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RESEARCH ARTICLE

ORAL HEALTH STATUS AMONG BANK EMPLOYEES AND ITS RELATION WITH STRESS IN JAIPUR CITY

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Abstract

Background: Occupational stress has emerged as a major public health concern among banking professionals due to increasing workload, rapid technological transformation, stringent performance targets, and customer-related pressures. Chronic stress has been linked with various adverse systemic and oral health outcomes, including periodontal disease, dental caries, and poor oral hygiene practices. However, limited evidence is available regarding the relationship between occupational stress and oral health among bank employees in India.

Aim: To assess the oral health status of bank employees and evaluate its association with occupational stress among employees working in public and private sector banks in Jaipur city.

Materials and Methods: A cross-sectional study was conducted among 252 bank employees working in selected public and private sector banks in Jaipur city between January and June 2025. Occupational stress was assessed using the Occupational Stress Inventory-Revised (OSI-R) and Cohen's Perceived Stress Scale (PSS). Oral health status was evaluated using the WHO Oral Health Assessment Form (2013), Decayed Missing Filled Teeth (DMFT) Index, and Community Periodontal Index for Treatment Needs (CPITN). Data were analyzed using SPSS version 25. Statistical significance was considered at $p<0.05$.

Results: Among the study participants, 53% were females and 47% were males. Moderate stress was observed in 70% of employees, while 27% reported low stress and 3% experienced high stress. Occupational stress domains demonstrating higher scores included role overload, workplace discomfort, responsibility, and physical strain. Mean DMFT scores increased with increasing stress levels; however, the association was not statistically significant ($p=0.08$). A statistically significant association was observed between stress levels and periodontal health assessed through CPITN ($p=0.01$), indicating greater periodontal destruction among highly stressed employees.

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Conclusion: Moderate occupational stress was highly prevalent among bank employees. Although stress was not significantly associated with dental caries experience, a significant association was observed between stress and periodontal health. Workplace stress-management programs and preventive oral health interventions may contribute substantially to improving employee well-being and oral health outcomes.

Introduction:-

Health is a multidimensional concept encompassing physical, mental, and social well-being rather than merely the absence of disease. Occupational health forms an integral component of overall health because work-related conditions directly influence quality of life, productivity, and psychosocial functioning. The International Labour Organization estimates that occupational illnesses and workplace-related stress contribute substantially to global economic losses through absenteeism, reduced productivity, and increased healthcare expenditure. In service-oriented sectors such as banking, employees are frequently exposed to demanding workloads, performance pressures, customer interactions, and organizational changes that predispose them to occupational stress.[1,2]

Occupational stress refers to the psychological and physiological responses that occur when job demands exceed an individual's coping resources. During the last two decades, globalization, digitalization, and technological advancement have transformed the banking industry considerably. Employees are now expected to adapt continuously to evolving technologies, maintain digital competencies, achieve performance targets, and simultaneously satisfy increasingly informed customers. Such changes have generated unique occupational stressors including techno-stress, role ambiguity, decision fatigue, and concerns regarding job security.[3,4]

The banking profession has consistently been recognized as one of the most stressful occupations worldwide. Studies from Europe, Asia, and India have reported moderate-to-high levels of occupational stress among bank employees due to excessive workload, long working hours, financial accountability, target-oriented performance evaluation systems, and interpersonal conflicts.[5,6] Occupational stress not only affects psychological well-being but also contributes to various systemic disorders such as hypertension, cardiovascular diseases, diabetes mellitus, anxiety, depression, musculoskeletal disorders, and sleep disturbances.[7]

Increasing evidence suggests that psychological stress may significantly influence oral health. Stress can affect oral health through behavioral and biological pathways. Individuals experiencing chronic stress frequently neglect oral hygiene practices, adopt unhealthy dietary habits, increase tobacco and alcohol consumption, and postpone dental visits. Furthermore, stress-induced alterations in neuroendocrine and immune responses may impair host defense mechanisms and increase susceptibility to periodontal disease. Elevated cortisol levels associated with chronic stress have been implicated in enhanced inflammatory responses and periodontal tissue destruction.[8,9]

Oral diseases continue to represent a major global public health challenge. According to the Global Burden of Disease Study, untreated dental caries affects approximately 2.3 billion individuals worldwide, while severe periodontal disease affects nearly 800 million people. These conditions adversely affect mastication, speech, aesthetics, quality of life, and occupational productivity.[10] Consequently, understanding factors that contribute to poor oral health among working populations has become increasingly important.

