Original Article

Perceptions and Experiences of Gender Bias in Dental Education and Clinical Practice: A Cross-Sectional Study

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ABSTRACT

Background: Gender biasness in dental education and dental practice affect clinical-training, evaluation, leadership possibilities, and progression of career. Dental-related literature from Pakistan is limited. This study assessed reported experiences and perceptions of gender bias among dental students, trainees, and faculty members in dental institutes in Punjab, Pakistan.

Methodology: This multicentre online cross-sectional survey was conducted from January 2023 to February 2024. Final-year dental students, house officers, postgraduate trainees, demonstrators/senior demonstrators, and faculty members were recruited by non-probability convenience sampling. A 23-item questionnaire, reviewed by two experts and pilot-tested, assessed clinical equality, perceived patient gender preference, women's competence and leadership, discrimination, and gender-related denial of employment or promotion. Categorical responses were compared by gender using Pearson's chi-square or Fisher–Freeman–Halton exact tests.

Results: Of 250 eligible individuals invited, 222 participated (response rate 88.8%). Perceived patient preference for male dentists was reported by 162 (73.0%) participants, without a significant gender difference ($p = 0.079$). Support for women in leadership was reported by 117 (52.7%) and differed significantly by gender ($p < 0.001$). Gender discrimination in dental clinics was reported by 176 (79.3%; $p = 0.211$). Women being treated as less competent was reported by 175 (78.8%), with a significant gender difference ($p < 0.001$). Gender-related denial of a job/assignment and promotion was reported by 116 (52.3%) and 84 (37.8%), respectively; gender differences were not significant.

Conclusion: Gender bias was commonly perceived and reported within the surveyed institutions. Institutional strategies are needed to promote transparent, equitable, and inclusive educational and professional environments.

Keywords: Gender bias; Dental education; Dentistry; Gender equity; Pakistan

INTRODUCTION

Gender bias in dentistry comprises conscious or unconscious beliefs, behaviours, and institutional practices that produce differential treatment, evaluation, or opportunity on the basis of gender.[1] It may arise during clinical training, specialty selection, recruitment, remuneration, promotion, and appointment to academic or professional leadership.[2] Bias can be interpersonal, such as stereotyped judgments of competence, or structural, such as unequal access to mentorship, clinical exposure, advancement, and decision-making. These experiences may influence confidence, career progression, retention, professional wellbeing, and participation in institutional leadership.[3,4]

The dental workforce has become increasingly feminised, but numerical representation has not consistently translated into equity at senior levels.[5] The Pakistan Medical and Dental Council currently lists 28,138 women among 40,920 registered dental practitioners (68.8%).[1] Internationally, women's representation has increased among dental graduates and faculty, yet women remain less represented among full professors, department chairs, and deans.[2,3] US data from 2011-2019 showed a slower increase in women's representation among senior faculty and leadership than among dental graduates,[2] and the ratio of male to female dental-school deans was approximately 5:1 in 2021.[3,6] Recent research reported that women in dental education continue to report concerns about pay equity, mentorship, and advancement despite increasing participation in leadership.[7,8]

Gender-related experiences also occur within dental education. An international survey of 990 female dental students found substantial institutional variation in

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perceived faculty bias, harassment, and willingness to report misconduct.[4] In three Brazilian dental schools, 68% of students reported discrimination in the academic environment, with gender among the principal reported reasons.[5] The 2022 American Dental Education Association Climate Study further demonstrated that experiences of micro-aggressions, harassment, and discrimination varied by institutional role and region.[6] Clinical education may be particularly sensitive to gendered expectations because students and trainees are assessed through close interpersonal supervision, receive procedure allocations, and depend on faculty feedback and mentorship.[5]

