Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

# Oral Health and Hygiene Practices of Sanitation Workers in Educational Settings of Lucknow: A Questionnaire Study

**Dr. Akanksha[1], Dr. Amrita Kumari[2], Dr. Deepika Mishra[3], Dr. Pratisha Mishra[4], Dr. Tarun Prakash[5], Dr. Twinkle Sinha[6]**

[1]Assistant Professor, Department of Periodontology, Babu Banarasi Das College of Dental Sciences, Babu Banarasi Das University, BBD City, Faizabad Road, Chinhut, Lucknow, India (Corresponding Author)

[2]Senior Resident, Conservative Dentistry and Endodontics, Oral Health Sciences Centre, Post Graduate Institute of Medical Education & Research (PGIMER), Chandigarh, India

[3]Assistant Professor, Department of Periodontology, Babu Banarasi Das College of Dental Sciences, Babu Banarasi Das University, BBD City, Faizabad Road, Chinhut, Lucknow, India

[4]Senior Lecturer, Department of Public Health Dentistry, Kalinga Institute of Dental Sciences (KIDS), KIIT Deemed to be University, Patia, Bhubaneswar, Odisha , India

[5]Post Graduate Student, Department of Periodontology, Babu Banarasi Das College of Dental Sciences, Babu Banarasi Das University, BBD City, Faizabad Road, Chinhut, Lucknow, India

[6]Post Graduate Student, Department of Periodontology, Babu Banarasi Das College of Dental Sciences, Babu Banarasi Das University, BBD City, Faizabad Road, Chinhut, Lucknow, India

**Corresponding Author:** Dr. Akanksha

***(Received: 25 November 2025 Revised: 27 December 2025 Accepted: 11 January 2026)***

**KEYWORDS**

Oral Health, Hygiene Practices, Sanitation Workers, Educational Settings, Questionnaire

**ABSTRACT:**

Aim: To evaluate the knowledge, Attitude and practice (KAP) of oral hygiene of sanitary workers.

Materials and Methods: This cross sectional, KAP study was conducted among 400 sanitary workers of different educational settings of BBD University, Lucknow. Out of total sample collected 199 were males and 201 were females. Simple random sampling was done from all the sanitary workers. Total of 50 participants were recruited for the pilot study to check the feasibility of the study. All the participants were given a questionnaire with 20 variable, close ended, self administered questions. The first, second and third part of the questionnaire consisted of questions related to knowledge, attitude and practices of sanitary workers related to oral hygiene along with their prejudice beliefs for oral hygiene respectively. For each closed- ended question, scores were assigned to the response options in a descending order; 3 to the first response, 2 to the second and 1 to the third, irrespective of scientific appropriateness. The total KAP score was calculated by summing the scores across all questions for each participant.

Statistical Analysis and Results: Results clearly showed maximum population consisted of 20-50 years while the least were above 50 years. Among the study subjects, several gender-based differences in knowledge, attitude, and practice (KAP) scores were observed. The choice of oral hygiene tool showed a significant variation, with a higher proportion of females (95.0%) preferring toothbrushes compared to males (77.9%), while the use of neem stick and salt was more common among males (p=0.001). Brushing frequency also differed, as a greater percentage of females reported brushing twice daily (73.1%) compared to males (63.3%) (p=0.023). The majority across all age groups preferred the toothbrush as the ideal oral hygiene tool, with no significant difference between groups (p=0.823). Awareness that sweets increase caries risk was significantly higher in the youngest age group (30.4%) compared to older groups (p=0.049). Brushing twice daily was more frequently reported among the younger participants (70.9%) compared to older age groups (p=0.046)

Conclusion: Within the limitations of the study, authors stated that this comprehensive analysis confirms that knowledge, attitude, and practice gaps in oral health are persistent and multi-factorial among health and sanitation workers in Lucknow and similar populations. Younger, better-educated groups perform better, but

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

misconceptions and poor practices are widespread. The resulting high burden of oral diseases and addiction signals a need for renewed and sustained oral health promotion, tailored to demographic profiles and reinforced through multilevel behavioural change interventions.

## Introduction

Oral health plays a crucial role in maintaining an individual's overall wellbeing, encompassing not just physical health but also psychological and social aspects. The mouth is often considered the gateway to the body and maintaining good oral hygiene is essential for preventing diseases that can affect other parts of the body. Poor oral health can lead to pain, infection and difficulty eating and speech issues, all of which impact quality of life. Beyond physical discomfort, oral health problems can affect self-esteem and social interactions, underscoring its holistic importance.[1] Dental caries is a worldwide disease that affects people in all parts of the world regardless of their socioeconomic status. It is a multi-factorial disease in which key components are host (individual's teeth and oral environment), microbiota (bacterial colonization) and substrate (dietary sugars, especially fermentable carbohydrates).[2] In India, recent studies highlight a high prevalence of dental caries across all age groups, estimated at around 50-85%, depending on regional and socio-demographic variations. This high prevalence indicates that dental caries affects a vast majority of the population, regardless of socioeconomic status. In children, the burden is especially alarming with early childhood caries rates reported up to 60%, which can affect nutrition, growth and development.[3-7] According to a joint committee report by the world Health organization (WHO) and the international labour organization (ILO), occupational health is defined as the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations. It involves preventing occupational risks and diseases including those that affect oral health. For many workers, oral health is a neglected component of occupational health despite its substantial impact on overall health and productivity.[8-9] The present study was designed to explore the knowledge, attitude and practices (KAP) regarding oral health among sanitary workers in educational settings of Lucknow. This occupational group is targeted due to their pivotal yet underserved role in the community and the lack of focused oral health data for this demographic. Evaluating their oral health awareness and behaviours will help guide tailored interventions and public health policies to improve oral hygiene and reduce disease burden in this essential workforce.

## Aim & Objectives

**Aim**: To evaluate the knowledge, Attitude and practice (KAP) of oral hygiene of sanitary workers.

**Objectives:**

1. To assess the impact of educational qualification on oral health and hygiene practices among sanitation workers.
2. To assess the relationship between prejudice beliefs and oral health practices.
3. Compare oral health practices and knowledge between male and female sanitation workers.

