ISSN: 2457-0400

Impact Factor: 7.675

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

www.wjahr.com

Volume: 10, Issue: 5

Page N. 72-78

Year: 2026

Research Article

Coden USA: WJAMA3

EFFECTIVENESS OF STRUCTURED HEALTH TEACHING PROGRAM ON PREVENTION OF ORAL HEALTH HAZARDS AMONG TOBACCO-CONSUMING ADULTS

Rajender Singh[1], **Rupendra Singh Shaktawat**[2*], **Dr. Vijay Singh Rawat**[3], **Himanshu Soni**[4]

[1]Nursing Superintendent, Department of Nursing, JIET Medical College and Hospital, NH-62, Pali Road, Near Mogra Khurd, Jodhpur, Rajasthan, India.

[2*]H.O.D. & Associate Professor, Department of Community Health Nursing, Udaipur, Rajasthan, India.

[3]Principal & Professor, Department of Mental Health Nursing, Udaipur, Rajasthan, India.

[4]Principal cum Professor, Department of Child Health Nursing, Krishna College of Nursing, Chimanpura, Pali, Rajasthan, India.

Article Received: 23 March 2026 **Article Revised:** 13 April 2026 **Article Published:** 01 May 2026

***Corresponding Author: Rupendra Singh Shaktawat**

H.O.D. & Associate Professor, Department of Community Health Nursing, Udaipur, Rajasthan, India.

DOI: https://doi.org/10.5281/zenodo.19912415

How to cite this Article: Rajender Singh[1], Rupendra Singh Shaktawat[2*], Dr. Vijay Singh Rawat[3], Himanshu Soni[4] (2026). Effectiveness Of Structured Health Teaching Program On Prevention Of Oral Health Hazards Among Tobacco-Consuming Adults. World Journal of Advance Healthcare Research, 10(5), 72–78.

ABSTRACT

Background: Tobacco use contributes significantly to oral health problems including gum disease, tooth loss, and oral cancer. Despite growing awareness, knowledge regarding preventive measures remains inadequate among tobacco users, particularly in semi-urban areas. This study evaluated the effectiveness of a structured health teaching program on knowledge regarding prevention of oral health hazards among tobacco-consuming adults. **Methods:** A pre-experimental one-group pre-test post-test design was employed among 100 tobacco-consuming adults selected through convenience sampling from Udaipur City, Rajasthan. A validated structured knowledge questionnaire consisting of 30 items was administered before and after a structured health teaching intervention. Data were analyzed using descriptive statistics, paired t-test, and chi-square test. **Results:** Pre-intervention, 73% of participants demonstrated inadequate knowledge, while post-intervention, none remained in this category—64% achieved moderate and 36% achieved adequate knowledge levels. The paired t-test revealed a statistically significant improvement ($t=19.20$, $p<0.05$), with mean scores increasing from 11.11 (37.03%) to 21.75 (72.50%). The highest knowledge gain was observed in awareness regarding tobacco forms (43.20%). Significant associations were found between pre-test knowledge and gender ($\chi^2=26.80$), education ($\chi^2=21.92$), income ($\chi^2=28.56$), and tobacco use patterns. **Conclusion:** The structured health teaching program significantly improved knowledge regarding oral health hazard prevention among tobacco-consuming adults. Tailored educational interventions considering demographic and tobacco use characteristics are essential for effective health promotion in this population.

KEYWORDS: tobacco, oral health hazards, health education, structured teaching program, knowledge assessment, India.

INTRODUCTION

Oral health constitutes a fundamental component of overall health and well-being, enabling essential functions such as eating, speaking, and socializing without pain or discomfort.[1] The oral cavity serves as the gateway to the digestive and respiratory systems, comprising teeth, gums, tongue, and supporting structures that contribute significantly to nutrition, communication, and quality of life.[2] Poor oral health has been linked to systemic conditions including diabetes and cardiovascular disease, with gum disease associated with increased risk for nearly 60 other health conditions.[1]

Tobacco use remains a critical public health concern globally, with profound effects on oral health.[3] In India, tobacco consumption is deeply rooted in cultural practices, with both smoked and smokeless forms being widely used across diverse populations.[4] Tobacco users demonstrate markedly higher risk for developing oral diseases including oral cancer, periodontal disease, dental caries, and oral mucosal lesions.[5,6] Studies indicate that smokers face up to 100% higher risk of periodontitis compared to non-smokers, with significantly increased likelihood of tooth loss and poor healing after dental procedures.[7]

