

Impact of oral hygiene training of anganwadi workers on improvement of oral hygiene in rural child population of Jammu and Kashmir

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ABSTRACT


Background: In India, there is an inequitable distribution of skilled dental practitioners. 70% of the Indian population resides in the rural area, for which only 30% of dental facilities are accessible. Anganwadi workers (AWWs) are grassroots workers responsible for health. **Objectives:** The aim of this study is to evaluate the impact of oral health training on oral health status and habits of preschool children who were attending anganwadi centers (AWC) in District Bandipora of Jammu and Kashmir state. **Materials and Methods:** This comparison study was conducted in anganwadis of District Bandipora of Jammu and Kashmir state. The anganwadis caters to around 35,000 preschool children. The sample size for the study was determined to be 496 students by EPI-INFO WHO package. A total of 19 anganwadis were selected. All the children aged 3-6 years attending the selected AWC were included in the study. The AWWs were provided with oral health training. After baseline data collection, end line data (post-training) were collected after 3 months. **Results:** During pre-training, the prevalence of dental caries was found to be 51.4%. The mean decayed, missing, filled teeth were higher in 4-5 years age group (2.72) as compared to 5-6 years (2.53) and 3-4 years age group (1.53). Only 4.2% of the population reported to brushing twice or more daily before the training, which increased to 9.9% post-training. There was a decrease in debris (78.3-54.1%) and halitosis (42.9-23.2%). **Conclusion:** It is established by the study that imparting knowledge and skills to AWWs regarding oral health improves the oral health status among children and also inculcate positive oral habits among them.

KEY WORDS: Oral Health Training; Anganwadis; Dental Caries; Oral Hygiene; Primary Health Care

INTRODUCTION

Globally, dental caries is considered in the list of public health problems in the children.^[1] Although there has been a substantial improvement in the oral health of children in

the past few years, dental caries still remains one of the most commonly occurring oral health problems in the children all over the globe.^[1] In India, there is an inequitable distribution of skilled dental practitioners. 70% of the Indian population resides in the rural area, for which only 30% of dental facilities are accessible. The oral disease burden is high in the rural areas. The lack of accessibility and affordability of oral health services particularly in developing country like India not only results in intensification of the disease but also enhances the cost of treatment and care. It has been observed across various countries that basic health-care workers and parents have limited knowledge about causes and prevention of the most common oral diseases.^[2,3]

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The Integrated Child Development Scheme (ICDS) is the Country's most comprehensive and multidimensional Program. For millions of young Indian children living in condition of poverty and different forms of deprivation, Integrated Child Development Services promises hope. The ICDS scheme which was started on experimental basis in 33 blocks of the country during 1975-76 has now expanded into a program with possibly the greatest outreach in the country. Today, this scheme represents one of the world's largest programs for early childhood development. It aims in enhancing survival and development of children from the susceptible and deprived sections of the society. Under the ICDS, an anganwadi usually covers a population of 1000 in both rural and urban areas and 700 in tribal areas. Services at anganwadi center (AWC) are delivered by an anganwadi worker (AWW), who is a part-time honorary employee.

Control of oral diseases is only possible if services are oriented toward primary health care and prevention. AWWs are grassroot workers responsible for health and sanitation of village. The key purposes of Anganwadi are to provide supplementary nutrition to the children below 6 years of age and to nursing and pregnant mothers from low-income families; immunization of all children <6 years of age and immunization against tetanus for all the expectant mothers provide nutrition and health education to all women in the age group of 18-45 years, as well as basic health checkup, which includes antenatal care of expectant mothers, postnatal care of nursing mothers, care of newborn babies, and care of all children under 6 years of age. In the general health aspects, the AWWs have knowledge about immunization, prophylaxis against blindness, nutrition and health care, supplementary nutrition, growth monitoring, and referral services.^[4] Understanding and knowledge to AWWs about the pivotal factors such as living environment, host resistance, and habits along with the underlying features that lead to dental caries may also be helpful in reduction of childhood caries.^[5] Whereas, early identification of the risks and signs in the development of caries through screening is considered as best one of the best method of prevention of childhood caries. Therefore, being grassroot level workers, AWWs may play a vital role in controlling ECC and may act as oral health guide efficiently.^[6]

In India, few studies have been conducted to access the knowledge of AWWs about oral health.^[2,3] Oral diseases are controllable only if services are oriented toward primary health care and prevention. Primary health-care workers might play a crucial role in areas where there is a deficiency of dental health-care professionals in providing oral health services. Studies in the literature have shown that training the AWWs in oral health has resulted in improvement in the knowledge of the community whom they catered.^[7,8] At the anganwadis, monthly meeting of mothers is held, and these serve as platforms for health education regarding immunization, breastfeeding, institutional delivery, and

post-natal care to mothers. Enabling community workers such as AWWs in oral health and providing basic oral health awareness to the mothers through them can be a feasible model for a developing country like India, where oral health is not a priority in the primary health care as yet. The ICDS, initiated nearly 33-year ago, has become the largest child development program. The AWW and helper are the basic functionaries of the ICDS. They are not government employees but are called "social workers" or "voluntary workers."

