Gender Differences in Pediatric Dentistry Chairs in the United States and Canada

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***Objective**: To analyze gender differences in personal and professional demographics, job perceptions and work satisfaction between male and female pediatric dentistry academic leaders in the United States and Canada. **Study Design:** A 40-question survey was sent electronically to department chairs requesting information about demographics, current circumstances of the position, professional history, and opinions about the position. Data was analyzed by the sex of the respondent. **Results:** Eighty-eight surveys were distributed electronically and 55 chairs responded (response rate: 62.5%). Women comprised 29.5% of the sample, were younger and had less leadership training than men. Men had served longer in the position (t(41)=2.02, p=0.05) and had higher ranking academic titles. Women spent more time managing personnel (p=0.026), creating courses and programs (p=0.029), and teaching (p=0.006) than men. Female chairs perceived to have a difficult relationship with the faculty (p=0.027), felt they received less faculty support (p=0.002), and were significantly more dissatisfied in the job (p=0.037). Men were more stressed about a heavy workload than women (p=0.001). **Conclusion:** Gender was significantly related to the demographics, experience, perceptions of the skills and abilities required for job performance, time management and job satisfaction for pediatric dentistry department chairs in American and Canadian institutions.*

***Keywords:** Leadership, Dental Education**,** Gender Roles, Women, Faculty*

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INTRODUCTION

The inclusion of women in dentistry has been a struggle spanning 150 years.[1] It was only in the 1920's that women could study and practice dentistry in the United States (**US**) and United Kingdom **(UK)**.[1] The gender gap in dental student enrollment has narrowed in many countries around the world;[2-7] in 2018, 50.5% of US dental school graduates were women.[7] However, women make up only 30% to 40% of the dental workforce in Oceania, Europe, Africa and Asia.[6] Despite the increasing number of women in the profession, few are still in faculty and academic leadership positions,[2,8] even though their presence in high ranking academic positions and leadership jobs has increased over the years.[2,9] There was a drop in the number of female full-time faculty in the US from 38.8% in 2016-2017 [10] to 36.8% in 2017-2018.[7] Men still comprise the majority of faculty in most countries where faculty data is available.[6,7] The number of women in senior positions in academic dentistry is even smaller around the world. In the US, UK, Germany, India, Saudi Arabia and Japan, gender disparities are seen in higher level positions.[5,6] For example, only 16 out of 77 deans in Canadian and American dental schools are women.[2] The exception, however, seems to be France, where the number of female dental deans is very high.[6]

Underrepresentation of women in leadership is not unique to academic dentistry. In medical specialties, women serve as chairs in 11% of academic departments overall, with the prevalence ranging from 30% in obstetrics and gynecology (**OBGYN**) [11] to 3%

MATERIALS AND METHOD

This project was approved by the institutional review board of the Louisiana State University Health Sciences Center (Protocol #9723). We developed a survey to assess the demographic and professional characteristics, time management, leadership developmental needs and job satisfaction of chairs of departments and divisions of pediatric dentistry in the US and Canada. After department chairs in an American dental school tested it and provided feedback, we made the necessary changes to make it clearer for the respondents. We defined the term department chair as the person who had the senior-most leadership and administrative job in an academic or training pediatric dental unit (department or division) in a hospital or dental school. In order to send the chairs the electronic survey, we harvested their names and emails from the American Academy of Pediatric Dentistry's website (http://www.aapd.org/residency_program/) and its listserv, the chairs' institutional websites, or through direct contact with the institutions to obtain the information. A listserv is a mailing list program that distributes messages to subscribers on an electronic mailing list.

The questionnaire was sent electronically using the platform SurveyMonkey™ (SVMK Inc., San Mateo, CA, USA), together with a cover letter to explain the study and the informed consent for participation. The instrument had 40 questions: nine about each chair's credentials and demographics, 16 on the current job circumstances, five on the chair's activities before the current position, and 10 on their opinion on several topics. The questions allowed different types of answers: open responses, ordinal (Likert scale), multiple choice, and yes/no answers. The answers for the ordinal questions were ranked from 1 (a negative or very negative answer) to 3 (a neutral answer) to 5 (a positive or very positive answer), framed according to the question asked. Participation was voluntary and the potential study subjects received an electronic reminder two weeks after they received the first communication, and two weeks after that. Statistical analyses included t-tests, Mann Whitney, and Spearman's rho, using SPSS version 22 (IBM Corporation, Armonk, NY, USA). Mann-Whitney tests yield statistics called mean ranks (instead of means) that summarize trends in scores across subjects in each group. They represent relative preponderances toward higher or lower scores in one group versus the other. The scores themselves are not reported. Means are not used in the calculation of the ranks because they should not be calculated for ordinal variables.

