WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 11, Issue 4, 1614-1627. Research Article ISSN 2277– 7105

# ASSESSMENT OF PERIODONTAL HEALTH AWARENESS USING A SELF-REPORTED QUESTIONNAIRE AMONG THE PATIENTS VISITING A DENTAL COLLEGE IN BANGALORE

**[1]Dr. Darshan B. Mundinamane, [2]*Dr. Reshmi V. Nair, [3]Dr. Suchetha Aghanashini, [4]Dr. Sapna Nadiger, [5]Dr. Apoorva Sokke Mallikarjunappa and [6]Dr. Divya Bhat**

[1,4,5]MDS, Reader, Department of Periodontics, D A P M R V Dental College, Bangalore.

[2]Post-graduate, Department of Periodontics, D A P M R V Dental College, Bangalore.

[3]MDS, Professor and Head, Department of Periodontics, D A P M R V Dental College, Bangalore.

[6]MDS, Senior Lecturer, Department of Periodontics, D A P M R V Dental College, Bangalore.

Article Received on
07 Feb. 2022,

Revised on 28 Feb. 2022,
Accepted on 21 March 2022

DOI: 10.20959/wjpr20224-23637

***Corresponding Author**
**Dr. Reshmi V. Nair**
Post-graduate, Department of Periodontics, D A P M R V Dental College, Bangalore.

## ABSTRACT

**Aim:** The study aims to evaluate knowledge, attitude, and practice measures regarding oral health awareness among the general population in Bangalore through a printed questionnaire. **Materials and methods:** A total of hundred patients were included in the study. Periodontal health awareness was assessed with the help of a structured questionnaire composed of eleven questions. Informed consent was obtained and printed questionnaires were given to all the patients. The collected data were tabulated and analyzed statistically. **Results:** All the questions were acknowledged and were statistically significant. The question on the presence of gum disease was found to be statistically significant ($P<0.04$) wherein 43% of the patients responded positively. There was no statistical significance for the question of bleeding of gums while brushing. Thus, it can be assumed that the patients were not aware that bleeding is an objective sign of gingivitis. Most of the patients gave a positive response to the question of visiting the dentist and undergoing scaling every 6 months. **Conclusion:** Many researchers have shown that self-reported questionnaire has excellent predictive and discriminative validity. Based on the response of the patient to the questionnaire the clinicians can evaluate the patient and educate them in the areas of lacunae.

**KEYWORDS:** Periodontal health; Self-awareness; Questionnaire.

## INTRODUCTION

Health is defined as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"[1] and oral health has been defined as "a state of being free of mouth and facial pain, oral infections and sores, and oral and other diseases that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial well-being" (WHO 2012).[2] General health cannot be effectuated without oral health.[3] Health is considered as multifactorial and multidimensional as it is influenced by factors such as genetics, lifestyle, environment, socio-economic status (SES), and many others. These factors have a direct or an indirect significance on the incidence, course, and outcome of a wide variety of communicable and non-communicable diseases as well as many other health problems presently oppressing the world.[4] Oral conditions like dental caries and periodontal (gum) disease continue to afflict humanity as they are the foremost reasons for tooth loss and acute orofacial pain.[3]

Periodontal health can be defined as "a state free from inflammatory periodontal disease". This, consecutively, means that absence of inflammation associated with gingivitis or periodontitis, when assessed clinically, is a prerequisite for defining periodontal health.[1]

Periodontal disease is a widespread chronic inflammatory dental disease that has the potential for systemic health implications. Patients may present with a reversible condition such as gingivitis, or an irreversible condition such as periodontitis.[5] The development of common periodontal diseases depends mainly on etiology and behavior, and the control of these diseases is greatly supported by the fact that the etiological factors are well documented.[6] Awareness on oral health requires the need for the right actions by patients and dental professionals is the key to improving periodontal health.[7]

Oral hygiene has been an ignored and quiescent crucial social problem. The majority of the people are oblivious of the association between oral hygiene and systemic diseases or disorders. Most diseases initially appear through oral signs and symptoms and they remain undiagnosed or untreated due to ignorance.[8]

Oral health promotion has developed as the contemporary approach to intercept oral diseases. Oral health promotion seeks to attain sustainable enhancement in oral health and reduce

inconsistencies through action directed at the underlying heterogeneity of periodontal health. An essential component of this process is multidisciplinary action, which utilizes a range of complementary strategies.[9]

