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**EFFECT OF ORAL HEALTH TRAINING PROGRAM ON KNOWLEDGE AND
PRACTICES OF HEARING- IMPAIRED CHILDREN, CAIRO UNIVERSITY**

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ABSTRACT

Oral health problems in hearing - impaired children are higher than in the normal children in Egypt. The aim of the present study was to evaluate the effect of oral health training program on knowledge and practices of hearing- impaired children. A quasi-experimental research design was utilized to fulfill the aim of this study. The study was conducted in two primary governmental schools of El-Sayeda Zeinab Educational directorate, Cairo governorate. A convenient sample of 52 primary school age children was included in the study. Data were collected using two tools: 1- Structured interviewing knowledge questionnaire about oral health. 2- Oral hygiene observational checklists. The study revealed a statistically significant difference found between children's total knowledge scores and total practices scores regarding oral health before, immediately and after three months of program implementation. Children's total knowledge scores and total practices scores was increased immediately and after three months of program compared to their scores before program implementation. The study concluded that hearing- impaired children who were received oral health training program had higher knowledge and practices scores after the training intervention was done. It is recommended to perform periodic oral health training program for hearing-impaired children for promoting their

oral health, also replication of this study on a large sample and in different settings is recommended for generalization of results.

Keywords: Oral health, Training program, Knowledge, Practices, Hearing-impaired children.

INTRODUCTION

Oral health is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain [1]. The prevalence of dental caries is estimated to be about 70 % worldwide, periodontal disease is also one of the two major dental diseases that affect mankind at highest prevalence rate [2]. Many studies have shown a higher prevalence of dental caries and periodontal diseases among physically disabled population than their normal counterpart [3]. According to [4] "Hearing impairment" refers to both complete and partial loss of the ability to hear, these children learn from visual stimulation rather than oral communication. [5] revealed that, there are 360 million people worldwide suffering from hearing impairment, this is over 5% of the world's population; 32 million of these people are children, most of them live in low-income and middle-income countries.

Oral health training program is a combination of learning experiences designed to facilitate voluntary actions which is conducive to health. The oral health

training program increased awareness of individuals, families or communities about oral health issues. Thus the scope of oral health training may include training interventions for children with hearing impairment [6]. Oral health training program may be delivered at multiple forums - namely, hospitals, primary healthcare centers, private dental clinics, and school. Nevertheless, schools are perhaps the best place for promoting oral health because approximately one billion children worldwide spend most of their daytime life there [7].

Community health nurse have an important role in promoting oral health through providing children, young people and families information and support to be able to make healthier oral health choices. The nurse has the most important role in caring for children having hearing impairment through careful assessment, focus on the health history taking and physical examination. The primary goal of nursing care is to provide education, training and support for the children [8]. Also community health nurse has an opportunity

to assess the oral health by supporting oral hygiene and guiding about adequate nutrition, preventing dental discomfort, and detecting oral diseases early [9]. Oral health for hearing-impaired children in Egypt has not been emphasized among the following fields: nursing practice, education, and researches. Therefore the aim of this study was to evaluate the effect of oral health training program on knowledge and practices of hearing-impaired children.

MATERIALS AND METHODS

The aim of present study was to evaluate the effect of oral health training program on knowledge and practices of hearing-impaired children. To fulfill the aim of this study, the following research hypotheses were formulated:

H.1: Hearing-impaired children who received oral health training program had higher knowledge scores after the intervention of program.

H.2: Hearing-impaired children who received oral health training program had higher practices scores after the intervention of program.

A quasi-experimental research design was utilized in the current study. This study was conducted in two primary governmental schools of El-Sayeda Zeinab Educational directorate, Cairo governorate. A convenient

sample of 52 primary school age children were included in this study (20 children from Al- Amal school for deaf and hearing-impaired at El Mounira, and 32 children from Al- Amal school for deaf and hearing-impaired at El- Sayeda Naffisa). Data were collected using the following tools: (1) Structured interviewing knowledge questionnaire about oral health, it was divided into 3 parts: Part I: Demographic data of children, Part II: oral health habits that promote oral health behaviors, and Part III: knowledge related to oral health. (2) Oral hygiene observational checklists, divided into 2 parts: Part I: Steps of brushing teeth checklist, and Part II: Oral observation checklist. Three experts from community health nursing department, one expert from pediatric health nursing department and a dental Assistant Professor, Cairo University were asked to check the tools for its content validity. Modifications of the content were done according to the panel judgment on the clarity of sentences and appropriateness of content. Reliability of the knowledge tool and observational checklists tool was tested using Cronbach's Alpha (0.746 & 0.729) respectively.

