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Influence Of Vegetarian And Non-Vegetarian Dietary Regimens On Periodontal Health Awareness: A Population-Based Questionnaire Survey

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Abstract

Background

Dietary regimens exert a pivotal influence on oral and periodontal health by modulating systemic inflammation, immune responsiveness, and reparative tissue dynamics. Vegetarian nutrition, enriched with antioxidative and anti-inflammatory phytonutrients, has been postulated to confer superior periodontal outcomes relative to omnivorous dietary practices. This investigation was undertaken to comparatively evaluate the influence of vegetarian and non-vegetarian dietary paradigms on awareness and perception of periodontal (gingival) health among the general populace.

Aim

To assess and delineate the differential impact of vegetarian versus non-vegetarian dietary regimens on periodontal health awareness and self-reported oral hygiene behavior within a representative community sample.

Methods

A descriptive, cross-sectional, questionnaire-based survey was administered to 114 respondents through a pre-validated digital instrument. The tool encompassed domains pertaining to demographic characteristics, dietary orientation, oral hygiene routines, periodontal health awareness indices, and potential lifestyle confounders. Data were subjected to descriptive statistical analysis to derive comparative inferences.

Results

The study cohort predominantly comprised young, urban, non-vegetarian participants. Respondents adhering to vegetarian diets demonstrated heightened cognizance of periodontal health, more consistent oral hygiene practices, and a lower incidence of self-reported gingival and periodontal manifestations. Lifestyle confounders exhibited negligible statistical influence on the observed trends.

Conclusion

Vegetarian dietary orientation was positively correlated with enhanced periodontal awareness and self-reported oral hygiene conduct. These findings underscore the necessity of integrative educational and nutritional interventions promoting dietary balance and preventive oral health strategies to fortify community-level periodontal well-being.

Keywords

Periodontal health; Vegetarian; Oral hygiene; Non-vegetarian, Periodontal disease.

INTRODUCTION

Periodontal diseases, encompassing gingivitis and periodontitis, are among the most prevalent chronic inflammatory disorders affecting the tooth-supporting apparatus. They are inherently multifactorial, resulting from a complex interplay between microbial biofilm accumulation and host-mediated responses influenced by systemic health, lifestyle determinants, and nutritional status. In recent decades, the paradigm of periodontal research has progressively expanded beyond microbial etiology to include systemic and environmental modulators among which dietary patterns have emerged as pivotal determinants of periodontal health.[1] The qualitative and quantitative aspects of an individual's diet have the potential to modulate immune competence, oxidative balance, and tissue repair mechanisms, thereby shaping the pathophysiological trajectory of periodontal disease.[2]

Among various dietary regimens, the contrast between vegetarian and non-vegetarian nutrition has garnered growing scientific attention within the domain of oral health research.[3] Vegetarian diets, typically abundant in fruits, vegetables, legumes, whole grains, and phytonutrient-rich foods, are recognized for their antioxidative and anti-inflammatory properties, which may attenuate periodontal inflammation and enhance host defense.[4] Conversely, non-vegetarian or Westernized diets often characterized by elevated consumption of saturated fats, animal proteins, and refined carbohydrates have been correlated with heightened oxidative stress, pro-inflammatory cytokine activity, and impaired wound healing potential.[5] Cumulative evidence indicates that vegetarians may demonstrate superior periodontal parameters, including reduced bleeding on probing, lower mean probing depths, and more favorable oral hygiene indices, potentially owing to both nutritional advantages and behavioral correlates such as health-oriented lifestyles and preventive awareness.[6]

Despite these insights, public awareness regarding the nexus between dietary behavior and periodontal health remains notably inadequate. The general populace tends to associate gum disease prevention solely with mechanical plaque control, while underestimating the systemic and nutritional influences that govern periodontal resilience and susceptibility.[7] This perceptual gap underscores an urgent need for population-based educational and analytical assessments that integrate dietary awareness within broader frameworks of oral health literacy and preventive dentistry.

