



Occupational Stress in Orthodontics: A Cross-Sectional Survey among Nepalese Practitioners

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ABSTRACT

Background

Orthodontists may experience varying degrees of stress since they spend a lot of time with the same patient before concluding treatment, and their meetings with each patient need long working hours. The objective of the study was to identify the potential stressors of orthodontic practice that cause stress among orthodontists in Nepal.

Methods

This was a descriptive cross-sectional study. Data were collected from 125 Nepal Medical Council Registered Orthodontists of Nepal through random sampling technique with the help of self-administered Occupational Stress Questionnaire by Roth *et al.*, related to the practice of orthodontics, created with the help of Google Form as an online-based survey by sending the link of Google form. The questionnaire consisted of 19 questions, which assessed the severity of stress experienced by the orthodontists while dealing with patients. The study duration was 6 months (12th September 2025 to 12th March 2026). Descriptive statistics (frequencies, percentages, mean, and Standard Deviation) was used to describe the categorical and quantitative variables.

Results

Out of 125 participants, 82 were male and 43 were female. The age of the males was 34.43 ± 4.332 (mean $\pm$ Standard Deviation SD) and of the females were 32.07 ± 5.646 (mean $\pm$ SD). The most concerning stressor contributing significantly to occupational stress was to see relapse in patients on retention after orthodontic treatment is over (2.76 ± 0.429). Out of 19 possible stressors, 9 stressors were found most concerning to occupational stress. Overall occupational stress score was 1.91 ± 0.458 , with 78.4% of participants reporting orthodontic practice as moderately stressful and 6.4% as very stressful.

Conclusions

Evaluation of the occupational stress and determination of the potential stressors perceived by orthodontists in Nepal showed that the most concerning stressors in orthodontic practice was to see relapse in patients on retention after orthodontic treatment is over.

Keywords: Nepal; Occupational stressors; Orthodontics; Surveys and questionnaires.

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INTRODUCTION

Stress is defined as the biological reaction to any adverse internal or external stimulus, physical, mental, or emotional, which tends to disturb the organism's homeostasis, resulting in frustration, anger, or nervousness.^{1, 2} Orthodontists may experience varying degrees of stress since they spend a lot of time with the same patient before concluding treatment, and their meetings with each patient need long working hours.³ Orthodontic burnout begins as a response to chronic daily stress.⁴ The overall mean severity score for stress is higher among orthodontists who underwent training in Saudi Arabia, Arab countries, and Asian countries when compared to those who were trained in Europe or United States.¹ Excessive occupational stress has been shown to have detrimental effects, including clinician wellbeing, burnout, job satisfaction, patient communication, quality of care, and professional performance, hypertension, and even suicidal thoughts.² Despite the fact that there have been studies undertaken to analyze stress levels among orthodontists in other areas of the world, no such study was done among orthodontists in Nepal following a literature search; so the research gap was found. Although occupational stress levels were known among medical doctors of Nepal, such data were not available for dentists (orthodontists) of Nepal.⁵ This study addresses this research gap. The objective of the study was to identify the potential stressors of orthodontic practice that cause stress among orthodontists in Nepal.

METHODS

Study Area

The study population included orthodontists in active clinical practice in Nepal.

Study Design

This was a descriptive cross-sectional study.

Sample Size and Sampling

The sample size was calculated using the Slovin's formula $n / (1 + n E^2)$.² With the number of Orthodontics (n) 178 having NMC License certificate by December 31, 2023, permissible error

$E=0.05$ (95% confidence level), the sample size was approximately 125.⁶ The samples were selected based on a random sampling technique using random number generation on an Excel sheet.

Data Collection

The study duration was six months (12th September 2025 to 12th March 2026). The target population comprised all orthodontists who were in active clinical practice in Nepal during the study period. The sampling frame consisted of 178 orthodontists registered with the Nepal Medical Council (NMC) as of December 31, 2023. Because the NMC register includes all licensed orthodontists irrespective of their current practice status or location, eligibility was assessed before participant recruitment.