Primary approval to conduct the study was obtained from the Research Ethics Committee at the Faculty of Nursing - Cairo

University and from the director of Al- Amal School for deaf and hearing - impaired at El Mounira & the director of Al - Amal School for deaf and hearing - impaired at El- Sayeda Naffisa. The purpose and nature of the study was explained to the hearing- impaired children through their teachers, stating the possibility to withdraw at any time. The researcher emphasized that, participation in the study was entirely voluntary; anonymity and confidentiality was assured through data coding. Written informed consent was obtained from the children's parents.

Oral health training program was carried out on four phases: **1. Assessment phase:** assessment of hearing-impaired children's knowledge and practices by using structured interviewing knowledge questionnaire and oral hygiene observational checklists. **2. Planning and designing phase:** based on the assessment results and comprehensive review of relevant literature, the researcher designed a training program about oral health to improve knowledge and practices of hearing-impaired children.

3. Implementation phase: sessions was implemented through effective communication and through the help from school teachers (sign interpreters). The oral health training program was based on educating the children about the methods of

dental caries prevention and proper training of tooth brushing and cleaning. Teaching sessions was about the importance of good oral hygiene, causes of tooth decay, beneficial and non-harmful diet were clarified and emphasized through posters and cartoon video film. Demonstration on the proper technique of brushing using jaw models and tooth brushes was done, the children were asked to brush their teeth twice daily as has been taught. Oral rinsing was advised when it was not possible to brush their teeth after the intake of food particularly sweets. Training program aides (carton video film, posters, power point presentation, demonstration, and role model) was utilized to enhance the communication and the appropriate method of evaluation was carried out at the end of each session. Booklet containing the main point was distributed to the children at the end of the program and each child received a toothbrush and toothpaste to ensure continuity of training.

4. Evaluation phase: evaluating the effect of oral health training program on knowledge and practices of hearing-impaired children was done in this phase. The same tools was giving immediately post program and three months after the program to the same children that participated previously in the study in order to evaluate

the degree of knowledge and changes in their practices after program implementation.

Statistical Analysis:

The data was scored, tabulated, and analyzed by computer using the “Statistical package for the social sciences” (SPSS program, version 20). Numerical data were expressed as mean and standard deviation. Qualitative data were expressed as frequency and percentage. For qualitative data, comparison between two variables was done by using t test. Relations between different numerical variables were tested using person correlation. Probability (P-value) < 0.05 was considered significant for ANOVA test and P value less than 0.01 was considered significant for person correlation.

RESULTS AND DISCUSSION

Results of the current study (Table 1 and 2) revealed that, 65.38 % of children were girls with a highly statistically significant positive correlation found between children’s total practice scores and children’s sex. These findings were supported the study done by [10] about the oral health care awareness among 624 hearing- impaired children attending special schools in India, and found a statistically significant relationship between sex and oral hygiene practices which was more number of males had poor oral hygiene practices than

the females. This may be attributed to that females seem to be more mature and very much concerned about their appearance & health compared to males.

Regarding the child’s rank, 78.85% of the children ranked first to third child in their families with a mean of 2.42 ± 2.82 child with a statistically significant positive correlation found between children’s total practice scores and child’s rank. These findings were in agreement with [11] who studied the parenting styles of mothers with deaf or hard-of-hearing children and hearing siblings in Cyprus, and found that, half of children were second born and more than one third of them were first born. Also these findings were supported by [12] who studied the effect of an oral care educational program on the knowledge, practice and self-efficacy among 203 school age children in Port-Said city, Egypt, and found a statistical significant relation between the children’s total practice and rank of child. On the same line, the study done by [13] about the association between family structure and oral health of children in Nigeria, indicated that a child’s birth rank was associated with less use of fluoridated toothpaste practice. This may be linked to family size; where large families may need to cut down on expenses, including having to buy cheaper toothpaste leading to an

increased risk of developing caries. So financial and social pressures on large families could have a negative impact on the oral health practices of children.

Also the present study revealed that, 78.85% of children never took any oral health education with a highly statistically significant positive correlation found between children's total knowledge scores & total practice scores and previous health education about oral health. These results were supported by [14] who studied the effect of a dental health education program on the oral health status of 103 hearing-impaired children in Cairo, Egypt, and found that, the children had never taught the importance of oral hygiene and had not participated in any other oral health education program. Also these findings were in agreement with the study done by [15] about factors influencing the knowledge of oral health among 222 children in Korea, and found that, the experience of oral health education causes influence on knowledge of oral health. The relationship of oral health education experience and oral health knowledge level of those who have education experience is higher than those who didn't have. In addition, knowledge will be positively and significantly associated with practices. So the present oral health training

program for hearing- impaired children was needed, that can largely bring a change in their knowledge and practices in caring and maintaining their oral health.

