EFFECT OF HEALTH EDUCATION ON ORAL HYGIENE KNOWLEDGE AND PRACTICES IN RURAL AREAS OF DISTRICT BHAKKHAR (PUNJAB-PAKISTAN)

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ABSTRACT

OBJECTIVE: To assess the effect of health education in improving the knowledge and practice of oral hygiene in a rural community of district Bhakkar.

STUDY DESIGN: Non Randomized Design (before and after design).

PLACE AND DURATION: At 12 Union Councils of District Bhakkar, Punjab. Duration is 12 months, from 15th April 2014 to 1st April 2015.

METHODOLOGY: Total of 1739 individuals were interviewed before the oral health/hygiene education sessions and were re-interviewed after 3 months using the same closed ended questionnaire to assess the effect of oral health counseling. A total of 51 awareness sessions on oral hygiene were conducted in small groups. The data was collected from the subjects mainly focusing on oral hygiene knowledge and practices.

RESULTS: The knowledge about the oral health/hygiene, diseases related to it, methods of brushing the teeth etc. improved among the community members after the intervention, which was found to be statistically significant. Before the awareness session only 16% had knowledge about the caries which increased to 31% in post-test. Similarly, more people started to adopt healthy oral hygiene practices on regular basis (pre 49% and post 70%).

CONCLUSION: The findings of the study showed that health education sessions had a profound effect on raising knowledge about different aspects of oral health and improving practices of the respondents.

KEY WORDS: Health education, Knowledge, Practices, Oral hygiene, Rural areas.

INTRODUCTION

The oral hygiene gives an indication about overall health condition of an individual. Poor oral hygiene leads to poor oral health which ultimately has detrimental effects on general health and significantly diminishes the quality of life. Good oral hygiene not only warrant freedom from the sufferings associated with oral health but also helps in boosting the self-esteem, quality of life and performance of the individual. A variety of oral diseases can result from bad oral hygiene, considered as one of the major public health problems and having significant social impact. Strengthening of health education programs through implementation of effective oral disease prevention measures and promotion of oral health can improve oral hygiene practices. Oral health promotion through educating the community is a cost-effective strategy to decrease the burden of oral diseases and maintain quality of life.

There has been a marked improvement in the oral health status of the individuals in many developed countries. In developing countries, oral health is still a major public health problem especially in the low income and socially disadvantaged groups. Similarly, in developing countries where oral hygiene preventive programs are not well established, dental caries is on the rise.

A huge percentage of oral diseases can be prevented both at the individual and community level by providing education focusing on oral hygiene and health. This will improve the oral health attitude and practices among the general population. Preventive dental care programs are almost nonexistent in the rural areas of developing countries. Studies show that the residents of urban areas, with better education, socioeconomic status and access to quality dental health services have better oral health status.

The challenges of improving oral health are particularly great in developing countries like Pakistan, gets even worse in the rural areas where majority belong to low socio economic group and are uneducated. There must be more awareness created among people about various dental problems, their complications and the treatment needs. Public health dentists should take the initiative of adopting more community oriented oral health programs to increase the awareness among rural populations.

There is little data available about the oral health and hygiene knowledge and practices in rural areas of Pakistan. Most of the studies have been conducted on school children that too of the urban areas. Statistics about the oral hygiene knowledge and practices in the community is regarded as an essential basis for planning dental health awareness programs and provision of dental care facilities.

Keeping this back ground in mind, this study was conducted with the objective of improving the knowledge and practices with regard to oral hygiene among the residents of different Union Councils of district Bhakkar, one of the most
underdeveloped and underprivileged area of southern Punjab with very low literacy rate. This area is deprived of basic dental care facilities either due to lack of knowledge, long distance and transport problems or economic reasons. The main focus of this study was primary prevention through a generation of awareness and health education sessions.

