Oral health related knowledge, attitude and practices among the primary health care workers of a district in India

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Abstract

Aim: To assess the knowledge, attitude, and practices of the primary health care workers in our country.

Materials and Methods: Data was gathered by means of a closed-ended questionnaire form. A total of 30 primary health centers (PHCs) and 60 subcenters (SCs) were included in the study. Frequency distribution was used together with Chi-square tests and analysis of variance (ANOVA) in this study. A P value of < 0.05 was considered significant.

Results: Only 40% of the primary health care workers knew that dental caries is multifactorial, majority of them could not identify the symptoms of gum diseases, a meager number of the primary health care workers (28%) knew about the oral health aspects of a pregnant lady, and with the exception of doctors, the other health care workers were not sure of the etiology of oral cancer.

Conclusion: About one-tenth of the primary care workers had high knowledge regarding oral health, only one-tenth of them had highly favorable oral health attitudes, and 9% of them had highly favorable oral health practices.

Key words: Knowledge attitude practice study, oral health, primary health care

INTRODUCTION

A brief insight into the global burden of chronic diseases clearly states that the epidemic of chronic diseases affecting the bulk of the rural population has been neglected and it can be said more for the oral diseases. Oral diseases are categorized as chronic non-communicable diseases. Analysis of current data suggests a majority of the population is affected by dental caries and severe periodontitis is found in 5-20% of the adult population in most countries.¹

In our country, dental caries affects 80-90% of children by 16 years of age with an average DMFT of 4, 95-100% of the population is affected by periodontal diseases, and 7-9 lakh cancer cases are detected each year, out of which approximately 35% are oral cancers.²

The World Health Organization (WHO) too has urged its member states to consider mechanisms to incorporate the essential oral health services into the existing primary health care system, with emphasis placed upon disease prevention and health promotion for the poor and the disadvantaged populations.³

India, with a strong network of 22,380 primary health centers (PHCs) and 132,285 subcenters (SCs), is well placed or would do well to incorporate essential oral health services through its primary health care network to a vast majority of the rural population. The PHCs were envisaged to provide an integrated curative and preventive health care to the rural population with
emphasis on the preventive and promotive aspects of health care. For the primary health care workers to dissipate oral health related messages, they must have enough knowledge regarding the etiology of oral diseases/disorders. As such, no data is available in the literature highlighting the oral health related knowledge, attitude, and practice levels.

There are isolated studies done on physicians, nurses, and school teachers, but clear comprehensive data in this field was found wanting. Therefore, this study was conceived to assess the oral health related knowledge, attitude, and practices among the primary health care workers of Ranga Reddy district, Andhra Pradesh, India.

MATERIALS AND METHODS

Ethical clearance

Ethical clearance was obtained from the Institutional Review Board (IRB) of Sri Sai College of Dental Surgery, Vikarabad.

Study area

The district is divided into 3 revenue divisions and 37 mandals. East division consists of 13 mandals. Chevella division and Vikarabad division consist of 13 and 11 mandals, respectively.

Study population/source of data

The study population comprised the primary health care workers working at the PHCs and SCs in Ranga Reddy district of Andhra Pradesh. The work force consisted of medical officers, administrative staff, multipurpose health supervisors (MPHS), staff nurses, multipurpose health assistants (MPHA), pharmacists, and lab technicians.

Data for this research was gathered from the office of the district medical and health officer, located at Shivrampally. The primary health care setup in Ranga Reddy district consists of a well laid-out network of 37 PHCs and 396 SCs, with each PHC located at every mandal and an average of 10 SCs under each PHC.

Study design

This was a cross-sectional study which was carried out among the primary health care workers of Ranga Reddy district.

Selection of PHCs from each zone: Ranga Reddy district is divided into four zones, namely Chevella, Vikarabad, East (urban), and East (rural).

Sampling technique

A stratified cluster random sampling method was employed to select a list of PHCs from each zone.

Ranga Reddy district consists of 37 PHCs, and a total of 30 PHCs were included in this study. No prior studies were done with respect to oral health related knowledge, attitude, and practices of the primary health care workers in Ranga Reddy district, and therefore, no stated formula was used to arrive at this number. This number, i.e. 30, was selected as this is the minimum count required to perform statistical tests.

Based on the number of PHCs in each zone, a proportional number of PHCs was selected using the following formula:

Number of PHCs to be selected in each zone = total number of PHCs in each zone/total number of PHCs in Ranga Reddy district × 30.

