

The effect of education on healthcare workers' knowledge of oro-dental health in a group of Iranian rural children

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Original Article

Abstract

BACKGROUND AND AIM: Oro-dental health is one of the most important factors affecting children's health. Healthcare workers' knowledge is one of the most important factors for oro-dental health services. Therefore, the current study aimed to determine the effect of education on healthcare workers' knowledge of oro-dental health.

METHODS: This experimental study was conducted in the rural regions located in south-eastern Iran in Sistan and Baluchestan Province. 120 healthcare workers were selected by a convenience sampling method based on Morgan's table and were randomly divided into experimental (n = 60) and control groups (n = 60). First, both groups completed the questionnaire; then, intervention was conducted for the experimental group in ten 2-hour sessions over 5 weeks. Finally, both groups completed the questionnaire one week after the education.

RESULTS: In the pre-test, the mean scores of the healthcare workers about overall knowledge in the intervention (12.50 ± 5.07) and control (12.46 ± 4.71) groups had no significant difference ($P = 0.42$); whereas, in the post-test, the mean scores of overall knowledge in the intervention (14.23 ± 2.77) and control (12.61 ± 4.84) groups showed a statistically significant difference ($P < 0.01$). Results of study showed significant differences between the two groups in dimensions of the dental knowledge, oro-dental health principles, and how to provide oro-dental care ($P < 0.01$).

CONCLUSION: Given the importance of preventive oro-dental care in children, it is recommended that health education programs in the field of oro-dental health be designed and implemented within the framework of the educational model.

KEYWORDS: Education; Training Program; Healthcare Workers; Knowledge; Oral Health; Children

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Oral health is of equal importance as public health. In addition, knowledge about oral health is listed as an important factor in determining health.^{1,2} Education is a necessary component for behavior change.³ Knowledge, attitude, and appropriate behavior about oro-dental health can prevent oro-dental diseases and education can play an effective role in oro-dental health.^{4,5}

In modern orthodontics, the number of people who come to orthodontic treatment

centers to improve their psychosocial problems in relation to facial appearance have increased more than the past. In the project of orthodontic treatments, more importance is given to the aesthetic issue and the facial appearance as a therapeutic goal.¹

About 40% of the Iranian population lives in deprived villages and regions. Therefore, a primary healthcare provider is very important, considering the level of health knowledge and beliefs in these areas.⁴ The healthcare system in Iran is hierarchical and

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has regular structures with a logical relationship between levels. Health centers are the first places people contact the healthcare system, and healthcare workers are in charge of case-finding, screening, follow-up, and referral of patients from health centers to health facilities.⁶ Healthcare workers are in charge of providing health education and health care in all areas, including oro-dental health and attracting public to health programs.^{7,8}

Oro-dental health means to take full care of your teeth through the use of the right toothbrush and toothpaste, as well as dental floss and mouthwash.⁸ Oro-dental health is very important for physical health.² Not only does it add to the beauty and better speech, but also it is essential for physical health. Oro-dental health services provided in health centers are based on education, prevention, and treatment.⁹ Healthcare workers must examine and record the oro-dental status of children. Oro-dental health influences public health through healthy teeth and gums. Furthermore, prevention and early treatment of primary caries and gum disease in susceptible and vulnerable people avoid imposing heavy medical costs on people and the government.¹⁰

Gambhir and Gupta showed Indian healthcare workers' insufficient knowledge of oro-dental health. Therefore, some preventive and therapeutic aspects of oro-dental diseases must further be trained.¹¹ Khademi et al. showed that the healthcare workers' mean knowledge of oro-dental health was not favorable, but their attitude was positive.¹² According to Falahinezhad Ghajari et al., the knowledge of middle school students in southeastern Iran was not desirable.¹³

Therefore, healthcare workers' knowledge of oro-dental health is one of the factors affecting the quality of oro-dental health services. Healthcare workers' knowledge, as well as their attitude towards oro-dental health, is an important step in preventing oro-dental diseases in deprived communities. Therefore, the current study aimed to

determine the effect of education on healthcare workers' knowledge of oro-dental health in southeastern Iran.

Methods

Study design and setting: The present study was an experimental research conducted in the rural areas located in southeastern Iran in Sistan and Baluchestan Province. Eleven health service centers covering two hundred and thirty-eight villages were considered.

Sample size and sampling: The study population consisted of 400 healthcare workers working in eleven health service centers in rural areas. In this study, 120 qualified health workers were selected by convenience sampling method based on Morgan's table and were randomly divided into experimental ($n = 60$) and control ($n = 60$) groups. Samples were randomized and divided into two groups based on random numbers.

