Initial Impact of an Educational Program Programme for the Orphans in Erbil City

Bushra Rashid[1] & Zainab Yalman Othman[2]

[1&2]Dentistry Faculty, Tishk International University, Erbil, Iraq
Correspondence: Bushra Rashid, Tishk International University, Erbil, Iraq.
Email: bushra.rashid@tiu.edu.iq

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Purpose: This study aimed to assess the state of the orphans' oral health living in Erbil orphanage; their oral health knowledge, attitude and practice; and the improvements in oral healthcare after the provision of oral health education.
Materials and Methods: The study included orphans aged 6–15 years living in Erbil orphanage in Iraq. As a baseline visit (A), the oral hygiene status of all participating orphans was evaluated using the oral hygiene index–simplified (OHI-S). To evaluate the orphans' oral health knowledge, attitude and practice, the orphans completed an oral hygiene questionnaire. Dental caries prevalence was assessed using the decayed, missing, filled teeth (DMFT and dmft index). An educational programme was provided which included demonstrations and descriptions of dental health indications and how to carry out oral hygiene procedures. After two months, follow-up visit (B) performed to assess the OHI-S, and the same oral hygiene questionnaire that was used in the baseline visit was also completed by the orphans.
Results: Between visits A and B, no significant differences were found in oral health knowledge (visit A = 7.321 ± 2.204 and visit B = 7.714 ± 1.749) or attitude (4.357 ± 2.930 and 4.553 ± 2.992). A significant difference was found in oral health practice (5.15 ± 1.89 and 6.3 ± 1.69). Dental caries prevalence was 65% in the primary teeth and 73% in the permanent teeth.
Conclusion: The orphans and caregivers need training in how to maintain oral hygiene. Dental health professionals should provide oral health education and regular screening camps for these children.

Keywords: Dental Caries, Orphans and Vulnerable Children, Oral Health Practice, Oral Health Education

1. Introduction

Oral illnesses cause significant health problems across the world (Petersen, 2006; Petersen, 2008). Oral diseases can ruin people's quality of life, and they can negatively affect the functioning of the oral cavity, aesthetics and social relationships (Gift, 1992). Oral health is therefore crucial to the whole-body wellbeing of the person. Dental caries and periodontal diseases mainly affect disadvantaged groups in both developed and developing countries, and orphans are a high-risk group (UNICEF Press Center, 2012). An orphan is any child under 18 years' old who has lost one or both of their parents. Orphans are an underprivileged group; thus their isolation from the community made them more liable to diseases (Park, 2021). Character development and the availability of opportunities are delayed in orphans due to their social setting (e.g., nonexistence of maternal supervision, environmental deficiency and emotional instability (Saravanan, 2008).

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In 2009, the government of the Kurdistan region in Iraq opened Erbil orphanage. In developing countries such as Iraq, oral healthcare is often inadequate due to insufficient knowledge, funds and dental workers (Petersen, 2007). The Ministry of Health or other organizations can use educational programmes to develop oral health knowledge. Recently, a study involved a short educational programme in a public school in Erbil concluded that dental knowledge increased and the oral hygiene of the students improved after the programme. The researcher suggested including this type of educational programme in the students' educational syllabus (Noaman, 2017).

The aim of this study was to assess the oral health status of the children living in the orphanage; their oral health knowledge, attitude and practice; and the improvements in oral healthcare after providing oral health education.

2. Materials and Methods

Fifty-six orphans in the age range 6–15 years living in Erbil orphanage participated in the study. Agreement of the university authority was obtained before starting the research. Informed consent was obtained from the orphanage directors after providing them with detailed information on the study protocol. Four orphans did not attend the second visit and were thus removed from the study.

As a baseline (visit A) before any intervention, the oral hygiene status of all participating orphans was evaluated using the oral hygiene index–simplified (OHI-S) (Green, 1964). The evaluation was performed using disposable instruments. Four well-trained dentists conducted the initial examination to determine the oral hygiene of the orphans. The standardization of the dentists was achieved by each dentist examining 15 children for training, followed by checking by an inter-examiner. The calibration was almost the same between the dentists and the inter-examiner (90%). A paediatric dentist explained the examination method, how the teeth should be examined and the standards for scoring in the indices. The data were collected on a form especially prepared according to OHI-S. Dental caries prevalence was assessed by using the World Health Organization's form for children of calculating Decayed, Missing and Filled Teeth (DMFT and dmft) index. To evaluate the oral health knowledge, attitude and practice of the orphans before the educational programme started, the orphans completed an oral hygiene questionnaire. The questionnaire checked the knowledge, attitude and behaviour of the subjects. The questions included; is plaque (bacteria) on your teeth good or bad? How many times a day should you brush your teeth? How long should you brush your teeth? How often should you see your dentist? Which types of foods are risky for your health? Reason for brushing; Frequency of sweet food consumption; preferable time for sweet food consumption? Are you brushing your teeth? The questionnaire was in the format multiple-choice questions. In the end of the (A visit) the educational programme was performed which included audio-visual and verbal descriptions of dental health indications and how to carry out oral hygiene procedures for the orphans and their caregivers (with emphasis on the orphans). The dentists requested the caregivers to encourage the orphans to follow the educational programme every day.