RESULTS

Fifty-five out of 88 surveys were returned (response rate of 62.5%). The demographics of all respondents, irrespective of sex, have been previously reported elsewhere.[30] Only 13 women and 30 men indicated their sex, thus our gender analyses were based on those responses only. Furthermore, the total number of responses varied for each item because not all chairs who indicated their sex responded to all questions.

Select personal and professional demographic characteristics of 43 respondents are shown in Table 1. The majority was non-Hispanic white, with a mean age of 50.8 years (standard deviation [SD] = 7.7 years) for female chairs and 55.9 years for men (SD = 9.2 years). Most women were associate professors while most men were full professors. Twice as many men were tenured and had achieved board certification compared to women. Thirty chairs had

in surgery,[12,13] otolaryngology, [14] and urology.[15] Women account for only 16% of deanships of American medical schools.[16] This paucity of females in academic leadership positions is mirrored by the healthcare industry, where women hold only 12% of Chief Executive Officer positions.[17] In academia, women tend to be positioned in more supportive roles, such as program directors or associate directors at the department level, [13] or assistant and associate deans in health science colleges.[18] In executive roles, women are more likely to hold leadership positions related to human resources and informational security.[17]

In addition to being underrepresented in leadership positions, women report a different experience in senior roles in healthcare. Many are the reasons for this problem. First, women lack female role models and mentorship.[2,16,19-21] There is also gender discrimination,[5,16,19] barriers to career development,[5,16] and unconscious bias in medical school and residency programs.[22]

Participation of women in healthcare leadership is important for successful outcomes. For example, it is widely accepted that the clinical staff and management of health care organizations should reflect the gender, racial, ethnic, and cultural diversity of the communities they serve.[17] Women comprise 78% of the health care industry's workforce in the US[17] and are the largest consumers of healthcare.[23] They also account for approximately half of medical school and dental school graduates, and their exclusion from leadership positions would effectively reduce the talent pool by 50%. Furthermore, women tend to lead with a transformational, democratic leadership style that can promote the inclusion and growth of junior faculty members.[17,24,25] Faculty have identified the presence of a female chair as a source of pride and a benefit for recruitment.[24]

The department chair position in dentistry is a critical role because it directly influences faculty development and is often a pathway to advancing into higher administration.[26] In the US, there was a 44.3% increase in female enrollment in pediatric dental programs from 2010 to 2016 and hence more women work as pediatric dentists than men (6.1% vs. 2.8%, respectively).[27] There has been a simultaneous increase in the number of female faculty in pediatric dentistry as well.[28] Therefore, it is expected that more women will rise to positions of academic leadership in the specialty within the next few years. Thus, it is important to understand the gender differences so that hospital and university administrators may help them succeed and achieve equality with men, including in wages.[1,3,8,21,29] However, wage disparity does not seem to be a problem in India, where 93.5% of female dental faculty felt their salary was the same as their male counterparts.[5]

This manuscript is part of a project that generated a large amount of data about the characteristics and professional needs of pediatric dentistry chairs in the US and Canada. A previously published manuscript described the cohort demographics, the skills and abilities they perceived as important for the job, and their professional developmental needs.[30] The objective of this part of the study was to analyze the gender differences in personal and professional demographics, job perceptions, time management and work satisfaction. We hypothesized that (1) women had fewer years of experience as a chair than men, (2) had different views and perceptions of the job, and (3) were less satisfied at work. To our knowledge, this is the first study in the world that has specifically evaluated gender differences in pediatric dental academic leadership.

