ORIGINAL ARTICLE

Empowerment of *Anganwadi* Workers in Oral Health Care: A Kerala Experience

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Abstract

Introduction: Oral diseases are a serious public health problem, which affects the overall health of a person. The lack of available and affordable oral health services, especially in a developing country like India, not only results in aggravation of the disease, but also enhances the cost of treatment and care. Education and involvement of community workers like *Anganwadi* workers aid to remove stigma, discrimination and provide better atmosphere conducive for patients with various diseases.

Aim: To assess the knowledge and practice of oral health care among the AWWs of the Pulikeezh block Panchayath before and after an oral health education training.

Materials and methods: A self-administered questionnaire was distributed to *anganwadi* workers of the Pulikeezh block Panchayath, Thiruvalla, Kerala before and after an oral health education training within a period of 3 months.

Result: The mean knowledge and practice scores in the pretest were found to be 9.6 + 2.2 and 5.0 + 1.0 respectively. The posttest conducted after a 3-month period showed an increase in the knowledge and practice score with a mean of 10.9 + 2.2 and 5.7 + 0.6 respectively. The increase in knowledge and practice was statistically significant ($p < 0.0001$).

Conclusion: Empowered women are recognizably key agents in the change process who can play an effective role for health promotion. AWWs can function as oral health guides who can create awareness and help in prevention oral diseases.

Clinical significance: As the oral health of an individual is set in the preschool period and more than 90% of dental diseases are preventable; preventive factors established around this age will determine the person's dental health for many years to come. The inclusion of oral health education in *Anganwadi* centers can be helpful in prevention of dental diseases.

Keywords: *Anganwadi* workers, Knowledge, Oral health education, Practice, Preexperimental study.

International Journal of Clinical Pediatric Dentistry (2019): 10.5005/jp-journals-10005-1636

Introduction

Oral diseases are a serious public health problem, which affect the overall health of a person.[1] The lack of available and affordable oral health services especially in a developing country like India, not only results in aggravation of the disease, but also enhances the cost of treatment and care.

Oral health literacy, like general health literacy, incorporates the capacity of a person to learn and use information about oral health in making decisions about their oral health. Poor oral health literacy can bring about significant challenges.[2] The sharing of risk factors between oral and general health, and the effects on the later development of diseases point to practical and economic reasons for integrating oral health promotion efforts. This can achieve multiple aims if started in the early childhood itself. Such interventions provide improved oral health knowledge, behaviors, and self-efficacy of parents/caregivers in the short-term.

The *anganwadi* (AW)—meaning courtyard, is a childcare center located within the village or the slum area itself. It is the center point for the delivery of services at community levels to children below six years of age, adolescent girls pregnant women, and nursing mothers. The AW is a meeting ground where groups of women/mothers can come together, with other frontline workers, to promote awareness and joint action for child development and women's empowerment. All services of the Integrated Child Development Services (ICDS) are provided through the AW in an integrated manner to enhance their impact on childcare. Each AW is run by an *anganwadi* worker (AWW) supported by a helper in integrated service delivery, and improved linkages with the health system—thus increasing the capacity of community and women, especially mothers for childcare, development and survival. They provide services like, pre-school formal education, nutrition and health education supplementary nutrition, referral services, auxillary nurse midwife (ANM) in immunization, health check-ups.[3] AWWs are trained regularly on behavior change communication (BCC) and capacity building strategies along with health education.[4]

The concept of health education is changing and is directed towards a common risk factor approach.[5] Education and involvement of community workers, aid to remove stigma, discrimination and provide better atmosphere conducive for patients with various diseases, even HIV.[6] Hence, health education not only plays to improve physical health, but also removes the myths and broadens the mindset of the society. Oral health education (OHED) is a widely used effective intervention at school settings that has resulted in induced changes in oral habits, knowledge, practice and routine.[7–9]

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How to cite this article: Cherian SA, Joseph E, *et al.* Empowerment of *Anganwadi* Workers in Oral Health Care: A Kerala Experience. Int J Clin Pediatr Dent 2019;12(4):268–272.