Professional stereotypes may extend beyond the educational environment. Female dentists in Saudi Arabia have reported environmental, interpersonal, family, and cultural barriers to career progression, including gender discrimination and restricted promotion opportunities.[7] Pakistani evidence is limited and fragmented. A Lahore survey of medical and dental students reported that 78% had experienced gender discrimination, but the mixed sample and single-institution design limited dental-specific interpretation.[9] Qualitative research among Pakistani women dentists described interactions between career continuation, family roles, and institutional opportunities,[10] while women comprised only 17.5% of editorial-board members of Pakistani medical and dental journals in an earlier national review.[11] Pakistani women in healthcare leadership have additionally identified gender stereotypes, limited organisational support, and unequal opportunities as barriers to advancement.[12]

Available literature, therefore, does not adequately describe how gender bias is perceived and experienced across different stages of dental education and professional practice in Pakistan. In particular, limited knowledge exists about perceived clinical equality, patient gender preferences, professional competence, leadership, employment, and promotion among students, early-career trainees, and faculty within the same institutional settings. Such information may help institutions identify where inequities are perceived, refine reporting and mentorship structures, and design more focused equity initiatives.

This study aimed to assess perceptions and reported experiences of gender bias among final-year dental students, house officers, postgraduate trainees, demonstrators/senior demonstrators, and faculty members at six selected public and private dental institutes in Punjab, Pakistan, and to compare responses between male and female participants.

METHODOLOGY

This multicenter, questionnaire-based descriptive cross-sectional study, using online data collection was conducted at University College of Dentistry, Lahore, from January 1, 2023, to February 20, 2024. The data was collected form six dental institutes in Punjab, Pakistan, comprising four private and two public institutions, and were reported anonymously.

The Institutional Review Board of the University College of Medicine and Dentistry, University of Lahore approved the study (Ref: UCD/ERCA/24/281). Electronic informed consent was obtained. The introductory page explained the study purpose, voluntary participation, and confidentiality statement. No direct personal identifiers were collected.

The minimum sample size was estimated using $n = Z^2p(1-p)/d^2$ formula, where n = required sample, Z = standard normal value, p = anticipated proportion, and d = absolute precision. A 95% confidence level (Z = 1.96), expected proportion of 0.78, and precision of 5.5% were used. The expected proportion was based on a Pakistani survey in which 78% of medical and dental students reported gender discrimination.[9] A sample size of 218 participants was calculated and to allow for non-response, 250 eligible individuals were invited.

Eligible participants were final-year undergraduate dental students undertaking clinical training, house officers, postgraduate dental trainees/residents, demonstrators/senior demonstrators, and faculty members (assistant professor or above). Individuals not meeting the inclusion criteria and those who did not consent were excluded.

Eligible participants were approached through WhatsApp and Facebook groups. Participation was voluntary using non-probability convenience sampling with a voluntary-response component. The survey link included the study purpose, consent and confidentiality statement. All 222 submitted questionnaires were complete and eligible; none was excluded. Because data was anonymous, duplicate participation could not be conclusively excluded, although the distribution was restricted to participating institutional groups.

Following a comprehensive review of the relevant literature, a 23-item questionnaire comprising two sections was developed using Google Forms (Google Inc.) and subsequently distributed to potential participants through WhatsApp and Facebook groups. The first section recorded age, gender, institutional sector, and designation. The second assessed perceived equality of clinical treatment, perceived patient preference for male or female dentists, support for women in leadership, reported gender discrimination in dental clinics, perceptions that women were treated as less competent, and reported gender-related denial of jobs/assignments or promotion. Perception items used a four-point Likert (strongly disagree, disagree, agree, strongly agree); experience

items used four frequency categories (most of the time, some of the time, seldom, never).

Gender bias was operationally defined as a participant's perception or reported experience of differential treatment, preference, evaluation, or professional opportunity on the basis of gender. Items included were related to patient preference and determined perceptions. Employment and promotion items indicated self-reported experiences only. Since items assessed various construct no composite scoring was calculated.

Two experts from community dentistry department reviewed the instrument for relevance, clarity, coverage, and appropriateness. Face-validation changes included rephrasing unclear items. The revised instrument was pilot-tested in 30 eligible individuals, who were excluded from the main sample, to assess clarity, completion time, technical functionality, and acceptability. Overall internal consistency was acceptable (Cronbach's alpha = 0.80).