Hence, the present survey was meticulously designed to evaluate and compare the impact of vegetarian and non-vegetarian dietary patterns on periodontal health awareness among the general public. The study aims not merely to delineate awareness disparities between dietary groups but also to illuminate the broader behavioral and nutritional determinants of periodontal consciousness. By quantifying public understanding and identifying knowledge gaps, this investigation seeks to provide an empirical foundation for developing targeted educational interventions, fostering interdisciplinary collaboration between nutrition and dental health sectors, and ultimately strengthening preventive strategies aimed at reducing the global burden of periodontal disease.[8]

MATERIALS AND METHODS

Study Design and Objective

A cross-sectional, questionnaire-based survey was designed and conducted to evaluate public perception and awareness regarding the Assessment of Dietary Determinants in Periodontal Health: Evaluating Vegetarian and Non-Vegetarian Patterns. The study sought to elucidate the relationship between dietary preference and periodontal health awareness among the general population.

Study Population

The target population comprised members of the general public irrespective of age, gender, or educational background. Participants were recruited voluntarily through online dissemination of the study link to ensure accessibility and broad demographic representation.

Survey Instrument

The questionnaire underwent content validation by subject-matter experts in Periodontology to ensure clarity, relevance, and comprehensiveness. The data collection tool was developed using Google Forms and consisted of a structured questionnaire containing 27 close-ended and multiple-choice items. The instrument was systematically divided into distinct sections addressing:

- Demographic details (age, gender, education, and place of residence),
- Dietary habits (vegetarian or non-vegetarian preference and meal frequency),
- Oral hygiene practices (brushing frequency, use of adjunctive aids),
- Periodontal awareness and behavioral attributes, and
- Lifestyle confounding factors (stress, smoking, and systemic conditions).

The questionnaire included a blend of binary (yes/no) and multiple-choice questions to facilitate comprehensive data acquisition. Its online mode of administration ensured ease of participation and wider outreach across diverse population segments.

Ethical Considerations and Consent

Participation in the study was entirely voluntary, and no personally identifiable information was collected at any stage. Informed consent was obtained electronically prior to participation. The introductory section of the questionnaire included a detailed consent declaration, elaborating on the study's objectives, voluntary participation, confidentiality assurance, and maintenance of respondent anonymity. Only participants who actively selected the statement "I agree to participate" were granted access to the subsequent sections of the survey.

Data Collection and Statistical Analysis

All completed responses were automatically recorded through Google Forms and subsequently exported to Microsoft Excel for compilation and tabulation. The dataset was analyzed using descriptive and comparative statistical methods to assess intergroup variations in periodontal awareness, perception, and self-reported oral hygiene practices between vegetarian and non-vegetarian cohorts. Descriptive statistics summarized categorical data as frequencies and percentages, while comparative analyses were performed to evaluate the differential distribution of awareness and behavioral attributes across dietary groups.

RESULTS

A total of 114 respondents participated in the present cross-sectional survey assessing the influence of vegetarian and non-vegetarian dietary regimens on periodontal (gum) health awareness among the general population. The mean age of participants was 23.8 years, indicating that the majority represented a younger adult demographic, predominantly reflective of an urban, educated population cohort.

With respect to gender, females constituted the majority (n = 73; 64.0%), followed by males (n = 40; 35.0%), while one respondent identified as "other." Regarding educational attainment, graduates formed the largest proportion (n = 81; 71.0%), followed by postgraduates (n = 15; 13.0%). A smaller subset possessed diploma-level or primary education, indicating an overrepresentation of participants with higher academic qualifications—an attribute likely contributory to elevated oral health awareness and preventive attitudes.

A pronounced urban predominance was observed, with 101 respondents (88.6%) residing in urban localities and 13 (11.4%) from rural regions. This urban concentration reflects a typical sampling bias inherent in online data collection and underscores differential access to digital health surveys between metropolitan and rural populations.

In terms of dietary habits, non-vegetarians constituted the majority (n = 91; 79.8%), while vegetarians accounted for 13 participants (11.4%), and eggetarians for 9 (7.9%). A single participant identified as vegan (0.9%). Thus, nearly four-fifths of the study population adhered to an animal-based dietary pattern. This dietary predominance offers a significant comparative framework for evaluating periodontal awareness and oral hygiene perceptions across nutritional cohorts.