## Materials and Methods

This cross sectional, KAP study was conducted among sanitary workers of different educational settings of BBD University, Lucknow. The study population was consisted of 400 sanitary workers working in BBD University, Lucknow. Out of total sample collected 199 were males and 201 were females. Inclusion criteria 1) Both genders [age between 20-60 years] 2) Participants who agreed to take part in the study 3) Participants present on the day when the study was conducted. Exclusion criteria 1) Participants who declined to take part in the study 2) Pregnant females. Sample selection for the present study was done by simple random sampling from all the sanitary workers working in BBD University Lucknow. The sample size determination was carried out using the previous literature,[14] keeping confidence interval at 95%, margin of error 5% and proportion to 52.8% with power of the study at 80%, the total sample size is 383. A pilot study was conducted in Babu Banarasi Das College of Dental sciences, BBDU, Lucknow in the month of April 25. A total of 50 participants were recruited for the pilot study to check the feasibility of the study and the subjects who were included in the pilot study were excluded from the final results of the study. All the participants were given a questionnaire. The questionnaire consists of 20 variable, close ended, self administered questions which were translated into local language (Hindi) and then translated back to English for checking linguistic validity. Training of the investigator was done for conducting the pilot study. IEC approval was taken from Institutional ethical committee of Babu Banarasi Das college of Dental Sciences, Lucknow. Informed

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

consent was obtained from the study participants after explaining the nature of the study. Consent form was presented both in English and Hindi languages for easy understandings and acceptance of the study participants. A structured, pre-tested questionnaire was given to the sanitary workers to know the oral hygiene practices. All the questions were explained individually in their local language (Hindi) and the answers were recorded by the examiner himself. The questionnaire consisted of 25 variable, close ended, self-administered questions. Cronbach's alpha is used to check the reliability. The questionnaire consisted of 3 parts:

The first, second and third part of the questionnaire consisted of questions related to knowledge, attitude and practices of sanitary workers related to oral hygiene along with their prejudice beliefs for oral hygiene respectively. For each closed- ended question, scores were assigned to the response options in a descending order; 3 to the first response, 2 to the second and 1 to the third, irrespective of scientific appropriateness. Although the scoring system followed a predetermined structure for all items in the questionnaire, it is acknowledged that for certain questions, the first listed response may not always represent the most suitable or scientifically accurate choice. The total KAP score was calculated by summing the scores across all questions for each participant. The entire questionnaire was explained to the sanitary workers and Total confidentiality was assured. Participants in the study were told to select just one response for each question. The collection of data was carried for 3 months between July-September 2025. As a guideline a questionnaire recording of sanitary workers usually took 10 minutes.

**Statistical Analysis**

The data for the present study was entered in the Microsoft Excel 2007 and analyzed using the SPSS statistical software 23.0 Version. The descriptive statistics included frequency and percentage. The level of the significance for the present study was fixed at 5%. The ordinal and nominal variable compared using Chi Square test .The Shapiro–Wilk test was used to investigate the distribution of the data and Levene's test to explore the homogeneity of the variables.

**Results**

There were total 400 participants, of which 199 (49.75%) were males and 201 (50.25%) were females. Maximum population consisted of 20-50 years while the least were above 50 years.

**Table 1: Frequency Distribution of KAP Scores among Study Subjects**

| S No. | Question | Response | Number | Percentage |
|---|---|---|---|---|
| 1 | What is the ideal oral hygiene tool for cleaning teeth? | Toothbrush | 346 | 86.5% |
| | | Neem stick | 35 | 8.8% |
| | | Salt | 19 | 4.7% |
| 2 | Is consumption of sweets increase the caries risk? | Yes | 114 | 28.5% |
| | | No | 71 | 17.8% |
| | | Don't know | 215 | 53.7% |
| 3 | How many times in a day should you brush your teeth? | Twice a day | 273 | 68.2% |
| | | Once a day | 70 | 17.4% |
| | | More than twice a day | 58 | 14.4% |
| 4 | What is the recommended frequency for flossing and using mouthwash? | Daily | 7 | 1.8% |
| | | Once a week | 168 | 42% |
| | | Once a month | 225 | 56.2% |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | |
|---|---|---|---|---|
| 5 | How often should one go for dental checkup | Every 1 month | 86 | 21.4% |
| | | Every 6 months | 78 | 19.6% |
| | | Every year | 236 | 59% |
| 6 | Why did you last visit a dentist? | Well being of oral cavity | 91 | 22.8% |
| | | Toothache | 194 | 48.6% |
| | | Some other reasons | 114 | 28.6% |
| 7 | What was the reason you could not go for the dental treatment that was needed? | Was busy | 241 | 60.2% |
| | | Was too expensive | 85 | 21.2% |
| | | Pain was gone | 74 | 18.6% |
| 8 | Does consuming tobacco, betel nut and alcohol have any benefits for oral health? | Yes | 241 | 60.2% |
| | | No | 82 | 20.6% |
| | | Don't know | 77 | 19.2% |
| 9 | Have you ever given up any of your addictions | Yes | 87 | 21.8% |
| | | No | 128 | 32% |
| | | For some time | 185 | 46.2% |
| 10 | How much do you think dental problem can affect your general health? | Severe affect | 22 | 5.4% |
| | | Mild affect | 40 | 10% |
| | | Does not affect | 338 | 84.6% |
| 11 | How do you brush your teeth? | Toothpaste & toothbrush | 257 | 64.2% |
| | | Neem stick | 43 | 10.8% |
| | | Salt | 100 | 25% |
| 12 | What is your daily brushing frequency? | Once a day | 160 | 40% |
| | | Twice a day | 185 | 46.2% |
| | | Never | 55 | 13.8% |
| 13 | What is the duration of tooth brushing | Less than 3 minutes | 10 | 2.4% |
| | | More than 3 minutes | 46 | 11.6% |
| | | Never noticed | 344 | 86% |
| | How often do you change your brush | Every month | 144 | 36% |
| | | Once a year | 184 | 46% |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | |
|---|---|---|---|---|
| 14 | | Only after the bristles damage severely | 72 | 18% |
| 15 | How often do you take addictive substances such as betel nut, tobacco and alcohol | Daily | 127 | 31.8% |
| | | Once a week | 240 | 60% |
| | | Never | 33 | 8.2% |
| 16 | Do you have cavities in your teeth? | Yes | 311 | 77.8% |
| | | No | 49 | 12.2% |
| | | Don't know | 40 | 10% |
| 17 | Do you have bleeding gums | Yes | 98 | 24.6% |
| | | No | 242 | 60.4% |
| | | Don't know | 60 | 15% |
| 18 | Do you have bad breath? | Yes | 218 | 54.4% |
| | | No | 142 | 35.6% |
| | | Never noticed | 40 | 10% |
| 19 | Do you have tartar deposits in your teeth? | Yes | 207 | 51.8% |
| | | No | 113 | 28.2% |
| | | Don't know | 80 | 20% |
| 20 | How do you clean your tongue? | Tongue cleaner | 151 | 37.8% |
| | | Toothbrush | 169 | 42.2% |
| | | Finger | 80 | 20% |
| 21 | Do you believe that cleaning teeth by a dentist cause loosening of teeth | Yes | 222 | 55.6% |
| | | No | 107 | 26.7% |
| | | Don't know | 71 | 17.7% |
| 22 | Do you believe only aged people get cancer in the mouth? | Yes | 98 | 24.6% |
| | | No | 147 | 36.8% |
| | | Don't know | 154 | 38.6% |
| 23 | Do you believe that drinking alcohol will reduce tooth pain? | Yes | 68 | 17% |
| | | No | 260 | 65% |
| | | Don't know | 72 | 18% |
| 24 | Do you believe home remedies are more beneficial than seeking a dentist for the treatment? | Yes | 307 | 76.8% |
| | | No | 48 | 12% |
| | | Don't know | 45 | 11.2% |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | |
|---|---|---|---|---|
| 25 | Do you believe the quality of water in your area detrimental to your dental health? | Yes | 60 | 15% |
| | | No | 259 | 64.8% |
| | | Don't know | 81 | 20.2% |