Responses were downloaded from Google Forms, checked, coded, and analysed in IBM SPSS version 24 (IBM Corp., USA). Age was reported as mean±standard deviation. Categorical variables were presented as frequencies and percentages. For brief descriptive overview, "agree" and "strongly agree" were combined, and any reported occurrence ("most," "some," or "seldom") was compared with "never"; inferential analyses retained all four response categories. Pearson's chi-square test compared male and female participants. Expected cell frequencies were examined, and Fisher-Freeman-Halton exact test was used for 2 × 4 tables when more than 20% of expected cell counts were below five. Cramer's V determined association strength, with approximately 0.10, 0.30, and 0.50 interpreted as small, moderate, and large associations. Tests were two-tailed and a p-value ≤0.05 was considered statistically significant.

RESULTS

Of the 250 eligible individuals invited, 222 completed the questionnaire (response rate: 88.8%); 28 did not respond. No completed responses were excluded. The mean age of participants was 24.4 ± 4.2 years. Of the participants, 176 (79.3%) were female, and 180 (81.1%) belonged to private institutions. Regarding designation, 97 (43.7%) were final-year dental students, followed by 53 (23.9%) house officers, 36 (16.2%) demonstrators/senior demonstrators, 29 (13.1%) postgraduate trainees, and 7 (3.2%) assistant professors or higher-ranking faculty members (Table 1).

Overall, 116 (52.3%) participants disagreed or strongly disagreed that male and female students or house officers were treated equally in clinics, whereas 106 (47.7%) agreed or strongly agreed. The four-category response distributions did not differ significantly by gender ($\chi^2 = 2.02$, $p = 0.568$, Cramer's V = 0.095).

Table 1: Demographic and professional profile of study participants (n = 222)

Characteristics	n (%)
Gender	
Male	46 (20.7)
Female	176 (79.3)
Institutional sector	
Private	180 (81.1)
Public	42 (18.9)
Designation	
Final-year dental student	97 (43.7)
House officer	53 (23.9)
Postgraduate trainee	29 (13.1)
Demonstrator/senior demonstrator	36 (16.2)
Assistant professor or above	7 (3.2)

Perceived patient preference for male dentists was reported by 162 (73%) participants, including 132/176 (75%) female respondents and 30/46 (65.2%) male respondents. The four-category response distributions did not differ significantly by gender ($\chi^2 = 6.80$, $p = 0.079$, Cramer's V = 0.175). Similarly, perceived patient preference for female dentists was reported by 65 (29.3%) participants, including 56/176 (31.8%) female respondents and 9/46 (19.6%) male respondents. However, the four-category response distributions differed significantly by gender (Fisher–Freeman–Halton exact test, $p = 0.001$, Cramer's V = 0.272).

Overall, 117 (52.7%) participants supported women in key leadership roles, including 34/46 (73.9%) male respondents and 83/176 (47.2%) female respondents. The four-category response distributions differed significantly by gender (Fisher–Freeman–Halton exact test, $p < 0.001$, Cramer's V = 0.290) (Table 2).

Gender discrimination in dental clinics was reported at least seldom by 176 (79.3%) participants, including 143/176 (81.3%) female respondents and 33/46 (71.7%) male respondents. The four-category response distributions did not differ significantly by gender ($\chi^2 = 4.51$, $p = 0.211$, Cramer's V = 0.143). Similarly, 175 (78.8%) participants reported that women were treated as less competent in the workplace at least seldom, including 149/176 (84.7%) female respondents and 26/46 (56.5%) male respondents. The four-category response distributions differed significantly by gender ($\chi^2 = 19.55$, $p < 0.001$, Cramer's V = 0.297).