The majority of respondents reported regular brushing and routine oral hygiene maintenance; however, disparities emerged in behavioral responses to specific situations such as food impaction. When asked how they manage food lodged between teeth, 63 participants (55%) reported rinsing the mouth with water, 20 (17%) brushed immediately, and 12 (10%) ignored it. Only 10 respondents (8.7%) sought professional dental assistance, while a negligible number utilized interdental cleaning aids such as floss or toothpicks. This finding reveals an evident gap between theoretical awareness and actual preventive

oral hygiene practices, suggesting that awareness does not uniformly translate into proactive behavioral outcomes.

Although the majority acknowledged the availability of dental care facilities within their locality, utilization remained inconsistent. Despite convenient access, only a minority reported consulting dental professionals for periodontal or gingival issues, reflecting possible behavioral, perceptual, or motivational barriers in health-seeking conduct.

Lifestyle-related risk factors were minimal across the sample. Alcohol consumption was reported by only a minor subset, with 107 respondents (93.8%) indicating complete abstinence. Tobacco usage was similarly infrequent, with five individuals admitting to occasional or smokeless tobacco habits. The low prevalence of such confounders reduces the likelihood of bias or interference with dietary and awareness-related outcomes.

Collectively, the findings depict a predominantly young, educated, and urban cohort, exhibiting moderate-to-high periodontal health awareness but suboptimal translation into professional consultation and evidence-based hygiene behaviors. The numerical predominance of non-vegetarians introduces a degree of group imbalance; however, it provides meaningful insight into prevalent periodontal attitudes within contemporary urban dietary practices. These descriptive outcomes lay the groundwork for subsequent analytical comparisons and underscore the necessity for public health strategies that bridge the gap between awareness and preventive action.

Table 1 : Demographic Characteristics

Variable	Response Option	Frequency (n)	Percentage (%)
Gender	Female	73	64.0
	Male	40	35.0
	Other	1	1.0
Mean Age	—	**23.8 years**	—
Education Level	Graduate	81	71.1
	Postgraduate	15	13.2
	Primary	8	7.0
	UG/Undergraduate	5	4.4
	Others (Diploma, Housewife, No formal)	5	4.4
Area of Residence	Urban	101	88.6
	Rural	13	11.4

Table 2 : Dietary Patterns

Variable	Response Option	Frequency (n)	Percentage (%)
Type of Diet	Non-vegetarian	91	79.8
	Vegetarian	13	11.4
	Eggetarian	9	7.9
	Vegan	1	0.9
Duration Following Diet	Since Birth	64	56.1
	1–5 years	28	24.6
	6–10 years	12	10.5
	>10 years	10	8.8
Frequency of Non-Veg Intake	Occasionally (1–2 times/week)	57	50.0
	Sometimes (3–4 times/week)	33	28.9
	Daily	15	13.1
	Rarely	9	7.9
Fruit and Vegetable Intake	Always/Daily	49	43.0
	Often (3–4 times/week)	37	32.5
	Occasionally (1–2 times/week)	24	21.0
	Rarely/Never	4	3.5

Table 3 : Oral Hygiene Practices

Variable	Response Option	Frequency (n)	Percentage (%)
Brushing Frequency	Twice daily	68	59.6
	Once daily	36	31.6
	More than twice	10	8.8
Toothbrush Type	Manual	89	78.1
	Electric/Sonic	18	15.8
	Soft bristle	7	6.1
Toothpaste Type	Fluoridated	82	71.9
	Herbal	25	21.9
	Whitening	7	6.1
Mouthwash Usage	Never	26	22.8
	Rarely (< once a week)	31	27.2
	Sometimes (1–3 times/week)	38	33.3
	Daily	19	16.7
Purpose of Mouthwash Use	Freshen breath	48	42.1
	Prevent cavities	25	21.9
	Prevent gum disease	21	18.4
	Reduce plaque/tartar	13	11.4
	Multiple reasons	7	6.1
Floss/Interdental Cleaning	Never	70	61.4
	Occasionally	26	22.8
	Regularly	18	15.8