Orthodontists were eligible if they held a valid Nepal Medical Council registration and were actively engaged in clinical orthodontic practice within Nepal during the study period. Orthodontists who were practicing outside Nepal or were not involved in active clinical practice (e.g., retired, exclusively academic, administrative, or otherwise not providing clinical orthodontic care) were excluded. Eligible participants were randomly selected from the sampling frame using random number generation on an Excel sheet.

Informed written consent was obtained from the participants before enrollment in the study. Data were collected over the period of 3 months i.e. eligible orthodontists were randomly selected from the sampling frame using random number generation on an Excel sheet with the help of self-administered Occupational Stress Questionnaire by *Roth et al.*, (original Questionnaire included 68 questions, 19 were included in this study as suggested by the study by Sonia Chauhan) given in Table 1, related to the practice of orthodontics, created with the help of Google Form as an online-based survey by sending the link of Google form.^{3, 7} The questionnaire was circulated among the orthodontists using Viber number and personal Email with study information, informed consent and a request to return the filled form of the questionnaire without any personal disclosures. Non-respondents received one

reminder after one week. If a selected orthodontist did not respond after the reminder, the individual was considered a non-responder and was replaced by the next randomly selected eligible orthodontist from the pre-generated randomization list until the required sample size was achieved. A total of 125 orthodontists were initially invited, 115 responded (response rate: 92%), 10 received one reminder, and 7 non-respondents were replaced.

Data Analysis

A numerical coding list was prepared, and according to the coding list, data was entered into Microsoft Excel 2021 and transferred into Statistical Package for Social Sciences (SPSS version 20) for statistical analysis. Accuracy was checked for every 20 entries. The Shapiro-Wilk test was used for assessing the normality of data. Descriptive statistics (frequencies, percentages, mean, and Standard Deviation) was used to describe the categorical and quantitative variables. The study duration was 6 months. The study variables included demographic information like age, gender, and severity of Occupational Stress. The questionnaire was pilot-tested among 10 practicing orthodontists to assess clarity,

comprehensibility, and feasibility of administration. The pilot participants were excluded from the final analysis. Reliability testing was not performed because the questionnaire was adapted from a previously published instrument.^{3, 7} The questionnaire consisted of 19 questions, which assessed the severity of stress experienced by the orthodontists while dealing with patients. The response was scored using 3-point Likert scale as Not Stressful = 1, Moderately Stressful = 2 and Very Stressful = 3. “Mean severity scores” of each item was calculated to determine the most stressful aspects of orthodontic practice. The items with a mean score of 2.20 or greater was considered the most concerning stress factors in orthodontic practice.³

RESULTS

A total of 125 orthodontists participated in the study, including 82 (65.6%) males and 43 (34.4%) females. The mean age of male participants was 34.43 ± 4.332 years (mean $\pm$ Standard Deviation SD), while that of female participants was 32.07 ± 5.646 years (mean $\pm$ SD) (Table 1).

Table 1: Frequency distribution of responses to orthodontic occupational stress items (n=125).

Possible stressors	How stressful? Not stressful Frequency/%)	Moderately stressful (Frequency/%)	Very stressful (Frequency/%)
How stressful is it to treat children of 14-18 years of age?	37 (29.6)	85 (68)	3 (2.4)
How stressful is it to treat adult patients?	38 (30.4)	76 (60.8)	11 (8.8)
How stressful are the physical working conditions in your department?	41 (32.8)	68 (54.4)	16 (12.8)
How stressful is it to train new assistants?	13 (10.4)	78 (62.4)	34 (27.2)
How stressful is it to keep a schedule?	21 (16.8)	91 (72.8)	13 (10.4)
How stressful is it if a patient is late/misses an appointment?	14 (11.2)	58 (46.4)	53 (42.4)
How stressful is it to maintain good communication with other specialists?	54 (43.2)	66 (52.8)	5 (4)
How stressful is it to manage patients referred to you?	35 (28)	79 (63.2)	11 (8.8)
How stressful is it when the patient fails to comply with the treatment instruction?	0 (0)	44 (35.2)	81 (64.8)
How stressful is it to manage disagreements with co-workers regarding orthodontic care?	15 (12)	70 (56)	40 (32)
How stressful is it when you see relapse in patients on retention after orthodontic treatment is over?	0 (0)	30 (24)	95 (76)
How stressful is it when patients come with a broken appliance?	2 (1.6)	51 (40.8)	72 (57.6)

