



Effectiveness of oral health education among primary health care workers at the primary health center in Nellore district, Andhra Pradesh

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ABSTRACT:

Background: Primary dental care can be a way of achieving good oral health for the community. This can be achieved by integration of oral health care with the existing primary health care activities through training of primary health care workers on aspects of oral health. **Objective:** To assess the effectiveness of oral health education among primary health care workers at the primary health center (PHC) in Nellore district, Andhra Pradesh. **Materials and Methods:** Descriptive longitudinal study was conducted from June 2010 to August 2010 at a PHC. Knowledge about oral health among primary health care workers was pretested using a self-administered questionnaire prepared in local language (Telugu). Later after a month health education was provided to the health workers, and pamphlets with information on oral health were distributed. Posttest assessment was done 1-month after providing health education using the same questionnaire. Statistical analysis was performed using the SPSS 12.0 software, Student's *t*-test was used to compare knowledge scores between pre and posttests. **Results:** A total of 118 Primary Health Care Workers with the majority in the 20-30 years age group participated in the study. Posttest assessment showed a change in knowledge level with an overall increase in knowledge level of primary health care workers with a mean difference of 12.56 ± 3.23 , which was highly significant ($P < 0.001$). **Conclusion:** The knowledge about oral health was poor, and it improved after providing health education to primary health care workers. Change in knowledge was appreciable and may play a key role in oral health promotion of the vast majority of the rural population.

Key words:

Health education, oral health, primary health care workers

INTRODUCTION

India is a vast country with the majority of people living in rural areas.^[1] Following the Alma Ata declaration of 1978 on the appropriateness of "primary health care," rural health infrastructure has been designed to cover rural population through subcenters, primary health centers (PHC) and community health centers.^[2] As oral health is an integral component of general health, Oral health care of the necessity has to be delivered through primary health care infrastructure.^[3] Primary health care workers might play a key role in these areas where there is a deficiency of dental surgeons in providing oral health care services.

WHO focused its attention on oral health in 1994 and chose the theme "oral health for a healthy life."^[4] Health

can never be adequately protected by health services without an active involvement of the community. The partnership at community level, between frontline workers of different sectors and community groups, can make the vision a reality. Community health worker activities can disseminate information and knowledge through health education activities and contribute to strengthening people's ability to deal with health problems.^[5]

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Multipurpose health workers (MPHW) play a vital role in the rural health care delivery system.^[6] MPHW female (MPHW [F]) should be sensitive and accountable to meet the health needs of the community.^[7] The Anganwadi worker (AWW) is a community-based voluntary frontline workers of the integrated child development scheme (ICDS) program. Selected from the community, she assumes the pivotal role due to her close and continuous contact with the beneficiaries.^[8] Accredited social health activist (ASHA) is a health activist in the community who will create awareness on health.^[9] Primary dental care can be a way of achieving good oral health for the community by the integration of oral health care in the existing primary health care activities. This is possible through training of primary health care workers about oral health.

The orientation and training of the health workers about oral health can be done by the dentist and local medical officer at the PHC. They should focus on integration of oral health activities with school health, ICDS, cancer control and geriatric health activities.^[10] Integrating dental strategies into primary health care approach would also require that oral hygiene instruction, as part of general hygiene instruction, be carried out by community health workers and social workers.^[11]

Primary health care workers get rigorous training in various health aspects, but oral health is given a low priority in their training curriculum. There are only few studies^[12,13] conducted on primary health care workers to assess their knowledge, attitude and practices toward oral health. However, only few studies^[14,15] were conducted to assess the effectiveness of oral health education among primary health care workers. In India, only one study^[16] has been conducted in Kerala. Hence, this study was planned with an aim to assess the effectiveness of oral health education among Primary health care workers at a PHC in Nellore district, Andhra Pradesh. The objectives of this study were to assess the knowledge of primary health care workers regarding oral health, to provide health education to primary health care workers regarding various aspects of oral health and to study the change in knowledge level after providing oral health education.

MATERIALS AND METHODS

A descriptive longitudinal study was conducted at a PHC in Muthukur Mandal of Nellore district of Andhra Pradesh over a period of 3 months from June 2010 to August 2010. This PHC is one major peripheral center for rural out postings adopted by Narayana Medical Institution.

