Original Article

Oral Health Status, Treatment Needs and Knowledge, Attitude and Practice of Health Care Workers of Ambala, India - A Cross-sectional Study

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Abstract

Background: Health care workers (HCWs) from an important component of the health care system of any nation. Adequate knowledge regarding oral health is also mandatory as it is directly related to general health. Aim: The present study was undertaken to assess oral health status and treatment needs of the health workers in Ambala district and to assess the knowledge, attitude and practices of HCWs. **Subjects and Methods:** A cross-sectional study was conducted among 148 HCWs of Ambala District. World Health Organization (WHO) Oral Health Performa-1997 was used to collect the data. For the diagnosis of dental caries, WHO type III examination was done using mouth mirrors and sharp probes while periodontal assessments were done by community periodontal index-probes. The data were analyzed using SPSS package, Chicago, IL, version 13.0. **Results:** Eating sweets and poor oral hygiene lead to dental caries were cited as the main reasons for dental caries by 62.2% (92/148) of subjects. Majority of the subjects (43.2%, 64/148) used to brush their teeth once a day. Mean number of decayed and missing teeth due to caries were 4.73 and 0.628 respectively. Prosthetic needs for maxillary arch were almost the same when compared to the prosthesis in the mandibular arch. Majority of the male (82.1%, 46/56) and female (79.3%, 73/92) subjects were having calculus. **Conclusion:** Attitude of the health workers toward oral health was poor as they had significantly higher treatment needs. The present study emphasized the need of regular dental checkup and health education of HCWs.

Keywords: Dental caries, Health care workers, Knowledge, Oral health, Treatment needs

Introduction

Health is one of the most valuable assets one can possess Oral health is now recognized as equally important in relation to general health. Oral health may be defined as a 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] Oral diseases can be considered a public health problem due to their high prevalence and significant social impact.[2] Data from previous studies indicates that the majority of people visit a dental professional only for symptomatic and curative purposes. One of the most important factors that decides the dental health of a population is the outlook of its people toward their dentition.[3]

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Health Care Centers form the back bone of the health care system. As on March, 2012, there are 148124 Sub Centers, 23887 Primary Health Centers (PHCs) and 4809 Community Health Centers (CHCs) functioning in the country. In Ambala, there are 13 PHC's, 7 CHC's and 3 Rural health centers and on an average 5 Sub-Centers under each.[4] Health Care Workers (HCWs) closely monitor and observe treatments given, as well as note the patient's response to changes in medicines, therapy routines and dietary restrictions. The Multipurpose Health Worker is the grass root health functionary for the control of communicable diseases including Malaria, Tuberculosis, Leprosy, Water Borne Diseases, as well as Environmental Sanitation, detection of disease outbreaks and their control, health education etc.[5]

Knowledge of oral health is considered to be a prerequisite for health related behavior. It has been shown that rural Indian community, who constitute more than 70% of the Indian population, has a low level of oral health awareness and practice when compared to urban.[6] Health workers knowledge, attitude and practices (KAP) toward oral health to a great extent influences the community as they can extend health education at the first contact in the community and hence should possess good oral health. According to a previous study carried out on dental HCWs, a greater percentage of health workers, believed that safe drinking water (98.9%), living environment of the person (96.6%) and a balanced diet, affect health more than availability of health services (59.8%) or the ability of the health care system to meet the needs of the people (55.2%) respectively.[7] Reports of another survey suggest that a vast majority (87%) of the nursing staff considered oral hygiene tasks unpleasant. The staff experienced, always or sometimes, resistance from the residents toward oral care.[8] Literature on the oral health knowledge and oral hygiene status of health care professionals of India is almost non-existent. Hence this study was carried out:

- To assess oral health status and treatment needs of the health workers in Ambala district
- To assess the KAP of HCWs
- To explore and suggest best possible method for oral care and education for health workers.

Subjects and Methods

Ethics

This study was conducted after obtaining ethical approval from the Institutional Review Board of M.M. University, Mullana and with prior permission from the District Health Officer, Ambala. Informed consent was taken from each subject prior to recording oral health. Confidentiality about the respondents' profile was maintained throughout the study. 10 subjects were not included in the study due their non-availability.

