Oral Health Knowledge and Practices among Primary Healthcare Workers in Shimla District, Himachal Pradesh, India

Abstract

Context: Primary healthcare workers being grassroots workers in rural areas can be effective in oral health promotion in these areas. Aim: To assess oral health knowledge and practices among primary healthcare workers in Shimla district in Himachal Pradesh. Setting and Design: A cross-sectional study. Subjects and Methods: A cross-sectional study was conducted to assess oral health knowledge and practices of primary healthcare workers in Shimla using a self-administered questionnaire. Statistical Analysis Used: Data were analyzed using SPSS package version 16. The tests used were t-test and Fisher’s exact test. A P value < 0.05 was considered statistically significant. Results: Of 130 subjects, there were 60 (46.2%) males and 70 (53.8%) females. The mean age of the population was 48.4 ± 5.9 with a range of 25–57. The mean knowledge score percent of the population was 51.9 ± 18.2. It was higher for males (52.3 ± 15.0) when compared with females (51.5 ± 20.7). The mean knowledge score percent was positively associated with education and negatively associated with age. Tooth brush was used by 97.7% and tooth paste by 121 (93.1%). The frequency of brushing twice was reported by 79 (60.8%). Conclusion: Though the overall knowledge about oral health is good among primary healthcare workers, the understanding about various aspects is lacking. Therefore, it is recommended that health workers should be given education to enhance knowledge and practices toward oral healthcare and to increase their screening capacity for common dental problem which will serve the community in long way.

Keywords: Knowledge, oral health, practices, primary healthcare workers

Introduction

Oral health, which is an integral part of general health, may be defined as “standard of health of the oral and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to general well-being.”[1] Several oral diseases have important side effects on general health, while systemic conditions may show a mutual influence on oral health. Therefore, oral healthcare needs to be addressed by a multiprofessional approach and should be integrated into comprehensive health-promoting strategies and practices.[2] The World Health Organization too has urged its member states to consider mechanisms to incorporate the essential oral health services into the existing primary healthcare system, with emphasis placed on disease prevention and health promotion for the poor and disadvantaged populations.[3]

In India, primary healthcare is being provided through subcenters, primary health centers (PHC), and community health centers (CHCs).[4] As on March 31, 2014, there are 152,326 subcenters, 25,020 PHCs, and 5363 CHCs functioning in India. In Shimla district, there are 89 PHCs, 8 CHCs, 14 civil hospitals, and 313 subcenters.[5] Multipurpose healthcare workers (male and female) posted here are sensitive and accountable to meet the health needs of the community. These healthcare workers might play a key role in a country like India, where 70% of population lives in rural areas and there is deficiency of dental surgeons in providing oral healthcare services. Primary dental care can be a way of achieving good oral health for the community by integration of oral healthcare in the existing primary healthcare activities. For effective integration of oral healthcare into primary healthcare, these healthcare workers need to have good knowledge about oral health. To assure that they acquire appropriate...
knowledge and practices about oral health, it is important to assess their existing knowledge and practices about oral health. As no such study has been conducted in this state, this study was conducted to assess oral health knowledge and practices among primary healthcare workers in Shimla district.

**Subjects and Methods**

A cross-sectional study was conducted among multipurpose healthcare workers (both males and females) in Shimla district, Himachal Pradesh. The necessary ethical approval clearance was obtained from the Ethical Committee of H. P. Government Dental College and Hospital, Shimla. Prior permission was taken from the Chief Medical Officer, Shimla district, to conduct the study.

For administrative purposes, Shimla district is divided into nine developmental blocks, namely, Mashobra, Rampur, Jubbal, Rohru, Theog, Chopal, Basantpur, Nankhari, and Chuara. There were a total of 384 health workers in all the nine blocks of Shimla district. Three blocks, namely, Mashobra, Rampur, and Mathiana were selected by simple random method to conduct the study. A lottery method was used to select the blocks. In these three randomly selected blocks, there were 176 health workers. All the health workers working in the subcenters, PHCs, CHCs, and civil hospitals in these three blocks 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 total of 142 questionnaires were distributed. Of 142, we received back 134 questionnaire. Of 134 questionnaires, 4 were incomplete and thus were excluded and thus making a total of 130 health workers as the study population were included in the study.