METHODOLOGY

A Non Randomized Design (before and after design), conducted in 12 different Union Councils of District Bhakkar, Punjab, one of the most underdeveloped and underprivileged districts of Punjab province. The duration of the study was 12 months (from 15th April 2014 to 1st April 2015). A sample of 1739 males and females of age group between 15- 60 were selected through non-probability convenience technique, mostly belonging to low socio-economic status. Oral health awareness and counseling sessions were imparted by our trained staff in 51 sessions for a period of ten months to the selected community members. The teaching was carried out through lectures with the help of visual aids like flip charts followed by small group discussions (SGDs). This also gave the participants an opportunity to clarify their doubts about the oral health related problems.

Inclusion & exclusion a criterion comprises of Residents of 12 Union Councils in the age group of 15 to 60 years and were willing to participate were included. Among those who were excluded were participants of age more than 60 years, with most of the teeth missing and children less than 15 years, those who did not turn up in dental camps after the awareness sessions, persons who turned up just because of free dental check-up without having attended the sessions.

The questionnaire was developed after careful literature review of articles and was translated into Urdu, being a language familiar to most of the locals. This close ended questionnaire was administered after taking informed consent before the awareness sessions as pre-test and similar was used after 3 months on the same individuals as post-test (before free dental camps) and mean scores were calculated and compared using Paired T test. Free dental camps were organized to attract the participants and to observe their existing oral health problems. Scoring was assigned to different variables in knowledge and practices, correct replies were given score one and no/don't know reply received zero score with a total score of 12. Paired t-test, chi-square and correlation test was used to see the statistical difference keeping 95 % CI and p value of less than 0.05 was considered as statistically significant in SPSS 22.

This study was conducted after the approval of Ethical Research Committee of Yusra Medical and Dental College. The Executive District Officer Health granted permission to conduct the study in the district. Informed consent to participate in the study was sought from the respondents with confidentiality assured.

RESULTS

The study included a total of 1739 participants between the age group of 15 to 60, with a mean age of 36.4 ± 12.8 years. Total male participants were 714 (41%) and female 1025 (59%). Most of them were uneducated 1390 (80%). Majority (77%) belong to low socio-economic group with monthly income less than Rs. 10000. The main source of income is farming (71%). Smokers were 513 (29%) and 1226 (71%) were non smokers.

The majority of the educated participants 275 (79%) were in the habit of brushing their teeth regularly (p = 0.000) with either tooth brush or maswak (p= 0.000) as compared to the uneducated which mostly used finger and homemade powder.

Most of the people are using maswak and other homemade remedies because of low cost. Before the awareness session only 16% had knowledge about the caries which increased to 31% in post-test. Similar changes were seen in other diseases knowledge also. Initially around 37 % participants believed extraction to be the only treatment option and had no idea about conservation. Because of the improvement in their knowledge in post-test around 64% believed in conservation of teeth. Other important responses of oral hygiene knowledge are shown in the Table - I.

The data showed an improvement in frequency of brushing before and after health education sessions [pre 10% (181) brush once a day, 3.5% (60) twice, and 51% (880) never) to [post 27% (465) once a day, 9% (156) twice a day and 30% (528) still never brushed p=0.000]. Among the target population who use toothbrush and maswak before the session was 17% which increased to around 31% after the session p=0.000. Duration of brushing to around one minute increased significantly from 24 % (426) to 42% (733). Similarly brushing techniques also showed improvement p=0.000. Other important responses of oral hygiene practices are shown in the Table - II.