Anganwadis have efficaciously proved their useful role for developing healthy habits such as correct brushing techniques and hand washing through non-formal education methods (learning by play way activities).^[9] Empowering community workers like AWW in oral health and providing basic oral health awareness to the mothers through them can be a practicable model for a developing country like India; where oral health is not a priority in the primary health care as yet. Monthly meeting of mothers at anganwadis provides a platform for disseminating health education to mothers regarding breastfeeding, immunization, safe delivery practices, pre- and post-natal care, growth monitoring, and supplementary nutrition.^[9] Probably if additional training in oral health care is provided to the AWWs, there is a high chance that they can efficiently function as oral health guides. Oral health guide is a person who is able to identify the oral health and disease condition and provides the information about the oral health prevention.

The present study was conducted with the objective to evaluate the impact of oral health training on oral health status and habits of preschool children who were attending AWC in District Bandipora of Jammu and Kashmir state.

MATERIALS AND METHODS

This before and after comparison study was conducted in anganwadis of District Bandipora of Jammu and Kashmir state, a North Indian rural town. These anganwadis cater to around 35,000 preschool children. The sample size for the study was determined by EPI-INFO WHO package. Taking alpha error to be 0.05 assuming baseline poor oro-dental hygiene of the children as 40% and expected improvement in oro-dental hygiene by oral health training package to be approximately 15% (effect size), drop-out rate as 10%, a sample size of 496 students was estimated. Assuming that an anganwadi will contain around 20-25 children in age group of 3-6 years, a total of 19 anganwadis were selected by simple random sampling. The selected 19 anganwadi centres had a total population of 538 children and data was collected and tabulated for all of the children who were present on the post training examination day. The AWWs were provided with oral health training package which included powerpoint presentation and demonstrated the skills like proper brushing technique, plaque disclosure, flossing technique, gum massaging, etc., in the local language.

The consent of parents was taken before examination of their wards. All the children aged 3-6 years attending the selected AWC on the date of visit were included in the study. The children absent on the day of visit or those <3 years or >6 years or whose parents denied consent were excluded from the study. All the children in selected anganwadis were examined for dental morbidity using pretested semi-structured pro forma before and after imparting trainings to AWW. The children were examined using plain mouth mirror and CPI probe for dental caries. Caries was recorded based on decayed, missing, filled teeth (DMFT) index using codes and criteria as described by the WHO.^[10]

Baseline data collection was done in the month of September-October, 2016 followed by training to AWW in the month of November 2016. End line data (Post-training) were collected after 3 months (February 2017). The consent of the project officer and parents of the children was obtained.

Statistical Analysis

Data were entered into Microsoft Excel software and exported to SPSS Version 15 for analysis. Descriptive statistics were used to report the frequency and percentage of independent variables. Data were analyzed using the software SPSS Version 15 using Chi-square test and Paired *t*-test.

RESULTS

A total of 534 and 538 children, respectively, were examined before and after training of AWWs (Table 1). During pre-training, prevalence of dental caries was found to be 51.4% ($n = 258$). Gender difference in mean DMFT score was insignificant ($P > 0.05$). There were no cases of filled teeth in any of the children examined. The mean DMFT was found to be significantly ($P < 0.05$) higher in 4-5 years age group (2.72) as compared to 5-6 years (2.53) and 3-4 years age group (1.53). DMFT per affected child was highest (4.74) in 4-5 years followed by 3-4 years age group (3.99). The DMFT score was significantly higher in children of lower socioeconomic strata (3.50) as compared to middle and upper socioeconomic strata.

Only 4.2% of the population reported to brushing twice or more daily before the training, which increased significantly to 9.9% post-training. Before the training, around 14% of children never brushed their teeth in their lifetime which reduced to half (7%) after the training. The rinsing of mouth post-meals also increased significantly from 39.5% to 52.2% (Table 2).

There was a significant decrease in debris (78.3-54.1%), halitosis (42.9-23.2%), and plaque (75.5-66.5%) in the oral cavity in post-training as compared to pre-training; however, gingival hygiene status and thumb sucking showed no significant improvement (Table 3).

Table 1: Demographic profile of the study population before and after training package

Demographic variables	Pre training ($n=534$)	Post training ($n=538$)	P value
	<i>n</i> (%)	<i>n</i> (%)	
Age group			
3-4	259 (48.5)	274 (50.9)	0.474
4-5	188 (35.2)	177 (32.9)	0.311
5-6	87 (16.3)	87 (16.2)	0.807
Gender			
Female	263 (49.3)	246 (45.7)	0.495
Male	271 (50.7)	292 (54.3)	0.326

Table 2: Oral hygiene practices among children examined before and after training package