Oral health status and behaviors also have been assessed by questionnaires, for example, those of the National Health Interview Survey (NHIS) and the Behavioral Risk Factor Surveillance System (BRFSS). These data are self-reported and subject to error, particularly the selection, and information biases.[10] Questionnaire surveys are often used in health research.[11]

Previous studies have indicated that the level of knowledge and attitude towards oral health might be a potential barrier to effective prophylactic efforts. Periodontal awareness alone seems not to result in appropriate periodontal health habits.[12]

There are several studies comparing self-reported dental health to findings on the clinical examination have mostly focused on the number of remaining teeth and the presence or absence of removable dentures,[13] but there are very few studies wherein questionnaire is used to assess the knowledge and attitude of patients towards periodontal health awareness. Thus, the study aims to evaluate knowledge, attitude, and practice measures regarding oral health awareness among the general population in Bangalore.

## AIMS AND OBJECTIVES OF THE STUDY

1. To evaluate the participant's awareness about their periodontal health.
2. To evaluate the participant's attitude towards their periodontal health.
3. To evaluate the practice measures of the patients regarding periodontal health.

## MATERIALS AND METHODS

### Sources of Data

Outpatients visiting the Department of Periodontics, D.A.P.M.R.V Dental College, Bangalore.

### Inclusion Criteria

1. The patient should not have undergone periodontal therapy (Root planing/LDD/Flap surgery).

2. Age group should be between 18 and 40 years for both sexes.

**Exclusion Criteria**

1. Patients who are edentulous adults.
2. Patients with less than 10 teeth.
3. Patients with a previous history of periodontitis.
4. Medically compromised patients.
5. Pregnant individuals.
6. Patients with drug-induced gingival enlargement.

**Method of Collection of Data**

A total of hundred patients were included in the study. Periodontal health awareness was assessed with the help of a structured questionnaire composed of eleven questions.

The Ethical clearance for the study was obtained from the ethical committee and review board of the institution (Annexure-I). A total of 100 patients were included in the study. Matching was done with respect to age and gender. A consent form and patient information sheet were provided to the patients after a brief explanation about the study and its purpose. All the patients were given the questionnaire in printed form. Once the patient had marked the answer. The collected data were tabulated and analyzed statistically.

**RESULTS**

A questionnaire-based study was done to assess the knowledge, attitude, and practice measures regarding oral health awareness among the patients visiting D A P M R V dental college, Bangalore. A total of 100 patients were selected and equally divided into 50 in each gender. All the patients gave complete responses to all eleven questions in the questionnaire. Thus, the response rate was 100%.

**PARTICIPANT'S CHARACTERISTICS**

1. **Age distribution -(Table-1, Graph 1)** Of the selected 100 patients, the mean age distribution was 31.06 years (range 18- 40 years).
2. **Gender distribution- (Table-2, Graph 2)** A total of 100 patients were included. Each group had an equal number of male and female patients (50 each).

3. **Education level distribution- (Table 3, Graph 3)** All the patients were literate of which 31 patients (31%) had completed a professional degree and 38 patients (38%/) were graduates.
4. **Occupational distribution- (Table 4, Graph 4)** Of the 100 patients, 38 patients (38%) were doing professional jobs, 18 patients (18%) were skilled workers and 34 patients (34%) were unemployed.

**SELF-REPORTED GENERAL QUESTIONNAIRE**

The item response rate for the question was 100%. 38% of the patients gave a positive response to the question: "Do you frequently use an interproximal brush to clean your teeth?" **of which 42% were males and 34% were females** as shown in table 5.

**SELF-REPORTED GINGIVAL HEALTH QUESTIONNAIRE**

The item response rate for all questions was 100%. The most positive response of 42% was for the question: "Does your gums bleed when brushing?" **of which 38% were males and 46% were females**. Followed by 31% (**32% males and 30% females**) of positive responses to the question: "Have you felt pain in your gums during the last few months?" and 22% (**14% males and 30% females**) of positive response to the question: "Do you think you have gum disease?" as shown in table 5.