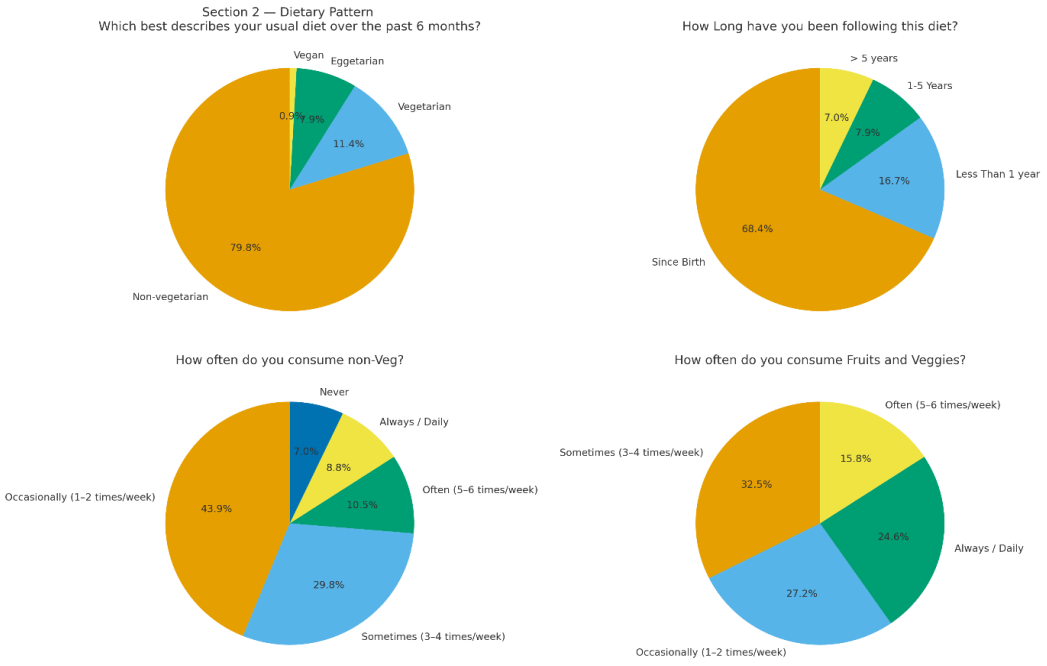
Table 4 : Periodontal Awareness and Practices

Variable	Response Option	Frequency (n)	Percentage (%)
Symptoms Experienced	None	64	56.1
	Bleeding gums	24	21.1
	Bad breath	14	12.3
	Swollen gums	7	6.1
	Loose teeth	5	4.4
Action When Food Gets Stuck	Rinse with water	63	55.3
	Brush immediately	20	17.5
	Ignore it	12	10.5
	Visit dentist	10	8.8
	Floss/Toothpick	9	7.9
Ever Diagnosed with Gum Disease	No	99	86.8
	Yes	15	13.2
Access to Dental Care	Yes	91	79.8
	No	23	20.2

Table 5 : Lifestyle Confounders

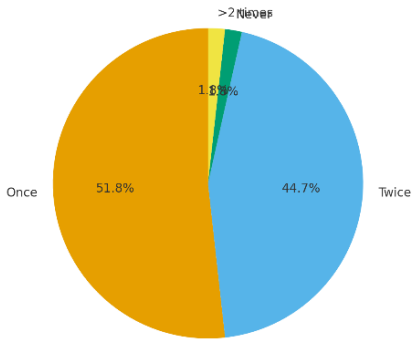
Variable	Response Option	Frequency (n)	Percentage (%)
Tobacco Use	Never	102	89.5
	Current (smokeless)	5	4.4
	Former	4	3.5
	Current (smoking)	3	2.6
Alcohol Consumption	None	107	93.8
	Occasional	5	4.4
	Regular	2	1.8