Several international studies have explored the relationship between occupational stress and oral health outcomes. Yoshino et al. demonstrated significant associations between job stress and subjective oral symptoms among financial workers in Japan.[11] Similarly, Vasiliou et al. reported that individuals experiencing higher stress levels exhibited poorer oral health status and increased oral disease burden.[12] Studies conducted among corporate employees and healthcare workers have also reported associations between stress and periodontal disease, xerostomia, bruxism, and oral mucosal lesions.[13,14]

In India, research examining occupational stress among bank employees has primarily focused on psychological outcomes, burnout, and job satisfaction. Limited investigations have assessed oral health consequences associated with occupational stress in this occupational group. Furthermore, evidence from Rajasthan remains scarce. Therefore, the present study was undertaken to assess occupational stress levels among bank employees and evaluate their association with oral health status in Jaipur city.

A better understanding of this relationship may facilitate the development of integrated workplace health promotion programs targeting both psychological well-being and oral health. Such interventions have the potential to improve

employee productivity, quality of life, and overall health outcomes while reducing the burden of oral diseases among working populations.

Aim: To assess oral health status and its association with occupational stress among bank employees in Jaipur city.

Objectives: 1. To assess occupational stress among bank employees. 2. To evaluate oral health status among bank employees. 3. To determine the association between occupational stress and oral health status. 4. To identify occupational factors contributing to stress among bank employees.

Materials and Methods:-

Study Design and Setting:-

A cross-sectional observational study was conducted among bank employees working in selected public and private sector banks in Jaipur City, Rajasthan, India, between January 2025 and June 2025. The study was designed to evaluate occupational stress and its association with oral health status among banking professionals. The study was conducted in accordance with the principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Institutional Ethics Committee of Rajasthan Dental College and Hospital, Jaipur. Written informed consent was obtained from all participants before enrollment.

Study Population:-

The target population consisted of clerical, officer-grade, and managerial employees working in public and private sector banks located in Jaipur city.

Inclusion Criteria:-

1. Employees present on the day of examination.
2. Employees willing to participate and provide informed consent.
3. Employees with at least one year of work experience.

Exclusion Criteria:-

4. Individuals unwilling to participate.
5. Pregnant employees.
6. Individuals with known systemic diseases that could influence stress or oral health outcomes.

Sample Size Determination:-

Sample size estimation was performed using the formula:-

$n = Z^2p(1-p)/d^2$

where:

- Z = 1.96 at 95% confidence interval
- p = 0.70 (expected prevalence of stress among bank employees)
- d = 5% absolute precision

The minimum calculated sample size was 252 participants.

Sampling Technique:-

Jaipur city was divided into four geographical zones: North, South, East, and West. A list of public and private sector banks was obtained and selected using simple random sampling. Employees from selected branches were invited to participate. Recruitment continued until the required sample size was achieved.

Pilot Study and Calibration:-

A pilot study was conducted among 30 bank employees to assess feasibility and reliability of the study instruments. These participants were excluded from the final analysis.

Occupational Stress Assessment:-

Occupational stress was assessed using the Occupational Stress Inventory-Revised (OSI-R).

The OSI-R evaluates:-
Occupational Roles Questionnaire (ORQ):-
- Role overload
- Role ambiguity
- Role boundary
- Responsibility
- Physical environment

Personal Strain Questionnaire (PSQ):-
- Psychological strain
- Interpersonal strain
- Vocational strain
- Physical strain

Personal Resources Questionnaire (PRQ):-
- Recreation
- Self-care
- Social support
- Rational coping

Responses were recorded on a five-point Likert scale.

Perceived Stress Assessment:-
Perceived stress was assessed using Cohen's Perceived Stress Scale (PSS-10).

Scores were categorized as:-
- Low Stress: 0–13
- Moderate Stress: 14–26
- High Stress: 27–40

Oral Health Examination:-
Clinical examination was performed according to WHO Oral Health Survey Methods (5th Edition, 2013).