A self-administered close-ended questionnaire was used. The questionnaire, which was used in the study, consisted of three parts. The first part comprised questions relating to demographic data including age, gender, education, and place of posting. The second part had seven questions about oral health knowledge and the third part had four questions on practices. For calculating mean knowledge, each correct answer was given a score of 1 and 0 for each incorrect answer. These scores were transformed into percentages of correct answers. Hence, a subject’s total score could range from 0% (no answers correct) to 100% (all seven answers correct). Subjects with a score less than 25% were considered to have weak knowledge, between 25% and 50% to have moderate knowledge, between 50% and 75% to have good knowledge, and more than 75% to have excellent knowledge.

The validity of the questionnaire was assessed by distributing the questionnaire to experts in the department and modifications were made accordingly. Reliability was assessed by test–retest method \( r = 0.8; \ P < 0.001 \).

**Results**

The response rate of the study was 94.3%. Of 130 subjects, there were 60 (46.2%) males and 70 (53.8%) females. The mean age of the population was 48.4 \( \pm \) 5.9 with a range of 25–57. Most of them were in the age group of 45–54 years. Most of the participants (62, 47.7%) had a qualification of matriculation followed by 12th pass (32, 24.6%) [Table 1].

The mean knowledge score percent of the population was 51.9 \( \pm \) 18.2. It was higher for males (52.3 \( \pm \) 15.0) when compared with females (51.5 \( \pm \) 20.7). On comparing it among the different age groups, it was highest for the age group of 21–30 years (76.16 \( \pm \) 8.2) and lowest for the age group of 51–60 years (49.8 \( \pm \) 15.7). The mean knowledge score was highest for those who were qualified with postgraduation (58.2 \( \pm \) 19.7) [Table 2].

Tooth brush was used by 97.7% and tooth paste by 121 (93.1%). The frequency of brushing twice was reported by 79 (60.8%) [Table 3].

| Variable | n (%) |
|----------|-------|
| Gender   |       |
| Male     | 60 (46.2) |
| Female   | 70 (53.8) |
| Age groups (years) |       |
| 21–30    | 3 (2.3) |
| 31–40    | 9 (6.9) |
| 41–50    | 61 (46.9) |
| 51–60    | 57 (43.9) |
| Level of education |       |
| 10th pass | 62 (47.7) |
| 12th pass | 32 (24.6) |
| Graduation | 23 (17.7) |
| Postgraduation | 13 (10.0) |

| Variable | n | Mean knowledge score percentage | P  |
|----------|---|----------------------------------|----|
| Gender   |   |                                  |    |
| Male     | 60 | 52.3 \( \pm \) 15.0              | 0.81|
| Female   | 70 | 51.5 \( \pm \) 20.7              |    |
| Age groups (years) |       |
| 21–30    | 3  | 76.1 \( \pm \) 8.2               | 0.07|
| 31–40    | 9  | 57.1 \( \pm \) 14.3              |    |
| 41–50    | 61 | 51.9 \( \pm \) 20.3              |    |
| 51–60    | 57 | 49.8 \( \pm \) 15.7              |    |
| Level of education |       |
| 10th pass | 62 | 48.3 \( \pm \) 17.0              | 0.13|
| 12th pass | 32 | 53.0 \( \pm \) 21.2              |    |
| Graduation | 23 | 56.4 \( \pm \) 14.6              |    |
| Postgraduation | 13 | 58.2 \( \pm \) 19.7              |    |
Answer about “visit to the dentist” was reported as 30% once a year, 24.6% as twice a year, and 29.2% reported they never visited a dentist in the past 1 year.

In bivariate analysis, education was positively correlated with mean knowledge score percent and age was negatively correlated with mean knowledge score percent [Table 4].

**Discussion**

India is a vast country with the majority of people living in rural areas.[6] Primary healthcare workers might play a key role in these areas regarding promotion of oral health. Hence, this study was conducted among primary healthcare workers to know the level of knowledge and practices about oral health among them. The questionnaire was prepared with basic questions on oral health in accordance with the training manual for health workers and also approved by experts.

The overall mean knowledge score percent of the population was 51.9 ± 18.2 which means the knowledge was good among healthcare workers in Shimla. The mean knowledge score percent was higher among males (52.3 ± 15.0) when compared with females (51.5 ± 20.7) but could not reach statistical significance (P = 0.81) which may be because both males and females are exposed to similar type of training regarding oral health. This is in line with the findings reported by Rabiei et al.,[3] Baseer et al.,[7] and Khami et al.[8] where gender differences were not found. In contrast, the studies by Ostberg et al.[9] and Fukai et al.[10] reported that females showed significantly higher oral health knowledge than males.