How stressful is it when parents/patients request to remove appliances/braces before treatment is completed?	9 (7.2)	34 (27.2)	82 (65.6)
How stressful is it to motivate patients with poor oral hygiene and/or decalcification?	6 (4.8)	62 (49.6)	57 (45.6)
How stressful is it when there is a lack of patient appreciation?	18 (14.4)	45 (36)	62 (49.6)
How stressful is it when patients express that your fees are too high?	20 (16)	69 (55.2)	36 (28.8)
How stressful is it to motivate patients with poor elastic wear?	16 (12.8)	80 (64)	29 (23.2)
How stressful is it to deal with unrealistic patient expectations?	4 (3.2)	32 (25.6)	89 (71.2)
Overall, how stressful do you find the practice of orthodontics?	19 (15.2)	98 (78.4)	8 (6.4)

Overall, 98 (78.4%) participants perceived orthodontic practice as moderately stressful, 8 (6.4%) perceived it as very stressful, and 19 (15.2%) considered it not stressful as given in Table 2. The overall mean occupational stress score was 1.91 ± 0.458 (mean $\pm$ SD) on the three-point Likert scale as given in (Table 2).

Table 2: Mean severity score of possible stressors (n=125).

Possible stressors	Mean	SD
How stressful is it to treat children of 14-18 years of age?	1.73	0.498
How stressful is it to treat adult patients?	1.78	0.59
How stressful are the physical working conditions in your department?	1.8	0.648
How stressful is it to train new assistants?	2.17	0.592
How stressful is it to keep a schedule?	1.94	0.52
How stressful is it if a patient is late/misses an appointment?	2.31	0.665
How stressful is it to maintain good communication with other specialists?	1.61	0.566
How stressful is it to manage patients referred to you?	1.81	0.578
How stressful is it when the patient fails to comply with the treatment instruction?	2.65	0.48
How stressful is it to manage disagreements with co-workers regarding orthodontic care?	2.2	0.635

How stressful is it when you see relapse in patients on retention after orthodontic treatment is over?	2.76	0.429
How stressful is it when patients come with a broken appliance?	2.56	0.53
How stressful is it when parents/patients request to remove appliances/braces before treatment is completed?	2.58	0.625
How stressful is it to motivate patients with poor oral hygiene and/or decalcification?	2.41	0.583
How stressful is it when there is a lack of patient appreciation?	2.35	0.721
How stressful is it when patients express that your fees are too high?	2.13	0.66
How stressful is it to motivate patients with poor elastic wear?	2.1	0.593
How stressful is it to deal with unrealistic patient expectations?	2.68	0.533
Overall, how stressful do you find the practice of orthodontics?	1.91	0.458

Among the 19 occupational stressors evaluated, nine had mean severity scores equal to or greater than the predefined cut-off value of 2.20, indicating that they were the most concerning stressors. The highest-ranked stressor was relapse in patients during the retention phase after completion of orthodontic treatment (2.76 ± 0.429), followed by dealing with unrealistic patient expectations (2.68 ± 0.533), patients failing to comply with treatment instructions (2.65 ± 0.480), parents or patients requesting removal of appliances before treatment

completion (2.58 ± 0.625), and patients presenting with broken appliances (2.56 ± 0.530) as given in Table 4. Other stressors exceeding the predefined cut-off included motivating patients with poor oral hygiene and/or decalcification (2.41 ± 0.583), lack of patient appreciation (2.35 ± 0.721), patients arriving late or missing appointments (2.31 ± 0.665), and managing disagreements with co-workers regarding orthodontic care (2.20 ± 0.635).