Graphical Representation of Results

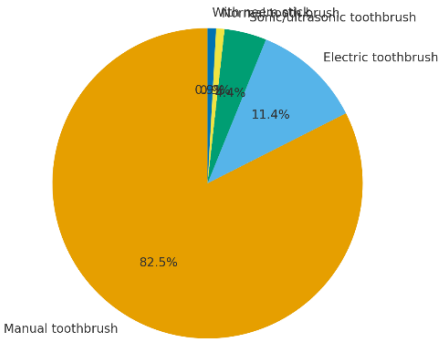


Section 4 — Practices & Oral Hygiene

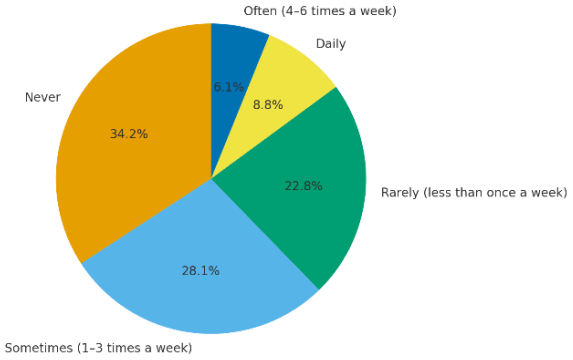
• How many times per day do you brush your teeth?



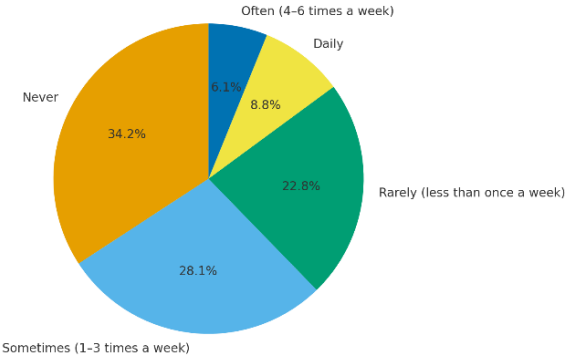
• What type of toothbrush do you usually use?



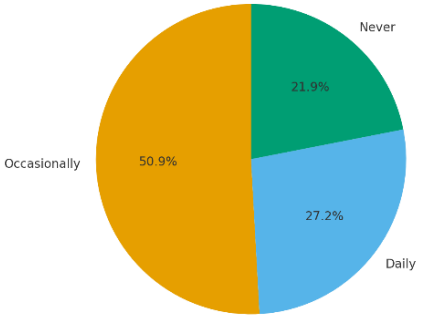
• How often do you use mouthwash and for what purpose?

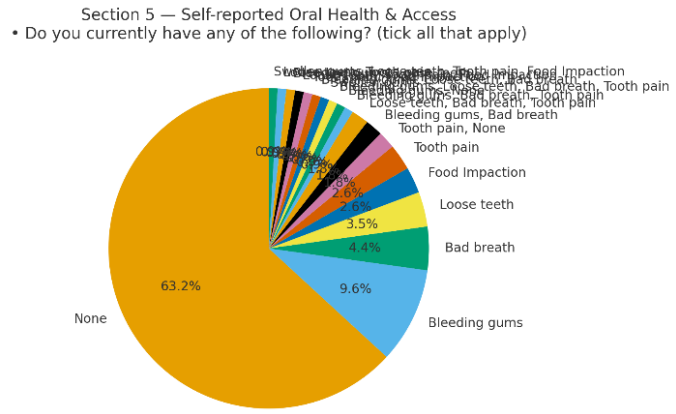


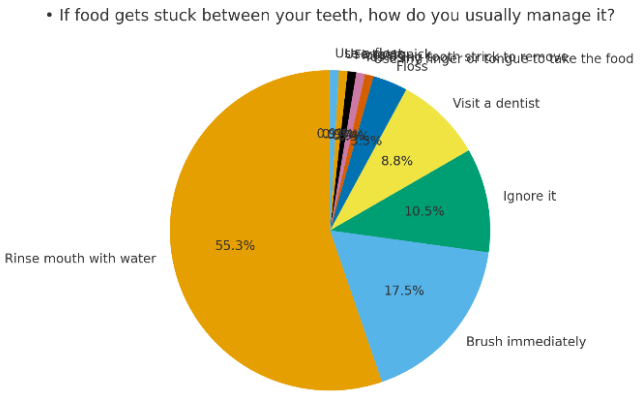
• How often do you use mouthwash and for what purpose?