The following indices were recorded:-
Dentition Status:-
Dental caries experience was assessed using the Decayed, Missing and Filled Teeth (DMFT) Index.

Periodontal Status:-
Periodontal condition was assessed using the Community Periodontal Index for Treatment Needs (CPITN).

CPITN codes:-
- Code 0: Healthy periodontium
- Code 1: Bleeding on probing
- Code 2: Calculus
- Code 3: Shallow periodontal pocket (4–5 mm)
- Code 4: Deep periodontal pocket (≥6 mm)

Statistical Analysis:-
Data were entered into Microsoft Excel and analyzed using IBM SPSS Version 25.
Descriptive statistics included frequencies, percentages, means, and standard deviations.

Associations between stress levels and oral health parameters were evaluated using:-
- Chi-square test
- Analysis of Variance (ANOVA)

A p-value <0.05 was considered statistically significant.

Results:-

Demographic Characteristics:-

A total of 252 bank employees participated in the study.Table-1 illustrates the sociodemographic characteristics of participants

Table 1. Sociodemographic Characteristics of Participants

Variable	Category	n (%)
Age Group	20–40 years	211 (83.7)
	41–60 years	41 (16.3)
Gender	Male	118 (46.8)
	Female	134 (53.2)
Marital Status	Single	163 (64.7)
	Married	89 (35.3)
Experience	<10 years	180 (71.4)
	10–20 years	53 (21.0)
	21–30 years	9 (3.6)
	>30 years	8 (3.2)
Education	Diploma	20 (7.9)
	Bachelor's Degree	207 (82.1)
	Master's Degree	25 (9.9)
Designation	Clerical	146 (57.9)
	Officer	66 (26.2)
	Manager	40 (15.9)
Type of Bank	Private	162 (64.3)
	Public	90 (35.7)

The majority of participants belonged to the 20–40 years age group (83.7%).Therewere females (53.2%) more than males, worked in private banks (64.3%), and had less than 10 years of professional experience (71.4%).

Perceived Stress Among Participants:-

Table 2. Distribution of Stress Levels According to PSS

Stress Category	Frequency	Percentage
Low Stress	69	27.4
Moderate Stress	177	70.2
High Stress	6	2.4

Moderate stress was the predominant category affecting 70.2% of employees.

Occupational Stress Inventory Findings:-

Table 3. Major Occupational Stress Domains

Domain	Mean Score	Interpretation
Role Overload	2.28 ± 1.26	High
Role Ambiguity	1.47 ± 1.26	Moderate
Role Boundary	1.63 ± 1.29	Moderate
Responsibility	1.73 ± 1.32	Moderate–High
Physical Environment	1.84 ± 1.30	Moderate
Psychological Strain	1.49 ± 1.30	Moderate
Physical Strain	1.95 ± 1.18	High
Personal Resources	1.90 ± 1.54	Fair to Good Coping

Role overload and physical strain represented the most prominent stress-producing factors among bank employees.

Oral Hygiene Practices:-

Table 4. Oral Hygiene Practices Among Participants

Variable	Category	n (%)
Brushing Frequency	Once Daily	130 (51.6)
	Twice Daily	122 (48.4)
Additional Oral Hygiene Aid	None	127 (50.4)
	Mouthwash	103 (40.9)
	Dental Floss	22 (8.7)
Toothbrush Type	Soft	163 (64.7)
	Medium	76 (30.2)
	Hard	13 (5.1)
Dental Visits	When Needed	171 (67.9)
	Regular	29 (11.5)
	Occasional	52 (20.6)

Most participants visited a dentist only when symptoms developed.

Association Between Stress and Dental Caries:-

Table 5. Association Between Stress Levels and DMFT Scores

Stress Level	n	Mean DMFT
Low	69	1.4
Moderate	177	3.2
High	6	5.8

ANOVA: p = 0.08
Although DMFT scores increased with stress levels, the association was not statistically significant.

Association Between Stress and Periodontal Status:-

Table 6. Association Between Stress Level and CPITN Scores

Stress Level	Healthy/Bleeding	Calculus	Shallow Pocket	Deep Pocket
Low	28	31	8	2
Moderate	52	86	25	14
High	0	1	3	2

Chi-square test: p = 0.01
A statistically significant association was observed between stress levels and periodontal status. Participants with high stress exhibited greater periodontal destruction.