Gender-related denial of a job or assignment was reported at least seldom by 116 (52.3%) participants, including 98/176 (55.7%) female respondents and 18/46 (39.1%) male respondents. The four-category response distributions did not differ significantly by gender ($\chi^2 = 4.80$, $p = 0.187$, Cramer's V = 0.147). Similarly, gender-

related denial of promotion was reported at least seldom by 84 (37.8%) participants, including 67/176 (38.1%) female respondents and 17/46 (37%) male respondents. The four-category response distributions did not differ significantly by gender (Fisher–Freeman–Halton exact test, p = 0.072, Cramer's V = 0.171) (Table 3). These findings represent participants' self-reported perceptions and experiences and were not independently verified.

Table 2: Perceptions of gender bias according to respondents' gender (n = 222)

Statement/response	Total n (%)	Male n (%)	Female n (%)	Test	p-value	Cramer's V
Male and female students/house officers are treated equally in clinics						
Strongly disagree	30 (13.5)	6 (13.0)	24 (13.6)	$\chi^2 = 2.02$	0.568	0.095
Disagree	86 (38.7)	14 (30.4)	72 (40.9)			
Agree	87 (39.2)	21 (45.7)	66 (37.5)			
Strongly agree	19 (8.6)	5 (10.9)	14 (8.0)			
Patients prefer male dentists						
Strongly disagree	11 (5.0)	5 (10.9)	6 (3.4)	$\chi^2 = 6.80$	0.079	0.175
Disagree	49 (22.1)	11 (23.9)	38 (21.6)			
Agree	123 (55.4)	26 (56.5)	97 (55.1)			
Strongly agree	39 (17.6)	4 (8.7)	35 (19.9)			
Patients prefer female dentists						
Strongly disagree	13 (5.9)	2 (4.3)	11 (6.3)	Exact	0.001	0.272
Disagree	144 (64.9)	35 (76.1)	109 (61.9)			
Agree	57 (25.7)	4 (8.7)	53 (30.1)			
Strongly agree	8 (3.6)	5 (10.9)	3 (1.7)			
Women should be given key leadership roles						
Strongly disagree	14 (6.3)	5 (10.9)	9 (5.1)	Exact	<0.001	0.290
Disagree	91 (41.0)	7 (15.2)	84 (47.7)			
Agree	98 (44.1)	31 (67.4)	67 (38.1)			
Strongly agree	19 (8.6)	3 (6.5)	16 (9.1)			

Pearson's chi-square test was used when assumptions were met; the Fisher-Freeman-Halton exact test was used for sparse 2 x 4 tables. All tests were two-tailed.

Table 3: Reported experiences of gender discrimination according to respondents' gender (n = 222)

Statement/response	Total n (%)	Male n (%)	Female n (%)	Test	p-vale	Cramer's V
Experienced gender discrimination in dental clinics						
Most of the time	44 (19.8)	7 (15.2)	37 (21.0)	$\chi^2 = 4.51$	0.211	0.143
Some of the time	83 (37.4)	13 (28.3)	70 (39.8)			
Seldom	49 (22.1)	13 (28.3)	36 (20.5)			
Never	46 (20.7)	13 (28.3)	33 (18.8)			
Women are treated as less competent in the workplace						
Most of the time	51 (23.0)	5 (10.9)	46 (26.1)	$\chi^2 = 19.55$	<0.001	0.297
Some of the time	73 (32.9)	10 (21.7)	63 (35.8)			
Seldom	51 (23.0)	11 (23.9)	40 (22.7)			
Never	47 (21.2)	20 (43.5)	27 (15.3)			
Turned down a job or assignment based on gender						
Most of the time	15 (6.8)	2 (4.3)	13 (7.4)	$\chi^2 = 4.80$	0.187	0.147
Some of the time	49 (22.1)	6 (13.0)	43 (24.4)			
Seldom	52 (23.4)	10 (21.7)	42 (23.9)			
Never	106 (47.7)	28 (60.9)	78 (44.3)			
Denied a promotion based on gender						
Most of the time	18 (8.1)	6 (13.0)	12 (6.8)	Exact	0.072	0.171
Some of the time	43 (19.4)	4 (8.7)	39 (22.2)			
Seldom	23 (10.4)	7 (15.2)	16 (9.1)			
Never	138 (62.2)	29 (63.0)	109 (61.9)			

Pearson's chi-square test was used when assumptions were met; the Fisher-Freeman-Halton exact test was used for sparse 2 x 4 tables. All tests were two-tailed.