Ethical approval for conducting the study was obtained from Institutional Ethical Committee. Permission was obtained from the medical officer of PHC and ICDS project officer to conduct the study after explaining the study procedure. All the health personnel working in the PHC's

and peripheral health centers were invited to participate in the study. Those health personnel who were willing to participate and who gave informed consent were included in the study.

A self-administered close-ended questionnaire was prepared using the training manual for health workers, National Oral Health Care Program (NOHCP)^[17] in English. The questionnaire was given to two experts in the field of dental research, and their response was recorded. The content validity was assessed using Davis criteria^[18] (1 - not relevant, 2 - somewhat relevant, 3 - quite relevant, and 4 - highly relevant). Content validity index^[19] was 1.0 and 0.9 for two experts respectively and scale content validity index^[20] was 0.9 for both experts. Then the questionnaire was translated into local language (Telugu) and it was checked for cross cultural sensitivity with the help of a bilingual expert. The translated question was checked for reliability by test-retest method among ten participants who completed the questionnaire twice with 2 weeks apart.

The questionnaire consisted of demographic data and questions built on 5 domains about oral health-normal oral anatomy, dental diseases, oral cancer and precancerous lesions, infant dental care and geriatric dental care.

Study included three steps:

1. Pretest: At baseline the questionnaire was handed over to the participants and sufficient time was given to them to complete
2. Oral health education: After a period of 1-month the investigator educated the participants about oral health using health education charts and power point based on the training manual for health workers by NOHCP. Pamphlets with information on oral health were distributed
3. Posttest: After 1-month the investigator visited the PHC and performed post-test assessment using the same questionnaire on the participants.

Analysis was performed using the SPSS 12.0 software (SPSS Inc., Chicago, IL USA). The results of basic demographic data and effectiveness of education in Primary health care workers were expressed in percentages. A paired *t*-test was used to compare knowledge scores between pre and posttests. Correlation of knowledge score was done with demographic data at pre and posttests. Statistical significance level was kept at 0.05 (*P* value).

RESULTS

Among 118 health workers who participated in the study, majority (94.1%) were females and most of the participants belong to 20-30 years age group. About 79.7% of participants had completed their secondary school, and only 4.2% of them were graduates. Majority of the primary health care workers who participated

in this study were AWW's (38.1%) followed by ASHA workers (33.9%), [Table 1].

In order to assess the effectiveness of oral health education, the percentage of correct responses were calculated for all 5 domains at pre and posttests in which increase in knowledge among health care workers was observed [Table 2]. Posttest analyses showed an overall increase in knowledge level of Primary Health Care Workers with a mean difference of 12.56 ± 3.23 which was highly significant ($P < 0.001$) [Table 3].

Correlation of knowledge score with age at pre and posttests showed that knowledge score was low at pretest with a significant difference ($P < 0.05$) among different age groups. At posttest, knowledge score increased among all the age groups with no significant difference ($P = 0.28$) among different age groups [Table 4].

Correlation of knowledge score with gender showed a significant difference ($P < 0.05$) between males and females with males having higher knowledge score at pretest. However after education though the knowledge was increased, there was no significant difference ($P = 0.17$) between gender [Table 5].

Analysis of data showed that knowledge score was differing significantly among health personnel's at pretest ($P < 0.001$), with health supervisors having highest score. However, analysis after education revealed that there was an increase in knowledge about oral health. The difference in knowledge score was statistically

significant ($P < 0.05$) with AWWs having best knowledge posttest [Table 6].

On correlating the knowledge scores of Primary Health Care Workers with education, there was no significant

