

Extent of Awareness Regarding Oral Health and Dental Treatment Needs among Individuals with Hearing and Speech Impairments in Saudi Arabia

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INTRODUCTION

Oral cavity can be defined as an important structure of the human body, which is comprised of tongue, teeth, palate, and mucous membrane. A significant number of research-based articles have described that the maintenance of oral health is extremely necessary in individuals for living a healthy life. The World Health Organization has identified that oral health plays a vital role for better and improved performance of the individuals. Appropriate oral health is significant for children and adults with disabilities to reduce the risk of various oral infections and diseases. Oral health is essential to general health and quality of life.^[1]

ABSTRACT

Objective: This study aims to evaluate the awareness level of the individuals with hearing and speech impairments (deaf and dumb individuals), in relation to their oral health and dental treatment needs.

Materials and Methods: The approach of stratified randomization method of sampling was used for the selection of participants. About 240 people with hearing and speech impairments (deaf and dumb) were selected from four cities of Saudi Arabia, which includes AlKharj, Riyadh, Dammam and Abha. A questionnaire of two sections was distributed among the participants for collecting data. A simple descriptive analysis was done, and the data were expressed in terms of frequencies and percentages. Microsoft Excel has been used for compilation of data and execution of graphs. Moreover, the questionnaire data were subject to SPSS data analysis (IBM SPSS Statistics for Windows, Version 22.0, Armonk, IBM Corp. NY).

Results: Most of the participants were not aware of the importance of oral health. Majority of the participants described that they did not visit qualified dentists in the past and many of them did not know the right way of doing tooth brushing. Hence, deaf and dumb individuals lack basic knowledge about oral health and dental treatment needs.

Conclusion: The study concluded that the awareness level of oral health and dental treatment needs is low among individuals with hearing and speech impairments (deaf and dumb) in Saudi Arabia.

KEYWORDS: Deaf, dental needs, dumb, hearing impairment, oral health, Saudi Arabia, speech impairment

There are numerous diseases and disorders, which are strongly associated with the oral cavity. Impaired oral health is a very common condition among the population of children.^[2,3] Oral infections have a direct impact on the physical and mental performance of the individuals. It is also a fact that inappropriate dental care will also affect the normal functioning of teeth. Therefore, numerous organizations have awareness programs for

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delivering better education regarding oral health and dental needs. It has been evaluated by the studies that increased awareness of the oral health, and dental needs will certainly result in improved oral health status.^[4,5]

In Saudi Arabia, the children are extremely at risk to oral infections and dental caries. Therefore, authorities are providing effective education to the school-going children in the educational institutions. This strategy is helpful for reducing the risk of dental caries and oral diseases.^[6] However, investigations about the awareness and educational level among the deaf and dumb individuals have not been carried out in the settings of Saudi Arabia. Impaired oral health among deaf and dumb individuals will also affect their wellness and quality of life. Therefore, such investigational projects are required for analyzing the awareness level of oral health and dental needs among deaf and dumb people.^[7-9]

Deaf and dumb individuals are a vital part of the society; however, a significant number of studies are not present for evaluating the awareness level regarding oral health status.^[10] Most of the scientific studies have focused on the general population for analyzing the awareness level regarding oral health and dental needs. Thus, the present study will play a role in analyzing and providing oral health-related education and information in people with hearing and speech impairment.

AIMS AND OBJECTIVES

The present study aims to measure and evaluate the awareness level of oral health among the people with hearing and speech impairments (deaf and dumb) in Saudi Arabia. This study will contribute to a certain extent in making a disease free and healthy society in relation to oral health, especially in people with hearing and speech impairments.

MATERIALS AND METHODS

DATA COLLECTION

A pilot study was done, and the data were collected on stratified randomization based on geographical locations from the four major cities of Saudi Arabia. These four cities include AlKharj, Riyadh, Dammam and Abha. A self-administered questionnaire was prepared based on one previous study,^[11] so as to evaluate the level of awareness regarding oral health and dental treatment needs among the people with hearing and speech impairments. Different types of schools and centers were selected from the four cities of Saudi Arabia, for the distribution of questionnaires among targeted population. Nature of the study was explained to all the participants, and an informed consent of all the participants was obtained.