The detailed frequency distribution of responses, mean severity scores for all occupational stressors and most concerning occupational stressors are presented in Tables 2-4. The questionnaire consisted of close-ended items with a standardized three-point Likert scale to ensure consistency in data collection and facilitate uniform responses across participants.

Table 3: Stressors with mean severity scores above the predefined cut-off (n=125).

Possible stressors	Mean	SD
How stressful is it when you see relapse in patients on retention after orthodontic treatment is over?	2.76	0.429
How stressful is it to deal with unrealistic patient expectations?	2.68	0.533
How stressful is it when the patient fails to comply with the treatment instruction?	2.65	0.48
How stressful is it when parents/ patients request to remove appliances/braces before treatment is completed?	2.58	0.625
How stressful is it when patients come with a broken appliance?	2.56	0.53
How stressful is it to motivate patients with poor oral hygiene and/or decalcification?	2.41	0.583
How stressful is it when there is a lack of patient appreciation?	2.35	0.721
How stressful is it if a patient is late/misses an appointment?	2.31	0.665
How stressful is it to manage disagreements with co-workers regarding orthodontic care?	2.2	0.635

DISCUSSION

Identifying the specific sources of stress is an essential first step toward developing targeted strategies to improve the practitioner well-being as well as

clinical practice. Dentistry is widely recognized as a demanding healthcare profession because it involves prolonged procedures, long clinical patient care, repetitive clinical work, lots of patient interaction, rigorous training, musculoskeletal strain, high patient expectations and the need to balance clinical responsibilities with practice management.^{8, 9} The nature of dentistry and the working circumstances in dental surgery make it a difficult profession.¹⁰ Persistent occupational stress has been associated with adverse physical and psychological outcomes, including burnout, reduced job satisfaction, impaired communication with patients, decreased quality of care, musculoskeletal disorders, and an increased risk of stress-related conditions such as hypertension and coronary artery disease. Chronic occupational stress may also contribute to mental health problems, including anxiety, depression, and alcoholism, drug addiction, suicide, through prolonged psychological strain and burnout.^{7, 11} These factors underscore the importance of identifying workplace stressors and implementing strategies to promote clinician well-being. Orthodontic practice presents additional challenges, including long treatment duration, dependence on patient cooperation, frequent follow-up visits, and the management of patients' and parents' expectations.^{3, 4} Collectively, these factors may contribute to increased occupational stress among orthodontists.^{3, 4} All aspects of orthodontic job satisfaction are impacted by occupational stress, however the most significant effects are seen in respect received, practice management, and personal time satisfaction.¹² Although the present study did not assess musculoskeletal disorders, previous studies among Nepalese dentists indicate that occupational demands may extend beyond psychological stress.⁹ However, further studies are needed to determine whether these findings also apply to orthodontists. The study by *Bhagat et al.*, found prevalence of burnout was found to be 69.7% in Nepal among the dentists of Nepal, however, further studies are needed to determine whether these findings also apply to orthodontists.¹³ Compared to the elder colleagues in this region, Nepalese dentists appear

to be less satisfied with their jobs.¹⁴ Frequency and severity of stress experienced by orthodontists was studied in this study. The items with a mean score of 2.20 or greater was considered the most concerning stress factors in orthodontic practice.³ In this study there were nine potential stressors as the most concerning stressors contributing to occupational stress which included relapse in patients after the orthodontic treatment, dealing with unrealistic patient expectations, patient failing to comply with the treatment instruction, parents/patients requesting to remove appliances/braces before treatment is completed, patients coming with a broken appliance, motivating patients with poor oral hygiene and/or decalcification, when there is lack of patient appreciation, when the patient is late/misses an appointment, and managing disagreements with co-workers regarding orthodontic care.

