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## A cross-sectional study on oral hygiene status among rural population

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### Abstract

**Background:** The oral health is an integral part of the general health and also the well being of an individual. Gingival diseases, periodontal diseases, dental caries and oral mucosal diseases constitute the major oral health problems in the developing countries. It is of prime importance to practice healthy oral habits. Awareness and education of a good oral health among rural population is considered to be an essential prerequisite for improving the oral health in a community.

**Objective:** The objective of the study was to assess the oral health status among population in rural areas.

**Methodology:** A cross sectional study was conducted in 26 rural places which comprised of almost 2363 subjects from 2017-2019. Data was collected and was analyzed by descriptive statistics.

**Results:** Out of 2363 population, 40.5% were males and 55.7% were females. The data suggested approximately 58% of the population were having poor oral hygiene among which 27.5% were having gingivitis, almost 17% had dental caries and approximately 13% had dental fluorosis.

**Conclusions:** In the present cross sectional study, the oral hygiene of rural population was assessed and it is concluded that oral health programmes can be organized at the rural level in order to evaluate the oral health status of the population and to determine the need for the dental education in the rural areas.

**Keywords:** Oral health status, oral hygiene practice, rural population

### Introduction

Oral cavity is the mirror of the body which implies to the fact that the oral health is the fundamental part of general body health and integral factor for the overall well being of an individual. The good oral health comprises of the healthy state of mouth with disease free oral cavity and its surrounding structures [1]. A good oral health or a disease free mouth makes it possible for an individual to eat, converse and socialize without any embarrassment and distress. The oral hygiene can be described as a practice for maintaining the cleanliness of the mouth and keeping the oral cavity healthy by brushing and flossing in order to prevent the gum or gingival diseases and the tooth decay. Oral health is an essential component of the general health and thereby determines the quality of life. The state of being free from diseases affecting the oral cavity and myofacial pain, oral infection, oral and throat pain, tooth decay, sores, periodontal (gum) disease, tooth loss, and other disorders and diseases that can limit an individual's capacity of biting, chewing, speaking, smiling and psychosocial well-being [2]. Likewise, the prevalence of the severe periodontal disease among the middle-aged adults is estimated to be approximately 15%–20%. The evidences from the literature suggest that the oral disease, and by extension poor oral health, disproportionately affects the rural, poor and disadvantaged population and adult population groups [2]. Maintenance of good oral hygiene is considered a lifelong habit. These oral health habits or practices begin in an early stage of life. It is very crucial and important to have a positive attitude and a good knowledge towards these oral hygiene practices in order to have a disease free oral cavity. The information delivers the knowledge and this information, when believed and accepted is translated into an action which in turn becomes a habit. Parents, siblings, colleagues and rural teachers play a significant role in conditioning healthy habits in young population.

Periodontal diseases, dental caries, and oral mucosal disease constitute a major proportion of the oral health problems in developing countries [3]. About 90% of rural population and adults worldwide would have experienced dental caries, which could be due to various factors among which, the important ones are consumption of refined carbohydrate and the lack of oral health knowledge. The problems related to poor oral health can have impact on the physical, social, mental and financial well being of an individual [4]. Adolescent age has been identified as a time when the personal oral health behaviors may be internalized and become the habits, as parents become increasingly less directly involved in their population's care. The increased autonomy may also mean that they fail to practice an adequate oral health care. They may tend to eat more snacks and consume more beverages between the meals. Oral care during the time of adolescence is very important for several reasons, which includes the eruption of permanent dentition which will increase the number of tooth surfaces and may expose them for tooth decay and also results in higher incidence of early periodontal disease. Thereby, adolescents may be at greater risk for the dental disease during a transitional period when they are developing the oral care habits.<sup>5</sup>A significant burden of oral diseases in young population restricts their activities in home, rural and other work which leads to the loss of many potential working hours. The population who suffer from oral diseases or have poor oral health are 12 times more likely to have restricted activity as compared to those who do not [6]. A greater incidence of periodontal diseases and dental caries is seen in rural population because of poor oral hygiene, lack of dental care and scarcity of dental check-ups and also due to junk foods and consumption of alcohol, smoking during adolescence [6]. The dental caries is one of the most prevalent diseases among population. The major complications which are associated with the dental caries are dentoalveolar infection and resulting pain. These complications can adversely affect the quality of life of the population and can cause an undue financial burden on their families. Many studies have clearly established that the dental caries is not a static process but instead it is a dynamic process where demineralization and remineralization of the tooth go side by side [7]. In India, the documentation on oral health status of the population has been done by various investigators. In 2003, national oral health survey reported a prevalence of 53.8% caries experience in 12-year-old, Significant Caries (SiC) and mean Decayed, missing, and filled teeth (DMFT) of 3 and 1.8 respectively. The majority of 12 years aged population had experienced caries in one or more of their total number of teeth [8]. In India, fluorosis is one of the severe public health problems, as almost two-third states are fluoride endemic [9]. Approximately 25 million people in India are presently affected by fluorosis and 66 million are at risk of developing fluorosis, which also includes population of age 14 years [10]. India is situated in the geographical fluoride belt and the areas where fluoride content is high in rocks or soil, the fluoride leaches and causes excessive fluoride level in the groundwater [11]. It is of great importance to consider the fact that the population can significantly contribute in the health promotion as well as in spreading the preventive information among their family members and the society. Thereby, the change to a healthy habit and positive attitude can be brought about by giving adequate information, education and motivation as well as healthy practices to the subjects [12]. In order to create such health education, the assessment of oral health status among the rural going population is of prime