Source of support: Nil

Conflict of interest: None

As the oral health of an individual is set in the pre-school period and more than 90% of dental diseases are preventable; preventive factors established around this age will determine the person's dental health for many years to come.[10] The inclusion of oral health education in *anganwadi* centers has been greatly advised.[11,12]

In general, the AWWs have been scarcely involved in oral health education and they have been reported to have a low to medium knowledge and practice regarding oral health.[13–16] Hence, the study conducted to assess the knowledge and practice of oral health care among the AWWs of the Pulikeezh Block Panchayat, provides an oral health education training and assesses its impact on their knowledge and practice.

Materials and Methods

The study was conducted among the *Anganwadi* workers of the Pulikeezh Block Panchayat, which is situated in Tiruvalla Taluk in the district of Pathanamthitta, Kerala, India. The Pulikeezh Block Panchayat was formed in 1995.[17] This block includes five panchayats (local self-governing bodies) of Kadapra, Kuttoor, Nedumpuram, Niranam, and Peringara and one municipality (Tiruvalla). There are 155 *anganwadi* centers in this block panchayat which is served by an AWW and a helper each. It caters to the needs of about 1,500 children.

A self-administered questionnaire was developed in English, which was translated to Malayalam and then back translated to English to avoid any linguistic errors. Content validation of the questionnaire was done by five subject experts and it was modified based on their comments. A pilot study was done on another group of AWWs from a different location before the actual study for validation.

The questionnaire was divided into 3 parts. Part 1 contained baseline variables, such as age, number of children in the *anganwadi* center, years of experience, education, and location. In part 2, questions regarding knowledge on oral health care were included and part 3 dealt with questions on practice.

Ethical clearance was obtained from the ethics committee of the institution and written consent was obtained from each AWW after explaining the purpose of the study.

The questionnaire survey and oral health educational training were done on the day of their monthly meeting. The questionnaire survey was conducted and announced to avoid bias. The forms were distributed and collected back from the AWWs ($n = 145$) on the same day. This constituted the baseline pre-intervention data and the filled up forms were collected for baseline data on the same day for the pre-intervention data.

The oral health educational training program was given with the aid of power point presentation. Various topics related to diet and oral care during pregnancy, infant oral care, teething, importance of regular dental visits, feeding habits, healthy dietary habits, oral habits and dental caries process were explained. Method of correct tooth brushing was also demonstrated with live model. This was followed by an interactive discussion where their doubts regarding pediatric oral health were cleared. After three months, the same questionnaire was distributed unannounced on the day of their meeting and collected back on the same day. This constituted the post-intervention data.

The data were entered and analyzed statistically. Since there was a difference in the number of study participants in pretest ($n = 145$) and posttest ($n = 138$), respondents who attended both pretest and posttest ($n = 131$) were selected for the prepost analysis. The gain in knowledge and practice scores were calculated as the difference between the post and pre-intervention scores. Kruskal–Wallis test was used to determine the relationship between baseline data and gain in knowledge and practice scores. Wilcoxon signed rank test was used for comparing the pre-study and post-study knowledge and practice scores.

Results

The oral health educational training had a significant impact on the increase in knowledge and practice of the *Anganwadi* workers of the Pulikeezh Block Panchayat. Table 1 gives the baseline characteristics of the 131 AWWs.

Pretest

The AWWs had moderate knowledge and practice in oral health hygiene in the pretest. The mean knowledge and practice scores in the pretest were found to be 9.6 ± 2.2 and 5.0 ± 1.0, respectively. More than 50% of the AWWs responded wrongly to certain knowledge questions like problems with baby teeth can affect adult teeth (Q2), it is necessary to do fillings in baby's teeth (Q3), frequent and prolonged breast/bottle feeding can cause tooth decay (Q7), nighttime bottle/breast feeding can cause tooth decay (Q11) and to the question relating to the practice of giving sweets to the children often (Q2).