Relapse in patients after orthodontic treatment was the most stressful factor for practitioners in Nepal. This finding was similar to that reported in Nigerian,² India,³ Canadian,⁷ orthodontists. 76% of participants found relapse in patients after orthodontic treatment as very stressful in this study. This was in support of study by *Patel et al.*, where 40.9% agreed that after treating the patient, the retention phase of orthodontic treatment frequently causes stress.¹⁵ It is important to consider its implications within the Nepalese context. Orthodontic treatment is lengthy and requires sustained patient cooperation during both the active and retention phases. Relapse may result from inadequate retainer wear, missed follow-up visits, or premature discontinuation of retention, all of which can compromise treatment outcomes despite appropriate clinical management. Because relapse often necessitates additional appointments and retreatment, it increases clinical workload, prolongs treatment, and may adversely affect patient satisfaction and professional confidence.¹⁵

Dealing with unrealistic patient expectations was second major area of concern which was unlike the study by *Alqahtani et al.*,¹ Patient failing to comply with the treatment instruction is another area of concern similar to the study by *Alqahtani*

et al.,¹ Orthodontic patients increasingly expect ideal aesthetic outcomes, whereas successful treatment requires consistent adherence to clinical instructions. When patients or parents expect results that are not clinically achievable or fail to comply with recommendations, orthodontists may experience additional pressure related to treatment progress, communication, and patient satisfaction.¹ This highlight the importance of comprehensive patient education, informed consent, and regular reinforcement of treatment goals throughout the course of therapy.¹

Parents/patients requesting to remove appliances/braces before treatment is completed is area of concern similar to the study by *Alqahtani et al.*, *Aikins et al.*, *Chauhan*, *Roth et al.*,^{1, 2, 3, 7} Patients coming with a broken appliance is another area of concern similar to the study by *Alqahtani et al.*, *Aikins et al.*, *Chauhan*, *Roth et al.*,^{1, 2, 3, 7} unlike the study by *Ousehal et al.*¹¹ Clinicians experience "time pressures" when treating "patients with broken appliances," which makes it difficult for them to "try to keep to a schedule."⁷ Requests from patients or parents to remove appliances before treatment completion, together with the frequent occurrence of broken appliances, further reflect challenges in treatment adherence and practice management. Premature appliance removal may compromise treatment objectives and increase the risk of relapse, while broken appliances require unscheduled emergency visits, disrupt appointment schedules, and increase the clinician's workload.⁷ These situations may reduce clinical efficiency and contribute to occupational stress by making it difficult to maintain planned treatment timelines.⁷ Motivating patients with poor oral hygiene and/or decalcification is another area of concern similar to study by *Alqahtani et al.*, *Aikins et al.*, *Chauhan*, *Roth et al.*,^{1, 2, 3, 7} unlike the study by *Ousehal et al.*,¹¹ This issue emphasizes the importance of patients' cooperation during their treatment. Additionally, it demonstrates the orthodontists' preference for improving their patients' smiles over accepting the negative effects of inadequate cleanliness

throughout treatment. Maintaining adequate oral hygiene during fixed orthodontic treatment is essential to prevent enamel demineralization and periodontal complications.^{1,2,3} Repeated counselling and monitoring increase chairside time and demand continuous behavioral reinforcement, adding to the clinical burden. This underscores the importance of effective communication strategies and patient motivation throughout treatment.^{1,2,3}

When there is lack of patient appreciation is another major area of concern which is unlike the study by *Chauhan, Roth et al.*,^{3,6} When the patient is late/misses an appointment is another area of concern which is similar to the study by *Alqahtani et al.*, *Aikins et al.*, *Chauhan, Roth et al.*, *Ousehal et al.*,^{1,2,3,7,11} Missed or delayed appointments interfere with appointment scheduling, prolong overall treatment duration, and reduce practice efficiency. Because orthodontic practices rely on carefully planned follow-up visits over extended periods, disruptions to the treatment schedule may affect both patient outcomes and clinical productivity.^{1,2,3,7,11}

Managing disagreements with co-workers regarding orthodontic care is another area of concern similar to the study by *Roth et al.*,⁷ unlike the study by *Chauhan*.³ The reason for the discrepancy could be that an individual's interactions with their surroundings determine their level of occupational stress.⁵ Effective orthodontic treatment frequently requires collaboration with dental assistants, general dentists, and other specialists.⁷ Differences in clinical opinions, communication problems, or coordination difficulties may hinder efficient patient management and create additional workplace stress. Promoting effective teamwork, clear communication, and collaborative decision-making may therefore help reduce occupational stress among orthodontists.^{5,7}