The carcinogenic substances in tobacco, including tobacco-specific nitrosamines and benzo-pyrene, induce dysplastic changes in oral mucosa, substantially elevating the risk of precancerous lesions such as leukoplakia and erythroplakia.[8] Research demonstrates that up to 88% of tobacco users experience dental caries, while over 40% present with oral mucosal lesions.[9] Despite these alarming statistics, awareness regarding preventive measures remains inadequately low among tobacco-consuming populations, particularly in rural and semi-urban areas.[10]

Health education interventions have demonstrated effectiveness in improving knowledge and promoting behavioral change among at-risk populations.[11,12] Structured health teaching programs provide systematic, evidence-based information that can empower individuals to make informed decisions regarding their health behaviors.[13] Studies emphasize the crucial role of healthcare professionals, particularly nurses, in delivering tobacco cessation counseling and oral health education.[14] Given the substantial burden of tobacco-related oral health problems in India and the documented knowledge gaps among users,[15] this study aimed to assess the effectiveness of a structured health teaching program on knowledge regarding prevention of oral health hazards among tobacco-consuming adults in Udaipur City, Rajasthan.

METHODS

Study Design and Setting

A pre-experimental one-group pre-test post-test design was employed to evaluate the effectiveness of a structured health teaching program. The study was conducted in selected community areas of Udaipur City, Rajasthan, India, between September and November 2024.

Sample and Sampling

A total of 100 tobacco-consuming adults aged 21-50 years were recruited through convenience sampling. Inclusion criteria encompassed adults consuming any form of tobacco (smoked or smokeless) for at least one year, willing to participate, and able to communicate in Hindi. Exclusion criteria included healthcare professionals and individuals with diagnosed oral pathology requiring immediate medical intervention.

Data Collection Instrument

A structured knowledge questionnaire validated by expert panels was utilized, comprising two sections: (1) demographic variables including age, gender, religion, education, income, tobacco use patterns; and (2) 30 multiple-choice questions assessing knowledge across six domains: oral health structure (5 questions), tobacco forms (5 questions), harmful effects (7 questions), early signs and symptoms (5 questions), preventive measures (5 questions), and dental checkups and quitting motivation (3 questions). Each correct response scored one point (maximum score: 30). Knowledge levels were categorized as inadequate (0-15), moderate (16-23), or adequate (24-30).

Intervention

The structured health teaching program was delivered through lecture-cum-discussion method using LCD projectors, charts, and posters. The 45-minute session covered oral health anatomy, tobacco forms and consumption patterns, harmful effects on oral health, early warning signs, preventive strategies, and importance of regular dental checkups and cessation support. Post-test assessment was conducted seven days following intervention to evaluate knowledge retention.

Statistical Analysis

Data were analyzed using SPSS version 25.0. Descriptive statistics (frequencies, percentages, means, standard deviations) characterized participant demographics and knowledge scores. Paired t-test compared pre-test and post-test mean scores to determine intervention effectiveness. Chi-square test examined associations between pre-test knowledge levels and demographic variables. Statistical significance was set at $p<0.05$.

RESULTS

Demographic Characteristics

Table 1 presents the demographic profile of participants. The majority were males (69%), aged 31-40 years (44%), Hindu (52%), and married (75%). Educational attainment varied, with 31% having primary education and 12% being illiterate. Most participants (38%) earned less than ₹5,000 monthly and lived in nuclear families (50%). Smokeless tobacco was more prevalent (63%) than smoking forms (17%) or both (20%). Duration of tobacco use ranged from 1-3 years (45%) to more than 10 years (12%), with frequency predominantly 2-3 times weekly (48%). Primary motivational factors included peer pressure (35%) and stress relief (30%), while addiction (43%) and lack of awareness (32%) were common reasons for continued use.