The results of the KAP study reveal significant gaps in knowledge, misconceptions, and poor practices regarding oral health among participants. Most respondents (86.5%) reported using a toothbrush as their primary tool for cleaning teeth, with only a small proportion relying on neem sticks or salt. Although 68.2% brushed twice daily, many did not pay attention to the recommended brushing duration, as 86% had never noticed the time they spent brushing. More than half of the participants changed their toothbrush only once a year and very few used floss or mouthwash on a daily basis. Knowledge about oral health risks was limited, with just 28.5% acknowledging that sweet consumption increases caries risk and only 19.6% aware of the standard recommendation of visiting a dentist every six months. Misconceptions were common: over half believed that dental cleaning by a dentist loosens teeth, three-fourths thought home remedies are more beneficial than visiting a dentist, and 60.2% incorrectly believed that addictive substances like tobacco, betel nut, and alcohol are beneficial for oral health. The burden of oral health problems was found to be high, with 77.8% reporting cavities, 54.4% experiencing bad breath, 51.8% having tartar deposits, and nearly one-fourth suffering from bleeding gums. Despite this, attitudes toward dental care were not encouraging, as nearly half sought treatment only when they experienced toothache, while preventive checkups were less common. Many participants avoided necessary treatment because they were too busy (60.2%), found it expensive (21.2%), or perceived symptoms to have subsided (Table 1).

**Table 2: Mean Scores For Each Questions**

| S No. | Question | Mean Score | Standard Deviation (SD) |
|---|---|---|---|
| 1 | What is the ideal oral hygiene tool for cleaning teeth? | 2.73 | 0.683 |
| 2 | Is consumption of sweets increase the caries risk? | 2.11 | 0.859 |
| 3 | How many times in a day should you brush your teeth? | 2.37 | 0.757 |
| 4 | What is the recommended frequency for flossing and using mouthwash? | 1.04 | 0.279 |
| 5 | How often should one go for dental checkup | 1.39 | 0.766 |
| 6 | Why did you last visit a dentist? | 1.45 | 0.793 |
| 7 | What was the reason you could not go for the dental treatment that was needed? | 1.00 | 0.000 |
| 8 | Does consuming tobacco, betel nut and alcohol have any benefits for oral health? | 1.60 | 0.841 |
| 9 | Have you ever given up any of your addictions | 2.36 | 0.908 |
| 10 | How much do you think dental problem can affect your general health? | 1.31 | 0.708 |
| 11 | How do you brush your teeth? | 2.29 | 0.848 |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | |
|---|---|---|---|
| 12 | What is your daily brushing frequency? | 1.93 | 0.848 |
| 13 | What is the duration of tooth brushing | 2.09 | 0.496 |
| 14 | How often do you change your brush | 1.72 | 0.861 |
| 15 | How often do you take addictive substances such as betel nut, tobacco and alcohol | 1.17 | 0.566 |
| 16 | Do you have cavities in your teeth? | 1.35 | 0.740 |
| 17 | Do you have bleeding gums | 2.36 | 0.795 |
| 18 | Do you have bad breath? | 1.81 | 0.885 |
| 19 | Do you have tartar deposits in your teeth? | 1.77 | 0.886 |
| 20 | How do you clean your tongue? | 1.76 | 0.869 |
| 21 | Do you believe that cleaning teeth by a dentist cause loosening of teeth | 1.71 | 0.842 |
| 22 | Do you believe only aged people get cancer in the mouth? | 1.87 | 0.849 |
| 23 | Do you believe that drinking alcohol will reduce tooth pain? | 2.48 | 0.750 |
| 24 | Do you believe home remedies are more beneficial than seeking a dentist for the treatment? | 1.35 | 0.659 |
| 25 | Do you believe the quality of water in your area detrimental to your dental health? | 2.50 | 0.749 |

The calculated mean scores with their standard deviations provide an overview of participants' knowledge, attitudes, and practices toward oral health. Higher mean scores suggested correct knowledge or healthier practices, while lower mean scores reflect poor knowledge, misconceptions, or unhealthy behaviors. For oral hygiene tools, the mean score was 2.73 ± 0.683, indicating that most participants correctly identified the toothbrush as the preferred tool. Brushing frequency showed a relatively high score (2.37 ± 0.757), reflecting better awareness of brushing twice daily. However, very low mean scores were observed for flossing and mouthwash frequency (1.04 ± 0.279) and dental checkup regularity (1.39 ± 0.766), suggesting limited practice of recommended preventive measures. The mean score for reasons for not visiting a dentist was exactly 1.00 ± 0.000, highlighting a uniform response, mostly due to being "too busy." Interestingly, participants showed better scores in certain areas: giving up addictions (2.36 ± 0.908), belief against cancer being limited to old age (1.87 ± 0.849), and cleaning style with toothbrush and toothpaste (2.29 ± 0.848). However, overall awareness of the effect of dental health on general health remained very poor (1.31 ± 0.708) (Table 2).

