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AGREEMENT BETWEEN PATIENT'S CHIEF COMPLAINT AND CLINICIAN'S DIAGNOSIS IN ORTHODONTIC PATIENTS: A DIAGNOSTIC CONCORDANCE STUDY

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ABSTRACT

Aim: To evaluate the level of agreement between orthodontic patients' chief complaints and clinicians' objective diagnoses and to identify factors associated with diagnostic mismatch. **Methods:** This cross-sectional diagnostic study included 180 orthodontic patients presenting at King Talal Military Hospital, Princess Haya Military Hospital, and Prince Rashid Military Hospital between November and December 2025. Before examination, each patient recorded a single primary chief complaint (crowding, spacing, esthetics, bite problem, midline deviation, or other). A blinded orthodontist performed a standardized clinical assessment and documented the primary diagnosis using the same categories. **Results:** Crowding (37%), esthetics (21%), and spacing (17%) were the most frequent chief complaints. Most often crowding (29%) and bite problems (20%) were identified as clinician diagnoses. The cases of diagnostic mismatch were found in (34%) patients. Mismatch-related comparisons did not reveal any differences in the distribution of study sites, age, sex, previous treatment, or chief complaint ($p>0.05$). Clinician diagnosis was unusual ($p=0.002$) with a high percentage of bite problems in the mismatch group (34% vs 13%), and a low percentage of crowding (15% vs 37%). **Conclusion:** Crowding (29%) as well as bite problems (20%) were diagnosed the most by clinicians. The cases of diagnostic mismatch were found in 34% of patients. Also clinician diagnosis had a high percentage of bite problems in the mismatch group. However, a low percentage of crowding was reported in the same group.

KEYWORDS: Orthodontics, chief complaint, patient perception.

INTRODUCTION

Patients who seeks care for orthodontics usually suffer from some manifestation such as malocclusions.[1] Research reported the most common experienced concerns before treatment such as alignment (89%), and smile problems in 63% of patients. Patients expected several outcomes after orthodontic management including better confidence and enhanced teeth appearance.[2]

Pain and orthodontic-related problems like crowding and malalignment is frequently reported by patients who attend dentistry clinics as well as dental caries is considered one of the most prevalent diagnosis among dental patients.[3] Patients' choices of orthodontic treatment are usually impacted by several features such as age, gender, and most importantly, the patient's perspectives of the appearance of their oral cavities.[4] Orthodontists can constantly have a better knowledge of a patient's aesthetic categorization or management needs.[5] Patient's own chief complaints can be utilized in conjugation with clinical information to better understand the diagnosis and the management of several orthodontic problems.[6] A prospective, cross-sectional study confirmed that both physicians and patients participate in clinical consultation.[7]

This study aims to evaluate the level of agreement between orthodontic patients' chief complaints and clinicians' objective diagnoses and to identify factors associated with diagnostic mismatch.

METHODS AND MATERIALS

Study design

This study was a retrospective descriptive analysis conducted on 180 participants mean age was 19.7. Our

study aimed to evaluate the level of agreement between orthodontic patients' chief complaints and clinicians' objective diagnoses and to identify factors associated with diagnostic mismatch. Data were collected from the Orthodontics Department at King Talal Military Hospital, Princess Haya Military Hospital, and Prince Rashid Military Hospital between November and December 2025.

Data collection

A total of 180 patients who had previous orthodontic treatment were included in this study. A primary chief complaint (crowding, spacing, esthetics, bite problem, midline deviation, or other) was recorded by each patient. Standardized clinical assessment was done by a blinded orthodontist and documented the primary diagnosis using the same categories. Cohen's kappa measured agreement between patient and clinician assessments. Sensitivity, specificity, positive predictive value, negative predictive value, and overall accuracy of diagnosis were reported for each complaint category. All extracted information was recorded in a structured database for subsequent statistical analysis.

Ethical considerations

The approval of this study was granted by the Institutional Review Board (IRB) committee affiliated with the Jordanian Royal Medical Services (approval no:###). All study procedures were in accordance with the Declaration of Helsinki, 1964. All patients' data were anonymized and safely stored.