Overall occupational stress for the practice of orthodontics was 1.91 ± 0.458 , which was less than the concerning factor of 2.2. Although the overall mean score was below the predefined cut-off, most orthodontists (78.4%) still perceived their work as moderately stressful. 6.4% found that the overall practice of orthodontics is very stressful which

is less than the general practitioners of Nepal.¹³ A significant stress-related concern among medical doctors, with 67.88% experiencing moderate stress and 17.88% reporting high-stress levels,⁵ whereas our study found 78.4% moderately stressful and 6.4% very stressful overall practice of orthodontics. Occupational stress of pedodontists is low similar to our study.¹⁶

In order to address the problems related to stress, the orthodontists must pay more attention while choosing a case to avoid relapse. To prevent patients from having needless, irrational expectations, patients must be informed about the scope and limitations of orthodontic therapy. If patients don't follow instructions or practice good oral hygiene, they should be held accountable for any relapses that occur following therapy. Before beginning therapy, written consent should be obtained stating that the patient will be solely responsible for any relapses if they request that the device or brackets be removed beforehand. Early recognition of occupational stress helps in preventing burnout in orthodontists.¹⁷ A study found that if an orthodontist concentrates on patient education, informed consent, maintaining dental cleanliness, and rigorous adherence to instructions, expectation management, compliance promotion, efficient appointment scheduling, communication about retention and relapse and workplace communication may help reduce occupational stress and improve both practitioner well-being and treatment outcomes.^{7,18} The study advocated certain ways to alleviate stress conditions like anticipate problems, time management skill, relaxation, diet and working habits.¹⁹ It is strongly advised that orthodontists embrace new methods with enthusiasm while maintaining a strong foundation in traditional technical and practical knowledge and paying close attention to developments in the field.⁴ Doctors could benefit from a comprehensive evaluation of job content and patient flow, as well as the deployment of organizational methods centered on staff health, to improve productivity and wellbeing.²⁰

Limitations

The study's limitations include the subjective nature of the recorded perceptions and the possibility that each respondent's unique circumstances could skew how they perceived some of the scenarios evaluated. Some of the findings of this study may not be immediately applicable to orthodontists working in other nations due to environmental variations that may influence perceptions of impact. Because of small sample size, relationship between age and gender with possible stressors was not studied. Since the study was cross-sectional, it was not possible to evaluate how coping techniques affected potential stressors.

Because the data were collected using self-administered questionnaire, the findings may be subject to self-report bias, including social desirability and response bias. Although a standardized close-ended questionnaire was used to improve consistency of responses, such bias cannot be completely eliminated.

It is advised to look more closely at longitudinal data to see how changes in environmental conditions affect orthodontists' work-related stress.

Conclusions

Evaluation of the occupational stress and determination of the potential stressors perceived by orthodontists in Nepal showed that the most concerning stressors in orthodontic practice was to see relapse in patients on retention after orthodontic treatment is over. In addition, there were other eight most concerning stressors contributing to occupational stress which included dealing with unrealistic patient expectations, patient failing to comply with the treatment instruction, parents/patients requesting to remove appliances/braces before treatment is completed, patients coming with

a broken appliance, motivating patients with poor oral hygiene and/or decalcification, when there is lack of patient appreciation, when the patient is late/misses an appointment, and managing disagreements with co-workers regarding orthodontic care.

Overall occupational stress score was 1.91 ± 0.458 . Although this value was below predefined cut-off value for most concerning stressors, majority (78.4%) of participants still reported as moderately stressful and 6.4% as very stressful.

Ethics approval

Ethical approval (Ref. No.: 32/082-083) was taken before the commencement of the study from IRC-NGMC of Nepalgunj Medical College, Kohalpur, Nepal.

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Conflict of interest

The authors declares no conflict of interest.

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Availability of data and materials

The collected data and detailed analyses will be made available upon reasonable request from the corresponding author.

Author contributions

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