Table 1. Select Personal and Professional Demographic Characteristics by Sex

VARIABLE		Males	Females
Mean age in years (SD)*	54.5 (8.9)	55.9 (9.2)	50.8 (7.7)
Mean years as chair (SD)**	9.6 (7.5)	11.6 (8.3)	6.5 (4.9)
	Total Number	**Males (%)**	**Females (%)**
Race/Ethnicity			
Asian	5	3 (60%)	2 (40%)
White, non-Hispanic	25	18 (72%)	7 (28%)
White, Hispanic	12	8 (67%)	4 (33%)
Current Rank			
Assistant Professor	5	5 (100%)	0 (0%)
Associate Professor	16	9 (56%)	7 (44%)
Professor	17	14 (82%)	3 (18%)
Tenured			
Yes	25	17 (68%)	8 (32%)
No	18	13 (72%)	5 (28%)
Pediatric Dentistry Education in the US			
Yes	37	25 (68%)	12 (32%)
No	2	1 (50%)	1 (50%)
Board Certified			
Yes	33	22 (67%)	11 (33%)
No	6	4 (67%)	2 (33%)
Leadership Training			
Yes	30	23 (77%)	7 (23%)
No	12	7 (58%)	5 (42%)

*SD = standard deviation

**p <0.05

had leadership training, of whom only 23% were women. Men had served in the position almost twice as long as women (11.6 years vs. 6.5 years), which was the only statistically significant difference found in their demographic information ($t(41)=2.02$, $p=0.05$).

The respondents indicated how much time they spent in several job activities (Table 2). Response options ranged from very little time (1) to moderate amount (3) to a lot of time (5). The only statistically significant differences were that women spent more time managing personnel ($p=.026$), creating courses and programs ($p=0.029$), and teaching ($p=0.006$). Respondents also indicated how much time the department chair should spend on the same activities in "an ideal situation" (Table 2). The only significant difference was that women thought chairs should spend more time writing grants ($p=0.015$).

Respondents were asked to indicate their overall level of job satisfaction as a chairperson, on a scale from 1 (very unsatisfied) to 5 (very satisfied). Women were overall less satisfied in the job ($p=0.037$, Figure 1 and Table 3). While women and men typically agreed on the sources of job satisfaction, female chairs gained more satisfaction from service/patient care than males ($p=0.002$). When asked to choose from a list of factors regarding the chair position that differed from the expectation they had before starting the job, some significant differences were found (Table 4). Women received less support from faculty than they had expected ($p=0.002$), as only 13.3% of men reported receiving "less" or "a lot less" support from faculty than expected compared to 54% of the women. Women also reported that being a chair had strained their relationship with faculty more than they had expected ($p=0.027$).

Table 2. Gender Differences in Time Allocation (Current and Desired)

	Mean Ranks+ Men	Mean Ranks Women	Significance ($p < 0.05$)
Current Time Allocation			
Personnel Management	18.8	27.6	**0.026***
Creating Courses and Programs	19.4	28.1	**0.029***
Teaching	18.7	29.7	**0.006***
Advising Students	19.1	25.1	0.135
Budget Management	22.6	20.6	0.648
Facilities Management	22.7	20.3	0.574
Research	21.0	24.4	0.425
Email	21.4	23.4	0.648
Reading Administrative Documents	22.7	18.6	0.342
Writing Reports	21.7	22.6	0.845
Program Planning and Curriculum	21.4	23.3	0.667
Fundraising	22.8	20.0	0.505
Public Relations	23.7	18.1	0.184
Establishing Partnerships	22.6	18.8	0.386
Scheduling	19.3	25.2	0.150
Writing Grants	19.6	24.1	0.272
Representing Department	22.7	20.4	0.592
Leading or Attending Meetings	21.7	22.6	0.845
Professional Development	21.4	21.8	0.945
Desired Time Allocation			
Grant Writing	18.4	28.1	**0.021***
Advising Students	21.2	22.2	0.815
Personnel Management	19.5	26.5	0.098
Budget Management	21.2	22.4	0.773
Facilities Management	21.1	20.8	0.965
Research	20.6	23.7	0.483
Email	21.7	21.0	0.880
Reading Administrative Documents	20.4	22.5	0.621
Writing Reports	20.6	23.7	0.466
Program Planning and Curriculum	21.0	22.7	0.690
Creating Courses and Programs	20.0	23.3	0.436
Fundraising	20.6	23.7	0.466
Public Relations	21.1	22.6	0.731
Establishing Partnerships	21.2	22.3	0.794
Scheduling	19.5	19.4	1.00
Representing Department	21.8	20.7	0.794

+Mean ranks are a summary statistic indicating the general trend of each compared group on an ordinal scale. Generally, higher and lower ranks indicate the propensities of group members to score higher or lower, respectively, on the scale.