Number of times (per day)	Pre-training ($n=534$)	Post-training ($n=538$)	P value
	<i>n</i> (%)	<i>n</i> (%)	
Once	252 (47.2)	251 (46.7)	0.908
Twice or more	22 (4.1)	53 (9.9)	0.000*
Sometimes	186 (34.8)	195 (36.2)	0.674
Never	74 (13.9)	39 (7.2)	0.000*
Medium of cleaning			
Toothbrush	455 (85.2)	485 (90.2)	0.017*
Tooth powder	5 (0.9)	14 (2.6)	0.066
No	74 (13.9)	39 (7.2)	0.000*
Rinse mouth			
Yes	211 (39.5)	281 (52.2)	0.000*
No	282 (52.8)	251 (46.7)	0.050*
Sometimes	41 (7.7)	6 (1.1)	0.000*

*Significant at 0.05 level

DISCUSSION

The present comparison study was done in a population of rural children. Health education that may be infused at an earlier age may have a lifelong effect in individuals. Anganwadi's can form an ideal setting for enhancing oral health, and AWWs can form the major driving force in the country for incorporating good oral health behavior among growing children. Any damage caused by nutritional deficiencies in first 2 years of life is detrimental to child's growth and development and could lead to impaired cognitive development, compromised educational achievement, and low economic productivity.^[11]

Literature reveals that AWWs have successfully embarked on different roles such as providing information about breastfeeding and complementary feeding,^[12] identifying childhood disability and instituting immunization and supplementary nutrients,^[13] contributing in rural newborn care program,^[14] and identifying childhood blindness,^[15] and the present study has confirmed that after appropriate

Table 3: Impact of training package on oral health status of children in AWC

Presence of oral diseases/habit	Pre-training (n=534)	Post-training (n=538)	P value
	n (%)	n (%)	
Debris	418 (78.3)	291 (54.1)	0.000*
Halitosis	229 (42.9)	125 (23.2)	0.000*
Fluorosis	30 (5.6)	37 (6.9)	0.468
Plaque			
Plaque	403 (75.5)	358 (66.5)	0.001*
Oral habit (thumb sucking)	46 (8.6)	40 (7.4)	0.549
Gingival Health Status			
Healthy	519 (97.2)	509 (94.6)	0.048*
Bleeding	9 (1.7)	12 (2.2)	0.671
Calculus	6 (1.1)	17 (3.2)	0.036*
Mean DMFT	2.1±3.20	1.9±1.4	0.060
Prevalence (%)	48.3	47.8	0.071

AWC: Anganwadi centers, *Significant at 0.05 level, DMFT: Decayed, missing, filled teeth

training they can be empowered to become an oral health guide.

Raj et al.^[6] conducted a study to evaluate the impact of oral hygiene training package to AWWs on improving oral hygiene of preschool children and justified that the workers can be used for oral hygiene training. Few studies done on AWWs have revealed that they possess the dental knowledge to some extent on certain topics, but providing them with official dental training is required.^[16] Training the AWWs on oral health will ensure that a wider section of society can be educated on basic oral hygiene with minimum utilization of resources. Moreover, such training will ensure that the health promoting behaviors learnt in early childhood are deeply ingrained in the society and are resistant to change.

Key findings of this study were short-term reductions in debris, plaque, and caries besides improvements in self-reported oral hygiene practices. The lecture-demonstration method used in the present study for imparting oral health education (OHE) to AWW was similar to other studies.^[17,18] The similar package used in a study by Thomas et al. showed significant improvement in various oral habits and hygiene of children.^[19] A study by Haleem et al. has concluded that various strategies (dentist-led, teacher-led, and peer-led strategies) of OHE are equally effective in improving the oral health knowledge and oral hygiene status of adolescents.^[20] The present study showed a significant improvement in various oral habits (namely, brushing and rinsing of mouth post-meals) and decrease in debris and stage-1 plaque post-training as compared to pre-training. Similar findings were found in a study in China, wherein the percentage of people reported to brush teeth twice a day increased from 50% to 69.3% after imparting oral health training.^[21] The study conducted by Shenoy and Sequeira among 12-13-year-old school children revealed that plaque and gingival score reductions were highly

significant in intervention schools.^[17] Farias DC et al. (2004) in their study among school children of Central China showed that after imparting OHE to children, their mothers, and school teachers, positive effects were seen in oral health behaviour such as tooth brushing, increased dental visits, use of fluoride toothpaste, and less frequent consumption of cakes/biscuits.^[22]

Although the results are promising, certain limitations cannot be overlooked. The results presented, here, are based on a small sample size, with inputs collected over a fairly small time period. It would be imperative to study the knowledge retention of these participants after about a year. Most of the workers are beyond 35 years of age; during this phase, the time span of concentration is reduced, and the motivation and willingness to learn new topics are reduced. Hence, providing them with oral health training will need extra effort. In addition, the ground reality about AWW cannot be neglected. They are overloaded with excessive record maintenance^[23] and are given inadequate honorarium.^[21] In such a scenario, training them to become oral health guides will be a challenging task. They need to be really motivated and provided with an incentive to create interest in undergoing the training session.

CONCLUSION

Imparting knowledge and skills to AWWs regarding oral health improves the oral health status among children and also inculcate positive oral habits among them. Orientation trainings in oral health should be imparted at regular intervals to AWWs to bring about desired change in the oral habits and decreasing dental morbidity of children.

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