TARGET POPULATION

The aim of the study was mainly to know the extent of awareness regarding oral health and dental treatment needs among individuals with both hearing and speech impairments, so age factor was not focused much, but they were ranging mainly in the age group between 15 and 30 years. In this study, it was very difficult to select deaf and dumb persons because most of them were unable to read anything appropriately. Therefore, sign language was used at most of the places. A video was made for showing sign language to the deaf and dumb persons regarding questions. Different types of graphics were also used for demonstrating and explaining terminologies visually. An audio was also running along with the video for the deaf persons, having hearing aid. Guardians and staff members were allowed to assist the target group for better understanding of the questionnaires.^[12] Similarly, hearing disability also plays a role of barrier in the collection of data. Thus, the study selected the required group with the help of displaying videos. The extent of hearing and speech impairment was not our objective in this study, so we did not focus much about these criteria, but they were in all ranges from mild, moderate to severe for both hearing and speech impairments. A total of 240 deaf and dumb individuals were selected on stratified randomization method based on geographical locations from the four major cities of Saudi Arabia. As there were very few centers in Saudi Arabia for people with hearing and speech impairments (deaf and dumb), we selected sixty participants from every center/city to make a total of 240 participants.

QUESTIONNAIRE

A self-administered questionnaire was prepared which was pretested for its reliability and validity. To examine the validity of the designed questionnaire, it was produced before ten specialist dental practitioners to advise their level of agreement to the question statements using a five-point rating scale from 0-4 (4-rating means extremely appropriate, 3-rating means appropriate, 2-rating means no idea, 1-rating means inappropriate and 0-rating means extremely inappropriate). On this basis, some of the questions were revised to improve the clarity of understanding, and a discussion was arranged to validate the questions and apply the necessary modifications to validate the questionnaire.

The validity of entire questionnaire and each question was 75% and 76%-85%, respectively. These values of validity were acceptable. Cronbach's alpha was used to assess the reliability of the questionnaire. Cronbach's coefficient for the reliability was 0.83, which was suitable for an acceptable study. After the required scrutiny and discussion, the questionnaire

was divided into two major categories for deriving out effective outcomes appropriately. The first section of the questionnaire was composed of 08 questions about the information and awareness of dental care [Table 1]. The second section of the questionnaire was comprised of 10 questions regarding the basic knowledge on oral and dental health [Table 2]. The questions and material of the questionnaire were written in a precise and simplified language and were closed ended, scientific terms were not used in the questionnaire.

TIME FRAME

A period of 09 months was served for the implementation of the project. The project began with the development of questionnaire for individuals with hearing and speech impairments. The study began its investigation from June 2016; different centers were selected by stratified randomization based on geographical locations from four cities of Saudi Arabia, for the distribution of questionnaires and later collection of data. The study concluded its findings by the end of February 2017.

RESULTS

A total of 240 deaf and dumb individuals were selected for the study to derive out effective outcomes. The data were obtained through random sampling. All the participants had hearing and speech impairments. The section of results is divided into two categories, similar to the questionnaire. A simple descriptive analysis was done, and the data were expressed in terms of frequencies and percentages. The collected data were appropriately arranged and analyzed through different computer software applications. Microsoft Excel has been used for the compilation of data and execution of graphs. Moreover, the questionnaire data were subject to SPSS data analysis (IBM SPSS Statistics for Windows, Version 22.0, Armonk, IBM Corp. NY).

INFORMATION AND AWARENESS OF DENTAL CARE

The first category of this section is regarding the awareness level of dental care. This section of the questionnaire was comprised of eight (08)

questions which is listed in Table 1. All the selected participants (100%) responded to this section of the questionnaire [Table 1a]. In this category, each and every question had three options, which include yes, no, and I don't know. Most of the participants described that they did not visit qualified dentists in the past. However, the majority of the participants did notice blood from gums during brushing teeth. About 69% of the participants were not aware of the right way of brushing. Nearly 73% of the participants have not seen any awareness source for improved dental health. Majority of the participants did not use dental floss. Similarly, 56% of the participants

Table 1a: The responses of the participants on "Information and awareness of dental care" by the people with hearing and speech impairments in terms of frequency and percentage

Serial number	Questions	n (%)
Q1	Did you visit the dentist before?	
	(a) Yes	19 (8)
	(b) No	195 (81)
Q2	Do you clean your teeth using toothbrush and toothpaste	
	(a) Yes	24 (10)
	(b) No	166 (69)
Q3	Do you notice blood from gum while brushing?	
	(a) Yes	132 (55)
	(b) No	62 (26)
Q4	Are you satisfied about your dental health?	
	(a) Yes	134 (56)
	(b) No	34 (14)
Q5	Have you seen any awareness program for dental health?	
	(a) Yes	31 (13)
	(b) No	175 (73)
Q6	Do you use dental floss?	
	(a) Yes	7 (3)
	(b) No	74 (31)
Q7	Is proper information about dental care necessary?	
	(a) Yes	38 (16)
	(b) No	51 (21)
Q8	Is dental care necessary for improved oral health status?	
	(a) Yes	53 (22)
	(b) No	89 (37)
	(c) I don't know	98 (41)