TABLE-I: KNOWLEDGE REGARDING ORAL HYGIENE (n=1739)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Pre session test mean (SD)</th>
<th>Post session test mean (SD)</th>
<th>95% Confidence interval of the difference</th>
<th>p value (paired t test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is dental health important</td>
<td>0.341 (.474)</td>
<td>0.669 (.470)</td>
<td>-0.355 to -0.301</td>
<td>0.000</td>
</tr>
<tr>
<td>Know importance of brushing after meals</td>
<td>0.178 (.383)</td>
<td>0.400 (.490)</td>
<td>-0.240 to -0.201</td>
<td>0.000</td>
</tr>
<tr>
<td>Importance of brushing after fizzy drinks</td>
<td>0.090 (.286)</td>
<td>0.300 (.458)</td>
<td>-0.229 to -0.191</td>
<td>0.003</td>
</tr>
<tr>
<td>Bad oral hygiene can cause diseases</td>
<td>0.219 (.414)</td>
<td>0.469 (.499)</td>
<td>-0.270 to -0.229</td>
<td>0.000</td>
</tr>
<tr>
<td>Will you go to a dentist</td>
<td>0.102 (.303)</td>
<td>0.413 (.492)</td>
<td>-0.334 to -0.286</td>
<td>0.000</td>
</tr>
<tr>
<td>Local remedy</td>
<td>0.190 (.392)</td>
<td>1.94 (.232)</td>
<td>-1.777 to -1.726</td>
<td>0.001</td>
</tr>
<tr>
<td>Do you notice smell</td>
<td>0.369 (.482)</td>
<td>0.588 (.492)</td>
<td>-0.238 to -0.199</td>
<td>0.000</td>
</tr>
</tbody>
</table>
In Pakistan, the role of prevention in dental health is a challenge to all health professionals and authorities. Because of the increase in the incidence of dental health problems, this sector should be given due attention. The findings of this study clearly indicate a positive impact of these oral health education awareness sessions combined with extensive explanatory work in the community, which can improve the knowledge and practices of the local community regarding oral health/hygiene. The correct response of majority of the questions after the intervention is a positive sign and encouraging but still some people either lack the knowledge or couldn\'t appreciate the importance of oral hygiene.

Most of the study participants belong to low socioeconomic group and uneducated, had poor knowledge and practices of oral hygiene. Muhammad et al. and Thomas et al. in their studies also proved low socioeconomic status and illiteracy were the main causes of poor oral health. Knowledge about the use of carbonated drinks and sweets affecting the teeth also improved after the sessions. Most of the participants were hardly bothered about the appearance of their teeth which was not the case in a study done in Karachi and Spain. It was seen in our study that majority were using miswak or other homemade remedies for cleaning the teeth. Use of toothbrush and toothpaste was less which was not the case in a study done in Karachi, Ripah University students and private school in rural South India, where majority (90%) had the knowledge of toothbrush with toothpaste use. The most common tool used for cleaning teeth seen in these studies was toothbrush with toothpaste which was not the case in our study. This may be because our study participants were poor and cannot afford toothbrush and paste. It was also seen that in our study around 90% participants did not go to the dentist before while in a study done in Islamabad only 26% never visited dentist. In a study done in Karachi, it was seen that majority of the students (60%) had good knowledge regarding oral health and hygiene which was also seen in the educated group in our study. Studies done in Karachi, Lahore and Bhopal (India) shows that in order to increase the knowledge, attitudes and practices of the general population regarding dental/oral health there is a need to implement community oriented dental practices together with health education programs.

In our study there were 18% smokers which is less than the national statistics of 34%. Before the health education sessions only around 34% participants had an idea that maintaining oral hygiene is important out of which 22% knew it can effect general health. Which is less than a study done in India where around 36% had an idea about its effects on general health. The present study results on the knowledge and practices of

**DISCUSSION**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Pre session test mean (SD)</th>
<th>Post session test mean (SD)</th>
<th>95% Confidence interval of the difference</th>
<th>p value (paired t test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you clean your teeth</td>
<td>0.494 (.500)</td>
<td>0.696 (.459)</td>
<td>-0.221</td>
<td>-0.183</td>
</tr>
<tr>
<td>Do you change your brush</td>
<td>0.061 (.239)</td>
<td>0.143 (.350)</td>
<td>-0.095</td>
<td>-0.069</td>
</tr>
<tr>
<td>Do you clean your tongue</td>
<td>0.235 (.424)</td>
<td>0.516 (.499)</td>
<td>-0.301</td>
<td>-0.259</td>
</tr>
<tr>
<td>Do you rinse mouth</td>
<td>0.889 (.313)</td>
<td>0.990 (.098)</td>
<td>-0.114</td>
<td>-0.086</td>
</tr>
<tr>
<td>Do you rinse mouth after eating</td>
<td>0.610 (.487)</td>
<td>0.870 (.336)</td>
<td>-0.280</td>
<td>-0.239</td>
</tr>
</tbody>
</table>