The mean knowledge score percent was positively correlated with education which means knowledge score percent was highest for those who were qualified with postgraduation and lowest with those who were matriculate, which is quite obvious as those who are highly qualified will have better understanding and knowledge. Similar results were reported by Kaur et al.[11]

The mean knowledge score percent was negatively correlated with age. This may be because elderly age group has joined their services long back and there was no reinforcement of knowledge about oral health to health workers or because their educational qualification was less when compared with younger age group.

The cause of tooth decay was reported correctly by 40% only which means that the subjects are not aware of multifactorial nature of disease. This is in line with the results from Korea by Moon et al.[12] Most of the subjects in our study reported it due to poor oral hygiene and improper brushing. In a study by Thean et al.,[13] 45.3% attributed it to frequent intake of sugary food, whereas in our study, 40.7% identified frequent intake of sugary food as cause of tooth decay. Therefore, knowledge on etiology of dental caries should be enhanced. Emphasis should be placed to make them understand that the etiology of dental caries is multifactorial. This has to be reinforced because dental caries is the most common chronic disease affecting mankind and healthcare workers are in an ideal position to disseminate this piece of information.

Only 22.3% of the subjects could correctly identify that tobacco can cause both oral cancers and periodontal disease, which is in contrast to the results of Aggnur et al.,[14] where almost all the subjects identified tobacco as a cause of oral cancer. Hence, the multipurpose health workers who form the backbone of the primary healthcare system fared miserably in this issue. The bulk of the primary healthcare workers are engaged in the fieldwork at the grassroots level, and with the present knowledge levels, they are less likely to counsel the patients about the ill effects of tobacco usage. This issue has to be seriously taken up as oral cancer is a life-threatening disease and is one of the most common cancers in the Indian subcontinent (squamous cell carcinoma). The national cancer control agencies should more seriously start disseminating health education messages to primary healthcare workers to reduce the burden of cancer, particularly oral cancer.

In this study, 73.1% of the subjects were aware of association between oral health and general health which is in contrast to the results of Aggnur et al. (44.3%).[14] In our

---

**Table 3: Oral hygiene practices among health workers**

| Variable                  | Number (%) |
|---------------------------|------------|
| Oral hygiene aid used     |            |
| Tooth brush               | 127 (97.7) |
| Finger                    | 3 (2.3)    |
| Tree stick                | 0          |
| Oral hygiene material used|            |
| Tooth paste               | 121 (93.1) |
| Tooth powder              | 9 (6.9)    |
| Charcoal                  | 0          |
| Salt                      | 0          |
| Frequency of brushing     |            |
| Once                      | 51 (39.2)  |
| Twice                     | 79 (60.8)  |
| How often did you visit a dentist in past twelve months? | |
| Once                      | 39 (30)    |
| Twice                     | 32 (24.6)  |
| More than two times       | 21 (16.1)  |
| Never                     | 38 (29.2)  |

**Table 4: Bivariate correlation between mean knowledge score percentage with education and gender**

| Variable | Pearson’s coefficient (r) | P     |
|----------|---------------------------|-------|
| Education| 0.203                     | 0.02* |
| Age      | -0.188                    | 0.03* |

*P<0.05 is significant
study, 63.1% of the health workers felt that loss of tooth is age-related which was also reported by Sequareia et al.\textsuperscript{[13]} Therefore, we can say knowledge about geriatric oral health is also low. In our country, the population who have attained 60 years of age is expected to shoot up by 360% by 2050.\textsuperscript{[16]} 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.”\textsuperscript{[16]} As 80% of people reside in rural region, health services should be provided to them through primary healthcare workers.\textsuperscript{[17]} So educating healthcare workers about geriatric oral health might help them provide more services to older people.

The use of tooth brush and tooth paste was present in 97.7% and 93.1%, respectively, which is slightly less than as reported by Kaur et al.\textsuperscript{[11]} where tooth brushing with tooth paste was a universal finding. Approximately 61% of the subjects reported brushing twice daily which is higher than 50% as reported by Kaur et al.\textsuperscript{[11]} and 57% as reported by Aggnur et al.\textsuperscript{[14]} The frequency of brushing twice was not statistically significant between the genders, whereas Kaur et al.\textsuperscript{[11]} and Doshi et al.\textsuperscript{[18]} reported that females had higher frequency of brushing twice. The frequency of brushing twice was higher among highly qualified subjects than less qualified ones and the difference was statistically significant. Hence, we can infer that oral health-related practices are good among them. Now, it depends on the health agencies how far they consider oral health as an important aspect of one’s health and to incorporate minimal oral health services through primary healthcare system, thus giving an opportunity to healthcare workers to convert their practices into ground realities.