Table 1: Questionnaire one (information and awareness of dental care)

S. No.	Questions
Q1	Did you visit the dentist before?
Q2	Do you clean your teeth using toothbrush and toothpaste
Q3	Do you notice blood from gum while brushing?
Q4	Are you satisfied about your dental health?
Q5	Have you seen any awareness program for dental health?
Q6	Do you use dental floss?
Q7	Is proper information about dental care necessary?
Q8	Is dental care necessary for improved oral health status?

Table 2: Questionnaire two (basic knowledge about oral health)

S.No.	Questions
Q1	How many times you have to brush daily?
Q2	How much time you spend on brushing?
Q3	How much times you have to visit the dentist?
Q4	What do you do when a tooth accidental fall?
Q5	The effect of vegetables contains fibers on teeth?
Q6	Which vitamin is important for the gums?
Q7	Is there a preventive treatment for teeth?
Q8	Do any of the permanent teeth appear before 7 years of age?
Q9	Are you aware of the basic knowledge regarding oral health?
Q10	Is better oral health beneficial for overall health status?

were not satisfied with their dental health. Majority of the participants do not know that dental care is necessary for improved oral health status. Figure 1 provides complete details about the participants' responses to the first section of questionnaire.

BASIC KNOWLEDGE ABOUT ORAL HEALTH

The second section of the questionnaire was developed to measure the basic knowledge about the oral and dental health; ten (10) questions were included in this section which are listed in Table 2. The participants responded different questions with various options [Table 2a]. Majority of the participants did not know how many times they have to brush their teeth daily and how much time they should spend on brushing. About 72% of the participants had never visited a dentist in the past. Nearly 65% of the participants do not know that there is a preventive way of treatment for teeth. Majority of them were not aware of the basic knowledge about oral health. Complete details about the participants' responses are mentioned in Figure 2.

DISCUSSION

Lack of awareness about the oral health is a serious problem among different communities of the world. Most of the developing countries are coping with this problem on an extensive scale. However, the population of developed countries has also reported certain medical cases regarding oral health. Several studies have indicated the importance of dental and oral health among the general population. A similar study was conducted in India, which have described the significance of oral and dental health. The study has mentioned that the general population should develop positive attitudes toward oral and dental health effectively.^[13] Similarly, another study was conducted in England, which has also mentioned the importance of oral health. The study described that it is extremely necessary for the individuals to adopt oral hygiene habits, to maintain their general health status. Improved quality of life and effective physical

Table 2a: The responses of the participants on basic knowledge about oral health by the people with hearing and speech impairments in terms of frequency and percentage

Serial number	Questions	η (%)
Q1	How many times you have to brush daily?	
	(a) Once daily	57 (24)
	(b) Twice daily	34 (14)
Q2	How much time you spend on brushing?	
	(a) Two minutes	34 (14)
	(b) More than two minutes	24 (10)
Q3	How many times you have to visit the dentist?	
	(a) I don't know	149 (62)
	(b) Twice every year	36 (15)
Q4	What do you do when a tooth accidental fall?	
	(a) Once every year	31 (13)
	(b) Twice every year	36 (15)
Q5	What do you do when a tooth accidental fall?	
	(a) Saved and placed back in the mouth	50 (21)
	(b) It should be thrown away	113 (47)
Q6	The effect of vegetables contains fibers on teeth?	
	(c) I don't know	77 (32)
	(a) Good	48 (20)
Q7	Which vitamin is important for the gums?	
	(b) Bad	82 (34)
	(c) I don't know	110 (46)
Q8	Is there a preventive way of treatment for teeth?	
	(a) Vitamin D	36 (15)
	(b) Vitamin C	31 (13)
Q9	Do any of the permanent teeth appear before 7 years of age?	
	(c) I don't know	173 (72)
	(a) Yes	34 (14)
Q10	Are you aware about the basic knowledge regarding oral health?	
	(b) No	55 (23)
	(c) I don't know	151 (63)
Q11	Do any of the permanent teeth appear before 7 years of age?	
	(a) Yes	41 (17)
	(b) No	82 (34)
Q12	Are you aware about the basic knowledge regarding oral health?	
	(c) I don't know	117 (49)
	(a) Yes	31 (22)
Q13	Is better oral health benefits for overall health status?	
	(b) No	24 (43)
	(c) I don't know	185 (35)
Q14	Is better oral health benefits for overall health status?	
	(a) Yes	50 (21)
	(b) No	79 (33)
Q15	Is better oral health benefits for overall health status?	
	(c) I don't know	111 (46)
	(a) Yes	50 (21)

performance are strongly connected with appropriate oral health.^[5]