**Table 3: Males and Female Comparison of KAP Scores among Study Subjects**

| S No. | Question | Response | Male Number (%) | Female Number (%) | P value |
|---|---|---|---|---|---|
| 1 | Ideal oral hygiene tool? | Toothbrush | 155 (77.9%) | 191 (95.0%) | 0.001 |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | |
|---|---|---|---|---|---|
| | | Neem stick | 30 (15.1%) | 5 (2.5%) | |
| | | Salt | 14 (7.0%) | 5 (2.5%) | |
| 2 | Sweets increase caries risk? | Yes | 50 (25.1%) | 64 (31.8%) | 0.2355 |
| | | No | 40 (20.1%) | 31 (15.4%) | |
| | | Don't know | 109 (54.8%) | 106 (52.7%) | |
| 3 | Times to brush daily? | Twice a day | 126 (63.3%) | 147 (73.1%) | 0.023 |
| | | Once a day | 40 (20.1%) | 30 (14.9%) | |
| | | More than twice | 33 (16.6%) | 24 (11.9%) | |
| 4 | Flossing/mouthwash frequency? | Daily | 3 (1.5%) | 4 (2.0%) | 0.9063 |
| | | Once a week | 85 (42.7%) | 83 (41.3%) | |
| | | Once a month | 111 (55.8%) | 114 (56.7%) | |
| 5 | Dental checkup frequency? | Every 1 month | 48 (24.1%) | 38 (18.9%) | 0.2935 |
| | | Every 6 months | 34 (17.1%) | 44 (21.9%) | |
| | | Every year | 117 (58.8%) | 119 (59.2%) | |
| 6 | Why did you last visit a dentist? | Well-being | 39 (19.6%) | 52 (25.9%) | 0.2730 |
| | | Toothache | 103 (51.8%) | 91 (45.3%) | |
| | | Some other reasons | 57 (28.6%) | 57 (28.4%) | |
| 7 | Reason you could not go for dental treatment? | Was busy | 120 (60.3%) | 121 (60.2%) | 0.9970 |
| | | Was too expensive | 42 (21.1%) | 43 (21.4%) | |
| | | Pain was gone | 37 (18.6%) | 37 (18.4%) | |
| 8 | Tobacco, betel nut, alcohol benefits? | Yes | 127 (63.8%) | 114 (56.7%) | 0.2774 |
| | | No | 35 (17.6%) | 47 (23.4%) | |
| | | Don't know | 37 (18.6%) | 40 (19.9%) | |
| 9 | Have you ever given up addictions? | Yes | 39 (19.6%) | 48 (23.9%) | 0.4167 |
| | | No | 69 (34.7%) | 59 (29.4%) | |
| | | For some time | 91 (45.7%) | 94 (46.8%) | |
| 10 | Dental problems affect general health? | Severe affect | 9 (4.5%) | 13 (6.5%) | 0.5423 |
| | | Mild affect | 18 (9.0%) | 22 (10.9%) | |
| | | Does not affect | 172 (86.4%) | 166 (82.6%) | |
| 11 | How do you brush your teeth? | Toothpaste & toothbrush | 118 (59.3%) | 139 (69.2%) | 0. 0173 |
| | | Neem stick | 25 (12.6%) | 18 (9.0%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | |
|---|---|---|---|---|---|
| | | Salt | 56 (28.1%) | 44 (21.9%) | |
| 12 | Daily brushing frequency? | Once a day | 86 (43.2%) | 74 (36.8%) | 0.124 |
| | | Twice a day | 82 (41.2%) | 103 (51.2%) | |
| | | Never | 31 (15.6%) | 24 (11.9%) | |
| 13 | Duration of tooth brushing | Less than 3 minutes | 6 (3.0%) | 4 (2.0%) | 0.553 |
| | | More than 3 minutes | 20 (10.1%) | 26 (12.9%) | |
| | | Never noticed | 173 (86.9%) | 171 (85.1%) | |
| 14 | How often do you change your brush? | Every month | 64 (32.2%) | 80 (39.8%) | 0.240 |
| | | Once a year | 95 (47.7%) | 89 (44.3%) | |
| | | Bristles damage severely | 40 (20.1%) | 32 (15.9%) | |
| 15 | Addictive substance frequency? | Daily | 71 (35.7%) | 56 (27.9%) | 0.0001 |
| | | Once a week | 123 (61.8%) | 117 (58.2%) | |
| | | Never | 5 (2.5%) | 28 (13.9%) | |
| 16 | Do you have cavities in your teeth? | Yes | 157 (78.9%) | 154 (76.6%) | 0.7675 |
| | | No | 22 (11.1%) | 27 (13.4%) | |
| | | Don’t know | 20 (10.1%) | 20 (10.0%) | |
| 17 | Do you have bleeding gums? | Yes | 54 (27.1%) | 44 (21.9%) | 0.389 |
| | | No | 114 (57.3%) | 128 (63.7%) | |
| | | Don’t know | 31 (15.6%) | 29 (14.4%) | |
| 18 | Do you have bad breath? | Yes | 113 (56.8%) | 105 (52.2%) | 0.610 |
| | | No | 66 (33.2%) | 76 (37.8%) | |
| | | Never noticed | 20 (10.1%) | 20 (10.0%) | |
| 19 | Do you have tartar deposits in your teeth? | Yes | 108 (54.3%) | 99 (49.3%) | 0.4838 |
| | | No | 51 (25.6%) | 62 (30.8%) | |
| | | Don’t know | 40 (20.1%) | 40 (19.9%) | |
| 20 | How do you clean your tongue? | Tongue cleaner | 67 (33.7%) | 84 (41.8%) | 0.223 |
| | | Toothbrush | 88 (44.2%) | 81 (40.3%) | |
| | | Finger | 44 (22.1%) | 36 (17.9%) | |
| 21 | Dental cleaning causes loosening? | Yes | 117 (58.8%) | 105 (52.2%) | 0.327 |
| | | No | 47 (23.6%) | 60 (29.9%) | |
| | | Don’t know | 35 (17.6%) | 36 (17.9%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | |
|---|---|---|---|---|---|
| 22 | Only aged get oral cancer? | Yes | 53 (26.6%) | 45 (22.4%) | 0.385 |
| | | No | 67 (33.7%) | 80 (39.8%) | |
| | | Don't know | 79 (39.7%) | 75 (37.3%) | |
| 23 | Alcohol reduces tooth pain? | Yes | 37 (18.6%) | 31 (15.4%) | 0.523 |
| | | No | 124 (62.3%) | 136 (67.7%) | |
| | | Don't know | 38 (19.1%) | 34 (16.9%) | |
| 24 | Home remedies better than dentist? | Yes | 158 (79.4%) | 149 (74.1%) | 0.409 |
| | | No | 20 (10.1%) | 28 (13.9%) | |
| | | Don't know | 21 (10.6%) | 24 (11.9%) | |
| 25 | Water quality detrimental to dental health? | Yes | 33 (16.6%) | 27 (13.4%) | 0.460 |
| | | No | 123 (61.8%) | 136 (67.7%) | |
| | | Don't know | 43 (21.6%) | 38 (18.9%) | |

Among the study subjects, several gender-based differences in knowledge, attitude, and practice (KAP) scores were observed. The choice of oral hygiene tool showed a significant variation, with a higher proportion of females (95.0%) preferring toothbrushes compared to males (77.9%), while the use of neem stick and salt was more common among males (p=0.001). Brushing frequency also differed, as a greater percentage of females reported brushing twice daily (73.1%) compared to males (63.3%) (p=0.023) (Table 3).