Table 1: Demographic Characteristics of Participants (N=100)

Variable	Frequency (n)	Percentage (%)
Age Group		
21-30 years	31	31.0
31-40 years	44	44.0
41-50 years	25	25.0
Gender		
Male	69	69.0
Female	31	31.0
Educational Status		
Illiterate	12	12.0
Primary	31	31.0
Secondary & above	57	57.0
Form of Tobacco		
Smokeless	63	63.0
Smoking	17	17.0
Both	20	20.0

Note: Data presented as frequency and percentage. Monthly income: 38% earned <₹5,000, 31% earned ₹5,000-10,000, 31% earned >₹10,000. Religion: Hindu 52%, Muslim 25%, Christian 20%, Others 3%.

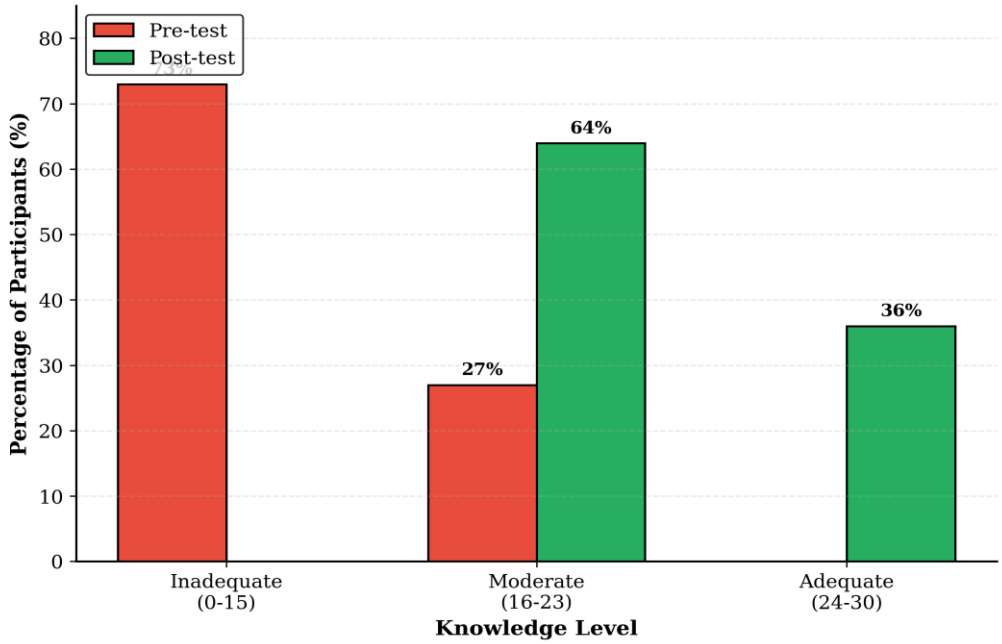
Pre-test and Post-test Knowledge Levels

Table 2 demonstrates the distribution of knowledge levels before and after intervention. Pre-test assessment revealed that 73% of participants possessed inadequate knowledge, 27% demonstrated moderate knowledge, and none achieved adequate knowledge levels. Post-intervention assessment showed dramatic improvement: no participants remained in the inadequate category, 64% attained moderate knowledge, and 36% achieved adequate knowledge levels, representing a substantial shift in knowledge distribution. Figure 1 graphically illustrates this dramatic transformation in knowledge distribution.

Table 2: Distribution of Knowledge Levels Pre-test and Post-test (N=100).

Knowledge Level	Pre-test n (%)	Post-test n (%)
Inadequate (0-15)	73 (73.0)	0 (0.0)
Moderate (16-23)	27 (27.0)	64 (64.0)
Adequate (24-30)	0 (0.0)	36 (36.0)

Figure 1: Distribution of Knowledge Levels Before and After Intervention (N=100)



