



ORIGINAL ARTICLE

Effectiveness of oral health education intervention among female primary school children in Riyadh, Saudi Arabia

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Abstract *Objective:* This study aimed to examine the effectiveness of oral health intervention on the improvement in knowledge and self-reported oral health behavior among 6–8 year old female primary school children in Riyadh, Saudi Arabia.

Materials and methods: The sample consisted of 1661 girls in primary schools who are 6 to 8-year-olds (first, second and third graders). The children's level of knowledge was assessed by a self-administered questionnaire that was formulated for this specific age and divided into two parts; oral health knowledge and self-reported oral health behavior. There were seven multiple choice questions and one true/false question with five underlying parts in the questionnaire which contained basic information about oral health knowledge, oral hygiene practices and certain habits that affect teeth. The questionnaires were distributed before and six weeks after implementation of the oral health educational program to measure the level improvement of knowledge regarding oral health among these children.

Results: All the questions showed statistically significant improvement in knowledge and self-reported behavior in the post intervention group. There was a significant increase in the level of knowledge by 11.24% and level of self-reported behavior by 25% after intervention ($P < 0.001$).

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The highest net change in the knowledge due to intervention was noted among third graders (13.3%), whereas for self-reported oral health behavior, it was noted among first graders (28.3%).

Conclusion: The results of this study showed that an easy-to-organize and inexpensive school-based intervention can, on a short-term basis, be effective in improving the knowledge and self-reported oral health behavior of children.

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1. Introduction

The improvement of oral health literacy, implementation of behavioral changes and maintenance of good oral health are fundamental objectives of oral health-education (OHE) programs (Kay and Locker, 1996). Schools, in conjunction with their educational commitments, is the most appropriate setting for conducting health-education programs as opportunities to promote public health goals in a large population of children which can be achieved at a very low expense (Kwan et al., 2005).

Different educational interventions have been used varying from the simple delivery of information to more complex programs involving psychological and behavior change strategies. Knowledge, attitudes, behaviors, intentions, beliefs, use of dental services and oral health status and adoption of healthier lifestyles have all been targeted for change as a result of these interventions, which has stood the test of time as dentistry's most pioneering testimony towards concern with the prevention of oral diseases (Kay and Locker, 1996).

Dental health education can result in enhancement of objective measures of oral health status and behaviors although it may be less effective in changing attitudes and knowledge (Brown, 1994). It helps dentists reach schoolchildren's families and community influencing their attitudes and behaviors at a formative stage (Habitu and Krishnappa, 2015). School OHE can be provided by means of professional instructions using charts, posters, brochures, leaflets, models, audio-visual aids, or PowerPoint presentations (Gambhir et al., 2013). Although pediatric OHE materials like leaflets are readily available, their quality and readability vary widely (Arora et al., 2014).

Several studies have reported positive outcomes of OHE interventions in terms of oral cleanliness (Yazdani et al., 2009), significant changes in oral health behaviors (Reinhardt et al., 2009), brushing skills (Livny et al., 2008), caries control regimens (Tolvanen et al., 2009), plaque and gingival scores (Shenoy and Sequeira, 2010, De Farias et al., 2009, Zanin et al., 2007) and also in the incidence of dental caries, improved oral hygiene and established positive oral health practices (Tai et al., 2009).

Therefore, we designed and supervised a preliminary school-based intervention oriented research project, implemented by undergraduate dental students of King Saud University, Riyadh, Saudi Arabia. The project evaluated how a structured school-based intervention program could improve changes in knowledge and self-reported oral health behavior of children. This study aimed to examine the effectiveness of OHE intervention on the improvement in the knowledge and self-reported behavior among 6–8 year old female primary school children in Riyadh, Saudi Arabia.

2. Materials and methods

2.1. Study design and setting

This cross-sectional study was ethically approved by the College of Dentistry Research Centre (CDRC; Registration Number: FR0301) at King Saud University in Riyadh, Saudi Arabia. The city of Riyadh comprises of a complex and diverse population of various origins, thereby representing the urban area of the Saudi Arabian peninsula. As such it was an appropriate region to study the effect of school based intervention among children in Saudi Arabia. Due to the rules and regulations in the Kingdom of Saudi Arabia which segregate genders in all levels of education, this study included only primary school girls. At the time of the study, in the city of Riyadh, the total number of schoolgirls studying at 436 government schools were 1,91,731 and 259 private schools were 49,361. The framework of the study was conceptualized in the beginning of 2014. During this stage, the study protocol was produced, the questionnaire was designed and school visits were planned. Consequently, three groups were formed, two groups of six students and one group of seven giving a total of 19 undergraduate female dental students. These 19 dental students, under the supervision of 6 faculty members of the Department of Periodontics and Community Dentistry, visited a total of 8 government primary schools for implementing this study. Government schools were targeted primarily due to the convenience of obtaining the permission from a single government organization, the Ministry of Education (MOE). Moreover, we assumed that children studying in the government schools would be less exposed to dental health education programs as they may be having less access to dental care either due to economic reasons, priority reasons or negligence. The official permissions from the school authorities were sought after explaining the objectives of the study before the commencement of the study and materials needed for the study implementation were prepared in December 2014. The fieldwork for the study was carried out from February to March 2015.

2.2. Method of selecting sample

At $\alpha = 0.05$ with estimated standard deviation = 2.5 score, power = 0.96 (Probability of type II error = 0.04) and effect size = 0.7, the sample size required for each group will be at least 530 female school children. Government schools from low to middle socioeconomic status were chosen in Riyadh city. The locality and neighborhood surrounding the school helped us in identifying the socioeconomic status of the selected government schools. We included first to third class groups (6–8 years of age children falls under these classes).

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