Inclusion criteria were having a degree of healthcare working, no mental illness,¹⁴ and not passing a similar workshop. The exclusion criterion was not participating in more than two training sessions.¹⁵

Instrument: Demographic information form and the knowledge of oro-dental health questionnaire were used. Demographic information included age, sex, marital status, and education level. To assess the healthcare workers' knowledge of oro-dental health, a questionnaire which was previously used by Moein Taghavi et al.¹⁰ was used. The questionnaire includes 15 multiple-choice questions (MCQ) in scaled measures including correct answer (score 1), wrong answer (score 0), with a minimum score of 0 and a maximum score of 15. This questionnaire consists of 3 components of dental knowledge (6 items), principles of oro-dental health (4 items), and knowledge about how to provide oro-dental care (5 items). Moein Taghavi et al. confirmed the questionnaire validity by content validity. They confirmed its reliability using internal consistency and the Cronbach's alpha

coefficient was calculated to be 0.92, 0.93, 0.95, and 0.97 for dental knowledge, principles of oro-dental health, knowledge about how to provide oro-dental care, and overall knowledge, respectively.¹⁰

Data collection: This study was conducted after obtaining the code of ethics (No. IR.KMU.REC.1398.380) as well as permission from health authorities. The study aims and phases were explained to the healthcare workers. All participants voluntarily participated in the study and could withdraw at any stage of the study. Also, the control group was provided with the same training after that the study was over. The experimental group was asked not to talk to the control group about the content taught in the classroom at all stages of the study to minimize the effect of classroom instruction on the control group. Both experimental and control groups completed the questionnaire before the intervention. All questionnaires were anonymous with specific codes.

Intervention was conducted for the experimental group in ten 2-hour sessions over 5 weeks with a presentation of an educational booklet by the second researcher. The training was done using lectures, group

discussions, question-and-answer, and videos. The educational content included dental structure, principles of oro-dental health, and how to provide oro-dental care that was confirmed by ten experts. Both groups completed the questionnaire one week after the classes.

Data were analyzed using SPSS software (version 19, SPSS Inc., Chicago, IL, USA). Descriptive statistics [frequency, percentage, mean, and standard deviation (SD)] were used to describe the healthcare workers' demographic and background characteristics and their knowledge. Chi-square test and Fisher's exact test were used to compare demographic variables between the two groups. Independent t-test was used to compare healthcare workers' knowledge of oro-dental health between the two groups.

Results

According to the results, the majority of the samples from both experimental and control groups were male, aged between 31 and 35 years, with 5-10 years of work experience, and had high/middle school degrees. There was no significant difference between the two groups in demographic characteristics (Table 1).

Table 1. Comparison of participants' demographic characteristics between intervention and control groups

Variable		Control group [n (%)]	Intervention group [n (%)]	Statistical test	P
Sex	Female	19 (31.6)	19 (31.6)	1.01	0.57*
	Male	41 (68.4)	41 (68.4)		
Age (year)	18-25	3 (5.0)	4 (6.7)	0.53	0.45*
	26-30	19 (31.7)	18 (30.0)		
	31-35	32 (53.3)	34 (56.6)		
	> 35	6 (10.0)	4 (6.7)		
Marital status	Single	11 (18.3)	13 (21.7)	0.49	0.43*
	Married	49 (81.7)	47 (78.3)		
Education	Middle school	45 (73.3)	42 (68.3)	2.82	0.30**
	Diploma	12 (16.7)	14 (18.3)		
	Associate degree	3 (10.0)	4 (13.4)		
Years of experience	5-10	25 (41.7)	23 (38.3)	1.40	0.42*
	11-15	12 (20.0)	11 (18.3)		
	16-20	8 (13.3)	9 (15.0)		
	21-25	8 (13.3)	9 (15.0)		
	25-30	7 (11.7)	8 (13.4)		

*Chi-square test, **Fisher's exact test

Table 2. Characteristics of healthcare workers' knowledge and its dimensions

Variable	Group	Pre-test	Post-test
		Mean \pm SD	Mean \pm SD
Dental knowledge	Intervention	4.93 \pm 2.11	5.71 \pm 1.02
	Control	4.91 \pm 1.82	4.95 \pm 1.99
Statistical test (P)		t = 0.46 (P = 0.42)*	t = 2.64 (P < 0.01)*
Oral health principles	Intervention	3.40 \pm 1.29	3.80 \pm 0.77
	Control	3.36 \pm 1.26	3.45 \pm 1.25
Statistical test (P)		t = 0.13 (P = 0.84)*	t = 1.83 (P < 0.01)*
How to provide oro-dental care	Intervention	4.16 \pm 1.69	4.71 \pm 0.99
	Control	4.18 \pm 1.59	4.21 \pm 1.64
Statistical test (P)		t = -0.05 (P = 0.67)*	t = 2.01 (P < 0.01)*
Overall knowledge	Intervention	12.50 \pm 5.07	14.23 \pm 2.77
	Control	12.46 \pm 4.71	12.61 \pm 4.84
Statistical test (P)		t = 0.03 (P = 0.58)*	t = 2.24 (P < 0.01)*