**SELF-REPORTED PERIODONTAL HEALTH QUESTIONNAIRE**

The item response rate for all questions was 100%. The most positive response of 29% was for the questions: "Have you noticed a change in position of your teeth during the past year?" and "Have some of your teeth become looser than normal?" **of which 30% of females gave a positive response, and 32% of males gave positive response respectively**. The positive response to the other questions: "Have your teeth become longer in the past years?", "Have you noticed that you see the roots of several of your teeth?" and, "Have you lost teeth due to mobility?" with a positive response percentage of 18% (Qn. 5 and 6) and 15% (Qn. 9) as shown in table 5.

**SELF-REPORTED QUESTIONNAIRE ON THE ATTITUDE OF THE PATIENT TOWARDS MAINTENANCE OF ORAL HEALTH**

The item response rate for all questions was 100%. The most positive response of 74% was for the question: "Is it necessary to undergo cleaning of teeth every 6 months?" wherein 74% of both the genders gave positive response followed by 73% positive response to the

question: "Is it necessary to visit a gum specialist in case of any gum problem?" **with 76% of females giving positive response compared to the 70% males** as shown in table 5.

The level of significance was set at P<0.05. All the questions were statistically significant except for the question: "Does your gums bleed when brushing?" was statistically not significant.

## SUBGROUP ANALYSES

Subgroup analyses were performed by age (<29 vs.>29 years), education (under high school vs. over professional training), and gender (male vs. female) to explore the performance of the self-reported questionnaire within each different group. For all subgroups, the most sensitive question was "Is it necessary to undergo cleaning of teeth every 6 months?" (Q 10). Also, the "Is it necessary to visit a gum specialist in case of any gum problem?" (Q 11) had higher values of sensitivity in participants >29 years of age. Positive responses to these questions were given by the graduates and the female participants.

The level of significance was set at P<0.05. The response to the question: "Do you think you have gum disease?" was found to be statistically significant based on gender.

## TABLES

**Table 1: Age-wise distribution of study participants.**

| Variable | Category | n | % |
|---|---|---|---|
| Age | ≤ 20 yrs. | 10 | 10% |
| | 21-30 yrs. | 34 | 34% |
| | 31-40 yrs. | 56 | 56% |
| | | Mean | SD |
| | Mean & SD | 31.06 | 7.04 |
| | Range | 18 – 40 | |

**Table 2: Gender wise distribution of study participants.**

| Variable | Category | n | % |
|---|---|---|---|
| Sex | Males | 50 | 50% |
| | Females | 50 | 50% |

**Table 3: Distribution of study participants based on their educational level.**

| Variable | Category | n | % |
|---|---|---|---|
| Education | Illiterate | 0 | 0% |
| | Primary School | 1 | 1% |
| | Middle School | 1 | 1% |
| | High School | 10 | 10% |
| | Intermediate | 19 | 19% |
| | Graduate | 38 | 38% |
| | Professional Degree | 31 | 31% |

**Table 4: Distribution of study participants based on their Occupational Status.**

| Variable | Category | n | % |
|---|---|---|---|
| Occupation | Unemployed | 34 | 34% |
| | Unskilled Worker | 0 | 0% |
| | Semiskilled Worker | 0 | 0% |
| | Skilled Worker | 18 | 18% |
| | Clerical / Shop / Farm | 7 | 7% |
| | Semi Profession | 3 | 3% |
| | Professional | 38 | 38% |

**Table 5: Comparison of distribution of responses to the study questionnaire by the participants using Chi Square Goodness of Fit Test.**

| Questions | Responses | n | % | $\chi^2$ Value | P-Value |
|---|---|---|---|---|---|
| Do you frequently use an interproximal brush to clean your teeth? | No | 62 | 62% | 5.760 | 0.02* |
| | Yes | 38 | 38% | | |
| Does your gums bleed when brushing? | No | 58 | 58% | 2.560 | 0.11 |
| | Yes | 42 | 42% | | |
| Do you think you have gum disease? | No | 78 | 78% | 31.360 | <0.001* |
| | Yes | 22 | 22% | | |
| Have you felt pain in your gums during the last few months? | No | 69 | 69% | 14.440 | <0.001* |
| | Yes | 31 | 31% | | |
| Have your teeth become longer in the past years? | No | 82 | 82% | 40.960 | <0.001* |
| | Yes | 18 | 18% | | |
| Have you noticed that you see the roots of several of your teeth? | No | 82 | 82% | 40.960 | <0.001* |
| | Yes | 18 | 18% | | |
| Have you noticed a change in position of your teeth during past year? | No | 71 | 71% | 17.640 | <0.001* |
| | Yes | 29 | 29% | | |
| Have some of your teeth become looser than normal? | No | 71 | 71% | 17.640 | <0.001* |
| | Yes | 29 | 29% | | |
| Have you lost teeth due to mobility? | No | 85 | 85% | 49.000 | <0.001* |
| | Yes | 15 | 15% | | |
| Is it necessary to undergo cleaning of teeth every 6 months? | No | 26 | 26% | 23.040 | <0.001* |
| | Yes | 74 | 74% | | |
| Is it necessary to visit a gum specialist in case of any gum problem? | No | 27 | 27% | 21.160 | <0.001* |
| | Yes | 73 | 73% | | |