Discussion:-

The present study investigated occupational stress and its relationship with oral health among bank employees in Jaipur city. The findings revealed that occupational stress was highly prevalent, with approximately 70% of employees reporting moderate stress levels. This observation is consistent with previous studies conducted among banking professionals in India and abroad, which have consistently demonstrated that banking remains one of the most psychologically demanding occupations.[1–4] The predominance of moderate stress observed in the present study is comparable to the findings of Kumar et al., who reported substantial occupational stress among Indian bank employees due to workload, customer expectations, and administrative responsibilities.[13] Similar observations were reported by Giorgi et al., who identified workload pressure, organizational change, and role conflict as major contributors to stress in the banking sector.[3]

Role overload emerged as one of the most important occupational stressors in the present study. Employees frequently reported excessive workloads, limited time availability, and pressure to meet organizational targets. These findings support those of Majid et al., who demonstrated that strict deadlines and increasing job demands were strongly associated with stress and employee turnover among Malaysian banking professionals.[8] An important finding of the present study was the significant association between occupational stress and periodontal health.

Employees experiencing higher stress levels exhibited greater periodontal destruction, characterized by increased prevalence of periodontal pockets and calculus accumulation. Similar findings have been reported by Sato et al., whose systematic review concluded that occupational stress was consistently associated with poorer periodontal outcomes.[12]

Stress may influence periodontal health through several biological pathways. Chronic activation of the hypothalamic-pituitary-adrenal axis results in increased cortisol secretion, suppression of immune function, and enhanced inflammatory responses. These physiological changes contribute to periodontal tissue breakdown and impaired healing. Furthermore, stressed individuals frequently neglect oral hygiene practices, thereby increasing plaque accumulation and periodontal disease risk.[29]

In contrast, no statistically significant association was observed between stress levels and DMFT scores. Although mean DMFT increased progressively from low-stress to high-stress categories, statistical significance was not achieved. Similar findings have been reported in several occupational studies where stress influenced periodontal outcomes more strongly than dental caries experience. This may be because periodontal tissues respond rapidly to stress-induced immunological alterations, whereas dental caries development depends on multiple long-term factors including diet, fluoride exposure, oral hygiene practices, and socioeconomic conditions.[26]

The oral hygiene findings indicate substantial scope for preventive interventions. More than half of participants brushed only once daily and nearly 68% sought dental care only when symptoms occurred. Such practices may contribute to the high prevalence of periodontal disease observed among stressed employees. These findings are consistent with reports from Ethiopia, Japan, and India demonstrating inadequate utilization of preventive dental services among working populations.[28],[26]

The present findings emphasize the importance of integrating occupational health promotion with oral health programs. Workplace-based stress management interventions, counseling services, employee wellness programs, and regular dental screening camps may collectively improve both psychological well-being and oral health outcomes. Strengths of this study include the use of validated stress assessment instruments, standardized clinical oral examinations, and inclusion of employees from both public and private banking sectors. Nevertheless, the cross-sectional design precludes causal inference, and future longitudinal studies are required to establish temporal relationships between stress and oral disease progression. Overall, the findings suggest that occupational stress constitutes an important determinant of periodontal health among bank employees and should be considered in workplace health promotion strategies.

Conclusion:-

The present study evaluated occupational stress and oral health status among bank employees in Jaipur city and explored the relationship between these variables.

The findings demonstrated that occupational stress was highly prevalent among bank employees, with the majority of participants experiencing moderate levels of perceived stress. Occupational stressors such as role overload, workplace demands, responsibility, and physical strain emerged as major contributors to psychological burden among employees.

Although no statistically significant association was observed between occupational stress and dental caries experience as measured by the DMFT Index, a significant relationship was identified between stress levels and periodontal health status. Employees experiencing higher levels of stress demonstrated greater periodontal destruction and treatment needs compared to their less-stressed counterparts.

These findings suggest that occupational stress may act as an important determinant of periodontal health among banking professionals. The integration of stress management strategies, workplace wellness programs, and preventive oral health services may contribute substantially to improving employee well-being and reducing the burden of oral diseases.

Addressing occupational stress should therefore be considered an essential component of comprehensive health promotion initiatives within the banking sector.

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