Statistical Method

Continuous variables were described as mean ± standard deviation (SD) and categorical variables as counts and percentages. The Wilcoxon rank-sum test of continuous variables and Pearson Chi-squared test or Fisher exact test of categorical variables were used to Mismatch-related comparisons depending on the expected number of cells counts. Multivariate logistic regression then estimated adjusted odds ratios (ORs) with 95% confidence intervals (CIs) and corresponding p-values of factors associated with the occurrence of Mismatch with reference categories dictated a priori when categorical predictors were used. Statistical tests were all two-sided and <0.05 p-value was taken as significant.

RESULT

A total of 180 patients consisted. The average age was 19.7 ± 5.8 years, 82 (46) were female and 45 (25%) had a previous orthodontic treatment (Table 1). The participants were recruited in King Talal MH (43%), Prince Rashid MH (30%), and Princess Haya MH (27%). Crowding (66, 37%), esthetics (38, 21%), and spacing (31,17%) were the most frequent chief complaints. Most often crowding (53, 29%) and bite problems (36, 20%) were identified as clinician diagnoses. The cases of diagnostic mismatch were found in 61 (34%) patients.

Mismatch-related comparisons did not reveal any differences in the distribution of study sites (p = 0.20), age (19.5 ±5.9 vs 20.0 ±5.7 years; p = 0.50), sex (p = 0.70), previous orthodontic treatment (p = 0.80), or chief complaint (p = 0.90) when compared through chi-squared tests and independent-samples t tests (Table 2). Clinician diagnosis was unusual (p = 0.002) with a high percentage of bite problems in the mismatch group (34% vs 13%), and a low percentage of crowding (15% vs 37%).

In the multivariate logistic regression models, diagnostic mismatch was not found to relate to age, sex, previous orthodontic intervention or site of study. Adjusted odds ratios were 1.03 per year of age (95% CI 0.97-1.08; p = 0.40), 1.26 male/female (95% CI 0.67- 2.40; p = 0.50) and 0.78 previous orthodontic treatment (95% CI 0.36-1.61; p = 0.50). It was 1.53 in Prince Rashid MH (95% CI 0.74-3.16; p = 0.20) and 0.64 in Princess Haya MH (95% CI 0.28-1.43; p = 0.30) compared with King Talal MH.

Table 1: Baseline characteristics of the study population (N = 180).

Characteristic	Value
Study site	
King Talal MH	78 (43%)
Prince Rashid MH	54 (30%)
Princess Haya MH	48 (27%)
Age (years), mean ± SD	19.7 ± 5.8
Sex	
Female	82 (46%)
Male	98 (54%)
Prior orthodontic treatment	45 (25%)
Chief complaint	
Crowding	66 (37%)
Spacing	31 (17%)
Esthetics	38 (21%)
Bite problem	27 (15%)
Midline deviation	10 (5.6%)
Other	8 (4.4%)

Clinician diagnosis	
Crowding	53 (29%)
Spacing	32 (18%)
Esthetics	37 (21%)
Bite problem	36 (20%)
Midline deviation	14 (7.8%)
Other	8 (4.4%)
Diagnostic mismatch	61 (34%)
1 Mean (SD); n (%)	

Table 2: Comparison of patient characteristics by diagnostic mismatch status.

Characteristic	No mismatch (N = 119)	Mismatch (N = 61)	P value
Study site			0.20
King Talal MH	52 (44%)	26 (43%)	
Prince Rashid MH	31 (26%)	23 (38%)	
Princess Haya MH	36 (30%)	12 (20%)	
Age (years), mean ± SD	19.5 ± 5.9	20.0 ± 5.7	0.50
Sex			0.70
Female	56 (47%)	26 (43%)	
Male	63 (53%)	35 (57%)	
Prior orthodontic treatment	31 (26%)	14 (23%)	0.80
Chief complaint			0.90
Crowding	44 (37%)	22 (36%)	
Spacing	22 (18%)	9 (15%)	
Esthetics	26 (22%)	12 (20%)	
Bite problem	15 (13%)	12 (20%)	
Midline deviation	7 (5.9%)	3 (4.9%)	
Other	5 (4.2%)	3 (4.9%)	
Clinician diagnosis			**0.002**
Crowding	44 (37%)	9 (15%)	
Spacing	22 (18%)	10 (16%)	
Esthetics	26 (22%)	11 (18%)	
Bite problem	15 (13%)	21 (34%)	
Midline deviation	7 (5.9%)	7 (11%)	
Other	5 (4.2%)	3 (4.9%)	
1 Mean (SD); n (%) 2 Wilcoxon rank sum test; Pearson’s Chi-squared test; Fisher’s exact test			

Table 3: Multivariable logistic regression analysis of factors associated with diagnostic mismatch.