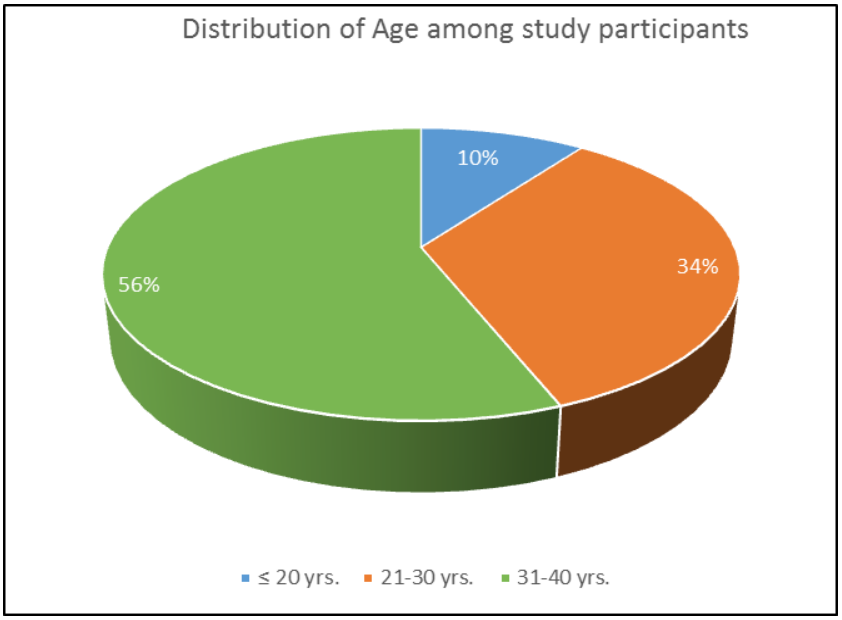
* - Statistically Significant

**Table 6: Gender wise comparison of the difference in the distribution of responses among study participants using Chi Square Test.**

