INTRODUCTION

Oral diseases are significant health problems around the world. Oral diseases seriously impair quality of life in a large number of individuals and they affect various aspects of life including function, appearance, and interpersonal relationship. Oral health is essential to the general health and well-being of all children and adults. Dental caries and periodontal diseases affect almost 100% of the population worldwide. According to WHO’s global review of oral health, despite great improvements in the oral health of populations in several countries, oral problem still persists. This is particularly among underprivileged groups, in both developed and developing countries. One of the known high-risk groups is orphans. Orphan is defined as a child under 18 years, who has lost his father, mother or both. Therefore, he is considered among disadvantaged or socially marginalized population, in whom disease burden is high. Healthy personality development as well as full unfolding of opportunities is hampered in orphans by certain elements in their social environment such as lack of parental guidance, environmental deprivation and emotional disturbances.

In developing countries like India, there is little access to oral healthcare due to lack of knowledge, insufficient financial resources and inadequate dental manpower in national healthcare system. The aim of this study was to evaluate the oral health status of orphan children and the improvements in the existing oral healthcare among the orphan children after imparting health education.

METHODOLOGY

An interventional study was carried out at an orphanage in the city of Pune, India, from April to June 2014. Clearance was obtained from Institutional Ethics Committee of Krishna Institute of Medical Sciences, Deemed University, Karad. Informed consent was also obtained from the orphanage authorities and the caretakers to carry out the study. Inclusion criteria were constituted for orphan children aged 5 - 12 years. Exclusion criteria were children suffering from acute or chronic systemic diseases, behavioral disorders, neurological problems, congenital abnormalities and those receiving medications.

ABSTRACT

Objective: To determine the knowledge and oral hygiene status of orphanage children in Pune and changes in them after health education.

Study Design: Interventional study.

Place and Duration of Study: Centers for Orphan Children in Pune, India, from April to June 2014.

Methodology: A specially designed questionnaire was used to assess the dental problems and existing oral hygiene maintenance practice among children between 5 - 12 years of age (n=100) in an orphanage center. Pre- and post-interventional intra-oral examination was carried out to check their oral hygiene status which included DMFS [Decayed Missing Filled Tooth Surfaces index (for permanent teeth)], OHIS (Simplified Oral Hygiene Index) and gingival indices. Intervention was in the form of oral health education, demonstration of correct brushing technique, diet counselling and maintenance of overall oral hygiene.

Results: Present study shows that the orphans had multiple dental problems along with improper oral hygiene practices and careless attitude towards oral health. Pre- and post-interventional DMFS was compared using Wilcoxon sign rank test, which was not significant; while OHIS and gingival indices were compared by using repeat measures ANOVA (p < 0.001) which was significant for each, respectively.

Conclusion: There was considerable improvement in the oral hygiene status of orphans due to educational intervention. Oral health education at right age can help to cultivate healthy oral hygiene practices in orphans which will benefit them for lifelong. Caretakers should be educated and trained about oral hygiene practices so that they can implement it and supervise the orphan children.

A total of 100 children with boy to girl ratio 1.1:1, aged between 5 - 12 years, were included in the study. A specially designed questionnaire was answered by the orphans and their caretakers to assess their problems, existing oral hygiene practice and attitude towards oral health. Intraoral examination was performed while the child was in sitting position, using torch light, autoclaved diagnostic instruments (mouth mirror, straight probe, periodontal probe, explorer) and personal protective barriers (gloves, head cap, face mask.) Baseline data were collected on oral hygiene, according to WHO recommendations comprising DMFS (Decayed, Missing, Filled Tooth Surfaces Index, for permanent teeth), OHI-S (Simplified Oral Hygiene Index), and the Gingival Index.

Intervention in the form of oral health education was given to the orphans and their caretakers by audio-visual aids. Brushing technique demonstration and diet counselling were done. Caretakers were advised to supervise and reinforce the correct brushing technique in orphans. After 2 months, post-interventional intraoral examination of orphans' oral hygiene status was done.

The data was collected and was subjected to statistical analysis, using Statistical Package for Social Sciences (SPSS) version 17 software. On using the Shapiro Wilk test, data was found to be non-normally distributed. Wilcoxon rank sum test was used to compare pre-interventional and post-interventional values of DMFS Index. Repeat measures ANOVA was used to compare pre-interventional and post-interventional values of OHIS and Gingival Indices for boys and girls. The total sample p-value of < 0.05 was considered significant.

RESULTS
The present study was carried out in 100 orphan children of 6 - 11 years age group (Table I). The questionnaire revealed that orphans had various dental problems like improper oral hygiene practices and careless attitude towards dental health. Majority (59%) of the orphan children had experienced tooth ache, 98 (98%) of subjects did not visit the dentist, all the subjects used toothbrush and toothpaste to clean the teeth, 95 (95%) of subjects brushed once daily, 99 (99%) children replaced tooth brush once in 6 months, 32 (32%) of subjects had bad breath and 58 (58%) had bleeding gums. None of the children used other oral health measures like interdental cleansing aids (Table II).