DISCUSSION

This study found that gender bias was commonly perceived and reported across the six surveyed dental institutes. Nearly three-quarters of participants perceived that patients prefer male dentists, although this perception did not differ significantly between male and female respondents. Approximately four-fifths reported experiencing gender discrimination and that women were treated as less competent at work. The most significant gender difference concerned perceived professional competence, reported by 84.7% of women and 56.5% of men. Support for women in leadership was significantly

different by gender. Reports of job/assignment denial and promotion denial were common, but gender-wise difference was not significant.

The perceived preference for male dentists should be interpreted cautiously because patients were not surveyed. Patient-based studies have produced variable findings. A recent mixed-method study from three private dental hospitals in Lahore found that patients associated male dentists with decisiveness and experience and female dentists with sensitivity, preventive care, and attention to detail, rather than demonstrating a uniform preference for one gender.[13] In Saudi Arabia, many patients reported no gender preference, with reputation, communication, clinical rank, and cost influencing dentist selection.[14] Differences between these studies may reflect patient populations, treatment contexts, survey wording, and sociocultural expectations. The present result therefore indicates a perceived stereotype within dental institutions, not an established societal preference.

The frequency of reported discrimination is similar to the 78% reported among medical and dental students in Lahore,[9] but comparisons must account for the earlier study's single-centre, mixed-profession sample. International dental education findings also vary. Tiwana et al. reported that 48% of students at one US dental school had experienced or witnessed gender-based prejudice in clinical settings,[15] while an international survey demonstrated pronounced differences among dental schools in faculty bias, harassment, and reporting confidence.[4] Brazilian research found discrimination in 68% of dental students and associations with gender, institutional sector, and stage of training.[5] The ADEA climate study similarly showed that experiences varied by institutional role and region.[6] These differences support the reviewer's concern that gender alone may not explain participants' responses; designation, institutional sector, and centre-level culture may also be relevant.

Perceived professional competence reported the clearest gender disparity. This should not be interpreted as evidence of actual differences in clinical ability, rather, it suggests that women were more likely to perceive or encounter questioning of capability. Previous study from India has identified stereotypes related male technical superiority and resistance to women who exercise authority,[16] while Saudi dental students have reported gender base expectations regarding specialty choice and workload.[17] Such stereotypes may affect feedback, confidence, clinical allocation, and career decisions even when objective competence is not assessed.

The leadership finding was unexpected: support for women in leadership was lower among female than male respondents. The study did not assess leadership aspirations, previous experiences, family responsibilities, or interpretation of the item, so causal explanations would be speculative. Nevertheless, structural underrepresentation remains well documented. Women continue to be underrepresented in senior academic dentistry and deanship despite rising numbers of graduates and faculty.[2,3] In a recent US survey, 71% of women dental faculty perceived unequal compensation and called for pay equity, mentorship, leadership development, and supportive workplaces.[8] Pakistani studies have likewise identified gender stereotypes, limited organisational support, work-family pressures, and restricted opportunities as barriers to healthcare leadership.[12,18] Qualitative work is needed to explain the direction of the present finding.

More than half of participants reported gender-related denial of a job or assignment and over one-third reported promotion denial. These experiences were not independently confirmed, and the questions may have had different relevance across career stages. Final-year students may have limited exposure to promotion processes, whereas trainees and faculty may have greater opportunity to encounter recruitment or advancement decisions. Saudi research has linked family and environmental factors with promotion among female dentists,[7] and bibliometric evidence demonstrates persistent gender disparities in leadership within dental research.[19-21] Analyses restricted to participants eligible for employment or promotion, and stratified by designation and sector, would provide more precise estimates.