The limitation of this study is that the data were collected by self-administered questionnaire, so the results should be interpreted with caution.

**Conclusion**

From this study, it can be concluded that the overall knowledge about oral health was good among health workers in Shimla, but the understanding of etiological factors about dental caries and other aspects was not clear. The knowledge was higher among males, younger age group, and highly qualified subjects. The oral hygiene practices were satisfactory except for frequency of brushing which needs to be improved. Hence, it is hereby recommended that education should be given to all the health workers to enhance their awareness, knowledge, and practices toward oral healthcare and maintenance and to increase their screening capacity for common dental problems, which can help in oral health promotion of the majority of the rural population.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**References**

1. National Institute of Dental and Craniofacial Research. A Report of the Surgeon General. US Department of Health and Human Services. Rockville MD: National Institute of Dental and Craniofacial Research; 2000.
2. Rabiei S, Mohebbi SZ, Patka J, Virtanen JI. Physicians’ knowledge of and adherence to improving oral health. BMC Public Health 2012;12:855.
3. Primary Health Care in India: Review of Policy, Plan and Committee Reports. Ministry of Health and Family Welfare, Government of India; 1993.
4. Ministry of Health and Family Welfare. National Oral Health Policy: Prepared by Core Committee. Ministry of Health and Family Welfare; 1995.
5. District Level Demographics Statistical Information 2012. New Delhi; 2012. Available from: http://www.districtdemographicstat.com/himachal/shimla/index.aspx. [Last accessed on 2013 Aug 17].
6. Infrastructure Division, Dept. of Family Welfare, Ministry of Health and Family Welfare. Bullet in on Rural Health Statistics in India. New Delhi: Issued by Infrastructure Division, Dept. of Family Welfare, Ministry of Health and Family Welfare, Nirman Bhavan; 2003.
7. Baseer MA, Alenazy MS, Alsaqah M, Algbabini M, Mekhari A. Oral health knowledge, attitude and practices among health professionals in King Fahad medical city, Riyadh. Dent Res J (Isfahan) 2012;9:386-92.
8. Khami MR, Virtanen JI, Jafarian M, Murtoomaa H. Prevention-oriented practice of Iranian senior dental students. Eur J Dent Educ 2007;11:48-53.
9. Ostberg AL, Halling A, Lindblad U. Gender differences in knowledge, attitude, behavior and perceived oral health among adolescents. Acta Odontol Scand 1999;57:231-6.
10. Fukai K, Takaesu Y, Maki Y. Gender differences in oral health behavior and general health habits in an adult population. Bull Tokyo Dent Coll 1999;40:187-93.
11. Kaur S, Kaur B, Ahluwalia SS. Oral health knowledge, attitude and practices amongst health professionals in Ludhiana, India. Dentistry 2015;7:315.
12. Moon HS, Jung JY, Horowitz AM, Ma DS, Paik DI. Korean dental hygienists’ knowledge and opinions about etiology and prevention of dental caries. Community Dent Oral Epidemiol 1998;26:296-302.
13. Thean H, Wong ML, Koh H. The dental awareness of nursing home staff in Singapore – A pilot study. Gerodontology 2007;24:58-63.
14. Aggnur M, Garg S, Veeresha K, Gambhir R. Oral health status, treatment needs and knowledge, attitude and practice of health care workers of Ambala, India – A cross-sectional study. Ann Med Health Sci Res 2014;4:676-81.
15. Sequeria P, Anup P, Srinivas P. A KAP study on dental health in Anganwadi workers. Indian J Community Med 2000;15:129.
16. Elderly to constitute 20% of India’s Population: UN, Indian Express. New Delhi; 01 Oct, 2012. Available from: http://www.archive.indianexpress.com/news/elderly-to-constitute-20-of-indias-population-un/1010339/2. [Last accessed on 2014 Mar 20].
17. Shah N. Geriatric oral health issues in India. Int Dent J 2001;51:212-8.
18. Doshi D, Baldava P, Anup N, Sequiera PS. A comparative evaluation of self-reported oral hygiene practices among medical and engineering university students with access to health-promotive dental care. J Contemp Dent Pract 2007;8:68-75.