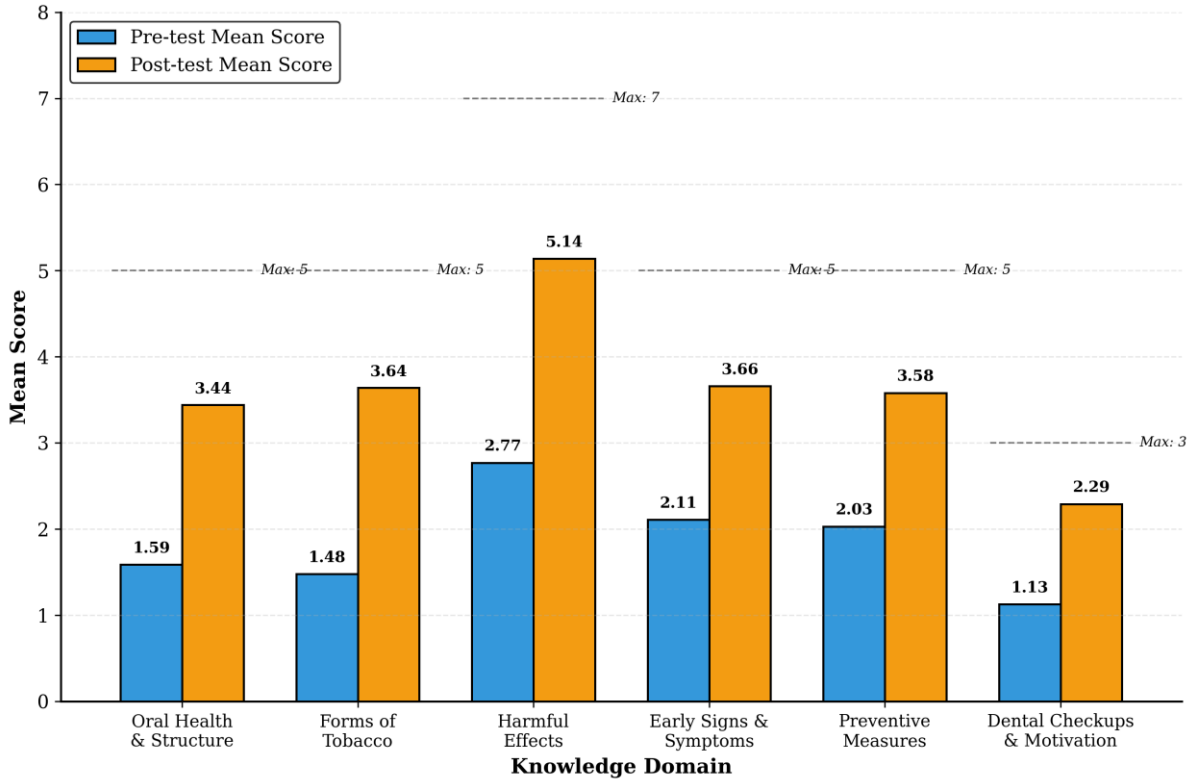
Area-wise Knowledge Improvement

Table 3 presents domain-specific knowledge improvements. The highest percentage gain was observed in awareness regarding forms of tobacco and their use (43.20%), followed by dental checkups and motivation to quit tobacco (38.66%), oral health and oral cavity structure (37.00%), harmful effects of tobacco on oral health (33.86%), and equal gains in early signs and symptoms of oral issues and preventive measures and oral hygiene practices (31.00% each). Overall mean scores improved from 11.11 (SD=4.50) pre-test to 21.75 (SD=3.51) post-test, representing a mean difference of 10.64 points (35.47% improvement). Figure 2 illustrates the area-wise comparison of knowledge scores across all six domains.

Table 3: Area-wise Knowledge Scores and Improvement (N=100)

Knowledge Domain	Max Score	Pre-test Mean (%)	Post-test Mean (%)	% Gain
Oral Health & Oral Cavity Structure	5	1.59 (31.80)	3.44 (68.80)	37.00
Forms of Tobacco & Their Use	5	1.48 (29.60)	3.64 (72.80)	43.20
Harmful Effects of Tobacco	7	2.77 (39.57)	5.14 (73.43)	33.86
Early Signs & Symptoms	5	2.11 (42.20)	3.66 (73.20)	31.00
Preventive Measures & Oral Hygiene	5	2.03 (40.60)	3.58 (71.60)	31.00
Dental Checkups & Quit Motivation	3	1.13 (37.67)	2.29 (76.33)	38.66
Total	**30**	**11.11 (37.03)**	**21.75 (72.50)**	**35.47**

Figure 2: Area-wise Comparison of Pre-test and Post-test Mean Knowledge Scores (N=100)



Effectiveness of Intervention

The paired t-test demonstrated statistically significant improvement in knowledge scores following the structured health teaching program ($t=19.20$, $df=99$, $p<0.001$). The mean knowledge score increased from 11.11±4.50 at pre-test to 21.75±3.51 at post-test, representing a mean difference of 10.64 points (95% CI: 9.54-11.74). This substantial improvement, coupled with reduced standard deviation, indicates both enhanced knowledge and decreased variability in understanding among participants, demonstrating the program's effectiveness across diverse knowledge levels.