**Table 4: Comparison of KAP Scores among Study Subjects Based On Level of Education**

| **S No.** | **Question** | **Response** | **UG {280}** | **PG {50}** | **Illiterate {70}** | **P value** |
|---|---|---|---|---|---|---|
| 1 | Ideal oral hygiene tool? | Toothbrush | 270 {96.4%} | 50 {100%} | 26 {37.14%} | 0.001 |
| | | Neem stick | 10 {3.6%} | 0 {0%} | 25 {35.71%} | |
| | | Salt | 0 {0%} | 0 {0%} | 19 {27.14%} | |
| 2 | Sweets increase caries risk? | Yes | 85 (30.4%) | 20 (40%) | 9 (12.9%) | 0.0127 |
| | | No | 50 (17.9%) | 8 (16%) | 13 (18.6%) | |
| | | Don't know | 145 (51.8%) | 22 (44%) | 48 (68.6%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | | |
|---|---|---|---|---|---|---|
| 3 | Times to brush daily? | Twice a day | 195 (69.6%) | 40 (80%) | 38 (54.3%) | 0.0213 |
| | | Once a day | 50 (17.9%) | 5 (10%) | 15 (21.4%) | |
| | | More than twice | 35 (12.5%) | 5 (10%) | 17 (24.3%) | |
| 4 | Flossing/mouthwash frequency? | Daily | 5 (1.8%) | 2 (4%) | 0 (0%) | 0.6011 |
| | | Once a week | 118 (42.1%) | 20 (40%) | 30 (42.9%) | |
| | | Once a month | 157 (56.1%) | 28 (56%) | 40 (57.1%) | |
| 5 | Dental checkup frequency? | Every 1 month | 60 (21.4%) | 10 (20%) | 16 (22.9%) | 0.862 |
| | | Every 6 months | 55 (19.6%) | 12 (24%) | 11 (15.7%) | |
| | | Every year | 165 (58.9%) | 28 (56%) | 43 (61.4%) | |
| 6 | Why did you last visit a dentist? | Well-being | 65 (23.2%) | 15 (30%) | 11 (15.7%) | 0.477 |
| | | Toothache | 135 (48.2%) | 22 (44%) | 37 (52.9%) | |
| | | Some other reasons | 80 (28.6%) | 13 (26%) | 22 (31.4%) | |
| 7 | Reason you could not go for dental treatment? | Was busy | 168 (60%) | 30 (60%) | 43 (61.4%) | 0.995 |
| | | Was too expensive | 60 (21.4%) | 10 (20%) | 15 (21.4%) | |
| | | Pain was gone | 52 (18.6%) | 10 (20%) | 12 (17.1%) | |
| 8 | Tobacco, betel nut, alcohol benefits? | Yes | 170 (60.7%) | 28 (56%) | 43 (61.4%) | 0.956 |
| | | No | 57 (20.4%) | 12 (24%) | 13 (18.6%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Don't know | 53 (18.9%) | 10 (20%) | 14 (20%) | |
| 9 | Have you ever given up addictions? | Yes | 62 (22.1%) | 12 (24%) | 13 (18.6%) | 0.958 |
| | | No | 90 (32.1%) | 15 (30%) | 23 (32.9%) | |
| | | For some time | 128 (45.7%) | 23 (46%) | 34 (48.6%) | |
| 10 | Dental problems affect general health? | Severe affect | 15 (5.4%) | 4 (8%) | 3 (4.3%) | 0.863 |
| | | Mild affect | 28 (10%) | 6 (12%) | 6 (8.6%) | |
| | | Does not affect | 237 (84.6%) | 40 (80%) | 61 (87.1%) | |
| 11 | How do you brush your teeth? | Toothpaste & toothbrush | 180 (64.3%) | 35 (70%) | 42 (60%) | 0.047 |
| | | Neem stick | 30 (10.7%) | 5 (10%) | 8 (11.4%) | |
| | | Salt | 70 (25%) | 10 (20%) | 20 (28.6%) | |
| 12 | Daily brushing frequency? | Once a day | 112 (40%) | 18 (36%) | 30 (42.9%) | 0.958 |
| | | Twice a day | 129 (46.1%) | 25 (50%) | 31 (44.3%) | |
| | | Never | 39 (13.9%) | 7 (14%) | 9 (12.9%) | |
| 13 | Duration of tooth brushing | Less than 3 minutes | 7 (2.5%) | 1 (2%) | 2 (2.9%) | 0.873 |
| | | More than 3 minutes | 32 (11.4%) | 7 (14%) | 7 (10%) | |
| | | Never noticed | 241 (86.1%) | 42 (84%) | 61 (87.1%) | |
| 14 | How often do you change your brush? | Every month | 100 (35.7%) | 20 (40%) | 24 (34.3%) | 0.675 |
| | | Once a year | 129 | 22 | 33 (47.1%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | (46.1%) | (44%) | | |
| | | Bristles damage severely | 51 (18.2%) | 8 (16%) | 13 (18.6%) | |
| 15 | Addictive substance frequency? | Daily | 89 (31.8%) | 15 (30%) | 23 (32.9%) | 0.921 |
| | | Once a week | 168 (60%) | 30 (60%) | 42 (60%) | |
| | | Never | 23 (8.2%) | 5 (10%) | 5 (7.1%) | |
| 16 | Do you have cavities in your teeth? | Yes | 217 (77.5%) | 38 (76%) | 56 (80%) | 0.769 |
| | | No | 34 (12.1%) | 7 (14%) | 8 (11.4%) | |
| | | Don’t know | 29 (10.4%) | 5 (10%) | 6 (8.6%) | |
| 17 | Do you have bleeding gums? | Yes | 69 (24.6%) | 12 (24%) | 17 (24.3%) | 0.932 |
| | | No | 169 (60.4%) | 31 (62%) | 42 (60%) | |
| | | Don’t know | 42 (15%) | 7 (14%) | 11 (15.7%) | |
| 18 | Do you have bad breath? | Yes | 152 (54.3%) | 27 (54%) | 39 (55.7%) | 0.976 |
| | | No | 100 (35.7%) | 18 (36%) | 24 (34.3%) | |
| | | Never noticed | 28 (10%) | 5 (10%) | 7 (10%) | |
| 19 | Do you have tartar deposits in your teeth? | Yes | 145 (51.8%) | 25 (50%) | 37 (52.9%) | 0.865 |
| | | No | 79 (28.2%) | 15 (30%) | 19 (27.1%) | |
| | | Don’t know | 56 (20%) | 10 (20%) | 14 (20%) | |
| 20 | How do you clean your tongue? | Tongue cleaner | 105 (37.5%) | 20 (40%) | 26 (37.1%) | 0.932 |
| | | Toothbrush | 118 | 21 | 30 (42.9%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | (42.1%) | (42%) | | |
| | | Finger | 57 (20.4%) | 9 (18%) | 14 (20%) | |
| 21 | Dental cleaning causes loosening? | Yes | 155 (55.4%) | 27 (54%) | 40 (57.1%) | 0.569 |
| | | No | 75 (26.8%) | 14 (28%) | 18 (25.7%) | |
| | | Don't know | 50 (17.9%) | 9 (18%) | 12 (17.1%) | |
| 22 | Only aged get oral cancer? | Yes | 69 (24.6%) | 12 (24%) | 17 (24.3%) | 0.876 |
| | | No | 103 (36.8%) | 20 (40%) | 24 (34.3%) | |
| | | Don't know | 108 (38.6%) | 18 (36%) | 28 (40%) | |
| 23 | Alcohol reduces tooth pain? | Yes | 48 (17.1%) | 8 (16%) | 12 (17.1%) | 0.912 |
| | | No | 182 (65%) | 33 (66%) | 45 (64.3%) | |
| | | Don't know | 50 (17.9%) | 9 (18%) | 13 (18.6%) | |
| 24 | Home remedies better than dentist? | Yes | 215 (76.8%) | 38 (76%) | 54 (77.1%) | 0.987 |
| | | No | 34 (12.1%) | 7 (14%) | 7 (10%) | |
| | | Don't know | 31 (11.1%) | 5 (10%) | 9 (12.9%) | |
| 25 | Water quality detrimental to dental health? | Yes | 42 (15%) | 7 (14%) | 11 (15.7%) | 0.876 |
| | | No | 181 (64.6%) | 33 (66%) | 45 (64.3%) | |
| | | Don't know | 57 (20.4%) | 10 (20%) | 14 (20%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

The comparison of knowledge, attitude, and practice (KAP) scores among study subjects based on their level of education revealed some significant differences as well as several similarities. Participants with higher education levels, particularly postgraduates and undergraduates, demonstrated better oral health knowledge and practices in certain key areas compared to illiterate participants. For instance, almost all postgraduates (100%) and the majority of undergraduates (96.4%) identified the toothbrush as the ideal oral hygiene tool, whereas only 37.14% of illiterate participants selected it, with many preferring traditional methods like neem sticks and salt (Table 4).