The sample composition limits interpretation. Women comprised 79.3% and private-sector participants 81.1% of respondents. These distributions may reflect the underlying dental workforce, in which women are now the majority in Pakistan,[1] but the study did not compare respondents with complete institutional rosters. The results may therefore disproportionately reflect women and private-institution environments.

The findings support institutional rather than solely individual responses. Dental institutes should use transparent criteria for clinical allocation, assessment, recruitment, promotion, remuneration, and leadership appointments. The confidential reporting pathways, faculty training on gender differences, a strong un-biased human resource department and structured mentorship and sponsorship are essential.

Limitations of this study include the cross-sectional design, non-probability sampling, and female and private-sector predominance, which is a condition common in this region as females prefer healthcare fields more commonly than males. Anonymous self-reporting may sometimes introduce recall and social-desirability bias, moreover, the duplicate participation could not be conclusively excluded, although focal persons at each institute ensured

suppression of duplicate responses. The study was limited to six selected institutions and should not be considered representative of Punjab or Pakistan. Despite these limitations, it provides multicentre evidence from several categories of dental learners and professionals and identifies priorities for larger stratified, qualitative, and longitudinal studies.

CONCLUSION

Gender bias was commonly perceived and reported among dental students, trainees, and faculty members. Participants perceived a preference for male dentists and concerns involving professional competence, leadership, employment, and promotion. Significant gender differences were observed in competence and leadership responses. As these were self-reported perceptions and experiences, they should not be interpreted as objective patient behaviour or causal evidence of employment discrimination. Institutional strategies should promote transparent opportunities, gender equity, and an inclusive educational and professional environment.

Author Contributions

GA: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing. HH: Conceptualization, Formal analysis, Investigation, Data curation, Writing – original draft. MH: Conceptualization, Data curation, Writing – original draft, Writing – review & editing. ME: Investigation, Data curation, Formal analysis, Writing – original draft. AH: Investigation (literature search), Writing – original draft, Writing – review & editing. All authors reviewed and approved the final version of the manuscript and agree to be accountable for their respective contributions.

AI Disclosure

The authors declared that no generative AI or AI-assisted technologies were used in the preparation of this manuscript.