The number of PHCs selected from each zone was included to be a part of the study.

Selection of the SC units

Each PHC has an average of 10 SCs under it. So, to capture the difference in variation, 2 SCs from each of the 30 PHCs were randomly picked, and therefore, a total of 60 SCs were included in this study.

Data collection

A descriptive questionnaire form was used to assess the primary health care worker’s knowledge, attitude, and practices with regard to the oral health. The primary investigator drafted the questionnaire form in English and it was then converted into the local language (Telugu) with the help of a professional dentist who was well versed with the local language (Telugu).

This Telugu version of the questionnaire form was then again back-translated into English by two independent dentists who were fluent in both English and Telugu. The back-translated English version was compared to the original English version to check whether the questions were properly translated. The statistical test used was Cronbach’s α to check the validity of the questionnaire, which was found to be 0.92.

Pilot study

In order to aid in the minimization of misinterpretation by the study subjects, a pilot study was conducted.
among the study subjects of the two PHCs and SCs that were randomly picked from the sample calculated earlier. The questionnaire form contained 28 closed-ended questions and these were distributed to the study subjects at their respective centers. After revisions, the form finally contained 25 questions. The study duration was for a period of 5 months, wherein the investigator travelled extensively across Ranga Reddy district for data collection.

Grading of the oral health knowledge/attitude/practices

The grading of the oral health knowledge, attitude, and practices of the respective designations was based on the formula given by Hamilton and Coulby in the year 1991.

The scale given is as follows:
Low/unfavorable: <Mean – 1 standard deviation (SD)
Medium/favorable: Mean – 1 SD to Mean + 1 SD
High/most favorable: >Mean + 1 SD

A marking system was used wherein the highest marks were given to the most appropriate answer and these changes were incorporated into the original Excel sheet.

The knowledge, attitude, and practice scores were calculated for each of the designations and their means were ascertained. The mean scores were graded based on the above formula given by Hamilton and Coulby.

Statistical analysis

Data from the questionnaires were manually entered in the Microsoft Excel spreadsheet.

Answers were coded in a database, and were controlled and analyzed by using SPSS statistical package (SPSS Inc., Chicago, IL, USA). Frequency distribution was used together with Chi-square tests. A P value of < 0.05 was considered to be statistically significant and at a confidence interval of 90%.

RESULTS

A total of 222 primary health care workers were part of this cross-sectional study. The questions were pertaining to the demographic details of the subjects, knowledge levels regarding various aspects of dental caries, periodontal disease, oral cancer, and malocclusion. Specific questions were asked to ascertain oral health related attitude and practice levels and the final question asked was about the level of responsibility on the part of the primary health care system for preventing oral diseases.

Table 1 shows the distribution of study subjects based on the etiology of tooth decay. In the present study, it was found out that among the doctors, 15% mentioned improper brushing as a cause for tooth decay, 22.5% attributed it to poor oral hygiene, 2.5% attributed it to frequent intake of sugary foods, and 60% felt that all the above options were the causative factors for tooth decay.

The frequency distribution of the study subjects based on the oral health problems encountered by a pregnant lady and the responsibility of the primary health care system in the prevention of oral diseases is presented in Tables 2 and 3.

It was found that among the doctors, 27.5% felt that bleeding gums is a common problem in pregnant women, 20% said that swollen gums are common, 2.5% felt that loose teeth is the common problem seen, 45% felt that bleeding gums, swollen gums, and loose teeth are the common problems seen in a pregnant lady, and 5% of them were not aware of the problems encountered.
Table 2: Frequency distribution of the subjects based on their knowledge of the oral health problems encountered by a pregnant lady

| Designation     | Bleeding gums | Swollen gums | Loose teeth | All the above | Do not know |
|-----------------|---------------|--------------|-------------|---------------|-------------|
| Doctor          | 11            | 27.5         | 8           | 20            | 1           | 2.5         | 18          | 45           | 2           | 5          |
| Admin staff     | 3             | 25           | 3           | 25            | 0           | 0           | 6           | 50           | 0           | 0          |
| MPHS            | 10            | 34.5         | 9           | 31            | 1           | 3.4         | 9           | 31           | 0           | 0          |
| Staff nurse     | 6             | 19.4         | 11          | 35.5          | 3           | 9.7         | 10          | 32.3          | 1           | 3.2        |
| MPHA            | 46            | 53.5         | 20          | 25.3          | 5           | 5.8         | 14          | 16.3          | 1           | 1.2        |
| Pharmacist      | 5             | 35.7         | 4           | 28.6          | 2           | 14.3        | 1           | 7.1           | 1          | 2          | 14.3      |
| Lab technician  | 2             | 20           | 0           | 0             | 0           | 0           | 0           | 6             | 60          | 2          | 20         |
| Total           | 83            | 55           | 12          | 64            | 28          | 8           |                |                |             |             |