Table 2: Percentage of correct response given to questionnaire

Knowledge question	Pretest (%)	Posttest (%)
Normal oral anatomy		
How many sets of teeth do we have?	65.3	91.5
Do you think tooth is a living part of body?	80.5	94.3
How many milk teeth are present in a child?	52.5	89.2
Which permanent tooth first erupts into the mouth?	35.5	88.6
At what age permanent teeth appear in the mouth?	36.4	79.8
Infant dental care		
Do you know that certain drugs during pregnancy may cause tooth discoloration in new born babies?	47.5	96.6
Do you think that germs are transferred from parents to baby during kissing and cuddling?	68.6	95.8
Do you think that prolonged breast feeding and bottle feeding during night will cause tooth decay?	20.3	96.6
Do you think it is necessary to clean the gum pads before the eruption of teeth?	78	94.9
When does the first milk tooth erupt?	72	94
When should brushing must be started?	62.7	97.8
How much toothpaste should a child use?	54.2	100
When tooth is avulsed what should we do?	11	86.4
Should the decay in milk tooth be treated?	62.7	98.3
Do you feel that thumb sucking causes irregular teeth?	44.9	94.9
Geriatric dental care		
Do you think loss of tooth is age related?	25.4	78.8
Where the removable teeth set should be placed in the night?	31.4	91.5
Do you know that removable teeth set should be brushed and cleaned with soap and water?	49.2	99.2
How frequently teeth set should be cleaned?	83.1	86.4
Dental diseases		
Which is the better option to prevent decay in children?	17.8	46.6
Which of the following can prevent tooth decay?	25	45
What are the symptoms of gum disease?	22	30.5
How to prevent gum disease?	28	45.8
Oral cancer		
Which of the following causes mouth cancer?	37.3	55.1
Which of the following are symptoms of mouth cancer?	17.8	53.4

Table 1: Sociodemographic details of the study participants

Variables	Number of participants (n)	Percentage
Age group (years)		
20-30	57	48.3
31-40	48	40.7
41-50	06	5.1
51-60	07	5.9
Gender		
Male	07	5.9
Female	111	94.1
Education		
Primary school	04	3.4
Secondary school	94	79.7
Intermediate	15	12.7
Graduate	05	4.2
Health personnel		
Health supervisors	05	4.2
MPHA (female)	22	18.6
MPHA (male)	06	5.1
Anganwadi workers	45	38.1
ASHA workers	40	33.9

ASHA – Accredited social health activist, MPHA – Multipurpose health assistant

difference ($P = 0.225$) in knowledge level at pretest. However, results were statistically significant ($P < 0.05$), showing increase in knowledge for graduates at posttest [Table 7].

DISCUSSION

The knowledge of the participant was assessed using a questions built on 5 domains about oral health – the normal oral anatomy, dental diseases, oral cancer and precancerous lesions, infant dental care and geriatric dental care. Questionnaire was prepared using the training manual for health workers, NOHCP^[17] in English. Since this training manual - NOHCP is used in India for training of health workers for NOHCP, it was used as a standard reference for preparing the questionnaire for health workers.

At base line pretest assessment of the knowledge of the health workers was done using a questionnaire and this was, followed by posttest assessment after giving educational intervention. The Oral health education rendered in the present study was well-received by the Primary Health Care Workers similar to other studies.^[14-16]

Prior to oral health education, the participants had enough knowledge about normal oral anatomy. However after education, their knowledge improved further which was similar to a study by Ocek *et al.*^[15] Though the study showed that the primary health care workers have knowledge about oral health, few knowledge gaps could be identified at pretest assessment. The misconceptions regarding the causes of oral diseases were commonly found worldwide regardless of geographical location and professional status^[21] were observed even in these primary health care workers, and these gaps in knowledge that were identified at pretest assessment were filled to a satisfactory extent through the educational intervention which was provided to these primary health care workers.

The participants had less knowledge about infant dental care at pretest, which improved after rendering health education. It is very important to take care of milk teeth as decay-free milk teeth create a healthy environment for the permanent teeth.^[10] Only a few participants had knowledge about dental caries and periodontitis, which later improved these findings were similar to the findings of the study conducted by Nair *et al.*^[16] As the treatment of dental diseases is costlier, it is better to prevent dental diseases by educating and creating awareness among health workers, which might help them educate the public.

Table 3: Overall changes in knowledge level of primary health care workers

	Knowledge score (mean±SD)	SE	Mean difference	t value	P value
Pretest	16.95±3.38	0.31	12.56±3.23	42.196	<0.001
Posttest	29.51±1.85	0.17			

SD – Standard deviation, SE – Standard error

Table 4: Correlation of knowledge score at pre- and post-tests age-wise

Age group (years)	n	Knowledge score at pretest mean±SD	Significance	Knowledge score at posttest mean±SD	Significance
20-30	57	17.44±3.84	F=3.027	29.21±1.77	F=1.281
31-40	48	15.94±2.38	P=0.032	29.69±1.97	P=0.284
41-50	06	18.00±4.05		29.83±1.47	
51-60	07	19.00±3.36		30.43±1.90	
Total	118	16.95±3.38		29.51±1.85	

