

A pilot project to improve the oral health of orphans and of the elderly in residential care in Constanta, Romania

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Aim: A pilot project to improve the oral health of Romanian orphans and elderly people in residential homes. **Material and Methods:** The orphanage and old persons' home were in Constanta. After training, 50 fifth-year dental students made 14 weekly residential home visits to improve carers' oral health knowledge and oral hygiene (OH) procedures and to monitor progress in one orphan and one old person. At baseline and after 14 weeks a local dental school staff member examined each orphan and old person's oral health using WHO (1997) criteria and the Simplified Oral Hygiene Index (OHI-S). The carers' knowledge of OH and attitudes to providing and the students' knowledge and attitudes were assessed at baseline and again after 14 weeks with a questionnaire. **Results:** All 56 orphans (mean age 9.6 years, mean DMFT 2.39) living in the home participated and their mean OHI-S improved (1.40 to 0.80, $p < 0.0001$). Fifty old people (mean age 75.9 years) participated, of whom 22 (44%) were edentulous. There was no significant improvement in mean OHI-S ($p < 0.10$). The carers' oral health knowledge improved (mean scores from 65 to 88, $p < 0.001$) as did their attitude score ($p < 0.013$). Students noted changes in their understanding of the needs of the carers, orphans and elderly people. Their perception of their capability to provide OH education or train others to do so, or their inclination to do so remained substantially unchanged. **Conclusions:** This pilot study met its aims suggesting that with suitable management, senior dental students can play a significant role in residential homes for orphans and old people by training carers and improving the residents' oral hygiene. Further similar studies in other settings are indicated.

Key words: oral health promotion, disadvantaged children, orphans, elderly, carers, dental students, Romania

Introduction

The oral health and the oral healthcare habits of orphanage children and elderly in residential care frequently depend on the nursing personnel and/or other carers. The extent of this dependency varies with the age of the orphan and the degree to which the elderly are either physically or intellectually handicapped. A number of studies have found that the oral health of elderly people is worse than that of comparable groups who live at home (Frenkel, 1999; Simmons *et al.*, 2000; Sweeney *et al.*, 2007). The ability of nursing personnel and carers to provide oral hygiene for residents in care homes has often been found to be poor (Fitzpatrick, 2000; Miegel and Wachtel, 2009; Sweeney *et al.*, 2007). This may be due to a number of factors including lack of knowledge, lack of time and psychological barriers to working in mouths (Pietrovski *et al.*, 1990; Wårdh *et al.*, 1997).

The limited literature comparing orphans' oral health with that of children in family homes suggests that it is worse (Al-Jobair *et al.*; 2013 Kumar *et al.*, 2011). In the UK a number of initiatives have tried to improve the oral health of the elderly in residential care. Some such as the Residential Oral Care in Sheffield (ROCS) scheme have involved dentists (Lines and Heyes, 2009), others have involved dental hygienists and oral health promoters (Duane *et al.*, 2011). Elsewhere in Europe, often in countries with well-developed public dental health services, there have been a number of initiatives to improve the oral health of

the elderly in residential care (Edman *et al.*, 2012; Vischere *et al.*, 2011). However, in other European countries with limited or no public dental services and weak economies, there have been few, if any such, initiatives.

This has been the situation in Romania, where since April 2013, no public funds have been allocated to oral health for prevention or treatment. External help was therefore needed to try and help improve the oral health of groups in residential care in Romania. The Council of European Chief Dental Officers was aware of this need and in collaboration with three dental companies designed a project that aimed to bring about a sustainable change in dental health of those in residential care. The Dean of the Dental School of the Ovidius University, Constanta and the staff of an orphanage and a care home for the elderly cooperated in implementing this project: to arrange for staff from the dental schools and fifth year dental students to visit these institutions at weekly intervals to train the carers and to liaise with the managers and cooks at the orphanage and care home. The project was supported by the three dental companies.

The aim of this pilot project was to improve the oral health of Romanian orphans and elderly people in residential homes. It had the following objectives :

1. To assess caries prevalence and oral hygiene status in children and the elderly in residential care
2. To improve the oral health of the orphans and elderly in residential care by promoting a non-cariogenic diet and the daily use of fluoride toothpaste

3. To improve oral health knowledge and attitudes of nursing personnel and other care givers
4. To improve self-reliance and self-esteem of the children and elderly so that, whenever possible, they would take responsibility for their (oral) health
5. To make fifth year dental students aware of the oral health problems of the orphans and elderly who live in institutions
6. To train fifth year dental students to provide oral health advice to nursing assistants and care-givers, orphans and elderly in state homes.