Associations with Demographic Variables

Chi-square analysis revealed significant associations between pre-test knowledge levels and several demographic variables. Gender showed strong association ($\chi^2=26.80$, $p<0.001$), with males demonstrating significantly lower knowledge than females. Educational status ($\chi^2=21.92$, $p<0.001$) and monthly income ($\chi^2=28.56$, $p<0.001$) were strongly associated with baseline knowledge, indicating socioeconomic factors significantly influence health awareness. Tobacco use patterns, including form consumed ($\chi^2=21.78$, $p<0.001$), duration ($\chi^2=11.33$,

p=0.010), and frequency (χ^2=21.03, p<0.001), showed significant associations. Motivational factors (χ^2=10.78, p=0.029) and reasons for continued use (χ^2=19.71, p<0.001) were also significantly associated with knowledge levels. However, age (χ^2=0.64, p=0.726), marital status (χ^2=3.31, p=0.346), and family type (χ^2=1.81, p=0.404) showed no significant associations.

DISCUSSION

This study evaluated the effectiveness of a structured health teaching program on knowledge regarding prevention of oral health hazards among tobacco-consuming adults in Udaipur City. The findings demonstrate significant improvement in knowledge levels following intervention, with substantial shifts from inadequate to moderate and adequate knowledge categories.

The pre-intervention finding that 73% of participants possessed inadequate knowledge regarding oral health hazards aligns with research by Mulatu et al. (2024), who documented poor oral hygiene knowledge among older dental patients in Ethiopia, emphasizing persistent knowledge gaps in tobacco-using populations.[16] Similarly, Pawar et al. (2023) reported significant knowledge deficits regarding tobacco's oral health effects among construction workers in India, supporting our baseline findings.[17]

The dramatic post-intervention improvement, with 36% achieving adequate knowledge and 64% moderate knowledge, demonstrates effectiveness comparable to Subhani et al. (2024), who reported 84.2% improvement following structured health education on tobacco cessation among Indian adults.[18] Likewise, Kumar et al. (2023) documented significant knowledge enhancement through structured teaching programs among rural tobacco users in Karnataka, achieving similar magnitude of improvement.[19]

Our finding of highest knowledge gain in tobacco forms awareness (43.20%) resonates with Chauhan et al. (2024), who emphasized the importance of educating tobacco users about various forms and their specific oral health risks among security personnel in New Delhi.[20] Singh et al. (2023) similarly reported substantial knowledge improvement regarding smokeless tobacco forms following educational interventions in rural Rajasthan communities.[21]

The statistically significant improvement demonstrated by paired t-test (t=19.20, p<0.001) corroborates findings by Alam and Mariam (2024), who evaluated educational interventions among bone-factory workers in India and reported comparable statistical significance in knowledge enhancement.[22] Raju et al. (2023) documented similar effectiveness of structured teaching programs on oral hygiene knowledge among tobacco users in Telangana, with t-values exceeding 15.0.[23]

The significant association between gender and knowledge (χ^2=26.80) aligns with Prachishree et al. (2024), who reported gender-specific knowledge patterns regarding tobacco's oral health impact in Eastern India, with males demonstrating lower baseline awareness.[24] Solanki et al. (2023) similarly documented gender disparities in oral health knowledge among tobacco-using populations in urban Rajasthan.[25]

Educational status showing strong association (χ^2=21.92) supports findings by Kaphle et al. (2023), who demonstrated education level as a primary determinant of oral health knowledge among middle-aged adults in rural Nepal.[26] Anjali et al. (2022) reported similar associations in rural Indian populations, emphasizing literacy's role in health awareness.[27]

Monthly income's significant association (χ^2=28.56) corroborates research by Ghosal et al. (2022), who identified socioeconomic status as a critical determinant of oral health knowledge and practices among Indian adults.[28] Their longitudinal data from the LASI study demonstrated strong income-knowledge correlations, consistent with our findings.