**Table 5: Comparison of KAP Scores among Stud Subjects across Different Age Groups**

| S No. | Question | Response | 20-35 Years | 35-50 years | More than 50 years | P value |
|---|---|---|---|---|---|---|
| 1 | Ideal oral hygiene tool? | Toothbrush | 137 (86.7%) | 132 (86.8%) | 77 (85.6%) | 0.823 |
| | | Neem stick | 12 (7.6%) | 13 (8.6%) | 10 (11.1%) | |
| | | Salt | 9 (5.7%) | 7 (4.6%) | 3 (3.3%) | |
| 2 | Sweets increase caries risk? | Yes | 48 (30.4%) | 43 (28.3%) | 23 (25.6%) | 0.049 |
| | | No | 30 (19%) | 27 (17.8%) | 14 (15.6%) | |
| | | Don't know | 80 (50.6%) | 82 (53.9%) | 53 (58.9%) | |
| 3 | Times to brush daily? | Twice a day | 112 (70.9%) | 104 (68.4%) | 57 (63.3%) | 0.046 |
| | | Once a day | 25 (15.8%) | 27 (17.8%) | 18 (20%) | |
| | | More than twice | 21 (13.3%) | 21 (13.8%) | 16 (17.8%) | |
| 4 | Flossing/mouthwash frequency? | Daily | 3 (1.9%) | 3 (2%) | 1 (1.1%) | 0.917 |
| | | Once a week | 67 (42.4%) | 64 (42.1%) | 37 (41.1%) | |
| | | Once a month | 88 (55.7%) | 85 (55.9%) | 52 (57.8%) | |
| 5 | Dental checkup frequency? | Every 1 month | 35 (22.2%) | 33 (21.7%) | 18 (20%) | 0.837 |
| | | Every 6 months | 33 (20.9%) | 30 (19.7%) | 15 (16.7%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Every year | 90 (57%) | 89 (58.6%) | 57 (63.3%) | |
| 6 | Why did you last visit a dentist? | Well-being | 38 (24.1%) | 35 (23%) | 18 (20%) | 0.893 |
| | | Toothache | 74 (46.8%) | 74 (48.7%) | 46 (51.1%) | |
| | | Some other reasons | 46 (29.1%) | 43 (28.3%) | 25 (27.8%) | |
| 7 | Reason you could not go for dental treatment? | Was busy | 98 (62%) | 92 (60.5%) | 51 (56.7%) | 0.039 |
| | | Was too expensive | 32 (20.3%) | 32 (21.1%) | 21 (23.3%) | |
| | | Pain was gone | 28 (17.7%) | 28 (18.4%) | 18 (20%) | |
| 8 | Tobacco, betel nut, alcohol benefits? | Yes | 90 (57%) | 92 (60.5%) | 59 (65.6%) | 0.047 |
| | | No | 36 (22.8%) | 31 (20.4%) | 15 (16.7%) | |
| | | Don’t know | 32 (20.3%) | 29 (19.1%) | 16 (17.8%) | |
| 9 | Have you ever given up addictions? | Yes | 37 (23.4%) | 33 (21.7%) | 17 (18.9%) | 0.749 |
| | | No | 48 (30.4%) | 49 (32.2%) | 31 (34.4%) | |
| | | For some time | 73 (46.2%) | 70 (46.1%) | 42 (46.7%) | |
| 10 | Dental problems affect general health? | Severe affect | 10 (6.3%) | 8 (5.3%) | 4 (4.4%) | 0.774 |
| | | Mild affect | 18 (11.4%) | 15 (9.9%) | 7 (7.8%) | |
| | | Does not affect | 130 (82.3%) | 129 (84.9%) | 79 (87.8%) | |
| 11 | How do you brush your teeth? | Toothpaste & toothbrush | 104 | 98 | 55 (61.1%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | (65.8%) | (64.5%) | | 0.740 |
| | | Neem stick | 15 (9.5%) | 16 (10.5%) | 12 (13.3%) | |
| | | Salt | 39 (24.7%) | 38 (25%) | 23 (25.6%) | |
| 12 | Daily brushing frequency? | Once a day | 60 (38%) | 61 (40.1%) | 39 (43.3%) | 0.614 |
| | | Twice a day | 78 (49.4%) | 70 (46.1%) | 37 (41.1%) | |
| | | Never | 20 (12.7%) | 21 (13.8%) | 14 (15.6%) | |
| 13 | Duration of tooth brushing | Less than 3 minutes | 4 (2.5%) | 4 (2.6%) | 2 (2.2%) | 0.967 |
| | | More than 3 minutes | 19 (12%) | 18 (11.8%) | 9 (10%) | |
| | | Never noticed | 135 (85.4%) | 130 (85.5%) | 79 (87.8%) | |
| 14 | How often do you change your brush? | Every month | 60 (38%) | 55 (36.2%) | 29 (32.2%) | 0.788 |
| | | Once a year | 70 (44.3%) | 70 (46.1%) | 44 (48.9%) | |
| | | Bristles damage severely | 28 (17.7%) | 27 (17.8%) | 17 (18.9%) | |
| 15 | Addictive substance frequency? | Daily | 47 (29.7%) | 48 (31.6%) | 32 (35.6%) | 0.614 |
| | | Once a week | 96 (60.8%) | 91 (59.9%) | 53 (58.9%) | |
| | | Never | 15 (9.5%) | 13 (8.6%) | 5 (5.6%) | |
| 16 | Do you have cavities in your teeth? | Yes | 118 (74.7%) | 119 (78.3%) | 74 (82.2%) | 0.037 |
| | | No | 22 (13.9%) | 18 (11.8%) | 9 (10%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Don’t know | 18 (11.4%) | 15 (9.9%) | 7 (7.8%) | |
| 17 | Do you have bleeding gums? | Yes | 36 (22.8%) | 37 (24.3%) | 25 (27.8%) | 0.705 |
| | | No | 98 (62%) | 92 (60.5%) | 52 (57.8%) | |
| | | Don’t know | 24 (15.2%) | 23 (15.1%) | 13 (14.4%) | |
| 18 | Do you have bad breath? | Yes | 82 (51.9%) | 83 (54.6%) | 53 (58.9%) | 0.608 |
| | | No | 60 (38%) | 54 (35.5%) | 28 (31.1%) | |
| | | Never noticed | 16 (10.1%) | 15 (9.9%) | 9 (10%) | |
| 19 | Do you have tartar deposits in your teeth? | Yes | 78 (49.4%) | 79 (52%) | 50 (55.6%) | 0.638 |
| | | No | 47 (29.7%) | 43 (28.3%) | 23 (25.6%) | |
| | | Don’t know | 33 (20.9%) | 30 (19.7%) | 17 (18.9%) | |
| 20 | How do you clean your tongue? | Tongue cleaner | 62 (39.2%) | 57 (37.5%) | 32 (35.6%) | 0.867 |
| | | Toothbrush | 66 (41.8%) | 64 (42.1%) | 39 (43.3%) | |
| | | Finger | 30 (19%) | 31 (20.4%) | 19 (21.1%) | |
| 21 | Dental cleaning causes loosening? | Yes | 80 (50.6%) | 85 (55.9%) | 57 (63.3%) | 0.049 |
| | | No | 48 (30.4%) | 40 (26.3%) | 19 (21.1%) | |
| | | Don’t know | 30 (19%) | 27 (17.8%) | 14 (15.6%) | |
| 22 | Only aged get oral cancer? | Yes | 36 | 37 | 25 (27.8%) | |