Characteristic	OR	95% CI		P value
		Lower	Upper	
Age (years)	1.03	0.97	1.08	0.40
Sex				
Female	Reference	—	—	—
Male	1.26	0.67	2.40	0.50
Prior orthodontic treatment				
No	Reference	—	—	—
Yes	0.78	0.36	1.61	0.50
Study site				
King Talal MH	Reference	—	—	—
Prince Rashid MH	1.53	0.74	3.16	0.20
Princess Haya MH	0.64	0.28	1.43	0.30
OR: Odds Ratio, CI: Confidence Interval				

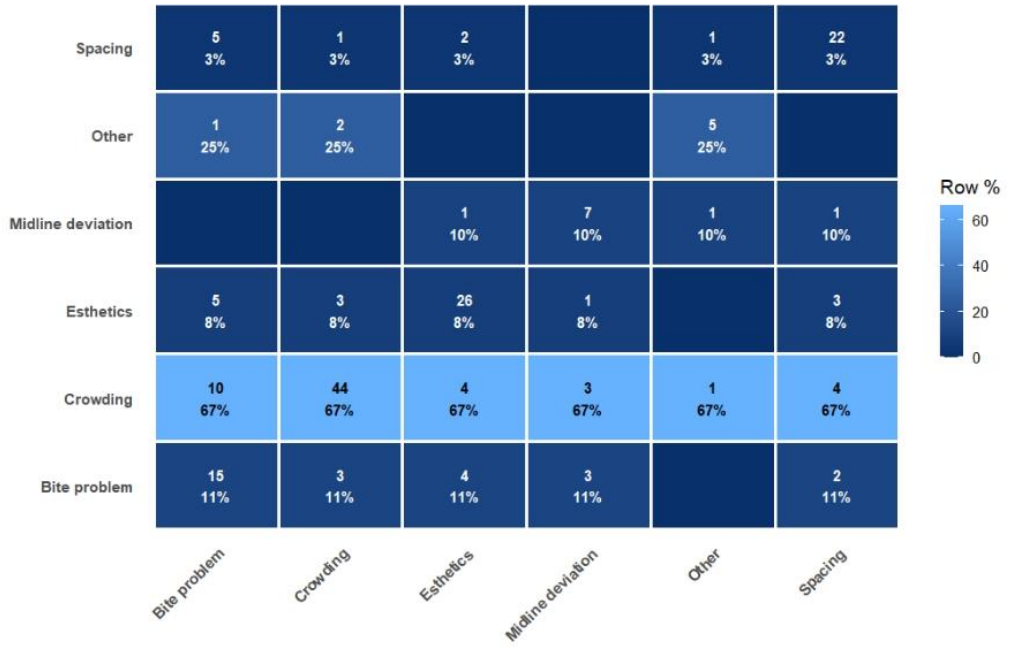

Figure 1: Concordance between Patient Chief Complaint and Clinician Primary Diagnosis.