*Independent t-test

SD: Standard deviation

In the pre-test, the mean scores of the healthcare workers about overall knowledge in the intervention (12.50 \pm 5.07) and control (12.46 \pm 4.71) groups had no significant difference (P = 0.42); whereas, in the post-test, the mean scores of overall knowledge in the intervention (14.23 \pm 2.77) and control (12.61 \pm 4.84) groups showed a statistically significant difference (P < 0.01). This means that, after the training, the mean scores of overall knowledge in the intervention group were improved compared to the control group (Table 2). In addition, table 2 shows that in the post-test stage, the mean score of all dimensions of healthcare workers' knowledge of oro-dental health such as dental knowledge (P < 0.01), oro-dental health principles (P < 0.01), and how to provide oro-dental care (P < 0.01) increased significantly in the intervention group compared to the control group.

Discussion

The present study aimed to investigate the effect of education on healthcare workers' knowledge of oro-dental health in rural children. The results showed that the overall knowledge of healthcare workers significantly increased after intervention. Therefore, the research hypothesis, the effect of education on the healthcare workers' knowledge of oro-dental health, was confirmed. Bahri et al. indicated a positive

impact of educational programs on knowledge, attitude, and improvement of short-term performance of pregnant women in oro-dental health in urban areas of Mashhad in northeastern Iran.⁹ Other results in urban areas of Tehran, Iran, showed that face-to-face education of students was a good method to teach caring tips and reduce dental plaques.¹⁶ The results also showed that video/lecture-based education not only increased instantaneous awareness but also oro-dental health in the long run. Therefore, video-based education is suggested to promote oral health in all urban and rural areas.¹⁷ The results suggest that although children in urban and rural areas differ culturally and in terms of access to facilities, they need oral health education. A study in Finland showed that understanding, encouraging, and interacting with adolescents with caries may make them more positive and receptive to self-care and Oro-dental care.¹⁸

Results also showed that the mean scores of dental knowledge, oral health principles, and how to provide oro-dental care significantly increased in the intervention group compared to the control group. Therefore, education was effective in all dimensions. Mottaghi et al. found that in the rural health centers of Kashan in central Iran, health education had a significant effect on the healthcare workers' knowledge of primary health services. Education plays an

important role in developing public awareness of primary health care.¹⁴ Francis et al. showed that in India, about 81.0% of secondary school students had adequate level of knowledge on causes and prevention of dental caries and 66.7% were aware of causes and prevention of periodontal diseases.¹⁹

According to these results, oro-dental health in children is very important, and rural children's oro-dental care has been neglected. This may be due to poor knowledge and lack of access to educational facilities in the villages. Khademi et al. studied the level of knowledge and attitude of healthcare workers towards the prevention of oro-dental diseases in Isfahan rural areas, Iran. They showed that healthcare workers' knowledge of oro-dental health was not favorable.¹²

A study in Tehran showed that the majority of 9-10-year-old children were not aware of the oro-dental health.¹⁶ According to Arsang Jang et al., the high cost of dental services is a barrier to access for rural children aged 6 to 7 years. Therefore, it is essential to enhance access to the prevention services in rural and urban areas as well as parental awareness of oro-dental health.²⁰ Research has shown that parents with proper knowledge are taking better care of their children's teeth.^{21,22}

Oro-dental health in addition to physical health may affect mental and psychological health. Studies have shown a positive and significant relationship between self-esteem and oro-dental health.^{23,24} Mazloumi Mahmoudabad et al. in Yazd urban areas, Iran, showed that the implementation of a scenario proportional to cultural issues could improve students' knowledge, practice, and

attitude towards oro-dental health.²⁵ Experts emphasize on the continuing revised education in the training of community health workers and other healthcare personnel.²⁶ Researchers in Bangladesh concluded that policymakers should provide guidelines for dental health education in educational institutions.¹

One of the study limitations was that data were collected by using a self-report questionnaire. Therefore, we tried to minimize confounding factors while completing the questionnaires.

Conclusion

The results showed the effectiveness of education on healthcare workers' knowledge of oro-dental health in children. Given the importance of preventive oro-dental care in children, major health problems, lack of specialized human resources in the provision of health services in deprived areas, and use of self-care to overcome oro-dental problems in children, health education is considered as the first practice in primary health care. Therefore, it is recommended that health education programs in the field of oro-dental health be designed and implemented within the framework of the educational model.

Conflict of Interests

Authors have no conflict of interest.

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