The results of current study (Figure 1 and Table 3) indicated that, 69.23 % and 63.46 % respectively of children had good level of knowledge immediately and after three months of program compared to 59.62 % of them who had poor level of knowledge before program implementation. A statistically significant difference was found between children's total knowledge scores regarding oral health before, immediately and after three months of program; these findings supported the first research hypotheses.

These results were in agreement with [16] who evaluated the effect of training teachers in Deaf and mute school on applying oral hygiene program on 68 children with hearing disabilities in Ismailia city, Egypt, and found a statistically significant difference between studied children mean scores of oral health knowledge (pre/post implementation) regarding importance of oral health, benefits of using toothpaste, benefits of eating fruits, vegetables and drinking milk as well as reasons of tooth decay & bleeding gums respectively, it also revealed a statistically significant improvement in children's mean

scores of oral health knowledge regarding signs of dental caries and prevention of dental problems and concluded that, the training program had a significant positive effect on improving the children's knowledge about oral health.

The present results (Figure 2, Table 4) revealed that, 53.85 % and 57.69 % respectively of children had good level of practice immediately and after three months of program, compared to 50 % of them who had poor level of practice before program implementation. A statistically significant difference was found between children's total practice scores regarding oral health before, immediately and after three months of program; these findings supported the second research hypotheses. These results were in agreement with [17] who studied the effectiveness of dental health education using cartoons video on knowledge and oral hygiene of 92 deaf children in Indonesia, and found a significant difference on oral hygiene index score before, after and a week after the dental and oral health education to the

children with hearing impairment. This may be related to the fact that young children tend to acquire skills very fast because of their curiosity and with proper training about oral health can change their health behavior which can lead to improvement in their oral health, also given them toothpaste and toothbrush can be motivational for them.

The current results (Table 5) revealed a highly statistically significant positive correlation between children's total knowledge scores and total practice scores. This finding was supported by [18] who evaluated the personal hygiene among 86 children in Ismailia city, Egypt, and found a statistically significant correlation between children's total knowledge scores and total observational scores. When the children were provided with basic knowledge about importance of oral health, benefits of eating fruits, vegetables and drinking milk this will support them in practicing oral healthy behaviors to prevent oral diseases, because the more knowledge they had the better practices they will perform.

Table 1: Distribution of children's sex, child rank and previous health education about oral health (n= 52)

Items	Frequency	%
Sex		
Boy	18	34.62
Girl	34	65.38
Child rank		
First - third	41	78.85
More than third	11	21.15
Mean \pm SD	2.42 \pm 2.82	
Previous health education about oral health		
No	41	78.85
Yes	11	21.15

Table 2: Correlations between children’s demographic characteristics and their total knowledge and total practice scores (n= 52)

Demographic characteristics	Total knowledge scores		Total practices scores	
	r	P	r	P
Sex	0.139	0.083	0.202	0.012**
Child rank	0.084	0.296	0.175	0.028*
Previous health education about oral health	0.221	0.005**	0.277	0.000**