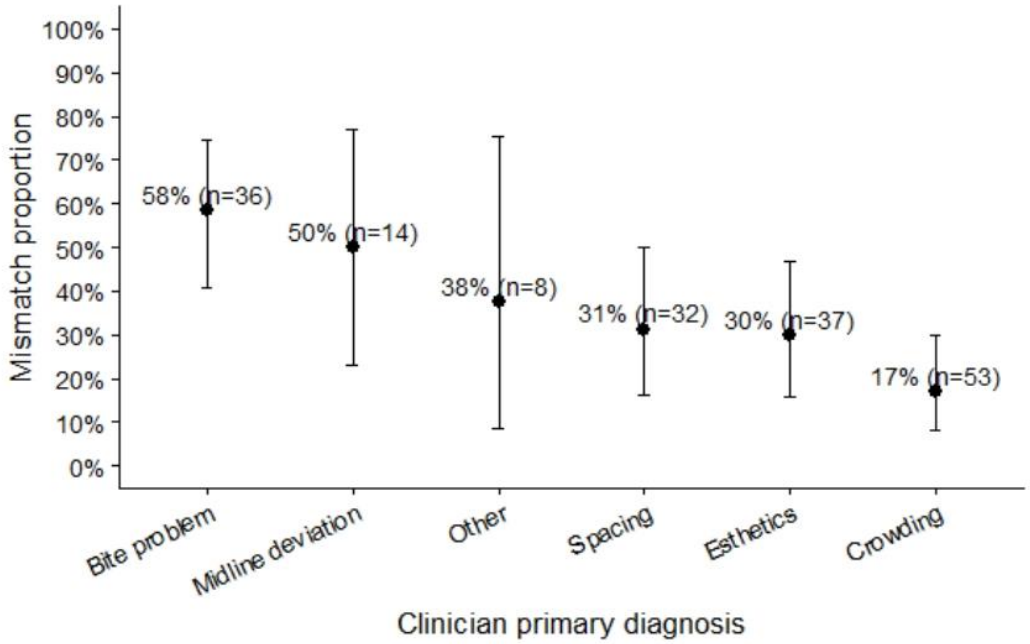

Figure 2: Diagnostic Mismatch By Clinician Primary Diagnosis Points Represent Mismatch Proportions; Vertical Lines Indicate 95% Binomial Confidence Intervals.

DISCUSSION

Initial physical complaints reported by patients can be different from what physicians recorded, resulting in complicated procedures that requires longer hospital stays and more resources.[8] This difference between patient's chief complaints and the reason for consultation could lead to dissatisfaction for patients. Literature recommendations included some ways to reduce dissatisfaction such as communication between patients and physicians before consultation, as well as shortening the time between referral and appointment.[9] Early diagnosis of some medical conditions is influenced by patient's chief complaints, additional testing using physical examination and imaging modalities can confirm the diagnosis accuracy.[10] In this study, the aim is to evaluate the level of agreement between orthodontic patients' chief complaints and clinicians' objective diagnoses and to identify factors associated with diagnostic mismatch. Choose of patients for orthodontic treatment depends on subjective factors such as patient's own opinion of orthodontic treatment as well as

objective determinants like physicians' clinical observations.[11]

In this cohort, most reported chief complaints by patients were crowding (37%), esthetics (21%), and spacing (17%). However, crowding (29%) as well as bite problems (20%) were diagnosed the most by clinicians. The cases of diagnostic mismatch were found in 34% of patients. A retrospective study was conducted at an Italian dental clinic found that overbite, overjet and crowding-spacing abnormalities were the primary causes that led patients to seek evaluation.[12] Moreover, another study was conducted at an Australian private clinic reported that the majority of patients' chief complaints were crowding in 37.6% of patients as well as aesthetics (21.3%).[13] In a very recent study, researchers reported significant discrepancies between self-perception of patients and clinicians' evaluations.[14]

Our cohort did not reveal any differences in the distribution of study sites, age, sex, previous orthodontic treatment, or chief complaint in the mismatch-related comparison (Table 2). Clinician diagnosis had a high percentage of bite problems in the mismatch group. However, a low percentage of crowding was reported in the same group. Recently, a cross-sectional study including 150 patients, reported that while demographic factors did not influence an individual's orthodontic treatment requirement, the nature of orthodontic presenting complaints did. Treatment need was higher in those with more obvious aesthetic problems.[15] These results emphasize the need to take patients' perceptions into account while conducting clinical evaluations in order to improve communication, compliance and general satisfaction with orthodontic management.

There are some limitations that we should acknowledge in this study such as the cross-sectional nature and limited sample size may limit the generalizability of the findings and induce bias. However, the involvement of multiple centers across Jordan is a strength of this cohort. We encourage future studies to include a larger sample size in order to enhance the outcomes and results.

CONCLUSION

Patients seeking orthodontic care might exhibit a different understanding of the underlying problem from clinical findings. Assessing the agreement between patient-reported chief complaints and orthodontic diagnoses is essential for improving communication, expectation management, and treatment planning. In this study, most reported chief complaints by patients were crowding (37%), esthetics (21%), and spacing (17%). However, crowding (29%) as well as bite problems (20%) were diagnosed the most by clinicians. The cases of diagnostic mismatch were found in 34% of patients. We also found that clinician diagnosis had a high percentage of bite problems in the mismatch group. However, a low percentage of crowding was reported in the same group.