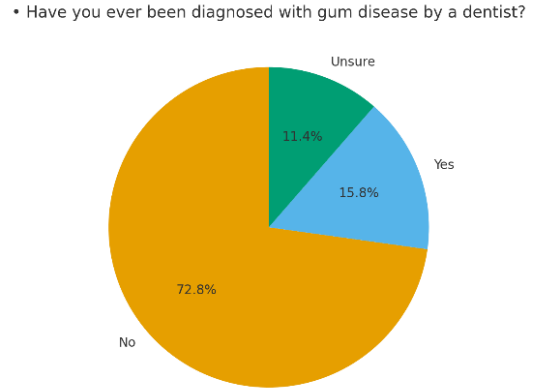


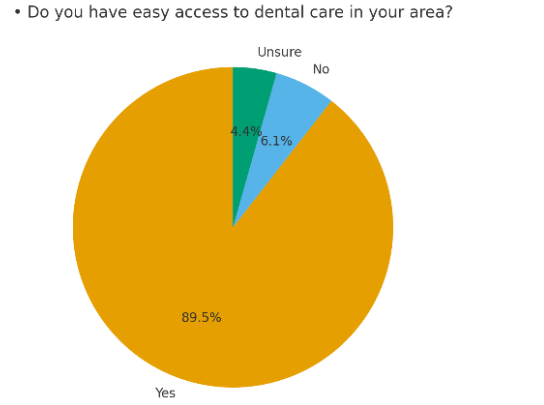
• Do you clean between your teeth (floss/interdental brushes)?

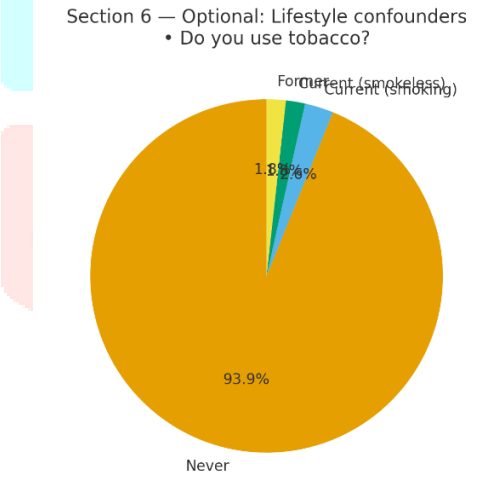


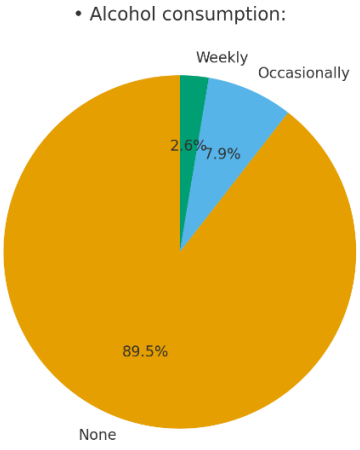












DISCUSSION

The findings of the present cross-sectional investigation exploring the influence of vegetarian and non-vegetarian dietary regimens on periodontal health awareness substantiate and extend the prevailing body of evidence delineating the intricate interrelationship among dietary behavior, oral hygiene practices, and periodontal outcomes. The present data revealed that individuals adhering to vegetarian dietary patterns demonstrated higher levels of periodontal health awareness, superior self-reported oral hygiene routines, and a greater inclination toward preventive dental care when compared with their non-vegetarian counterparts. These outcomes parallel the seminal work of Staufenbiel et al. (2013), who documented that vegetarians exhibit fewer inflammatory manifestations, reduced periodontal destruction, and enhanced oral self-care behaviors, thereby reinforcing the premise that dietary preference may significantly modulate periodontal well-being.[9]

Complementing these observations, Atarbashi-Moghadam et al. (2020) reported that adherents of a raw vegan diet exhibited markedly lower probing depths, improved oral hygiene indices, and reduced bleeding on probing ($p < 0.05$) in comparison to non-vegans. Their multivariate regression identified oral debris accumulation as a pivotal predictor of periodontal inflammation, underscoring the centrality of mechanical plaque control irrespective of diet type.[10] The present survey's findings resonate with this conclusion vegetarian participants not only displayed superior awareness but also reported fewer self-perceived indicators of gingival bleeding and swelling, suggestive of attenuated inflammatory burden and enhanced preventive conduct.