Sampling procedure

Ambala district is one of the 21 districts of Haryana state in India. Ambala town is the administrative headquarters of the district. The entire Ambala district is divided into 6 blocks for administrative purpose, consisting 12 PHC's, 4 CHC's and 2 sub centers employing a total of 158 HCWs. All the HCWs who were available on the day of the visit were examined as per the schedule. A total of 148 HCWs were available on the day of the visit and comprised the final sample size.

Instrument for data collection

Participants were given a structured and validated performa to fill and underwent a clinical examination. The performa comprised of questions that covered a variety of topics including demography, oral hygiene knowledge, presence of any deleterious habits, self-perception of oral health needs etc., [Table 1]. Prior to the distribution of performa, health workers were explained either in English or Hindi how to fill it. They were not allowed to discuss with their co-health worker. The filled questionnaires were collected after 15 min.

Table 1: Variables used to collect demographic information from the study subjects

Demographic information		
Age	**Gender**	**Educational qualification**
Self-reported conditions	Marital status	Oral hygiene knowledge
Oral hygiene practices	Deleterious habits	Awareness regarding oral health problems

Study variables

The following variables were used to assess KAP among the study subjects and around which key questions were organized.

- Socio-demographic characteristics - Age, gender, marital status, educational qualification
- Self-perception of general health problems-Participants were asked to write about their general health by answering questions on hypertension and diabetes
- Presence of any deleterious habits-Information from the participants were obtained regarding the presence of deleterious habits such as consumption of alcohol, smoking and chewing tobacco
- Perceived need for oral health care-Subjects were asked to indicate the type of dental treatment they thought they might need from the list of predefined alternatives
- Oral health knowledge and attitude-Oral health knowledge was determined by respecting responses to questions regarding causation of dental caries and relation of smoking to lung cancer or oral cancer. Attitudes were determined by responses to items concerned with inevitability of tooth loss with increasing age, regular visit to a dentist and effect of extraction on eye sight
- Oral hygiene practices-Oral health practices were determined by questions relating to the daily frequency of brushing, flossing and method used while brushing their teeth.

Examiner calibration

A single trained examiner (First Author, MA) who was calibrated in the department conducted all the examinations. Intra-examiner calibration was undertaken by examining 40 subjects followed by their re-examination a week later which resulted in 87% of diagnostic acceptability with a κ value of 0.84. A well-trained assistant was also taken for recording the data.

Clinical examination and recording of findings

The "World Health Organization (WHO) oral health performa-1997" was used to record the clinical findings [Table 2].[9] The oral cavities were examined using additional artificial light. For the diagnosis of dental caries, WHO type III examination was carried out using mouth mirrors and sharp probes while using additional artificial light. HCWs were allowed to sit on a chair or stool as per availability. A table

to place the instruments was placed within easy reach of examiner. The recording assistant was allowed to sit close to the examiner. Periodontal assessments were done by community periodontal index (CPI)-probes. The diagnosis of oral lesions was carried out using WHO criteria[10] and Pindborg's color atlas.[11] Recording of data of dental caries and periodontal disease was based on the publications of WHO.[12]

Statistical analysis

The data collected was analyzed using analysis of variance (ANOVA), Chi-square test and *Z*-test. $P < 0.05$ was accepted as statistically significant and $P < 0.01$ was set to be highly statistically significant. The statistical analysis was performed using the SPSS (13.0) software package, Chicago, IL.

Results

A total of 148 subjects formed a representative sample from the study population. 37.8% (56/148) of the study subjects comprised of males and 62.2% (92/148) were males. Majority of the subjects (48%, 71/148) were in the age-group of 25-34 years [Table 3].

Multi-purpose HCWs comprised of 81.1% (120/148) of the study population and the rest were auxiliary nurse midwife (17.6%, 25/148) and general nursing midwife (1.35%, 2/148). Among the self-reported systemic conditions, 23% (34/148) reported to be suffering from hypertension and 1.4% (2/148) were diabetic respectively. Nearly 20.3% (30/148) of the subjects were consuming alcohol and 19% (28/148) of the subjects had a habit of using tobacco which was present in males only. No oral mucosal lesions were reported from the study subjects as such.

Self-perception of oral health problems and conditions

Among total 148 subjects 6.8% (10/148) thought that they were not suffering from any dental problem where as 8.8% (13/148) thought that they needed extraction. Nearly 2.7% (4/148) of the study subjects believed that they needed both extraction and oral prophylaxis and 0.7% (1/148) felt the need of extraction, prophylaxis and replacement of teeth. 3.4% (5/148) believed that they needed extraction and replacement of teeth. 1.4% (2/148) of the subjects felt the need for extraction and restoration. Oral prophylaxis was needed by 37.8% (56/148) of the subjects [Table 4].