** Correlation is highly significant at the level of $\leq .01$; * Correlation is significant at the level of $\leq .05$

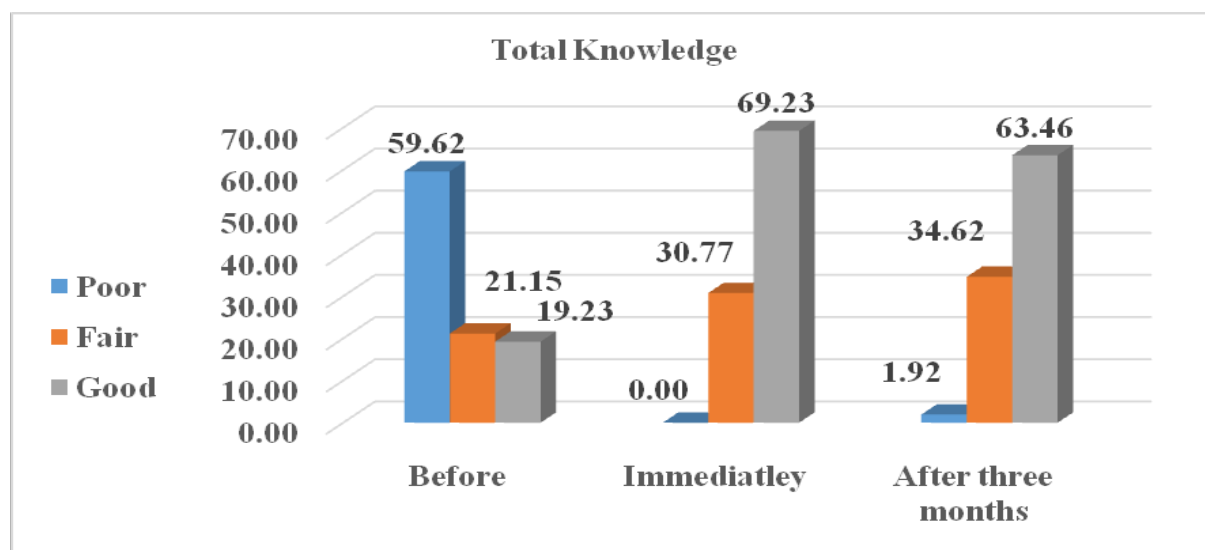


Figure 1: Distribution of children’s total knowledge scores before, immediately and after three months of program (n= 52)

Table 3: Difference between children’s total knowledge scores regarding oral health before, immediately and after three months of program (n= 52)

Variables	Mean ± SD	F	P
Total knowledge scores	Before	178.190	0.000*
	Immediately		
	After three months		

*significant difference at the level of ≤ 0.05

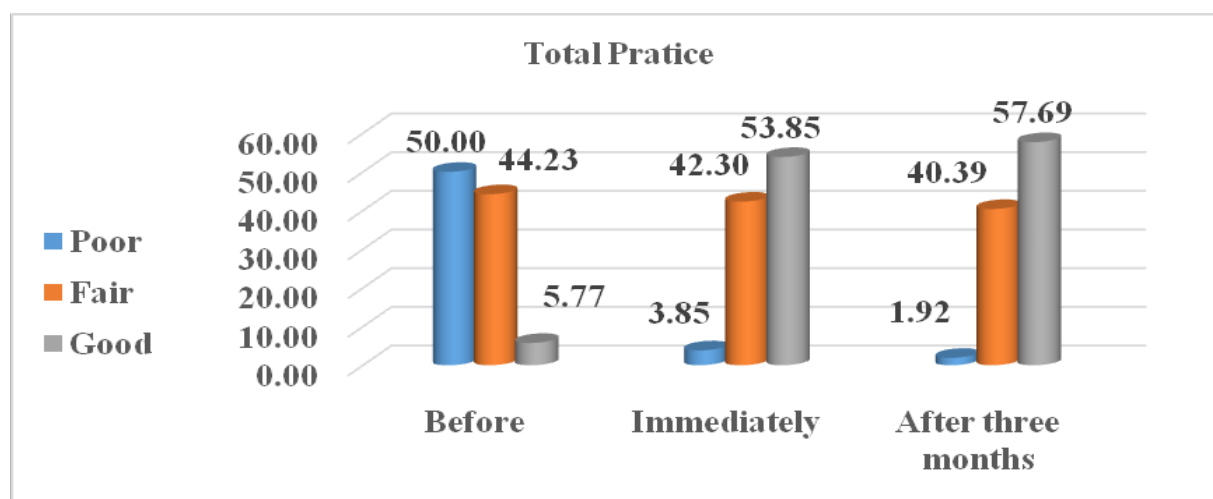


Figure (2) Distribution of children’s total practice scores before, immediately and after three months of program (n= 52)

Table (4) Difference between children's total practice scores regarding oral health before, immediately and after three months of program (n= 52)

Variables		Mean ± SD	F	P
Total practice scores	Before	6.5385± 1.80914	63.613	0.000*
	Immediately	9.4231± 1.31874		
	After three months	9.7308± 1.61021		

*significant difference at the level of ≤ 0.05

Table (5) Correlation between children's total knowledge scores and total practice scores before, immediately and after three months of program (n= 52).

Variables		Total knowledge scores	
		r	P
Total practice scores	Before	0.522	0.000**
	Immediately	0.966	0.000**
	After three months	0.706	0.005**

** Correlation is highly significant at the level of $\leq .01$; * Correlation is significant at the level of $\leq .05$

CONCLUSION

Results of the current study concluded that, hearing- impaired children who received oral health training program had higher knowledge and practices scores after the training intervention was done. It is recommended to perform periodic oral health training program for hearing- impaired children for promoting their oral health, also replication of this study on a large sample and in different settings is recommended for generalization of results.

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