There is marked increase in the number of participants who after the session are willing to go to a dentist instead of just trying local remedies (pre 10% and post 41%). There is a strong positive correlation between the knowledge and practices before and after the health education intervention shown in table 3.

**TABLE - III: KNOWLEDGE PRACTICE CORRELATION BEFORE AND AFTER HEALTH EDUCATION (n=1739)**

<table>
<thead>
<tr>
<th>Knowledge-Practices before health education- males (n=714)</th>
<th>Correlation Coefficient (R)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge-Practices before health education- females (n=1025)</td>
<td>0.714</td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge-Practices before health education-females (n=1025)</td>
<td>0.864</td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge-Practices before health education-total (n=1739)</td>
<td>0.665</td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge-Practices after health education-total (n=1739)</td>
<td>0.877</td>
<td>0.000</td>
</tr>
</tbody>
</table>
oral health are consistent with the studies done in Islamabad\textsuperscript{11} and Iran\textsuperscript{12}, these studies concluded that oral health behaviors of even the dental professionals needs improvement which can be done by continuing dental education. The knowledge about the correct use of toothbrush and tooth paste was much less than a study done in India\textsuperscript{15} where the knowledge was more in the female participants as compared to male. Pain (tooth ache) was the major cause for the participants visiting the dentist similar to some other studies\textsuperscript{20,23,25}.

Different studies\textsuperscript{22,24-28} showed that more than 60% students brush their teeth once daily which is less in general public around 40%, but in our study before the health education sessions it was around 11% which is really less although it improved to 27% but still needs a lot of improvement. Twice a day brushing practice was seen in around 3.5% of the study population which was almost similar to a study done in India \textsuperscript{4.1\%} \textsuperscript{22}. Studies\textsuperscript{23,28} show that the global trend of brushing twice a day is much higher than our region. If we want to get an effective behavior change, we need to focus on guidelines/instructions on correct oral hygiene practices. Regular use of maswak and other oral hygiene methods other than tooth brush was seen in the individuals, this is not usually seen in the studies done in China, Denmark, Sweden, and Jorden\textsuperscript{25,28}. Correct brushing techniques knowledge and practices was also less in our study participants as compared to study done in Jordan\textsuperscript{25}. Mouth rinsing practices after meals was also less as compared to a study done by Farhan et al\textsuperscript{16}.

Because of the poor educational status of the participants we were unable to ask about the fluoridated toothpaste. Lack of reinforcement and repetition of oral hygiene instructions and practical demonstration of different brushing techniques which is proved to be an effective tool in health education\textsuperscript{25,27}. This present study was done in rural area only where the socioeconomic status is really low. If similar study is done in urban areas or big cities, result might be different. To minimize the bias we tried to conduct the dental camps first of the UCs where awareness sessions were given first.

CONCLUSION

The findings of our study concluded that health education was found to be an effective intervention to improve the knowledge and practices of oral hygiene among general public. Health education sessions not only improved the level of knowledge of the participants regarding oral health but also their practices based on this knowledge. This warrants a multipronged approach with interventions at all levels with the help of dental health professionals and local NGOs for the under privileged rural communities.

Contribution of authors:
Hassan Bin Usman: Literature Review, Manuscript writing, Data Analysis
Usman Siddique: Data Collection and literature review
Iffat Atif: Proof reading
Huma Chishti: Data collection

REFERENCES