Knowledge and awareness regarding oral health and oral problems

Majority of the subjects were not aware of the association between oral health and general health problems (43.2% [64/148]). Eating sweets and poor oral hygiene can lead to dental caries was cited by 62.2% (92/148) of the study subjects. Almost all the HCWs (145, 98%) were aware of the fact that excessive smoking can pre-dispose the person to oral and lung cancer. Nearly 91.2% (135/148) subjects believed that loss of tooth with increasing age is a normal phenomenon. Only 6.6% (4/148) of the subjects were of the opinion that a dentist should be visited once in every 6 months. Regarding misconception about extraction of teeth, 35.1% (52/148) of the subjects believed that extraction of teeth can lead to impairment of vision [Figure 1].

Oral hygiene practices

Only 43.2% (64/148) of subjects used to brush only once a day. 19.6% (29/148) preferred to use soft toothbrush. 93.9% (139/148) didn't know about flossing. 9.5% (14/148) of the subjects believed that regular brushing makes teeth week. 33.8% (50) of the study subjects used to brush their teeth using vertical strokes while 93.9% (139/148) of subjects preferred to clean their tongue at the time of brushing.

Dental caries

Figure 2 depicts the age-wise prevalence of dental caries. Mean decayed, missing and filled teeth (DMFT) of the study population were 5.02. Mean number of decayed and missing teeth due to caries were 4.73 (2.03) and 0.628 (1.75),

Table 2: Variables used in clinical examination

Clinical examination conducted utilizing different variables	
Periodontal status (CPI) without loss of attachment	Dental fluorosis
Oral mucosal lesions	Dentition status

CPI: Community periodontal index

Table 3: Distribution of study subjects according to age and gender

Age	Gender (%)		Total (%)
	Male	Female	
<25	4 (7.1)	3 (3.3)	7 (4.7)
25-34	36 (64.3)	35 (38.0)	71 (48.0)
35-44	10 (17.9)	40 (43.5)	50 (33.8)
>45	6 (10.7)	14 (15.2)	20 (13.5)
Total	56 (100.0)	92 (100.0)	148 (100.0)

Table 4: Self-reported oral health problems by the study subjects

Perceived treatment need	*N* (%)
No treatment	10 (6.8)
Extraction	13 (8.8)
Extraction and oral prophylaxis	4 (2.7)
Extraction, prophylaxis and replacement of teeth	1 (0.7)
Extraction and replacement of teeth	5 (3.4)
Extraction and restoration of teeth	2 (1.4)
Oral prophylaxis	56 (37.8)
Oral prophylaxis and replacement of teeth	8 (5.4)
Oral prophylaxis and restoration of teeth	25 (16.9)
Replacement of teeth	4 (2.7)
Replacement and restoration of teeth	1 (0.7)
Restoration of teeth	16 (10.8)
Correction of malocclusion	2 (1.4)
Others	1 (0.7)

N: Number of study subjects

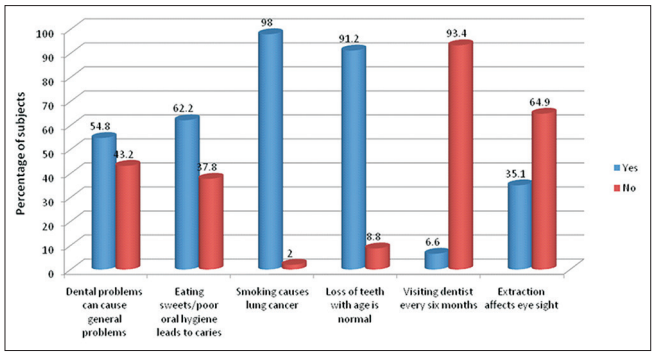

Figure 1: Knowledge and awareness regarding oral health and oral problems among study subjects