SD – Standard deviation

Table 5: Correlation of knowledge score with gender at pre- and post-tests gender-wise

Gender	n	Knowledge score at pretest mean±SD	Significance	Knowledge score at posttest mean±SD	Significance
Male	07	20.00±4.54	F=6.324	30.43±1.51	F=1.84
Female	111	16.76±3.22	P=0.013	29.45±1.86	P=0.178

SD – Standard deviation

Table 6: Correlation of knowledge score with health personnel at pre- and post-tests

Profession	n	Knowledge score at pretest mean±SD	Significance	Knowledge score at posttest mean±SD	Significance
Health supervisors	05	20.80±2.39	F=18.511 P<0.001	29.40±1.67	F=3.086 P=0.019
MPHA (female)	22	20.27±2.99		29.27±1.93	
MPHA (male)	06	20.17±4.95		30.83±1.16	
Anganwadi workers	45	15.42±2.74		30.02±2.08	
ASHA workers	40	15.88±2.03		28.80±1.39	

SD – Standard deviation, ASHA – Accredited social health activist, MPHA – Multipurpose Health Assistant

Table 7: Correlation of knowledge score with education of participants at pre- and post-tests

Gender	n	Knowledge score at pretest mean±SD	Significance	Knowledge score at posttest mean±SD	Significance
Primary school	04	16.25±2.98	F=1.476 P=0.225	28.25±0.50	F=2.923 P=0.037
Secondary school	94	16.69±3.40		29.44±1.82	
Intermediate	15	18.60±3.60		29.60±1.92	
Graduate	05	17.40±1.14		31.60±1.81	
Total	118	16.95±3.38		29.51±1.85	

SD – Standard deviation

Majority of health workers felt that loss of tooth is age-related similar to the findings of the study by Sequeria *et al.*^[12] The proportion of participants with knowledge about geriatric dental care was low prior to health education, which improved later on. In our country, the population who have attained 60 years of age, is expected to shoot up by 360% by 2050.^[22] According to a report by United Nations Population Fund “India has around 100 million elderly at present, and the number is expected to increase to 323 million, constituting 20% of the total population, by 2050.”^[22] As 80% of people reside in rural region health services should be provided to them through primary health care workers.^[23] So by educating the health care workers about geriatric oral health might help them to provide more services to the older people.

Only 17% had correct knowledge about oral cancer at pretest. The proportion increased to 54% after education. Studies^[24,25] conducted previously on primary health care workers established the feasibility of using these health care workers for the early detection of oral cancer and precancerous lesions as well as their ability to diagnose these lesions accurately. Training the Primary health care workers in screening for oral cancer could have a significant effect on reducing mortality from cancer in the country like India.

Educating the health workers about oral health showed a positive effect irrespective of their age which was low at pretest. The oral health addressed to primary health care workers was equally received by both genders after education. Prior to health education, the knowledge regarding oral health was low among females than males that improved substantially after the educational intervention.

Among the health personnel, the most of the health supervisors had knowledge about oral health prior to education. However after education all the different cadre of workers showed improvement in knowledge with maximum by AWWs. On correlating the educational qualification of health personnel with knowledge score at pretest, there was no difference. However after health education, knowledge level of primary health care workers increased with higher educational qualification.

Limitations

- The study was conducted only for a short period. Long-term retention of knowledge is not assessed
- The present study did not check how far the knowledge gained by primary health care workers translated into positive practice and its applicability in the field.

Recommendations

- Inclusion of oral health as a subject in the training curriculum to all primary health care workers
- Regular continuing education and field based

refresher training programs for health workers to update their knowledge are required

- As part of the health team, health workers are required to undergo regular capacity building and have access to specialized information for broadening their knowledge on the local reality and improving interventions for promoting a better quality of life.^[13]

SUMMARY AND CONCLUSION

The present study showed that the knowledge about oral health was poor in Primary health care workers, and it improved after providing health education. Change in knowledge in the present study was appreciable, and it may play a key role in oral health promotion of the vast majority of the rural population. These health workers can serve as a valuable tool for population-based health promotion approaches in achieving health for all.

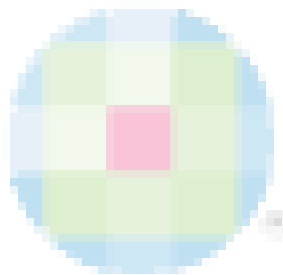
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