REFERENCES

1. Pakistan Medical and Dental Council. Statistical data of total medical and dental practitioners registered with Pakistan Medical and Dental Council [Internet]. Islamabad: Pakistan Medical and Dental Council; [cited 2026 Jul 30]. Available from: https://pmdc.pk/
2. Kim A, Karra N, Song C, Linder PJ, Bonino F, Doig P, et al. Gender trends in dentistry: dental faculty and academic leadership. J Dent Educ. 2024;88(1):23-29. doi:10.1002/jdd.13389.
3. Bompolaki D, Pokala SV, Koka S. Gender diversity and senior leadership in academic dentistry: female representation at the dean position in the United States. J Dent Educ. 2022;86(4):401-405. doi:10.1002/jdd.12816.
4. Ivanoff CS, Luan DM, Hottel TL, Andonov B, Ricci Volpato LE, Kumar RR, et al. An international survey of female dental students' perceptions about gender bias and sexual misconduct at four dental schools. J Dent Educ. 2018;82(10):1022-1035. doi:10.21815/JDE.018.105.
5. Sartori LRM, Henzel LT, Chisini LA, de Oliveira LJC, Saboia VPA, Correa MB. Discrimination and dental students: what is the reality in Brazilian institutions? Eur J Dent Educ. 2024;28(1):130-141. doi:10.1111/eje.12929.
6. Escontrias OA, Garcia MN, Escontrias G Jr, Butts-Wilmsmeyer C. Microaggressions, harassment, and discrimination in dental education: results from the 2022 American Dental Education Association Climate Study. J Dent Educ. 2025;89(5):649-657. doi:10.1002/jdd.13744.
7. Rajeh M, Nicolau B, Qutob A, Pluye P, Esfandiari S. A survey of the barriers affecting the career practice and promotions of female dentists in Saudi Arabia. JDR Clin Trans Res. 2019;4(2):187-195. doi:10.1177/2380084418815458.
8. Wendland ME, Gadbury-Amyot CC, Van Ness CJ, Haas SE. Women in dental education and their desire to lead: a follow-up. J Dent Educ. 2024;88 Suppl 1:690-698. doi:10.1002/jdd.13507.
9. Hashmi AM, Rehman A, Butt Z, Aftab MA, Shahid A, Khan SA. Gender discrimination among medical students in Pakistan: a cross-sectional survey. Pak J Med Sci. 2013;29(2):449-453. doi:10.12669/pjms.292.3256.
10. Mumtaz R, Qazi SH, Sajjad S. Balancing profession, family and cultural norms by women dentists in Pakistan. Open J Soc Sci. 2018;6(5):154-170. doi:10.4236/jss.2018.65013.
11. Bakht N, Arshad S, Zaidi SSN. Under-representation of women in the editorial boards of medical and dental journals of Pakistan. J Pak Med Assoc. 2017;67(5):722-724.
12. Iftikhar S, Yasmeen R, Khan RA, Arooj M. Barriers and facilitators for female healthcare professionals to be leaders in Pakistan: a qualitative exploratory study. J Healthc Leadersh. 2023;15:71-82. doi:10.2147/JHL.S399430.
13. Ehsan A, Aftab E, Khan MAJ, Azhar N, Ayub I, Sajjad A. Gender predisposition in patient attitudes and preferences during dental treatment: a mixed-method study from Lahore, Pakistan. Pak J Med Sci. 2025;41(10):2732-2738. doi:10.12669/pjms.41.10.11952.
14. Alsaeed S, Alghurairi N, Almutairi L, Alossimi A, Bin Fadhl A, Abahussain S. Factors that affect Saudi population preferences toward their dentist. Patient Prefer Adherence. 2021;15:2693-2701. doi:10.2147/PPA.S333994.
15. Tiwana KK, Kutcher MJ, Phillips C, Stein M, Oliver J. Gender issues in clinical dental education. J Dent Educ. 2014;78(3):401-410. doi:10.1002/j.0022-0337.2014.78.3.tb05690.x.
16. Iyer RR, Sethuraman R, Wadhwa M. A qualitative research analysis of gender-based parities and disparities at workplace experienced by female dentists of Vadodara, India. Indian J Dent Res. 2020;31(5):694-700. doi:10.4103/ijdr.IJDR_586_18.
17. Pullishery F, Alhejoury HA, Ahmed TH, Allugmani WA, Alrowaily GS, Aljohani DD, et al. Perception of dental students on gender preferences in career choice, plans, and expectations in dentistry in the Kingdom of Saudi Arabia. J Pharm Bioallied Sci. 2021;13 Suppl 1:S821-S825. doi:10.4103/jpbs.JPBS_803_20.
18. Khan KI, Jamil B, Muhammad M, Mohsin S, Khan AH, Javed MQ. Gender inequality in healthcare leadership: the challenges women face in breaking through the glass ceiling. BMC Health Serv Res. 2025;25:190. doi:10.1186/s12913-025-12347-y.
19. Gatti-Reis L, Mattos FF, Pordeus IA, Martins-Junior PA, Coutinho DCO, Perazzo MF, et al. Leadership through a gender lens: disparities in dental research. Braz Dent J. 2023;34(6):100-109. doi:10.1590/0103-644020230555959.
20. Sawair FA, Baqain ZH, Al-Omari IK, Wahab FK, Rajab LD. Effect of gender on performance of undergraduate dental students at the University of Jordan, Amman. J Dent Educ. 2009;73(11):1313-1319. doi:10.1002/j.0022-0337.2009.73.11.tb04823.x.
21. Emrani R, Katayoun S, Hossein H, Edalat M. Differences in the work pattern of male and female dentists in Tehran in 2021. Ital J Gender-Specific Med. 2022;8(3):143-146. doi:10.1723/3927.39108.