test administered to students, continues with the presentation of information, discussion, and question-and-answer sessions, and concludes with a post-test designed to assess students' level of knowledge and the activity's success. Twenty students participated in this community service event. Conclusion: There is a significant difference between the average pre-test and post-test scores with a p-value of 0.01 (0.05)



KEYWORDS

Ear
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1. Introduction

The three parts of the ear are the external ear, middle ear, and inner ear. Cerumen, a natural material that protects the external ear canal, is associated with the sense of hearing [1]. Cerumen is a typical secretion of the sebaceous glands in the outer portion of the external auditory canal [2]. The serum components include glycopeptides, lipids, hyaluronic acid, sialic acid, lysosomal enzymes, and immunoglobulins. Due to its lubricating qualities and acidic pH range, cerumen is a protective barrier in the external auditory canal (between 5.2 and 7.0) [3].

The typical external auditory canal has a natural self-cleaning process through which cerumen and other particles leave the ear canal on their own with jaw motions [2], [4]. Cleansing the ear canal can hinder this natural process and increase the risk of developing particular ear disorders [4]. According to reports, most people view cerumen as filthy and harmful to the human body [5]. Self-cleaning the ears results from this false perception [6]. Self-cleaning involves inserting objects into somebody's ears to clean them [3]. Cotton buds were reported to be the most popular item for self-cleaning ears, but some individuals also used feathers, pen covers, sticks, matches, and fingers [3], [5]. This method damages the ear's natural cleaning system. Cleaning the ear can result in various consequences, including trauma, impaction of cerumen, infection, and retention of cotton buds [4], [5].

This year, Coronavirus disease 2019 (COVID-19) is a significant health concern [7], [8]. On March 11, 2020, the WHO pronounced COVID-19 a pandemic [9]. COVID-19 has produced many changes in people's lives, including relocating office jobs to home offices or work-from-home arrangements and

implementing online education in all schools worldwide. This pandemic effect makes online education better [10]. All levels of education, including elementary, middle, and college, appear to be undergoing various methodological alterations. According to UNESCO, the COVID-19 virus stops school attendance for nearly 1.5 billion students [11]. Due to this issue, educational institutions and educators (teachers and lecturers) must be at the forefront of establishing the most effective learning process. In order to stop the transmission of COVID-19, the government has mandated that people study online or work from home to comply with restrictions on physical distance [12]–[14].

The technology of personal listening devices such as headsets, earphones, headphones, and similar devices has advanced with the evolution of technology and communication tools [15]. As a result, usage of these devices has risen, particularly among adolescents [16]. Using personal audio devices may increase noise-induced hearing loss (NIHL). Hearing loss is generally not diagnosed until a significant and irreversible loss has occurred, which contributes to the development of NIHL [17], [18].

According to the World Health Organization (2019), 1.1 billion young people, or 50% of those aged 12 to 35, are concerned about hearing impairment related to excessive loudness. Four hundred sixty-six million individuals, or 5% of the global population, will be affected by hearing loss. The quality of life will decrease for 432 million adults (93%) and 34 million children (7%). WHO predicts 630 million people will have hearing loss if nothing is done by 2030. This number is expected to rise from 900 million in 2050 to at least one in ten people by 2022 [19].

2. Method

This method of delivering community service utilizes short webinars or counseling via Zoom sessions, presentations, educational films, and booklets on maintaining ear health. Before and after counseling, students' knowledge will be evaluated. This extension is quasi-experimental, utilizing a pre-and post-test design with a single group. In paired Samples, the T-Test is the approach applied for data analysis. Community service as show in Fig. 1.