The highest mean DMFS index (pre-assessment), according to age, was seen at the age of 10 years (1.74 ±1.31) followed by 8 years (1.72 ±1.73) and 11 years (1.66 ±1.52). There was no statistically significant difference between the pre- and post-intervention DMFT scores (total) among the sample (Table III).

For the pre- and post-intervention scores of OHIS and gingival status, the repeat measures ANOVA showed a statistically significant difference between the groups for time (Table IV).
DISCUSSION

A majority of oral diseases are found in disadvantaged and socially marginalized population. Thus orphanage children are such disadvantaged groups having limited accessibility to oral healthcare. This is because of inadequate dental manpower, financial constraints, and lack of perceived need for dental care among the people. Present study results reveal information on present scenario of orphans in the society, which can be changed by taking simple appropriate measures.

A study carried out by Shanbhog et al., showed that only 11.5% children visited a dentist which shows that dentists do not contribute much in educating the patients regarding oral healthcare maintenance.9 The results are similar to this study, in which 98% orphans did not receive any dental treatment, indicating a need of frequent oral health checkups and treatment camps for this deprived group of population.9 Walsh in Iraq indicated that over half of the children used dental floss once or more often in a week.10 In another research carried out by Russel of San Francisco, 75% of 12 - 14 years children used dental floss,11 which is contradictory to the findings in this research as none of the orphans used any other oral health aids like dental floss, mouthwash etc.; this is so because of various circumstances like more awareness and availability about oral hygiene methods. Another study carried out by Al Malik and Holt in Jeddah, Saudi Arabia, found lower caries prevalence among orphans living in an institution, which was justified due to strict dietary control, and in contrast to this research because orphanage staff were unaware about diet and caries correlation.12 In a research carried out by Dhanya in Andhra Pradesh DMFT was 1.02,13 while in this study it was 2.7 ±1.2, which shows that first permanent molar erupts by 8 - 10 years due to improper oral hygiene maintenance. Hence, oral health education at that age will prevent the consequences and will help inculcate proper brushing technique at the right age, so that children will practice the same forever.

Gingival index was 1 ±0.28 (p= 0.002) in a research carried out by Asma et al. in Saudi Arabia and in this study it was 1.4 ±0.8 (p < 0.0001).15 Their OHIS was 2.1 ±0.48 and in this study it was 2.7 ±1.2, which shows there is no marked difference, it can be due to poor oral hygiene maintenance and social conditions in both the study groups.15

The WHO Regional Office of Africa has created Regional Oral Health Strategies to reach larger communities of people and to bring quality in oral healthcare to orphan children.16 Similarly, Indian Government and NGOs should make policies for improving oral health needs of this section of society.

Improvements in oral health sector are still required in developing countries, with the collaboration of professionals in healthcare services in preventive work as suggested by Petersen.17 Collaboration between general healthcare and oral healthcare has to be included in healthcare education programs.18 Dental colleges can organise camps for educating orphans and their caretakers. Various manufacturing companies can offer products free. Moreover, NGOs and government agencies can make health policies to promote oral health resources and address oral health needs for this under-privileged population.

CONCLUSION

There was improvement in oral hygiene status in orphans due to educational intervention. Oral health education at the right age can help cultivate healthy oral hygiene practices in orphans which will benefit them for lifelong. Caretakers should be educated and trained about oral hygiene practices so that they can implement it and supervise the orphan children. Sensitizing the children with awareness towards oral hygiene will go a long way. Simple and cost-effective measures to maintain oral hygiene will improve the oral health status.

REFERENCES

4. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral

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Table IV: Comparison of OHI-S and gingival index.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-intervention</th>
<th>Post-intervention</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gingival status (male)</td>
<td>1.54 (± 0.88)</td>
<td>1.12 (±0.82)</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>Gingival status (female)</td>
<td>1.48 (± 0.87)</td>
<td>1.11 (± 0.81)</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>Gingival status (total)</td>
<td>1.44 (±0.86)</td>
<td>1.07 (±0.80)</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>OHI-S (male)</td>
<td>2.87 (± 1.19)</td>
<td>1.80 (±1.02)</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>OHI-S (female)</td>
<td>2.82 (±1.15)</td>
<td>1.60 (±0.95)</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>OHI-S (total)</td>
<td>2.76 (± 1.21)</td>
<td>1.62 (± 0.97)</td>
<td>&lt;0.0001*</td>
</tr>
</tbody>
</table>

*p = <0.0001- statistically significant.
Oral health education to orphan children