The follow-up OHI-S assessment (visit B), conducted two months after visit A, examined the change in the oral hygiene of the orphans after the dental health education programme. In addition, the mean values of the participants' oral hygiene knowledge, attitude and behaviour during the two visits were compared. The mean OHI-S scores and oral health education knowledge between visit A and the follow-up visit B assessments were compared using paired t tests and one-way analysis of variance (ANOVA). Statistical significance was fixed at $\leq .05$.

3. Results

The sample consisted of 56 orphans (54% female, 46% male and the (Figure 1). Table 1 shows the difference in the mean oral hygiene scores between the baseline visit (A) and the follow-up visit (B). A statistically significant (p = .0089) difference was found between the B and A visits regarding the OHI-S score (0.821 ± 0.6 and 0.407 ± 0.563, respectively).

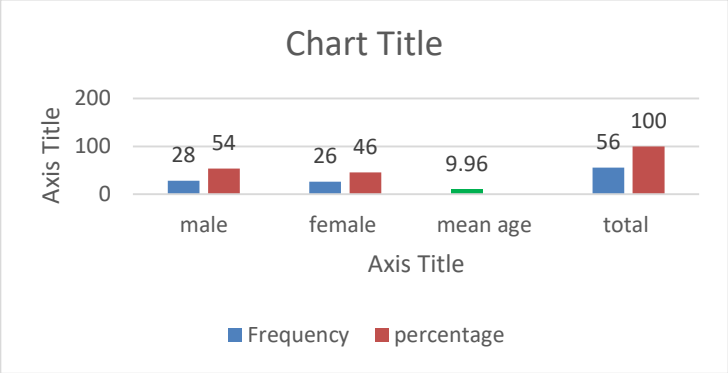

Figure 1: Distribution of the sample according to age and gender

Difference in Oral Hygiene Score between Baseline (A) and Follow-up Visit (B) is illustrated in table (1). Table 1 shows there was significant difference in the oral hygiene score (P= 0.089) between the mean baseline visit (0.821 ± 0.6) and the follow-up visit mean (0.407 ± 0.563) at level of P< 0.05.

Table 1: Difference in oral hygiene score between baseline (A) and follow-up visit (B)

	Mean A visit	Mean B visit	*p*-value
OHI-S	0.821 ± 0.6	0.407 ± 0.563	.0089*

* Significant difference set at $p < .05$

Table 2 illustrates the difference in knowledge, attitude and practice between visits A and B. No significant difference was found in the participants' knowledge between visits A and B (7.321 ± 2.204 and 7.714 ± 1.749, respectively). Likewise, no difference was found for attitude (4.357 ± 2.930 and 4.553 ± 2.992). The participants' behaviour scores were significantly higher (p = .011) for visit B (6.3 ± 1.69) than for visit A (5.15 ± 1.89).

Table 2: Difference in knowledge, attitude and practice between Visits A and B

Variable	Visit A	Visit B	*p*-value
Knowledge	7.321 ± 2.204	7.714 ± 1.749	.174
Attitude	4.357 ± 2.930	4.553 ± 2.992	.403
Behaviour	5.15 ± 1.89	6.3 ± 1.69	.011*

* Significant difference set at $p < .05$

Table 3 shows the mean dmft, which shows the prevalence of dental caries in the primary dentition. The prevalence of dental caries in the subjects less than 7 years old was 67%, which was more prevalent in males. The prevalence of dental caries in subjects aged 7-11 years was 64% and more in males than females. The total prevalence of dental caries was 65% in the primary teeth.