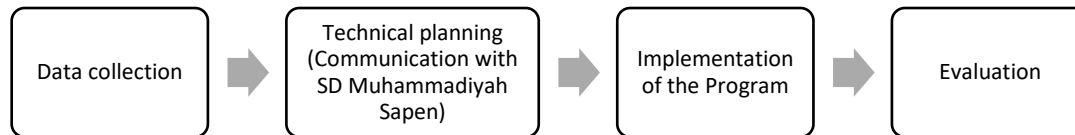


Fig. 1. Processes of Community Service Implementation

The coaching targeted twenty SD Muhammadiyah Sapen students. The implementation of this community service starts with the coordination of school collaboration. The Officer of SD Muhammadiyah Sapen coordinated identifying significant health issues, the location of respondents' activities, and the activity strategies through virtual meetings. Due to the spread of the virus, all of these community service activities are conducted online.

Since the pandemic's beginning, SD Muhammadiyah Sapen has conducted online teaching and learning activities, and Google forms have been used frequently. This community service project was accomplished on Saturday, February 26, 2022. This session began with a Google form pre-test to assess students' previous knowledge before teaching them appropriate ear cleaning and care. The activity continued after the presentation with a Google form post-test to determine if the student's knowledge had increased.

Students need to understand how to maintain ear health; consequently, sharing knowledge on maintaining ear health and taking precautions while using personal listening devices is essential. This community service at SD Muhammadiyah Sapen aims to raise students' knowledge of the significance of maintaining ear health through disseminating information.

3. Results and Discussion

This community service activity was placed in SD Muhammadiyah Sapen on February 26, 2022. Twenty students from SD Muhammadiyah Sapen's fourth grade participated in this activity. Twelve of

the twenty students (60%) were girls, while eight (40%) were boys. Respondent characteristic as show in Table 1.

Table 1. Respondent Characteristics by Gender

Participant's Gender	Amount	Percentage (%)
Boys	8	40
Girls	12	60
Total	20	100

The data revealed that 12 students, or 60 %, knew that the ears do not require cleaning alone. The common practice of cleaning somebody's ears by inserting objects into the ear canal has been documented. Most people who clean their ears assume that excess dirt must be eliminated. Cerumen is known to protect, clean, and lubricate the ear canal's skin. The ear canal does not need to be cleaned because it has a self-cleaning mechanism assisted by jaw movement [4]. Eleven students, or 55 percent of the total, know that using cotton buds to clean somebody's ears is not safe. Some research reveals that cotton buds are the most prevalent equipment for cleaning the ears [4]. Self-cleaning the ear can impair the ear's natural cleansing process and lead to complications such as trauma, impaction of cerumen, infection, and retention of cotton buds [3].

Thirteen of twenty students are aware that ears that are itching or swollen are not a reason to pick at them. 75% of students understand that a ruptured eardrum may lead to hearing loss. In addition, these students engaged in community service know that the volume limit for personal listening devices such as headsets, earphones, and headphones is 60% and that prolonged exposure to loud music via personal listening devices may cause hearing impairment. 75% of students understand that NIHL cannot be treated. The volume and duration of individual listening devices must be taken into consideration. Students are increasingly concerned about personal listening devices and hearing loss. According to research, 82% of students currently possess personal listening devices [20].

Before coaching, the results were 68.1 with an average score of 50; after coaching, the results were 79.3 with an average score of 62.5. The average pre-test and post-test values differed significantly, with a p-value of 0.01. (0.05). Tabel 2 as show scores for respondents' level of knowledge regarding ear health maintenance.

Table 2. Scores for Respondents' Level of Knowledge Regarding Ear Health Maintenance

Score Type	Minimum	Maximum	Average
Pre-test score	40	100	68,1
Post-test score	62,5	100	79,3

The findings obtained before coaching was 68.1, with an average score of 50, while the results obtained after coaching were 79.3, with an average score of 62.5. A p-value of 0.001 indicated that the average pre-test and post-test scores differed statistically significantly (0.05). Based on the evaluation of empowerment implemented via community service model training for SD Muhammadiyah Sapen students, it is possible to increase the average value of students' knowledge, attitudes, and behaviors regarding the relevance of protecting ear health.

4. Conclusion

This community service indicates that the concept of student empowerment can increase awareness of the importance of maintaining ear health in SD Muhammadiyah Sapen, as indicated by an average pre-test score of 68.1 and a post-test average score of 79.3.

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