Posttest

The posttest conducted after a 3 month period showed an increase in the knowledge and practice score with a mean of 10.9 ± 2.2 and 5.7 ± 0.6, respectively. The increase was statistically significant ($p < 0.0001$).

Table 1: Baseline characteristics of the AWW

Characteristics	*No.*	*%*
Age in years		
<40	22	16.8
40–54	85	64.9
≥55	24	18.3
Years of experience		
<5	26	19.8
6–16	43	32.8
17–27	19	14.5
≥28	43	32.8
Education		
Matriculate	78	59.5
High school	48	36.6
Degree	5	3.8
Area		
Kadapra	21	16.0
Kuttoor	17	13.0
Nedumpuram	10	7.6
Niranam	14	10.7
Peringara	22	16.8
Tiruvalla Muncipality	47	35.9
No. of children in *Anganwadi* schools		
Mean ± SD	11.7 ± 4.2	
Range	1–25	

$n = 131$

Table 2: Pre- and post-scores on knowledge and practice of oral health

	Pre-score		*Post-score*		
Score on	*Mean ± SD*	*Median*	*Mean ± SD*	*Median*	*p value*
Knowledge	9.6 ± 2.2	10.00	10.9 ± 2.2	11.00	0.0001
Practice	5.0 ± 1.0	5.00	5.7 ± 0.6	6.00	0.0001

n = 131

Table 3: Percent of correct answers for knowledge questions in pre- and posttest

S. no.	*Questions*	*Pretest*	*Posttest*	*p value*	*P diff*
Q1	When does the first baby tooth appear in the child's mouth?	58.8	72.5	0.018	1.3 ± 2.5 (−7 to −8)
Q2	Problems with baby teeth can affect adult teeth	35.1	47.3	0.018	
Q3	It is necessary to do fillings in baby's teeth	26.7	37.4	0.027	
Q4	Mother's diet during pregnancy will affect baby's teeth	80.9	84.0	0.465	
Q5	Sugar is an etiological factor for tooth decay	86.3	93.1	0.061	
Q6	Fluoride in toothpaste is important for preventing caries in teeth	90.2	84.7	0.002	
Q7	Frequent and prolonged breast/bottle feeding can cause tooth decay	42.7	70.2	0.0001	
Q8	Bottle feeding after the eruption of primary teeth can cause tooth decay	78.6	75.6	0.546	
Q9	Children need elder's help and supervision with cleaning teeth until they are 8 years of age	96.9	98.5	0.999	
Q10	Balance diet is essential for the healthy growth of a baby's teeth	99.2	96.2	0.102	
Q11	Night time bottle/breast feeding can cause tooth decay	48.1	73.3	0.0001	
Q12	It is important for a child to visit the dentist before the 1st birthday or after the eruption of the 1st baby tooth	52.7	55.7	0.572	
Q13	Cleaning a baby's mouth after each feeding should begin even before teeth erupt	80.9	97.7	0.0001	
Q14	Counseling on feeding and weaning to prevent caries in infants during antenatal period is required	97.7	100	0.083	

n = 131

Table 4: Percent of correct answers for practice questions in pre- and posttest

S. no.	*Questions*	*Pretest*	*Posttest*	*p value*	*P diff*
1	Do you educate mothers on good oral hygiene?	90.8	100	0.0001	0.7 ± 1.1 (−3 to 6)
2	Do you give sweets to the children often?	49.6	79.4	0.0001	
3	Do you teach the children about good oral hygiene?	99.2	99.2	0.999	
4	Do you take the effort to improve your dental health knowledge?	89.3	96.9	0.008	
5	Do you examine the oral cavity of the children?	95.4	99.2	0.059	
6	Do you share utensils like spoons to feed children?	74.8	94.7	0.0001	

n = 131

The pretest and posttest scores of knowledge and practice are given in Table 2. The comparison of percent of correct answers for each question on knowledge between pretest and posttests are given in Table 3 and that of practice in Table 4. The knowledge and practice were varied among AWWs from different educational background, working experience, and age but any significant association was not observed with the gain in knowledge or practice scores. The gain in knowledge according to baseline characteristics is presented in Table 5 and similarly, Table 6 presents the gain in practice by baseline variables.