Methods

An orphanage and a residential home for elderly people in Constanta, both randomly chosen, were invited to participate in the project, together with their management, cooks, nursing assistants and other caregivers (as appropriate). Permission was obtained from the local authorities who ran the institutions. Ethical approval was obtained from the ethics committees of the Ovidius University.

The staff and fifth (penultimate) year students of the Faculty of Dental Medicine, Ovidius University, Constanta, were trained by a tutor dental hygienist from the UK (MH), who had specialised in the oral health care of orphanage children and elderly. Training took two days and involved communication skills, theory and practice of preventing oral disease. Students from the fifth year and the staff of the institutions received training in dietary advice and communication as well as practical training in oral hygiene instruction, oral health knowledge and procedures.

The homes' nursing assistants and caregivers completed a piloted questionnaire (available at www.cecco.org and is attached to the online version of this paper) to assess their oral health knowledge and attitude. Then the UK trainer also visited the orphanages and residential home elderly people and met the managers, cooks and carers.

The baseline oral health and hygiene status and oral hygiene procedures of the orphans and elderly were evaluated by a clinical examination conducted by four clinicians who were calibrated to ensure consistency before the baseline examinations. Two visited the orphanage and conducted the clinical assessments at baseline and after 14 weeks and the other two conducted these assessments at the old persons' home. The clinical assessments were performed according to the WHO protocol (1997) and baseline DMFT and dmft values were established. Oral hygiene was assessed using the Simplified Oral Hygiene Index (OHI-S) (Greene and Vermillion, 1964). The subjects sat facing a window and no dental instruments were used except a dental mirror. The data were recorded on paper and transferred to electronic spreadsheet by one operator and the accuracy of entry was checked by a second operator. They were statistically analysed using paired t-test and chi square with statistical significances set at $p < 0.05$.

Between January and April 2012, each student provided one hour of oral health care coaching once per week to the usual healthcare giver who instructed one orphan or one elderly person in the presence of the student. The coaching included dietary analysis and the use of a

toothbrush with a fluoride toothpaste for the orphans and of dietary analysis and the use of suitable oral hygiene aids for the elderly, such that the carers were competent to provide supervised brushing or to brush the teeth of those who could not brush their own teeth (very young, incapacitated elderly, etc.) or care for their dentures. Toothbrushes and fluoride toothpaste were donated by one of the companies who supported the study.

Each student was responsible for one nursing assistant/carer caring for specific orphans and one specific carer caring for specific elderly persons, whom the student met every week for four months. At the end of the four month period, the oral health knowledge and attitude of the nursing assistants and the other healthcare givers was re-evaluated using the same questionnaire as was used at baseline. Oral health knowledge was assessed by calculating the percentage of correct answers to 51 questions. Attitude was assessed by positive answers to eight questions. The nursing assistants/carers were also asked whether or not their oral health knowledge had been *sustained* and their impressions of the benefits of the study both to them and to the children/elderly.

The oral hygiene status of the orphans and of the elderly was re-evaluated by the same examiners who conducted the baseline assessments.

The fifth year students were asked to state how their understanding of the needs of the carers, orphans and elderly people and their willingness and ability to provide oral health education, including oral hygiene advice had changed over the four months.

Results

The results relating to the orphans are presented first, then those for the elderly followed by the carers and finally the students.

All 56 children in the orphanage participated in the project. The exact age of five of the them was unknown. The ages of the other 51 ranged from 4-16 years (average 9.6 years). The 26 boys were on average slightly older 10.0 years than the 25 girls with the average age of 9.2 years. The overall mean DMFT=2.39 (sd 2.00) most of which comprised of DT=2.35, component, with a small treatment component FT=0.04. Thirty two orphans had deciduous teeth, with a mean dmft 1.9, most of which comprised of dt=1.8, with virtually no dental treatment of deciduous teeth.

At the start of the study, most of the orphans reported that they had toothbrushes and were brushing their teeth regularly. This did not change much during the project. However, the orphans' oral cleanliness status showed a marked improvement. Their OHI-S improved from a mean of 1.40 (sd 0.9) at baseline to 0.80 (sd 0.41) ($p < 0.0001$) after 14 weeks.