REFERENCES

1. Jabbar A, Khatri MS, Saeed K, Shah S, Bai K, Shakeel S. Problems related to patients seeking orthodontic treatment. Int J of Health Sci., 2022; 6(S10): 1282–9.
2. Bradley E, Shelton A, Hodge T, Morris D, Bekker H, Fletcher S, et al. Patient-reported experience and outcomes from orthodontic treatment. Journal of Orthodontics [Internet], 2020 Feb 29 [cited 2026 Jan 20]; Available from: https://journals.sagepub.com/doi/10.1177/1465312520904377
3. Gudipaneni RK, Aldahmeshi RF, Patil SR, Alam MK. The prevalence of malocclusion and the need for orthodontic treatment among adolescents in the northern border region of Saudi Arabia: an epidemiological study. BMC Oral Health, Dec. 1, 2018; 18(1): 16.
4. Alshammari AK, Siddiqui AA, Shammary NHA, Malik YR, Alam MK. Assessment of Perception and Barriers toward Orthodontic Treatment Needs in the Saudi Arabian Adult Population. Healthcare, Dec. 9, 2022; 10(12): 2488.
5. Ta S, A S, M F. Agreement between orthodontist and patient perception using Index of Orthodontic Treatment Need. The Saudi dental journal [Internet], Oct. 2014; [cited 2026 Jan 17]; 26(4). Available from: https://pubmed.ncbi.nlm.nih.gov/25382948/
6. L S, M K, T S, C M, Caj B, J K, et al. Changes in patient-reported chief complaints with orthognathic surgery: a prospective cohort study. Progress in orthodontics [Internet], Jul. 22, 2025; [cited 2026 Jan 17]; 26(1). Available from: https://pubmed.ncbi.nlm.nih.gov/40694175/
7. Amin N, Cunningham SJ, Jones EM, Ryan FS. Investigating perceptions of patient-centred care in orthodontics. Journal of Orthodontics [Internet], Sep. 15, 2020; [cited 2026 Jan 18]; Available from: https://journals.sagepub.com/doi/10.1177/1465312520952802
8. Rueegg M, Nickel CH, Bingisser R. Disagreements between emergency patients and physicians regarding chief complaint – Patient factors and prognostic implications. International Journal of Clinical Practice May 1, 2021; 75(5): e14070.
9. Mann SE, White S, Officer LC, Ramos L, Hirsch S, Ferril GR. Patient Chief Complaint and Otolaryngology Referral Rationale: Discordance and Opportunities for Quality Improvement. Annals of Otology, Rhinology & Laryngology [Internet]. 2021 Oct 29 [cited 2026 Jan 19]; Available from: https://journals.sagepub.com/doi/10.1177/00034894211052844
10. Feng Y, Dai W, Wang Y, Liao J, Wei X, Xie S, et al. Comparison of Chief Complaints and Patient-Reported Symptoms of Treatment-Naive Lung Cancer Patients Before Surgery . PPA, May 25, 2021; 15: 1101–6.
11. Salih FN, Lindsten R, Bågesund M. Perception of orthodontic treatment need among Swedish children,

adolescents and young adults. Acta Odontologica Scandinavica [Internet], Aug. 18, 2017; [cited 2026 Jan 19]; Available from: https://www.tandfonline.com/doi/abs/10.1080/00016357.2017.1326062

12. Di Blasio M, Vaienti B, Pedrazzi G, Cassi D, Magnifico M, Meneghello S, et al. Are the Reasons Why Patients Are Referred for an Orthodontic Visit Correct? International Journal of Environmental Research and Public Health, Jan. 2021; 18(10): 5201.
13. (PDF) A clinically based review of patient and treatment characteristics in West Australian private orthodontic practices. ResearchGate [Internet]. 2025 Aug 8 [cited 2026 Jan 19]; Available from: https://www.researchgate.net/publication/342275351_A_clinically_based_review_of_patient_and_treatment_characteristics_in_West_Australian_private_orthodontic_practices
14. LWW [Internet]. [cited 2026 Jan 19]. Comparative evaluation of orthodontic treatment needs index ... : Journal of Orthodontic Science. Available from: https://journals.lww.com/joos/fulltext/2025/09290/comparative_evaluation_of_orthodontic_treatment.30.aspx
15. (PDF) Assessment of Self-Perception Regarding Orthodontic Treatment Need Among Patients Presenting to Batman University Faculty of Dentistry. ResearchGate [Internet]. 2026 Jan 17 [cited 2026 Jan 20]; Available from: https://www.researchgate.net/publication/399752374_Assessment_of_Self-Perception_Regarding_Orthodontic_Treatment_Need_Among_Patients_Presenting_to_Batman_University_Faculty_of_Dentistry