Discussion

In this study, we found that the knowledge and practice of the AWWs in oral health had significantly improved with the oral health educational training. In the knowledge aspect of AWWs, there was an increase in the mean percentage of participants giving correct answers after the training from 68.23% to 77.58%. The mean percentage of AWWs giving wrong answers had reduced from 24.04% to 17.82% and also those opting for "don't know" response had reduced from 77.42% to 45.8%, in the pretest and posttest, respectively (Fig. 1). The practice of the AWWs also showed significant improvement in mean percentage with an increase of 11.7% after the training. The mean percentage of wrong answers had decreased from 16.79% to 5.08% in the posttest (Fig. 2). This was concordant with a study done by Kakodkar et al.[18]

Empowered women (skilled to make decisions and have control over the process of health and disease) are recognizably key agents in the change process who can play an effective role for health promotion.[19] From the above and other similar studies, it has been found that AWWs can function as oral health guides who can create awareness and help in prevention of oral diseases.[18,20–23]

Table 5: Association of gain in knowledge score according to baseline characteristics

Variables	*Mean ± SD*	*Median*	*Mean rank*	*p value*
Age in years				
<40	0.9 ± 3.0	0.5	59.1	0.182
40–54	1.6 ± 2.3	2.0	70.4	
≥55	0.7 ± 2.9	0.5	56.6	
Education				
Matriculate	1.4 ± 2.4	1.00	67.47	0.096
High school	1.4 ± 2.8	2.00	68.49	
Degree	1.0 ± 1.9	1.00	27.42	
Experience in years				
<5	1.2 ± 2.7	1.0	62.6	0.245
6–15	1.5 ± 2.4	1.0	69.3	
16–25	0.5 ± 2.7	0.0	51.5	
>25	1.6 ± 2.0	2.0	71.2	
Place				
Kadapra	0.4 ± 2.3	0.0	50.6	0.008
Kuttoor	2.2 ± 2.3	3.0	82.9	
Nedumpuram	2.4 ± 2.0	3.0	84.0	
Niranam	0.6 ± 1.9	1.0	55.8	
Peringara	2.4 ± 2.9	2.0	81.2	
Tiruvalla Muncipality	0.8 ± 2.6	1.0	58.9	

n = 131

Table 6: Association of gain in practice score according to baseline characteristics

Variables	*Mean ± SD*	*Median*	*Mean rank*	*p value*
Age in years				
<40	1.0 ± 1.7	1.0	73.7	0.201
40–54	0.6 ± 0.8	0.0	61.9	
≥55	0.9 ± 1.1	1.0	73.5	
Education				
Matriculate	0.7 ± 0.9	1.0	68.0	0.729
High school	0.7 ± 1.3	0.0	62.8	
Degree	0.6 ± 1.1	1.0	65.5	
Experience in years				
<5	0.6 ± 0.9	0.0	62.8	0.876
6–15	0.7 ± 1.3	1.0	66.5	
16–25	0.6 ± 0.8	0.0	62.6	
>25	0.8 ± 1.0	1.0	68.9	
Place				
Kadapra	0.4 ± 2.3	0.0	66.8	0.347
Kuttoor	2.2 ± 2.3	3.0	58.4	
Nedum-puram	2.4 ± 2.0	3.0	82.9	
Niranam	0.6 ± 1.9	1.0	64.2	
Peringara	2.4 ± 2.9	2.0	75.5	
Tiruvalla Muncipality	0.8 ± 2.6	1.0	60.9	