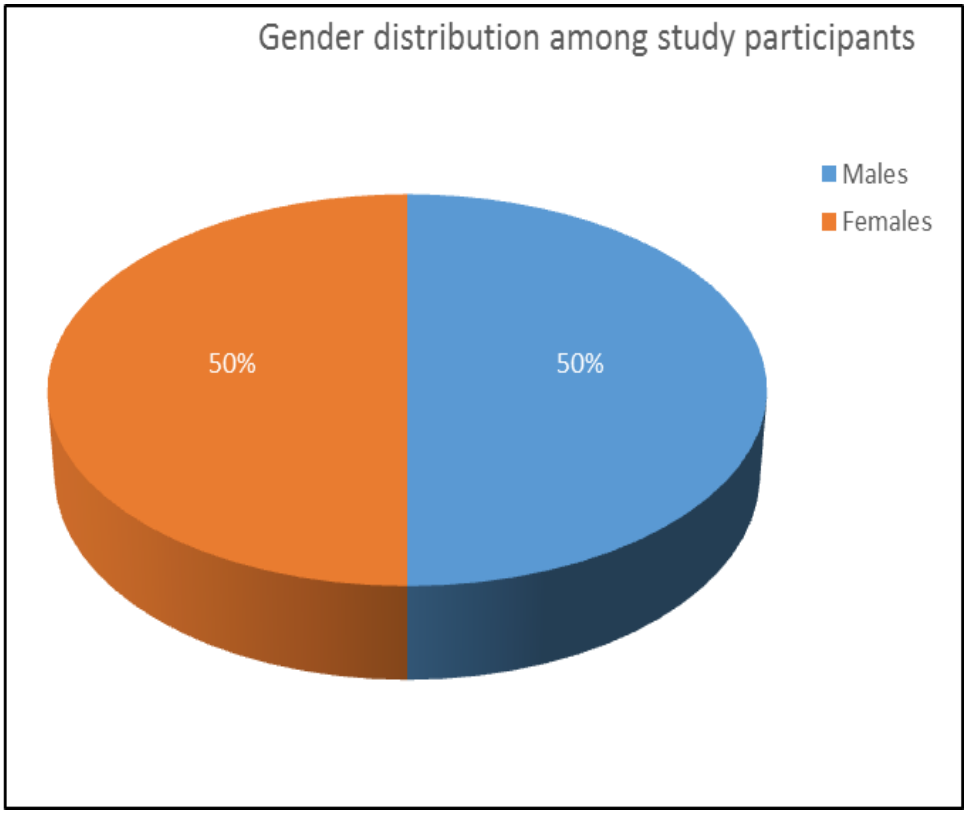
| Questions | Responses | Males | | Females | | $\chi^2$ Value | P-Value |
|---|---|---|---|---|---|---|---|
| | | n | % | n | % | | |
| Do you frequently use an interproximal brush to clean your teeth? | No | 29 | 58% | 33 | 66% | 0.679 | 0.41 |
| | Yes | 21 | 42% | 17 | 34% | | |
| Does your gums bleed when brushing? | No | 31 | 62% | 27 | 54% | 0.657 | 0.48 |
| | Yes | 19 | 38% | 23 | 46% | | |
| Do you think you have gum disease? | No | 43 | 86% | 35 | 70% | 3.730 | 0.04* |
| | Yes | 7 | 14% | 15 | 30% | | |
| Have you felt pain in your gums during the last few months? | No | 34 | 68% | 35 | 70% | 0.047 | 0.83 |
| | Yes | 16 | 32% | 15 | 30% | | |
| Have your teeth become longer in the past years? | No | 39 | 78% | 43 | 86% | 1.084 | 0.30 |
| | Yes | 11 | 22% | 7 | 14% | | |
| Have you noticed that you see the roots of several of your teeth? | No | 41 | 82% | 41 | 82% | 0.000 | 1.00 |
| | Yes | 9 | 18% | 9 | 18% | | |
| Have you noticed a change in position of your teeth during past year? | No | 36 | 72% | 35 | 70% | 0.049 | 0.83 |
| | Yes | 14 | 28% | 15 | 30% | | |
| Have some of your teeth become looser than normal? | No | 34 | 68% | 37 | 74% | 0.437 | 0.51 |
| | Yes | 16 | 32% | 13 | 26% | | |
| Have you lost teeth due to mobility? | No | 42 | 84% | 43 | 86% | 0.078 | 0.78 |
| | Yes | 8 | 16% | 7 | 14% | | |
| Is it necessary to undergo cleaning of teeth every 6 months? | No | 13 | 26% | 13 | 26% | 0.000 | 1.00 |
| | Yes | 37 | 74% | 37 | 74% | | |
| Is it necessary to visit a gum specialist in case of any gum problem? | No | 15 | 30% | 12 | 24% | 0.457 | 0.50 |
| | Yes | 35 | 70% | 38 | 76% | | |