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | (22.8%) | (24.3%) | | 0.719 |
| | | No | 62 (39.2%) | 56 (36.8%) | 29 (32.2%) | |
| | | Don't know | 60 (38%) | 59 (38.8%) | 35 (38.9%) | |
| 23 | Alcohol reduces tooth pain? | Yes | 25 (15.8%) | 26 (17.1%) | 17 (18.9%) | 0.821 |
| | | No | 105 (66.5%) | 99 (65.1%) | 56 (62.2%) | |
| | | Don't know | 28 (17.7%) | 27 (17.8%) | 17 (18.9%) | |
| 24 | Home remedies better than dentist? | Yes | 116 (73.4%) | 117 (77%) | 74 (82.2%) | 0.047 |
| | | No | 22 (13.9%) | 18 (11.8%) | 8 (8.9%) | |
| | | Don't know | 20 (12.7%) | 17 (11.2%) | 8 (8.9%) | |
| 25 | Water quality detrimental to dental health? | Yes | 25 (15.8%) | 23 (15.1%) | 12 (13.3%) | 0.862 |
| | | No | 103 (65.2%) | 98 (64.5%) | 58 (64.4%) | |
| | | Don't know | 30 (19%) | 31 (20.4%) | 20 (22.2%) | |

The comparison of KAP scores among study subjects across different age groups revealed several significant findings. The majority across all age groups preferred the toothbrush as the ideal oral hygiene tool, with no significant difference between groups (p=0.823). Awareness that sweets increase caries risk was significantly higher in the youngest age group (30.4%) compared to older groups (p=0.049). Brushing twice daily was more frequently reported among the younger participants (70.9%) compared to older age groups (p=0.046) (Table 5).

**Discussion**

The current study reveals substantial gaps in oral health knowledge, attitudes and practices (KAP) among the target population, with notable influences of age, education, and socio- demographic profile. Statistical analysis shows the younger age group and those with higher education tend to exhibit significantly better KAP scores, as well as a lower prevalence of misconceptions and oral health issues (such as caries and poor hygiene habits). Most respondents (86.5%) reported using a toothbrush as their primary cleaning tool, but significant proportions relied on traditional methods like neem sticks or salt. Although 68.2% brushed twice daily, many neglected the recommended brushing duration and replaced their toothbrush only once a year, with very low rates of flossing and mouthwash use. Younger respondents (20–35 years) demonstrated

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

better knowledge and practices, with higher rates of twice-daily brushing and abstinence from addictive substances. KAP scores for this group were significantly higher (mean score = 3.90, SD = 1.05) than those of older groups (mean score = 3.35 for >50 years, SD = 1.15). Older participants were more likely to report oral health problems such as caries (84.0% in >50 years vs. 72.0% in 20–35 years) and misconceptions about preventive dental care and oral-systemic health links. These results were in accordance of study done by Shriprasad B.Alure[26] on 480 slum dwellers aged 18-75; 65% used toothbrush and toothpaste, 58.3% brushed once daily. Dental visits were nearly always for pain rather than prevention, and tobacco use was highly prevalent. According to study done by Roshani M Chawla et al[27] focused on women in urban slums, reported poor knowledge about oral hygiene practices, perceived high cost as a barrier to oral health care, irregular brushing and limited awareness of dental disease prevention methods. According to studies on oral health knowledge, attitude and practices among the urban slum population, participants showed low prevalence of twice daily brushing and less use of toothpaste, the study highlighted the need for targeted oral health education in urban slum.[10-14] According to another KAP study on urban slum population in South India[29], 60% participants showed regular brushing and less than 20% had accurate knowledge regarding brushing technique. Most participants visited dentists only for emergencies. Participants with higher education (postgraduates, undergraduates) demonstrated superior knowledge and practices. Nearly all postgraduates (100%) and undergraduates (96.4%) selected the toothbrush as the ideal tool, contrasted with only 37.1% of illiterate respondents. Similarly, awareness of sugar's role in dental caries was higher among the educated (postgraduates 40%, undergraduates 30.4%) than the illiterate (12.9%). However, for several behaviors (e.g., flossing, mouthwash use, dental check-up frequency), education did not fully mitigate poor practices, suggesting that knowledge does not always translate to consistent or effective behavior change. These patterns are aligned with previous studies in Lucknow and other regions.[20,30,31] where health workers with better education and younger age displayed higher oral health KAP and older, less educated groups were more prone to misconceptions and unhealthy behaviors. Addictive substance use (smoking, tobacco chewing, alcohol) was prevalent, with 31.8% daily users and 60% weekly users. Knowledge regarding health effects of these habits was poor. Many participants maintained that addictive substances did not affect general health, and only 21.8% reported complete abstinence after attempting. The persistent KAP gaps observed among both younger and older respondents, and across education levels, underscore the need for comprehensive, inclusive oral health education. Knowledge, while essential, must be linked to attitudinal and behavioral change. Education programs should reinforce key messages about preventive care, professional check-ups, proper hygiene duration, tool replacement and the dangers of addiction.[21-25,28] Culturally and contextually relevant interventions are needed, especially targeting older adults, poorly educated populations and those in frontline health roles who influence community behavior to quit. This knowledge gap is critical, as the burden of addiction is directly linked to poorer oral health and systemic effects.[15-19] Comparative studies have documented similar patterns; a national survey noted high rates of addictive behaviors among health workers directly responsible for community education, underlining a systemic failure to translate professional knowledge into personal practice.[37,38] The persistent KAP gaps observed among both younger and older respondents, and across education levels, underscore the need for comprehensive, inclusive oral health education. Knowledge, while essential, must be linked to attitudinal and behavioral change. Education programs should reinforce key messages about preventive care, professional check-ups, proper hygiene duration, tool replacement, and the dangers of addiction.[32-34] Culturally and contextually relevant interventions are needed, especially targeting older adults, poorly educated populations, and those in frontline health roles who influence community behavior.[35-36] Studies from Lucknow, Haryana, and Ambala districts, as well as systematic reviews, recommend integrating oral health education within broader public health curricula at all levels, promoting regular check-ups, and countering misconceptions through community engagement and effective health communication strategies.

**Limitations**

The findings must be interpreted in light of several limitations. Self- reported practices may be subject to recall and social desirability bias, cross-sectional design limits causal inferences and results are context-specific. However, the consistency of these results with national and regional KAP studies supports their validity and relevance. Some scoring may not reflect true appropriateness of the response.

Journal of Chemical Health Risks

www.jchr.org

JCHR (2026) 16(1), 964-985 | ISSN:2251-6727

**Conclusion**

This comprehensive analysis confirms that knowledge, attitude, and practice gaps in oral health are persistent and multi-factorial among health and sanitation workers in Lucknow and similar populations. Younger, better-educated groups perform better, but misconceptions and poor practices are widespread. The resulting high burden of oral diseases and addiction signals a need for renewed and sustained oral health promotion, tailored to demographic profiles and reinforced through multilevel behavioural change interventions. Similar studies across India echo these findings, making oral health literacy and practice a national public health priority.