χ²=52.162, df=24, P<0.05

Table 3: Frequency distribution of the subjects based on their responsibility of the primary health care system in the prevention of oral diseases

| Designation     | Agree | Disagree | Uncertain |
|-----------------|-------|----------|-----------|
| Number          | %     | Number   | %         | Number    | %         |
| Doctor          | 39    | 97.5     | 1         | 2.5       | 0         | 0         |
| Admin staff     | 12    | 100      | 0         | 0         | 0         | 0         |
| MPHS            | 29    | 100      | 0         | 0         | 0         | 0         |
| Staff nurse     | 31    | 100      | 0         | 0         | 0         | 0         |
| MPHA            | 83    | 96.5     | 0         | 0         | 3         | 3.5       |
| Pharmacist      | 14    | 100      | 0         | 0         | 0         | 0         |
| Lab technician  | 10    | 100      | 0         | 0         | 0         | 0         |
| Total           | 218   |          |           |           |           | 0         |

χ²=9.353, df=12, P>0.05

The grading of the primary health care workers with respect to their oral health related knowledge, attitude, and practices has been displayed in a graphical form.

**DISCUSSION**

This study was designed with the sole purpose of decoding the knowledge, attitude, and practices of the primary health care workers belonging to one of the districts in the southern part of India.

The reason for choosing the primary health care workers is mainly because these health care workers have a relatively easy access to a vast majority of the rural population and can render health care services to the millions, in comparison to any other health care system.

With respect to the health workers’ knowledge regarding the most common problems associated with the oral cavity, a majority of them (58%) agreed that tooth decay, gum diseases, crooked teeth, and stained teeth were the most common problems. With these results, it can be safely said that the health workers are aware of the most common problems faced by the people, but what needs to be seen is whether this basic knowledge about oral health is being put into practice at the ground level. No similar studies could be traced out depicting the primary health care workers’ knowledge regarding the common problems associated with the oral cavity.

The health care workers were asked questions on the etiology of the tooth decay and 60% of the doctors said that improper brushing, poor oral hygiene, frequent intake of sugary foods, and hereditary factors were all responsible for the initiation of the tooth decay.

In a study conducted by Diu and Gelbier[6] in the UK, a majority of the general practitioners too identified the major causes of tooth decay as poor oral hygiene, frequent consumption of sugary foods, and improper brushing.

It is definitely an encouraging sign that the majority of the doctors heading the PHCs do understand the multifactorial origin of dental caries; but an equally discouraging fact is that the only about 40% of the other health care workers, i.e. health assistants, staff nurses, health supervisors, and pharmacists, knew about the multifactorial origin of dental caries. This is an important finding because the rest of the health care workers are more closely associated with the field work and come in direct contact with people than the doctors heading these PHCs. 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 the health care workers are in an ideal position to disseminate this piece of information.

In this present study, the primary health care workers were asked about the oral health problems encountered in a pregnant lady and the results obtained were rather disappointing. Only about 45% of the doctors, 31% of the multipurpose health supervisors, 32.3% of the staff nurses, and 16.3% of the multipurpose health assistants knew that bleeding gums, swollen gums, and loose teeth are the common oral health problems in a pregnant lady.

One of the six elements of primary health care is the provision of prenatal and natal care to the expectant mothers, and thereby the primary health care workers are expected to be aware of the oral health aspects of the expectant mothers. Health care workers should have this particular piece of knowledge, so that they can alleviate the anxiety levels of expectant mothers by...
counseling them that bleeding gums, swollen gums, and loose teeth are quite common during the gestation period, and thereby referring them for timely dental treatment if required.

Possible explanations for the lack of awareness may be the lack of motivation among them and they being overburdened with various other activities of the primary health care setup.

In a study carried out by Al Habashnah et al.,[7] a majority of the doctors (81%) said that in expectant mothers, there is an increased tendency for the gums to bleed and swell. Wilder et al.[8] carried out a study among obstetricians and it was found that an overwhelming majority of them (91%) agreed that swelling and bleeding of the gums may worsen during pregnancy. No similar studies could be traced out which have assessed the knowledge levels of staff nurses, multipurpose health supervisors, and multipurpose health assistants with respect to the oral health problems of an expectant mother.