* - Statistically Significant

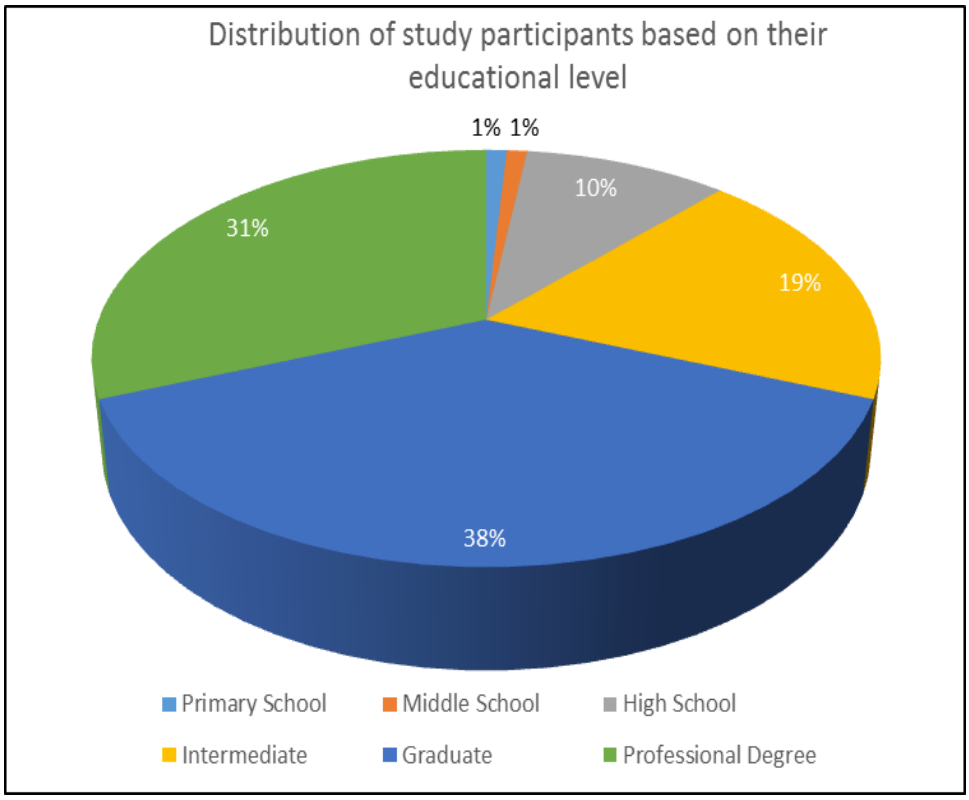
**GRAPHS**



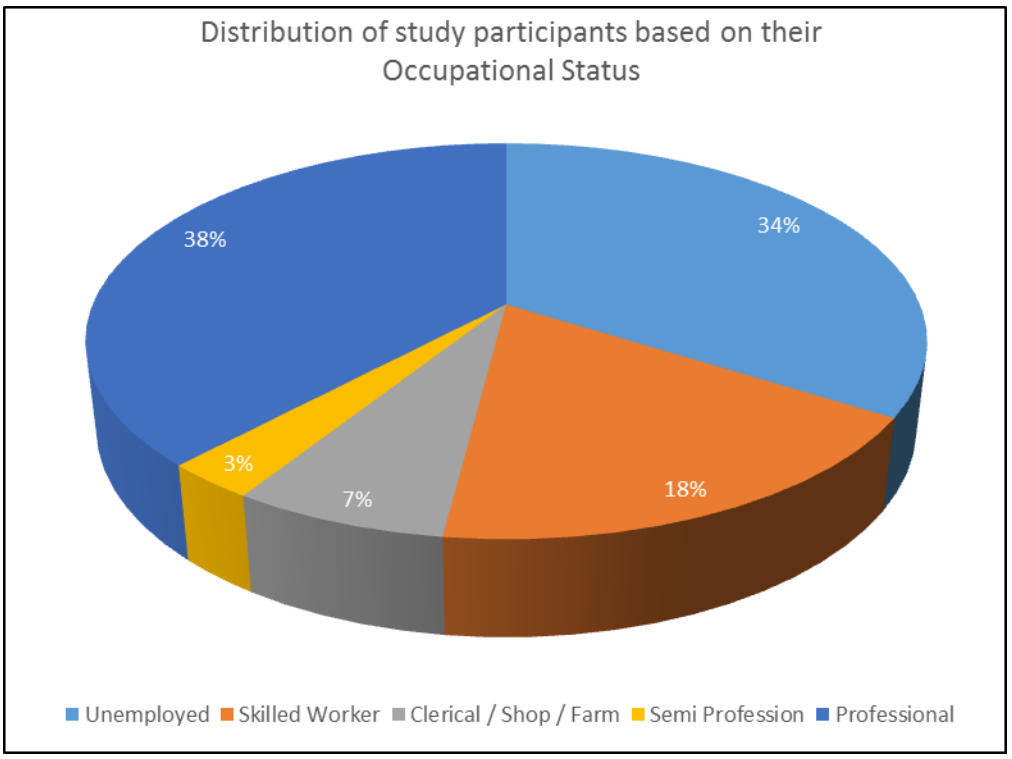

**Graph 1: Distribution of age among study participants.**




**Graph 2: Gender distribution among study participants.**




**Graph 3: Distribution of study participants based on their educational level.**




**Graph 4: Distribution of study participants based on their occupational status.**

## DISCUSSION

The holistic concept of health states that a person is healthy if he or she had the ability, to reach all of his or her vital goals, under the given standard circumstances. Standard circumstances should not be demented with normal circumstances, rather they relate to a cultural norm. For instance, a person is considered to be periodontally healthy regardless of the stable gingival recession, as long as he can chew effectively without pain, and is not expressing an esthetic concern.