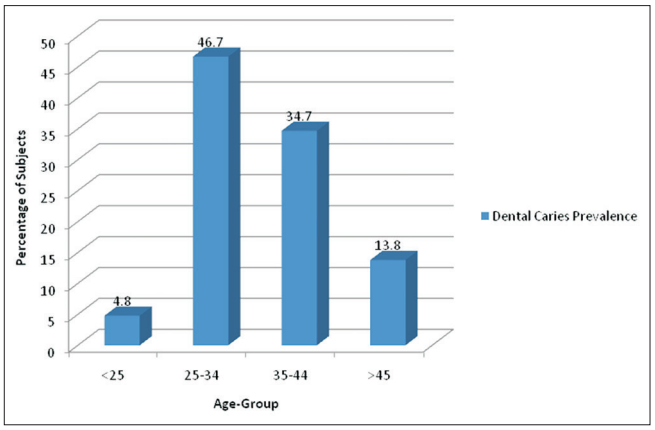

Figure 2: Age-wise prevalence of dental caries among the subjects

respectively and their relation with age was not found to be statistically significant ($P = 0.07$). Maximum no. of subjects having caries (46.7%) belonged to 25-34 years age-group. Almost all the subjects (97.2%) were suffering from dental caries. Mean number of subjects requiring one surface filling, pulp care and extraction were 3.75 (1.73), 0.32 (0.6) and 0.81 (1.09) respectively [Table 5]. Proportionally more elderly than younger adults needed extraction and caries was the major indication for extraction in all age groups.

Prosthetic status and needs

Table 6 depicts the prosthetic status and needs of subjects. Number of subjects possessing prosthesis were 4 (4.4%) in the maxillary arch and same number of subjects possessed prosthesis in the mandibular arch. When compared to the prosthesis present (prosthetic status), the need for a prosthesis was very high. Prosthetic needs for maxillary arch were almost the same as compared to the prosthesis in the mandibular arch. Prosthetic needs of female subjects were comparatively higher as compared to their male counterparts.

Periodontal status and needs

Table 7 illustrates the periodontal health status of the study population. Shallow pockets were present in 6.7% of the subjects. Calculus was the main finding which was present in the majority of the male (82.1%) and female (79.3%) subjects. However, CPI scores were non-significant in relation to frequency of brushing and habits such as chewing and smoking tobacco. The most prevalent periodontal treatment need was the removal of calculus and other plaque retentive measures (scaling) which was needed by 80.4% (119/148) of the study subjects.

Majority of the subjects (60.1%) had no dental fluorosis with only a few having questionable (23.2%) and very mild (16.7%) dental fluorosis.

Discussion

The dedicated HCW is possibly the most vital element in the recovery or stability of a patient's health. All HCWs carry a tremendous responsibility to assist and provide for the best possible outcomes for the patient. Control of various communicable diseases is also one of the tasks of these workers. Due to the high degree of responsibility involved, the health of these workers is also of utmost concern.

The impact of oral disease on people's every-day lives is subtle and pervasive, influencing eating, sleeping, work and social roles. The prevalence and recurrences of these impacts constitutes a silent epidemic. The intention of this cross-sectional study was to provide systematic information on the oral health status, treatment needs and knowledge of HCWs in Haryana as it will help in promoting a healthy lifestyle by incorporating healthy oral habits and transferring the same to the people they serve. Some of the results of the present study are compared with other population groups as a limited number of studies have been conducted on oral health of HCWs. A total of 148 HCWs were examined in the present study.

Hypertension and diabetes among the study subjects in the present study were less prevalent as compared to some other studies conducted elsewhere.[13,14] All deleterious habits were reported in male subjects; smoking and consumption of alcohol were not observed in female subjects in the present study which is in contrast to some other study findings in which about 46% were female smokers.[15] This may be due to a social taboo in the Indian community which doesn't allow Indian women to consume alcohol and smoke.[16]

Regarding perceived need for oral health care, more number of subjects cited oral prophylaxis and restoration of teeth as the most common perceived needs in the present study as compared to a study conducted among employees in South Australia.[17] On the contrary, the perceived need for oral prophylaxis alone was reported by fewer subjects in the current study as compared to another study conducted among dental auxiliaries.[1] The reports of the present study suggest a relatively low priority for receiving needed dental care in spite of the fact that there is a significant need for restorative, prosthetic and periodontal treatments. This finding is similar to some other study findings[18] which emphasizes the need for regular dental checkups and treatments in order to maintain good oral health.