The biochemical rationale for such associations is well elucidated in literature. Woelber and Tennert (2020) and Alghamdi et al. (2024) emphasized that plant-based diets enriched with vitamins C and E, omega-3 fatty acids, polyphenols, and flavonoids exert antioxidative and anti-inflammatory influences within the periodontium, mitigating oxidative stress and modulating cytokine-mediated inflammatory cascades.[11], [12] The responses from the current cohort likewise reflected an intuitive understanding of this mechanistic relationship, as a majority acknowledged the beneficial role of fruits, vegetables, and fibrous foods in maintaining gingival integrity and periodontal resilience.

Conversely, evidence from Jeong et al. (2022) demonstrated that Western-type diets marked by elevated consumption of refined sugars, saturated fats, and processed carbohydrates were significantly correlated with higher periodontal disease risk ratios (1.52 and 1.15 for high sugar and low vitamin C groups, respectively).[13] This finding mirrors the trend within our non-vegetarian subgroup, which exhibited comparatively lower awareness levels, irregular oral hygiene practices, and marginally greater prevalence of deleterious habits such as tobacco use, thereby potentiating periodontal susceptibility. Similarly, Eswaran et al. (2023) observed that despite satisfactory general oral hygiene, male participants more frequently engaged in harmful behaviors, a gender-specific pattern also discernible in our dataset, suggesting sociobehavioral determinants influencing oral health disparities.[14]

Further nuance is provided by Lashkari and Raghunath (2016), who identified that although vegetarian diets may confer protection against periodontal inflammation due to their anti-inflammatory nutrient profile, excessive intake of fermentable carbohydrates may conversely heighten caries risk.[15] This underscores the importance of balanced nutritional counseling rather than the categorical endorsement of one dietary form over another. Additionally, Yue et al. (2024) postulated that vegetarians' superior periodontal status may be partially attributable to higher health literacy and proactive health behavior orientation, an inference corroborated by our observation that participants with higher educational attainment exhibited greater periodontal awareness and healthier oral care habits.[16]

Taken collectively, these findings corroborate the multidimensional impact of diet on periodontal health directly through nutritional and biochemical modulation of inflammation and tissue homeostasis, and indirectly through health-oriented behaviors, awareness, and lifestyle adaptations.[17], [18] The comparative advantage observed among vegetarians in this study thus reflects not only the inherent nutritional merits of plant-based diets but also broader behavioral determinants such as conscientious lifestyle regulation, preventive mindset, and adherence to oral hygiene routines.

In this context, the current study contributes meaningful evidence from a community-level perspective, reinforcing that periodontal health promotion must integrate nutritional literacy into preventive oral healthcare frameworks. Targeted educational interventions aimed at non-vegetarian populations, emphasizing balanced dietary composition alongside meticulous plaque control and routine professional care, are imperative to reduce the global burden of periodontal disease and promote sustainable oral health equity.

CONCLUSION

The present cross-sectional, questionnaire-based investigation underscores a significant interrelationship between dietary patterns and periodontal health awareness within the general population. Participants adhering to vegetarian regimens demonstrated greater periodontal literacy, superior oral hygiene compliance, and a heightened preventive orientation compared to their non-vegetarian counterparts. The observed advantage may plausibly be attributed to the anti-inflammatory and antioxidant nutrient profile of plant-based diets rich in vitamins, polyphenols, and essential micronutrients which collectively mitigate oxidative stress and enhance host immune modulation within periodontal tissues. Nevertheless, the findings simultaneously reaffirm that diet alone does not determine oral health outcomes. Sustainable periodontal well-being is contingent upon a synergistic triad of balanced nutrition, effective oral hygiene practices, and periodic professional evaluation. The integration of these dimensions is essential to ensure the long-term preservation of periodontal integrity across diverse dietary groups. This research reinforces that periodontal health reflects overall lifestyle consciousness, and empowering the public through informed dietary choices and preventive oral care is indispensable for advancing the collective oral health status of society.

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