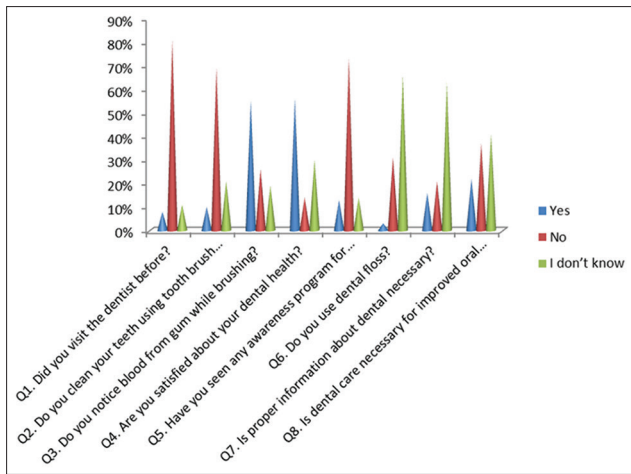


Figure 1: Graph showing the participants responses on “Information and awareness of dental care” by the people with hearing and speech impairments

A similar study was conducted in Malaysia, described that adults should maintain their oral health for the attainment of personal and professional goals. The study also declared that the knowledge about oral health will be helpful for the individuals to resolve numerous oral health issues effectively.^[14] A similar study was conducted by Mathur and Gupta, which have described the importance of oral health among the school-going children. The study mentioned that the school-going children should avoid using inappropriate strategies that will affect their oral health. It is a fact that the improved oral health status of the school-going children will certainly result in their better school performance. The study mentioned that the parents are also required to take appropriate education about enhanced and better oral health of their children.^[15]

Above discussed research-based studies have focused on the significance of oral health among the general population of respective countries. A significant number of studies are present in the databases regarding awareness of oral health among general population. However, specified studies about oral health status among deaf and dumb people were not present in a vast quantity. A study was conducted by Suma *et al.*, which have focused on the oral health knowledge about deaf and disabled children, described that majority of their participants were aware about the use of brush and toothpaste for maintaining their oral health. Thus, the study concluded that their participants were aware about the oral health concepts.^[11]

The results of our study showed that only a few participants knew the correct way of toothbrushing and were lacking the basic information and practice about oral health.

The study conducted by Shivakumar *et al.* demonstrated an increased caries prevalence, poor oral hygiene, increased risk of periodontal diseases, and extensive need

for dental treatment indicating that these children were neglected, and less treatment priority is offered to these children.^[16] The results of our study also showed that there is an alarming rise for dental diseases among these individuals with hearing and speech impairments.

A study carried out in the European countries, described the knowledge about oral health status among the disabled individuals. Most of the selected participants were suffering from various cerebral diseases. However, some of the participants were deaf and had hearing problems. This study mentioned that poor periodontal health status was observed among the blind and deaf children.^[17,18] A similar study was conducted in the population of Iran, which has focused on the oral health knowledge among disabled children and adults. The outcomes of this study were related to the findings of the current project which has mentioned that the deaf individuals were suffering from the condition of dental caries and oral infection, and that most of the deaf individuals were not aware of the oral health and dental needs.^[19-21] In our study also, we have noticed that majority of the participants are not aware of the information and knowledge about oral health habits and dental treatment needs.

ETHICAL ASPECT

This study has been conducted in full accordance with the World Medical Association Declaration of Helsinki. Consent was obtained from the head of all the selected centers in all the four cities and also from all the participants involved in this study, and this study has been independently reviewed and approved by the Institutional Ethical Committee of our college with letter no. 2015-03-4208/2016-17.

Since the present study was not using any clinical methods or using any control group, so there were not many ethical aspects that were to be considered in this study. However, keeping the information related to the participants' private and confidential was the main purpose of the consideration of these ethical and moral aspects and that no participant is neglected or hurt due to any reason during the study and that no discrimination was made between the participants.