Table 5: Comparison of age of study population with treatment needs

Age	Number of subjects	One surface filling		Pulp care		Extraction	
		Mean	SD	Mean	SD	Mean	SD
<20	7	1.72	1.82	0.34	0.64	0.32	0.85
25-34	71	5.84	1.65	0.44	0.73	0.62	0.96
35-44	50	4.82	1.56	0.26	0.65	0.72	1.0
>45	20	2.45	1.42	0.31	0.74	1.24	1.9
Total	148	3.75	1.73	0.32	0.6	0.81	1.09

SD: Standard deviation

Table 6: Prosthetic status and need of the study subjects

Prosthetic status and need	Number of subjects (%)	
	Maxilla	Mandible
Prosthetic status	4 (2.7)	4 (2.7)
Prosthetic need	39 (26.35)	43 (29)

Table 7: Distribution of maximum CPI score according to gender

CPI scores	*N* (%)		
	Male	Female	Total
Healthy	1 (1.8)	3 (3.30)	4 (2.7)
Bleeding	3 (5.4)	8 (8.7)	11 (7.4)
Calculus	46 (82.1)	73 (79.3)	119 (80.4)
4-5 mm pockets	4 (7.14)	6 (6.52)	10 (6.75)
6-7 mm pockets	2 (3.5)	2 (2.17)	4 (2.7)
Total	56 (100)	92 (100)	148 (100)

N: Number of subjects, CPI: Community periodontal index

Findings of the present study suggest that the majority of the subjects were not aware of the association between oral health and general health problems which are similar to reports of some other study conducted on health care providers.[19] Poor oral hygiene and intake of sugars are cited as the main cause of dental caries by most of the study subjects in the present study, which is not in agreement to the study findings of Thean *et al*.[20] Results of another study conducted in Korea suggests that most of the subjects were not having information on the etiology of dental caries which is contrary to the results of the present study.[21] More number of subjects in the present study had knowledge about oral cancer as compared to some other study reports.[22] Findings of the present study suggested that almost all subjects had adequate knowledge regarding oral cancer. This finding is consistent with reports of another study which was conducted on traditional healers providing oral health care.[23]

According to a study conducted in Brazil,[24] the number of HCWs who used to brush their teeth more than once daily and use floss were more in number as compared to the findings of the present study. Results of another study conducted on HCWs in Israel[25] indicates that the oral self-care habits were better as compared to the results of the present study but the oral hygiene habits were more satisfactory in the present study as compared to some other study conducted elsewhere.[26]

The DMFT surfaces index has been in use for about 65 years and is well-established as the leading measure of caries experience in dental epidemiology.[27] The mean DMFT recorded in the present study was less as compared to some other study reports.[28,29] Mean number of subjects who required one surface restoration in the study was similar to findings of another study.[30] However, total restorative needs in the present study were higher in comparison to another study.[31]

The prosthesis needs in maxillary arches was almost equal to mandibular arches. Nearly 35.9% of females have higher demand for one unit prosthesis for both maxillary and mandibular arches than for any other type of prosthesis which is in agreement with the results reported in the survey conducted by Dental Council of India, where the percentage of people wearing prostheses was low.[32]

Majority of the subjects were free from any signs of periodontal disease. Nearly 80.2% of the subjects had calculus which is contrary to some other study reports.[33] This shows that either health workers have less knowledge about the maintenance of oral hygiene or oral prophylaxis has not been availed.

Conclusion

The present study was conducted among 148 health workers from various PHCs, CHCs and sub centers of Ambala district. It can be concluded that:

- Attitude of the health workers toward dental treatment was poor since they had higher treatment needs
- Almost half of the health workers had beliefs and misconceptions regarding oral health such as extraction of teeth can lead to loss of eye sight, tooth loss with increasing age is normal, oral prophylaxis can lead to loosening of teeth
- 46.7% of the subjects were having dental caries
- Prosthetic needs of female subjects were comparatively higher as compared to their male counterparts
- Calculus is the most common finding with oral prophylaxis being the most common treatment need.

Recommendations

In view of the findings of the present study, it is recommended that:

- Regular dental checkup of all the health workers should be made every 6 months in their respective health care centers
- Health education should be given to all the health workers to enhance their awareness, knowledge and practices toward oral health care and maintenance and to increase their screening capacity for the common dental problem which will serve the community in the long way
- There is an urgent need for further studies and research in this area as very limited previous data is available.

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