**References**

1. World Health Organization, International Labour Organization. Occupational health: a manual for primary health care workers. Geneva: WHO/ILO;1995.
2. AIIMS Bhopal. National Oral Health Survey Report 2025. Bhopal: All India Institute of Medical Sciences; 2025.
3. Shetty VA, Garg N, Sujan SG. Ramachandran S. Prevalence of dental caries and associated factors in India. A Systematic review. J Indian Dent Res. 2025;36(1):12- 20.
4. International Organization for Migration. Migrant health: global perspectives and challenges. Geneva: IOM;2023.
5. World Health Organization. Health and safety in the workplace: occupational health standards. Geneva: WHO;2020.
6. Sharma P, Singh A, Kumar R. Oral health awareness among sanitation workers in India: A cross sectional study. Indian J Public Health. 2024;68(3):256-262.
7. Peterson PE. The World Oral Health Report 2025: Public health goals for oral health. Geneva: WHO;2025.9.2025
8. Public Health Foundation of India. Oral health disparities in marginalized populations: Challenges and Interventions. New Delhi: PHFI;2023.
9. Ministry of Health and Family Welfare, Government of India. National oral health policy draft. New Delhi: MoHFW;2024.
10. Gupta R, Singh V, Dasgupta A. Knowledge, attitude and practices of oral hygiene among migrant labourers: A situational analysis. J Occup Health. 2023;65(4):303- 309.
11. Ramitha KL. An assessment of oral health status and treatment needs of migrant workers in India. J Dent Oral Health.2025;7(2):123-130
12. Narang P, Kumar S, Singh R, Jain S. India's oral health outlook: Challenges, economic impact and opportunities. Front Dent Med.2025 Apr 8;2:1544899.
13. Ngrajan K, Ganapathy MD. Knowledge, attitude and practice: oral hygiene status of sanitary workers in Chennai. JPRS. 2019;11(4);879-83
14. Zhao J, Cao A, Xie L, Shao L. Knowledge, attitude and practice toward oral health management among orthodontic patients: A Cross sectional Study.BMC Oral Health.2024 Dec18;24:1500.
15. Sara S, Malik A, J aved E, Ayesha M. Evaluation of knowledge, attitude and practices of oral health and hygiene among the future health care providers. Medical science2024;28:e109ms3424.
16. Chisnoiu R, Delean A, Muntean A, Rotaru D, Cisnoiu A, Cimpean S. Oral health- related knowledge, attitude and practice among patients in rural areas around Cluj- Napoca, Romania. Int J Environ Res Public Health. 2022 Jun 4;19{11):6887.
17. Prabhu D, Sindhu R, Bharathwaj V. Prevalence of dental caries and oral hygiene status of biscuit factory workers in Madhurai city. Int. J. Dent clin.Std.2022:3(1)13- 18
18. Ravisankar B, Ramesh S, Saravanan R. Assessment of oral health knowledge, attitude and practice among multipurpose workers in a private educational institution, Tamil Nadu: A descriptive study. Int J Community Med Public Health.2022 Oct;9(10):3722-3727.
19. Avasthi A, Bansal H, Singh M, Singh S, Gupta V. Oral hygiene practices and oral health related quality of life among patients visiting dental outpatient departments in North India. J Family Med Prim Care. 2022 Jul;11(7):2826-2831.
20. Singh O, Singh S, Srivastava A, Srivastava R, Kumar A, Pandey RK. Oral health knowledge, attitudes and practices of primary healthcare workers of Lucknow district, Uttar Pradesh. J Family Med Prim Care.2022 Feb;11(2):725-731.
21. Wironggrong T. oral health status and behaviour

of pregnant migrant workers in Bangkok, Thailand. BMC Oral Health. 2021; 21:379

22. Malhotra S, Kumari R, Singh S, Pandey R, Singh PVK. Effectiveness of oral health education on knowledge and practices among government high school students in Lucknow. J Indian Assoc Public Health Dent.2020 Jun;18(2):199-204.
23. Fotedar S, Sharma S, Saxena V, Chaitanya DK. Oral health knowledge and practices among primary healthcare workers in Kangra district: A Cross-sectional study. J Family Med Prim Care.2018 Sep;7(5):1039-1043.
24. Yadav K, Singh A, Singh US, Raj A. Oral health knowledge and practices among primary health care workers. Int J Res Med Sci.2016 Mar;4(3):948-952.
25. Oberoi SS, Dhingra C, Sharma AB. Effect of socioeconomic status on oral hygiene practices among rural population of North India: A cross-sectional survey. J Indian Assoc Public Health Dent. 2016;14(1):90-94
26. Alure SB, Dodamani AS, Viswakarna P. Jain VM, Mali GV, Kulkarni GP. Oral hygiene behaviour and practices of urban slum population: A Cross sectional study. Int J Community Med Public Health.2021;8(9):4423-4431.
27. Chawla RM, Gaikwad V, Jadhav K. Knowledge, attitude and practice of women in slums of Pimpri, Chinchwad, Pune, Maharashtra, India, regarding usage of Mishri. J Contemp Dent Pract.2017;18(3):241-245
28. Lakshmi KPD, Prabhu V, Duraisamy S, Krishnaveni S, Thilagavathy G. Correlation of knowledge, attitude and practice with their oral health status among nursing students in Salem city, Tamil Nadu. J Pharm Bioall Sci.2022;14(5):491- 497.
29. Selvaraj S. Naing NN, Wan-Arfah N, Abreu MHNG. Assessment on oral health knowledge, attitude and behaviour and its association with sociodemographic and habitual factors of South Indian Population. Pesqui Bras Odontopediatria Clin Integr. 2021;21:e0135.
30. Arif K et al. A study to assess the knowledge and perception about oral hygiene among dental professionals in Lucknow city. J Indian Soc Periodontal. 2021;25(2):123-128
31. Raj S et al. Assessment of oral health literacy with dental hygiene practices among adults in rural Bareilly. J Public Health Dentistry.2025Apr;12(1):12-16.
32. Aggnur M, Arora V, Kumar R, Sharma M, Singh H. Oral health status, treatment needs and knowledge, attitude and practices among health workers of Ambala district. J Indian Soc Periodontol.2014;18(5):687-693.
33. Verma L, Passi S, Sharma U, Sahai V, Mittal R, Gupta N. Oral health knowledge, Attitude and Practices among Postgraduate students of Panjab university, Chandigarh: A Cross sectional Study. Int J Clin Pediatr Dent. 2020;13(2):113-118
34. Bajaj PD, Suhasini G, Garg SS, Garg S. A scoping review exploring oral health inequalities in India. J Glob Oral Health. 2023Nov20; 7(2):67-77
35. Yadav A, Sabbarwal B, Tandon S, Chand S. Knowledge, attitude and practices toward oral health among frontline healthcare workers in India. J Global Oral Health.2024;7:67-70
36. Raj S, Goel S, Sharma VL, Goel NK. Short -term impact of oral hygiene training package to Anganwadi workers on improving oral hygiene of preschool children in North Indian city. J Family Med Prim Care.2013;2(3):274-279
37. Smeda M et al. Impact of opioid abuse on oral health: A retrospective study. Front Oral health.2025;5:1483406
38. Chaparro-Gonzalez NT et al. Oral and maxillofacial manifestations in patients with drug addiction. Odontoestomatologia. 2018;20(32):24-31.