CONCLUSION

Maintenance of oral and dental health among the children and adults is necessary for their appropriate performance in the professional settings. It is a fact that the people, especially with hearing and speech impairments (deaf and dumb), should be aware of the basic concepts of oral health and dental needs for maintaining their oral health status. Deaf and dumb individuals are an essential part of this society; therefore, it is necessary to evaluate their awareness level for improved oral health status. From this study, it can be concluded that majority of

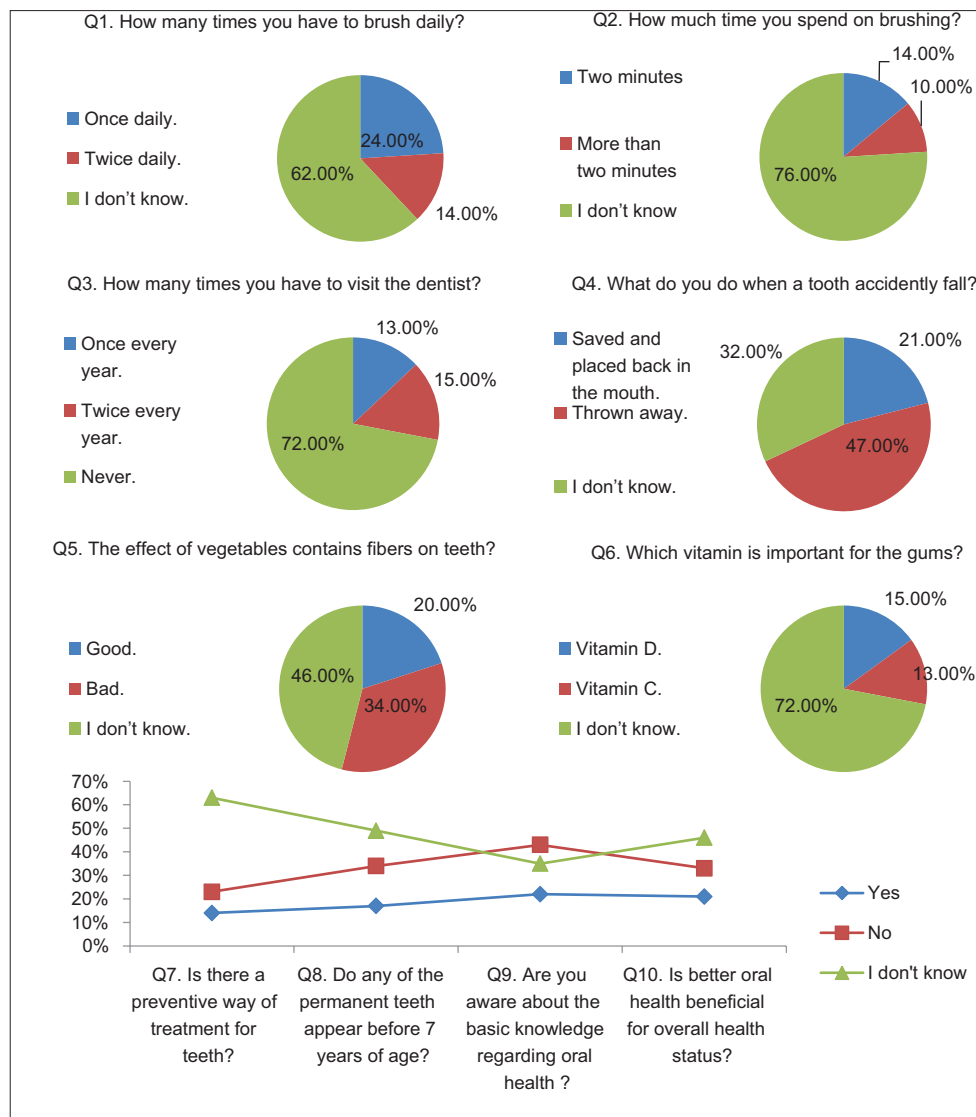


Figure 2: Different graphs (Q1 – Q10) showing the participants responses on the “Basic Knowledge about Oral Health” by the people with hearing and speech impairments

the deaf and dumb persons are not aware of the basic information and knowledge about oral health habits and dental needs in Saudi Arabia. However, specified studies about oral health status among deaf and dumb people were not present in vast number, especially in Saudi Arabia. The present study is basically a preliminary (survey based) study and hence there is a need for comprehensive prevention based educational and motivational oral health programs especially for individuals with hearing and speech impairments and also advanced research based projects are required for deriving effective outcomes.

AUTHORS' CONTRIBUTIONS

Mohammed Mustafa, Sukumaran Anil : Concept; Study design; Intellectual content; Manuscript drafting; Final manuscript approval including editing and reviewing.

Faris Yahya I Asiri, Shahad AlGhannam, Ibrahim Ali Mohammed AlQarni, Mohammed Abdullah AlAteeg: Literature search; Data acquisition; Data analysis; Manuscript writing.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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