importance. Hence this study was taken up to assess oral health in rural population in rural area.

### Materials and Methods

A cross sectional study was done in a rural population from 2017 to 2019 which comprised of population of 26 different villages (Figure 1). The sample consisted of 2363 subjects. The oral hygiene status and dental fluorosis were assessed by evaluating the gingivitis, dental caries and fluorosis in the population. The data was tabulated and analyzed. Gender distribution was determined as well the oral hygiene status was evaluated which comprised of dental and gingival diseases.

### Results

The study was done in the rural area which comprised of data from 26 villages. The population consisted of a total 2363 subjects in which 40.5% (958) were male and 55.7% (1316) were female (Figure 2). It implies that the females have participated actively in the study than the males. After the data was analyzed, 27.5% subjects were having gingivitis, 17.2% were having dental caries and 13.2% were having dental fluorosis (Figure 3).

More than half of the population (57.9%) was having some oral diseases i.e., gingivitis, dental caries or dental fluorosis and among which, 27.5% subjects were gingivitis and 17.2% subjects were having dental caries. The study also showed that the percentage of gingivitis is more than that of dental caries and fluorosis i.e, the subjects having gingivitis comprised of almost one-third of the total population. In the present study, the prevalence of gingivitis is higher in comparison to dental caries and fluorosis. The prevalence of dental caries (17.2%) was more than that of the dental fluorosis (13.2%). The study demonstrated that the oral hygiene status was poor in half of the subjects in the present population.

### Discussion

The customs, culture and beliefs of the rural India change considerably from one state or region to another. These beliefs and customs observed in people influence the maintenance of the general and oral health. Thereby, the oral hygiene practices in different rural areas differ. Therefore, this projects a great impact on the oral health of rural population of India. Many of the rural public continues to use the ancient or indigenous preparations for the maintenance of the oral hygiene even in this era of 21st century also. In most of the literatures and studies, it has been observed that the oral hygiene status of an individual correlates with the oral hygiene practice. In accordance with these studies, many surveys and studies have shown a positive correlation between these two. Manish *et al.* in 2009 conducted a study which showed that the Jain monks have poor oral hygiene because there is a part of their religion in which many individuals avoid brushing their teeth during fasting.<sup>13</sup> Many studies have shown similar results and correlation between the oral hygiene practice and the status of oral hygiene. Oral health is considered as a much lesser priority in the various developing countries like India, especially in the rural areas. Due to limited resources available to the health sector, poverty and only the little assignment are mainly directed towards life threatening conditions such as HIV/AIDS, malaria, tuberculosis and rather than only oral diseases. The adoption of a healthy lifestyle, changing living conditions and improved self-care practices, establishment of preventive oral

care programs and effective use of fluorides which have improvised the oral health status among the adults in the developed countries. However, these factors are more or less deficient in the developing countries with even worse scenarios in the rural areas. Considerable populations in the rural areas are still continuing to use the indigenous preparations for the maintenance of the oral hygiene such as finger, datum and dantmajan [14]. Therefore, in order to get an outcome of a good oral hygiene status of the population, it is very important to adopt good and efficient methods of oral hygiene practices. Factors affecting the life- style as well as the socioeconomic status of an individual influences the dental health to a great extent [15]. The rural population is highly deprived of targeted programmes which can educate, motivate and spread the awareness among the rural population as well as to infuse appropriate dental practices in order to maintain a good oral hygiene [16]. The current study has assessed the oral hygiene status in rural population in order to infer the need for dental education, motivation and awareness in the rural areas, especially the rural going population. The population residing in the villages should be motivated and informed about the right methods for maintaining a proper oral hygiene.