Fifty elderly people from a residential home in Constanta participated in the project, their age range was 60-94 years, with an average of 75.9 years. Thirty four were female and were older than the males, mean age 78.2 vs 70.7 years. Overall 22 (44%) were edentulous. The mean DMFT of those with teeth was 17.6. The elderly improved their tooth-brushing frequency, especially in the evening from 66% to 80%. The improvement in their oral cleanliness was insignificant.

The 50 dental students coached 49 carers. The mean self-rated oral health knowledge marks of these carers improved markedly over the 14 weeks from a mean of 3.9 (sd 1.8) (65%) to 5.3 (sd 2.0) (88%) ($p < 0.001$). Their average actual knowledge marks improved from 28.8 (sd 6.6) at baseline to 40.8 (sd 3.0, $p < 0.0001$). Their average attitude marks also increased from 6.2 (sd 0.9) to 6.6 (sd 0.6, $p = 0.013$).

The dental students commented on how their understanding of the needs of the carers, orphans and elderly people whom they coached had changed over the four months. However, their perceptions of their capability to provide OHE, or to train others to do it, or in their inclination to do it in the future all remained unchanged (Table 1).

Discussion

This pilot study suggests that senior dental students visiting residential homes can help by training carers and improve the oral hygiene of residents, young and old. The methods used in this study could be criticised for a number of reasons. Firstly, because WHO methods were used to assess dental caries and the patients were not examined in a dental chair with excellent lighting. There was a potential risk that at the assessment after 14 weeks, the clinicians concerned would have expected an improvement and this may have biased their assessments. Because the OHI-S was used and means calculated, the exact numbers of individuals whose oral hygiene had improved, stayed the same or deteriorated were not identified. These potential weaknesses are recognised. Furthermore, it was not possible to alter the orphans' or old people's diet because it was discovered that for both institutions all menus were decided not in the homes concerned but centrally, at a national level. An analysis of the menus found that they were well balanced. Neither the orphans nor the old people were given snacks between meals and due to lack of money both for the institutions and the individuals their access to sweets and sugared drinks was minimal.

Over the 14 weeks period of the study, there was a statistically highly significant improvement in the oral hygiene of the orphans and an improvement, but not of statistical significance in the oral hygiene of the old people. It will be interesting to know if this improvement has been maintained since the end of the study.

The percentage of old people with no natural teeth (44%) was identical to that found by a study of over 65 year olds in Finland (Musacchio *et al.*, 2007). Many

other studies report this percentage for the 65-74 year range making meaningful comparisons difficult.

The improvement in the carers' knowledge of oral health and attitude to providing help with oral hygiene was very encouraging. This may have been due to a number of factors. One was the style of the training they received. At the end of their training a number said that it was very good to be treated as equals and respected and that historically this had often not been the case. The managers of the homes and the district director of social services were very supportive of the study and appreciated the efforts that were being made to help the carers, the orphans and old people. Additionally, the students' regular visits may have helped establish a rapport with both carers and residents while promoting better oral hygiene practices.

In comparison with the improvements in oral hygiene of the orphans and old people and in the knowledge of oral health and attitudes of the carers, the results for the students were disappointing in that there were no statistically significant changes in their self-perceived capability to provide OHE, to train others to do it, or in their inclination to do so in the future. However, they all commented that as a result of their regular visits they had a far greater understanding of the social, health and oral health needs of children and old people living in state homes. It is possible that this may have been due to a response shift over the 14 weeks from initial understanding largely at a theoretical level, followed by an initial dip in confidence levels and then an improvement in awareness and confidence back to the original level.

Conclusions

In the setting in which it took place, this pilot study met its aims. Its outcomes suggest that with suitable management, senior dental students can play a significant role within residential homes for orphans and old people by training carers and improving the oral hygiene of residents. Further similar studies in other homes in other countries are indicated.

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Table 1. Students' mean scores for questions on their knowledge and inclination to do oral health education (OHE) at baseline and after 14 weeks

Question	Pre-programme mean (sd)	Post-programme mean (sd)	p
Like to do OHE	2.4 (0.8)	2.5 (0.8)	0.61
Feel capable to do OHE	2.2 (0.8)	2.0 (0.7)	0.42
Feel capable to train others for OHE	2.1 (0.7)	2.3 (0.7)	0.32
Feel comfortable to train others for OHE	2.5 (0.8)	2.5 (0.7)	0.85

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