In periodontology, many classifications of the disease have been presented over the years, and they share a common application of the natural health concept and thus, define periodontal health as the absence of any clinical signs of current or past disease. The American Academy of Periodontology (AAP) has defined health as "The condition of a patient when there is a function without evidence of disease or abnormality" (AAP 2001). This definition determines the absence of signs and symptoms of gingival and destructive periodontal diseases or any tissue status outside the normal range. As a result, this idealistic requirement of a pristine periodontium makes us all diseased in one way or another.[14]

The majority of people are unaware of the association between periodontal health and systemic health. Therefore, periodontal health has mostly persisted as a disregarded and

veiled social problem. A significant amount of importance is presently being given to the prevention of diseases rather than the treatment aspect. So, proper knowledge of preventive oral health and proper oral hygiene practice becomes the essential way for maintaining good dentition. A survey was conducted to understand the status of awareness in a particular section of society considered to have better knowledge and awareness than the general population. This survey was initiated with the key focus to determine the oral health awareness levels among the engineering, medical, and Ayurveda students in Dakshina Kannada District. The study concluded with the lack of understanding and limited knowledge on the oral hygiene practices seen among the health professionals and engineering students.[15]

The 11- item questionnaire was easy to understand, proven by the absence of non-response, and was also useful in determining the patient's capability to self-assess their oral health. The mean age of the total sample was 31.06 years (age range of 18-40 years). In this study, patients of a similar age group were considered to eliminate bias. Very young and old patients were avoided since the possibility of periodontitis occurring in young patients is rare and its occurrence in older individuals is very common.

In the present study, the female patients utilized the dental service more than the male counterpart, which was in accordance with the study by Helsinki et al.[16] It has also been evaluated that more of the educated patients availed the dental treatment which shows that education plays an important role in oral health awareness which was in contrary to the study by Dayakar et al.[15]

In this study, it was revealed that 38% of the individuals used interdental aids after brushing their teeth, which was found to be in accordance with the study conducted by Jamjoom et al. in Saudi Arabia.[17]

58% of the study population noticed that there was no bleeding in their gums which was contrary to the study conducted by Kaira et al. wherein most of the subjects noticed (86.4%) bleeding from gums and a majority of them (96%) knew that gum bleeding meant inflamed gums.[18]

About 73.5% of the participants gave a positive response to the questions that assess the attitude of the participants. The question "Do you think you have gum disease?" was found to

be statistically significant (P<0.04) compared to the other questions which were not statistically significant. To the former question, 14% of males and 30% of females gave a positive response. This was found to correlate with a study conducted by Khalid Gufran et al. in 2020.[19]

This study was conducted to assess the knowledge and attitude of the patients on their oral health during their first visit to the periodontist. There are two methods of assessing the patient's periodontal health status, one diagnosing the patient clinically and giving a questionnaire. Some patients feel nervous to undergo a clinical examination and also feel embarrassed about their oral status and oral cleanliness.[20] Constanza Saka-Herrán in 2018 found that the self-reported questionnaire had a useful discriminative capability of identifying individuals with periodontitis.[21] Thus, self-reporting of periodontal health status has shown to be a valid method in assessing the patient's oral hygiene and accepted by many people than undergo a clinical examination.

This study has shown to be advantageous to both clinicians as well as patients. As most of the participants in the study were visiting the dentist for the first time, evaluating the periodontal changes that they have noticed during the course of time gave us an insight into their knowledge and awareness about oral and periodontal health. Thus, we can evaluate the patient based on their responses to the questionnaire and educate them in the areas of lacunae. Even the patients can evaluate and gain knowledge from the questionnaire thus acquiring a positive attitude towards maintaining their periodontal health.

This study has been shown to improve patients' knowledge and attitude towards maintaining periodontal health and has been proven from the interest in which the patients asked questions on the various ways to improve their periodontal health condition and on the various treatment methods available. The limitation of the study was that no clinical evaluation was done to examine the reliability of the responses given by the patient.

## CONCLUSION

Many researchers have shown that self-reported questionnaires have excellent predictive and discriminative validity. Thus, from this study, it can be concluded that though the patients are aware of the maintenance of oral hygiene by visiting the dentist regularly every 6 months, they are not aware of the signs of gingivitis. There was a statistically significant difference seen in the distribution of responses to the study questionnaire.