The links between the personal as well as social outcomes and the oral health condition should be explored and the appreciation of a good oral health status should be promoted. Furthermore, the oral health awareness provided to the population will provide the opportunity to identify the interventions in order to minimize the consequences of the oral diseases. A study by Punitha *et al* [17] showed that only 62.96% population were using brush and that 29.62% rinse their mouth always after having food or drink. It also showed

that about 14.81% population were aware of the fact that by practicing regular brushing of the teeth, the tooth decay can be prevented whereas 45.67% had an idea that by avoiding chocolates and sweets, tooth decay can be prevented. In another study, only 1.23% believed that by the regular visit to a dentist can help in preventing the tooth decay. A study by Harikiran *et al*. [18]. showed that only 6.9% believed that the regular visit to a dentist can prevent the tooth decay while in contrast to this study, the studies done by Petersen *et al*. [19] (66%) and Wierzbicka *et al*. [20] (61%) showed a high percentage of the study participants that claimed that annual dental visit is beneficial. The cross-sectional studies are very important in estimating the prevalence of a disease in a population. Therefore, the present cross-sectional study was conducted with the aim to find out the oral hygiene status in the rural population. The data suggested that almost half of the population was having dental problems and among them the most common was the gingivitis i.e., approximately 27.5% which is a result of a poor hygiene status and the dental caries reported was almost 17%. These data implies that there is not adequate awareness in the rural population related to the dental diseases and also there is a lack of proper preventive measures which should be taken for the young population. Because the population play a crucial role in motivating their parents regarding the oral hygiene maintenance, they should be given appropriate knowledge and motivation regarding the importance of oral hygiene. Hence, the study gives information in respect to spread the awareness among the rural population and also the population should be motivated and educated about the maintenance of the good oral hygiene status.