Table 3: Frequency distribution of subjects according to prevalence of dental caries in the primary dentition

Total subjects				Males (n= 20)			Females (n= 14)		
Age in years	Total	with caries	% prevalence	Total	with caries	% prevalence	Total	with caries	% prevalence
≤7	12	8	67	10	10	100	2	0	0
7- 11	22	14	64	10	8	80	12	6	50
Total	34	22	65	20	18	90	14	6	43

Table 4 shows the mean DMFT, which shows the prevalence of dental caries in the permanent dentition. The total prevalence of dental caries was 73% in the permanent teeth. The prevalence of dental caries was more in females (86%) than males (25%).

Table 4: Frequency distribution of subjects according to prevalence of dental caries in the permanent dentition

Total				Males (n= 8)			Females (n=12)		
Age in years	Total	with caries	% prevalence	Total	with caries	% prevalence	Total	with caries	% prevalence
≤ 11	22	16	73	8	2	25	14	12	86

4. Discussion

The main purpose of this study was to determine the oral health status and future oral health perception of the orphans to stand over oral health problems and then to assess the causes and possible actions that can be taken. Oral diseases affect underprivileged and socially marginalized populations more than other populations. Children in orphanages are one such underprivileged group, and their access to oral healthcare is very limited. This lack of access is due to an insufficient number of dentists, possible financial restrictions and may be insufficient knowledge in actual necessity for dental care among other people (Shanbhog, 2014). In this study, dental caries prevalence was assessed using the DMFT index to have an idea about their dentition to put into consideration the future dental care programme.

The present study aimed to reveal essential information on the current situation of orphans, who can be rehabilitated by performing simple actions. The orphans and their caregivers were included in the

education programme, with emphasis on the orphans. The researchers assessed the baseline knowledge of the orphans in the first visit (visit A) using the questionnaire. They used the same questionnaire in the follow-up visit (visit B) to assess the benefit that the orphans received from the education programme. The results showed that the orphans made very little progress in their oral health knowledge. Schoolteachers can support dental staff in the cases of children with specific learning needs (Rashid, 2019). Short-term oral health education programmes may help improve oral hygiene and gingival health. Collaborations should be improved between school personnel, parents and health professionals to guarantee long-term benefits of such programmes (Relwani, 2016).

A study performed in the Erbil refugee camp showed that 67% of the children were affected by dental caries, and the author suggested that this population had limited access to the society in addition to lack of oral health knowledge (Noaman, 2019). In the present study, caries affected 64% of the orphans. Given that caregivers who act as substitute parents, supervise the orphaned children. The caregivers should be taught about importance of oral health knowledge, attitude and practice in orphans. The first step in caring for orphans is to educate the caregiver about oral health. In this study, an educational programme was provided for the orphans and the caregivers together.

Another study found that, in an orphanage in Saudi Arabia, the orphans had high rates of dental caries attributed to the loss of dietary control. To reduce oral diseases, therefore, diet control should be taken into consideration in preparing food for orphans. Moreover, oral health education is necessary to prevent dental caries and gingivitis, which can start from early childhood (Khedekar, 2015). In the present study, the educational programme covered topics that significantly improved the oral health behaviour of the orphans, indicating that they benefited from the programme. The orphans' attitudes, however, did not significantly improve. Whereas the orphans were better in practice that may indicate that, the orphans liked to practice after they watched the educational program, therefore they are in need for such an educational program.

In respect to the oral hygiene of the orphans, the OHI-S score decreased significantly from visit A to visit B (0.821 ± 0.6 and 0.407 ± 0.563, respectively). This reduction indicates that the educational programme was beneficial to the orphans and the caregivers. However, the OHI-S score of the orphans in the present study was not high compared to the OHI-S score of the orphans in the Saudi Arabia study (2.1 ± 0.48) (Khedekar, 2015) and the orphans in Pune, India (2.7 ± 1.2). While caries prevalence in the age range 10–15 years was 38% (comparable to a study in an orphanage in India), the caries prevalence was 25% in the age range 7–11 years. Over 50% of orphans, aged 6–9 years are affected by dental caries, which indicates either a lack of diet control or poor nourishment (Shah, 2016). An inadequate sample may be considered a limitation of this study. In conclusion, the orphans and caregivers need training in how to maintain oral hygiene. Dental health professionals should provide oral health education and regular screening camps for these children. These results point towards the required action for the orphans, and we recommend the following measures:

- The primary caregivers and secondary staff of the orphanages should be given training in educational plans and how to maintain good oral hygiene.
- Dental health professionals should provide oral health education and inspection camps for the orphans.
- The orphans should be encouraged to take responsibility for their own oral health and not to be reliant on oral health workers.
- The government should incorporate oral health education into the orphans' programme.

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