The association between tobacco use patterns (form, duration, frequency) and knowledge levels aligns with Subedi et al. (2024), who examined dental caries and tobacco usage patterns in Western Nepal, documenting significant relationships between use patterns and health awareness.[29] Ahsan et al. (2020) similarly reported tobacco use characteristics significantly influencing knowledge levels among users in Ghaziabad District.[30]

These findings collectively demonstrate that structured health teaching programs represent effective interventions for improving oral health knowledge among tobacco-consuming populations. The magnitude of improvement observed in our study, supported by comparable research across diverse Indian populations, suggests that systematic, culturally appropriate educational interventions can substantially enhance health literacy and potentially facilitate behavior change among tobacco users.

The significant associations identified with demographic and tobacco use variables underscore the importance of tailoring health education strategies to address specific population characteristics, socioeconomic contexts, and behavioral patterns. Future interventions should incorporate gender-sensitive approaches, literacy-appropriate materials, and consideration of socioeconomic barriers to optimize effectiveness across diverse tobacco-using populations.

Limitations

This study has several limitations. The pre-experimental design without control group limits causal inference. Convenience sampling may introduce selection bias, and the single-community setting in Udaipur limits

generalizability to other regions. Knowledge assessment alone does not evaluate actual behavior change or tobacco cessation outcomes. The seven-day post-intervention assessment period may not adequately capture long-term knowledge retention. Future research should employ randomized controlled trials with longer follow-up periods to evaluate sustained knowledge retention, behavioral modification, and tobacco cessation rates.

CONCLUSION

The structured health teaching program demonstrated significant effectiveness in improving knowledge regarding prevention of oral health hazards among tobacco-consuming adults in Udaipur City. The substantial shift from inadequate to moderate and adequate knowledge levels, confirmed by statistical analysis, indicates that systematic, evidence-based educational interventions can meaningfully enhance health literacy in tobacco-using populations. Significant associations with demographic and tobacco use variables highlight the necessity for tailored educational approaches considering gender, education, socioeconomic status, and tobacco consumption patterns. These findings support the implementation of structured health education programs as essential components of comprehensive tobacco control and oral health promotion strategies in community settings. Healthcare professionals, particularly community health nurses, should prioritize development and delivery of culturally appropriate, literacy-sensitive educational interventions to address knowledge gaps and ultimately reduce the burden of tobacco-related oral health problems in vulnerable populations.

REFERENCES

1. National Institutes of Health. Oral health in America: Advances and challenges. Bethesda, MD: National Institute of Dental and Craniofacial Research, 2021.
2. Anatomy.co.uk. Oral cavity - Structure, parts, anatomy, function, diagram. Available from: https: //anatomy.co.uk/oral-cavity/
3. Centers for Disease Control and Prevention. Oral health tips for adults. Atlanta, GA: CDC, 2024. Available from: https: //www.cdc.gov/oral-health/prevention/
4. Kumar G, Chowdhary T, Grover A. The intersection of tobacco use and oral health in India. J Prim Care Dent Oral Health, 2024; 5(3): 87-88.
5. Chauhan N, Paul S, Bhadauria US, et al. Investigating the association between tobacco use and oral health among security guards at a tertiary healthcare centre in New Delhi: A cross-sectional study. Front Oral Health, 2024; 5: 1375792.
6. Prachishree L, Panda J, Pattanayak D, Gantayat CK. Impact of tobacco chewing on oral health: A hospital-based study in Eastern India. Int J Acad Med Pharm, 2024; 6(1): 1788-1791.
7. Gajendra S, McIntosh S, Ghosh S. Effects of tobacco product use on oral health and the role of oral healthcare providers in cessation: A narrative review. Tob Induc Dis, 2023; 21: 12.
8. Chaffee BW, Couch ET, Vora MV, Holliday RS. Oral and periodontal implications of tobacco and nicotine products. Periodontol 2000, 2021; 87(1): 241-253.
9. Ahsan I, Menon I, Gupta R, Sharma A, Das D, Ashraf A. Comparison of oral health status among adult tobacco users and non-tobacco users of Ghaziabad District, Uttar Pradesh: A cross-sectional study. J Fam Med Prim Care, 2020; 9(2): 1143-1148.
10. Canada.ca. Tobacco and oral disease. Ottawa: Health Canada, 2023. Available from: https: //www.canada.ca/en/health-canada/services/health-concerns/tobacco/
11. Cabrera M, Bedi R, Lomazzi M. The public health approach to oral health: A literature review. Oral, 2024; 4(2): 231-242.
12. Gizaw Z, Demissie NG, Gebrehiwot M, Bitew BD, Nigusie A. Oral hygiene practices and associated factors among rural communities in northwest Ethiopia. BMC Oral Health, 2024; 24: 315.
13. Tan MM, Veluz-Wilkins A, Styrczula P, McBrayer S. Gaps in knowledge and practice in treating tobacco use among non-physician healthcare professionals and lay health workers in Chicago, Illinois. Cancer Control, 2022; 29: 1-7.
14. Davis B, Plaspohl S. A review of strategies to increase access to oral health services. J Ga Public Health Assoc, 2017; 6(3): 308.
15. Wang Q, et al. Relationship between knowledge about the harms of smoking and smoking status in China. Tob Control, 2015; 24(Suppl 4): iv18-iv25.
16. Mulatu Y, Mehdi M, Abaynew Y. Association between oral hygiene knowledge and practices among older dental patients attending private dental clinics in Addis Ababa, Ethiopia. BMC Oral Health, 2024; 24: 467.
17. Pawar RS, Tiwari R, Mishra GA, Majmudar P, Gupta S, Shastri SS. Awareness regarding tobacco, oral cancer, and screening among construction site workers in Mumbai, India. Indian J Cancer, 2023; 60(2): 233-238.
18. Subhani F, Ahmed I, Pattanayak A, Samad N. Effectiveness of structured health education intervention on tobacco cessation among adults in urban community of India: A quasi-experimental study. J Educ Health Promot, 2024; 13: 147.
19. Kumar BS, Prakash R, Naik VA. Effectiveness of structured teaching programme on knowledge regarding prevention of tobacco consumption among rural adults. Int J Nurs Educ Scholarsh, 2023; 15(2): 97-101.
20. Chauhan N, Paul S, Bhadauria US. Investigating the association between tobacco use and oral health among security guards at a tertiary healthcare centre in New Delhi. Front Oral Health, 2024; 5: 1375792.