In the present study, the primary health care workers were questioned about the etiology of oral cancer and, surprisingly, only an overwhelming majority of the doctors (95%) and pharmacists (92%) knew that tobacco usage was the most important etiological factor for oral cancer.

The multipurpose health assistants who form the backbone of the primary health care setup fared miserably in this issue, i.e. only 17.4% of them knew the role of tobacco in cancer initiation and about 65% of them said that improper brushing could lead to oral cancer.

The bulk of the primary health care workers are engaged in the field work 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 the most common cancer of the oro facial region in the Indian subcontinent (squamous cell carcinoma). The national cancer control agencies should more seriously start disseminating health education messages to the primary health care workers in order to reduce the burden of cancer, particularly oral cancer.

In a similar study conducted by Greenwood and Lowry,[9] in the northeast of England, only 50% of the primary care clinicians said that betel nut chewing could predispose to oral cancer. Interestingly, in a study conducted by Ni Riordain and McCreary,[10] among the Irish general medical professionals, 98% of them said that smoking is a leading risk factor for oral cancer and only a meager 0.8% of them attributed tobacco chewing as a causative factor to oral cancer.

Lastly, the study gathered data regarding the responsibility of the primary health care system in the prevention of oral diseases and the results were rather heartening. An overwhelming majority of the primary health care workers (98%) agreed that the primary health care system should take up the additional responsibility of preventing oral diseases. But for this to see the light of the day, the health policymakers in our country should realize the importance of oral health, with adequate emphasis being placed upon prevention through the primary health care system. This is rather a daunting task as the infrastructure and the manpower required has to be recharged in tune with the prevalence of oral diseases in our country.

An attempt was made to provide a comprehensive overview of the results. A majority of the primary health care workers (64.8%) had medium oral health knowledge levels, 19.8% of them had low levels of oral knowledge, and only about 15.3% of the primary health care workers had high knowledge with respect to oral health as depicted in Graph 1. This is an encouraging sign in spite of the fact that the primary health care workers are already overburdened rendering basic health services.

With respect to the oral health related attitudes, only 13% of the primary health care workers had the most favorable attitude, 13.6% had an unfavorable attitude, and a majority, i.e. 73.8%, of them had a favorable attitude toward oral health as depicted in Graph 2. This is also an encouraging result as they can be suitably educated in the foreseeable future, but what remains to be seen is whether these healthy attitudes can be translated into healthy oral health practices too.

Lastly, looking at the oral health related practices of the primary health care workers, 9.4% of them had unfavorable practice patterns, 9% of them had highly favorable oral health related practices, and an overwhelming majority of them, i.e. 81%, had favorable practice levels as depicted in Graph 3. The inference from the above result is that the onus is now on the governmental health agencies to consider oral health as a very important aspect of one’s health and
To our current knowledge, there is a dearth of studies which have focused on the primary health care workers’ knowledge, attitude, and practices with respect to oral health. This can be interpreted in two ways, the first one being that it is a drawback when we compare the findings of the present study. The second interpretation is that this is an area wherein further research could be conducted among the primary health care workers, which may result in better oral health care for the millions in our country. Our results may provide valuable stimulus and perspectives toward the formulation of relevant oral health education programs for the primary health care workers.

Second, due to the self-reporting aspect of the study, we could not determine whether the reported practices reflected the actual clinical practices. So, it is possible that social desirability biases may have caused respondents to over report or under report attitude and practice.

Although examples of both kinds of reporting have been identified, the more prevalent and serious problem in our estimation is over reporting, and supposedly, this hindrance to objectivity applies here as well. If so, it would paint an even more negative picture of the current knowledge, attitude, and practice than that has been portrayed.

As far as our knowledge is concerned, this study is the first of its kind in assessing the oral health knowledge, attitude, and practices of the primary health care workers in Ranga Reddy district, and more such studies are needed across the country in the near future, so that an amalgamation of the above literature could be used to plan out oral health educational programs for the primary health care workers.

**CONCLUSION**

- A majority of the primary health care workers had moderate oral health knowledge levels and only one-tenth of the primary health care workers had high knowledge with respect to oral health
- About one-tenth of the primary health care workers had highly favorable attitude on oral health and a majority of them had favorable attitude on oral health
- Only 9% of them had highly favorable oral health related practices and an overwhelming majority of them had favorable practice levels.

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