n = 131

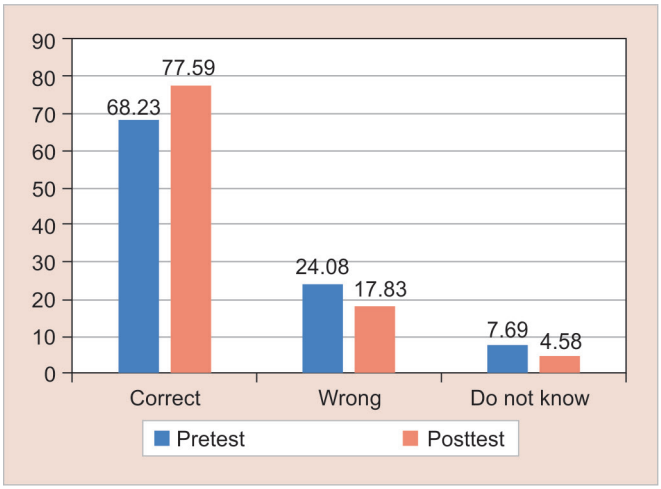

Fig. 1: Comparison of mean percentage of knowledge between pretest and posttest according to responses

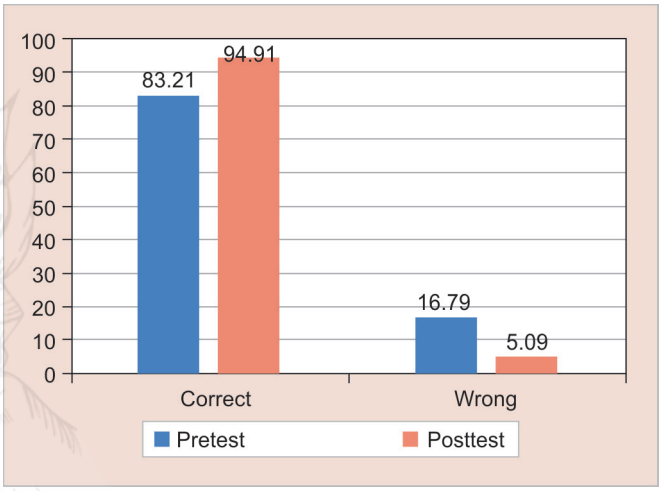

Fig. 2: Comparison of mean percentage of practice between pretest and posttest according to responses

Providing AWWs with regular oral health training will need extra effort. The ground reality about *Anganwadi* worker cannot be neglected in that they are overloaded with excessive record maintenance of house visits, and most of the *Anganwadi* workers are married and housewives.[24,25] As such, training them to become oral health guides will be a challenging task. Providing them with an incentive to create interest in undergoing training session can be a motivation.

The study has its limitations that it was done over a short period of 3 months, hence long-term retention of knowledge cannot be assessed. Though the practice of the AWWs was assessed, the oral health status of the children in these centers has not determined.

AWWs can successfully perform the following functions with the oral health education provided:

- Provide information about oral hygiene aids and brushing technique for children up to 6 years of age.
- Identify the dental caries and other oral diseases of the children up to 6 years of age and referral to dentist for further treatment.

- Educate the parents about diet, reasons for different dental problems in children, oral habits, teething, dental caries process, and the necessity for anticipatory guidance.
- Educate the pregnant women about the oral changes during pregnancy.

Educating the AWW on oral health will produce a ripple effect where the knowledge gets propagated to the mother and to her family and then to the entire community. The authorities can implement oral health training in their curriculum during the 4 month official training of the freshly recruited AWW. *Anganwadi* centers can be adopted by dental colleges in their vicinity.

Acknowledgments

The authors would like to thank Mrs Nisha Kurien, Asst. Professor, Biostatistics, Pushpagiri College of Medical Sciences, Ramadevi, CDPO, Pulikeezh Block Panchayat, *Anganwadi* workers who participated in the study for their contributions to this research.

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