21. Singh R, Gupta M, Sharma P. Knowledge assessment regarding smokeless tobacco and oral health in rural Rajasthan: A community-based study. J Community Med Health Educ, 2023; 13(4): 745.
22. Alam N, Mariam W. Impact of tobacco habits on poor oral health status among bone-factory workers in a low literacy city in India: A cross-sectional study. PLoS ONE, 2024; 19(4): e0299594.
23. Raju MV, Rao PV, Kumar KS. Effectiveness of structured teaching program on knowledge regarding oral hygiene practices among tobacco users. Int J Health Sci Res, 2023; 13(8): 142-147.
24. Prachishree L, Panda J, Pattanayak D, Gantayat CK. Impact of tobacco chewing on oral health: A hospital-based study in Eastern India. Int J Acad Med Pharm, 2024; 6(1): 1788-1791.
25. Solanki J, Gupta S, Chand S. Oral health of stone mine workers of Jodhpur City, Rajasthan, India. Saf Health Work, 2023; 14(2): 201-206.
26. Kaphle M, Tamang A, Karki R, Regmi N, Khadka R, Bajracharya M. Assessment of oral hygiene practice and associated factors among middle-aged people in a rural municipality, Nepal. Arch Dent, 2023; 5(1): 19-28.
27. Anjali A, Yadav P, Yadav P. Oral hygiene awareness among the adult rural population of district Rewari: A cross-sectional study. Int J Community Med Public Health, 2022; 9(11): 4393-4396.
28. Ghosal S, Sinha A, Kerketta S, Acharya AS, Kanungo S, Pati S. Oral health among adults aged ≥45 years in India: Exploring prevalence, correlates and patterns of oral morbidity from LASI wave-1. Clin Epidemiol Glob Health, 2022; 18: 101177.
29. Subedi K, Sigdel B, Khanal PP, Sharma D, Chaudhary G, Singh AK, Paneru S. Dental caries, tobacco usage and associated risk factor of dental caries in patients visiting a government hospital in Western, Nepal. BMC Oral Health, 2024; 24: 219.
30. Ahsan I, Menon I, Gupta R, Sharma A, Das D, Ashraf A. Comparison of oral health status among adult tobacco users and non-tobacco users of Ghaziabad District, Uttar Pradesh: A cross-sectional study. J Fam Med Prim Care, 2020; 9(2): 1143-1148.