**REFERENCES**


1. Lang NP, Bartold PM. Periodontal health. Journal of periodontology, Jun, 2018; 89: S9-16.
2. Yap AU. Oral health equals total health: A brief review. Journal of Dentistry Indonesia, 2017; 24(2): 59-62.
3. Grewal N, Kaur M. Status of oral health awareness in Indian children as compared to Western children: A thought provoking situation (a pilot study). Journal of Indian Society of Pedodontics and Preventive Dentistry, Jan 1, 2007; 25(1): 15.
4. Shekar BC, Reddy CV, Manjunath BC, Suma S. Dental health awareness, attitude, oral health-related habits, and behaviors in relation to socio-economic factors among the municipal employees of Mysore city. Annals of Tropical Medicine and Public Health, Jul 1, 2011; 4(2): 99.
5. Wehmeyer MM, Corwin CL, Guthmiller JM, Lee JY. The impact of oral health literacy on periodontal health status. Journal of public health dentistry, Jan, 2014; 74(1): 80-7.
6. Al-Zarea BK. Oral health knowledge of periodontal disease among university students. International journal of dentistry, 2013 Jan 1.
7. Croxson LJ. Periodontal awareness: the key to periodontal health. International dental journal, Apr, 1993; 43(2,1): 167-77.
8. Jain N, Mitra D, Ashok KP, Dundappa J, Soni S, Ahmed S. Oral hygiene-awareness and practice among patients attending OPD at Vyas Dental College and Hospital, Jodhpur. Journal of Indian Society of Periodontology, Oct, 2012; 16(4): 524.
9. Watt RG, Marinho VC. Does oral health promotion improve oral hygiene and gingival health?. Periodontology 2000, Feb, 2005; 37(1): 35-47.
10. Beltrán ED, Malvitz DM, Eklund SA. Validity of two methods for assessing oral health status of populations. Journal of public health dentistry, Dec., 1997; 57(4): 206-14.
11. Sjöström O, Holst D, Lind SO. Validity of a questionnaire survey: the role of non-response and incorrect answers. Acta Odontologica Scandinavica, Jan 1, 1999; 57(5): 242-6.
12. Taani DQ. Periodontal awareness and knowledge, and pattern of dental attendance among adults in Jordan. International dental journal, Apr, 2002; 52(2): 94-8.
13. Buhlin K, Gustafsson A, Andersson K, Håkansson J, Klinge B. Validity and limitations of self-reported periodontal health. Community dentistry and oral epidemiology, Dec, 2002; 30(6): 431-7.

14. Mariotti A, Hefti AF. Defining periodontal health. BMC oral health, Dec, 2015; 15(1): 1-8.
15. Dayakar MM, Kumar J, Pai GP, Shivananda H, Rekha R. A survey about awareness of periodontal health among the students of professional colleges in Dakshina Kannada District. Journal of Indian society of Periodontology, Jan, 2016; 20(1): 67.
16. Venta I, Murtomma H, Meumrman J, Turtola L. Use of dental services by students of Helsinki University during six years. *Proc Finn Dent Soc.,* 1992; 88: 123–9.
17. Jamjoom HM. Preventive Oral Health Knowledge and Practice in Jeddah, Saudi Arabia. *J KAU Med Sci.,* 2001; 9: 17–25.
18. Kaira LS, Srisvastava V, Giri P, Chopra D. Oral health related knowledge, attitude and practice among nursing students of rohilkhand medical college and hospital: A questionnaire study. J Orofac Res., 2012; 2: 20-3.
19. Gufran K, Alasqah M, Almalki S, Alkhaibari Y, Alghamdi Y, Aljulify TZ. Validation of self-reported periodontal disease status among subjects seeking dental treatment in a dental school. Journal of Pharmacy & Bioallied Sciences, Aug, 2020; 12(1): S550.
20. Gilbert AD, Nuttall NM. Self-reporting of periodontal health status. British dental journal, Mar, 1999; 186(5): 241-4.
21. Saka-Herrán C, Jané-Salas E, González-Navarro B, Estrugo-Devesa A, López-López J. Validity of a self-reported questionnaire for periodontitis in a Spanish population. Journal of periodontology, Aug, 2020; 91(8): 1027-38.