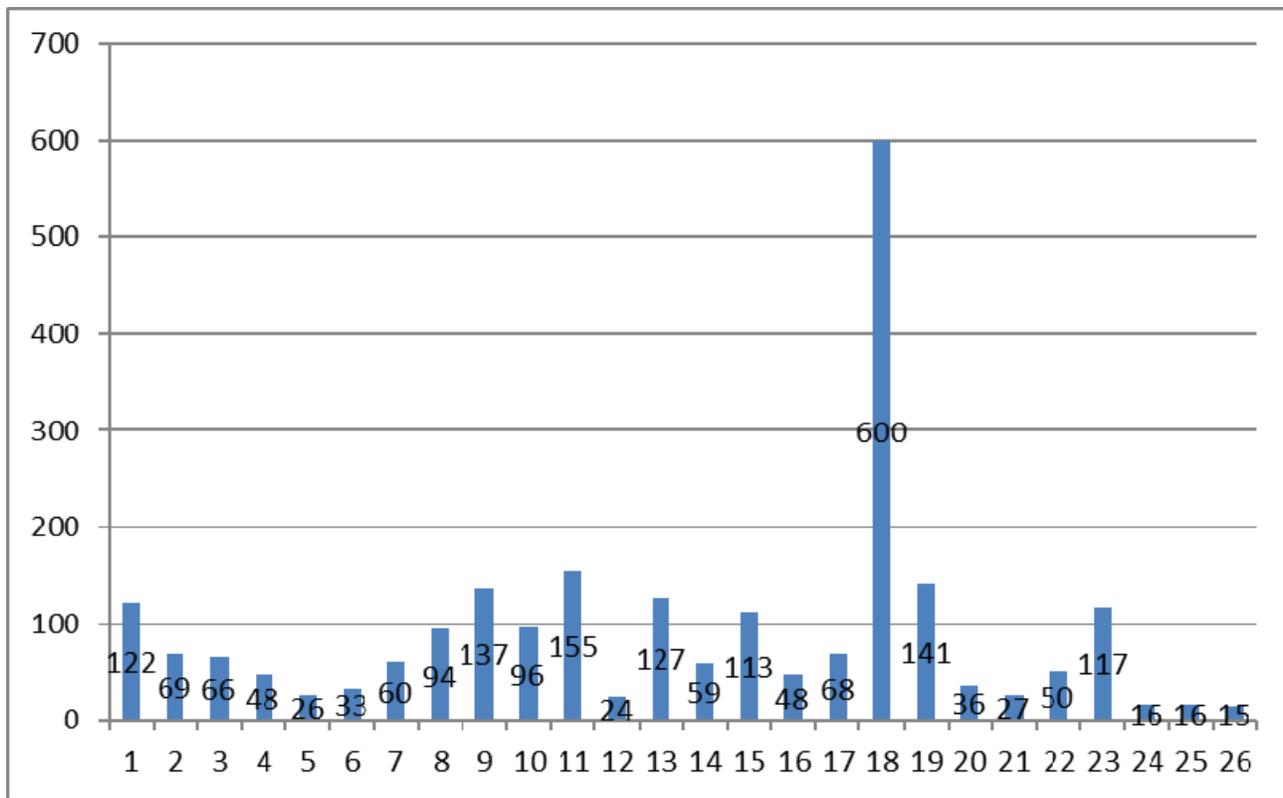


Fig 1: Distribution of the subjects in the population

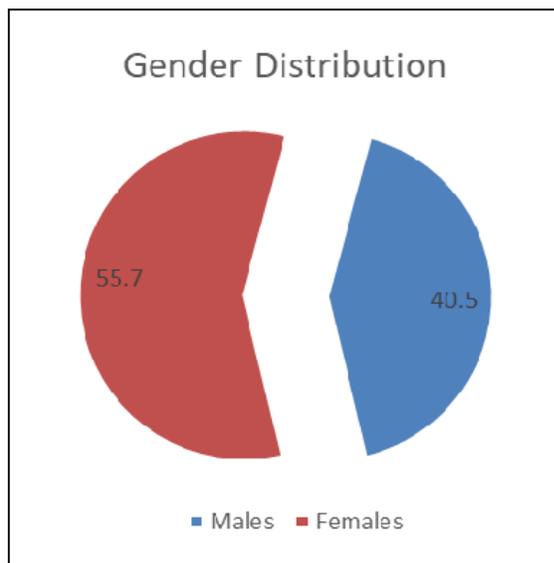


Fig 2: Gender distribution among the population

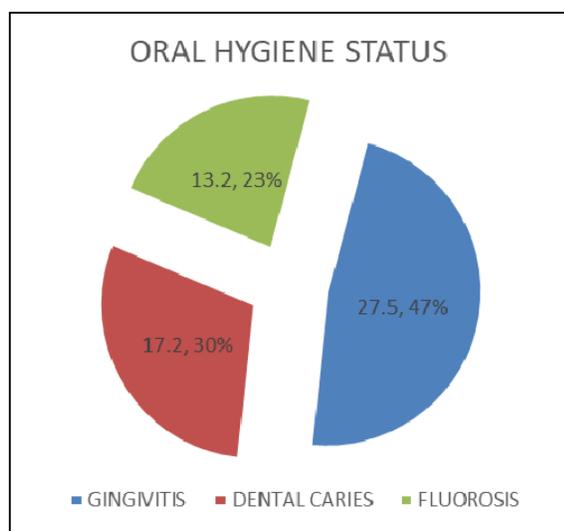


Fig 3: Oral hygiene status of the population

### Conclusion

There are a number of factors that have been put forward in order to explain the variation in the prevalence and the severity of the periodontal diseases and the dental caries, not only between developing and developed countries, but also between rural and urban populations. These factors in general can be divided into the intraoral local factors which are associated with the plaque accumulation and fluoride exposure or can be general factors like age, sex and socio-cultural variables. A good oral hygiene status significantly depends upon the mode of cleaning, frequency, type of the tooth brushing. A poor oral hygiene status among the rural population could be attributed to poor oral hygiene practices like use of finger instead of tooth brush, tooth paste being substituted with charcoal, as well as the availability and affordability of tooth brushes and fluoridated tooth pastes in rural population. An improvement in the oral health knowledge and motivation towards practicing a good oral hygiene is considered to be an important and very crucial prerequisite for improvement of the oral health of the community. In the present cross sectional study, the oral hygiene of rural population was assessed and it is concluded

that oral health programmes can be organized at the rural level in order to evaluate the oral health status of the population and to determine the need for the dental education in the rural areas. Introduction and emphasis to practice the measures for the maintenance of good oral hygiene can be included in the rural curriculum. Moreover, the accessibility to dentist needs to be improved along with that the cost of treatment also needs to be reduced.

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