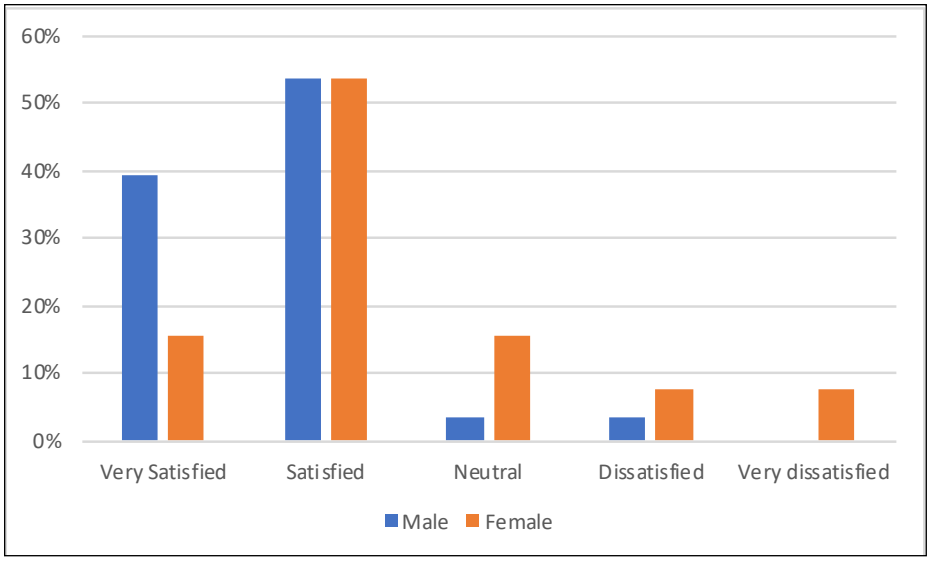

Figure 1. Level of Job Satisfaction as a Department Chair by Sex

Table 3. Factors Affecting Job Satisfaction by Sex

	Mean Ranks+ Men	Mean Ranks Women	Significance ($p < 0.05$)
Overall Satisfaction	23.4	15.8	**0.037***
Satisfaction Factors			
Service and Patient Care	18.5	30.2	**0.002***
Administrative/Management Duties	23.8	18.0	0.167
Student Advising	19.6	26.1	0.123
Research	19.9	25.1	0.204
Faculty Development	23.5	18.5	0.232
Budget/Finance Management	21.7	19.3	0.581
Community Relations	22.3	21.4	0.845
Non-Faculty Staff Issues	21.0	22.9	0.650
Teaching	19.9	26.8	0.099
Collaboration with other Units	22.2	21.4	0.845
Alumni Relations	21.3	23.6	0.592

+Mean ranks are a summary statistic indicating the general trend of each compared group on an ordinal scale. Generally, higher and lower ranks indicate the propensities of group members to score higher or lower, respectively, on the scale.

Table 4. Job Factors that Differed from Chairs' Expectation by Sex

Factor	Mean Ranks+ Men	Mean Ranks Women	Significance ($p < 0.05$)
Support from Faculty	25.5	14.0	**0.002***
Relationship with Faculty	19.4	28.0	**0.027***
Opportunities for Impact	23.6	18.2	0.202
Support from Dean	22.3	19.5	0.518
Support from University	21.8	18.7	0.459
Support from Hospital	22.2	20.0	0.610
Job Rewards	22.6	20.6	0.648
Time Job Requires	20.8	24.7	0.366
Paperwork and Bureaucracy	22.5	20.8	0.705
Time for non-Routine Projects	20.0	23.5	0.387
Creative Activities	17.6	24.8	0.066
Attending Meetings	21.2	24.0	0.505
Time Spent or Correspondence	21.5	23.2	0.705

+Mean ranks are a summary statistic indicating the general trend of each compared group on an ordinal scale. Generally, higher and lower ranks indicate the propensities of group members to score higher or lower, respectively, on the scale.

We also found that chairs responded differently stress-wise to the activities of their job. Men reported more stress about keeping current in the discipline, balancing their quality of life, being interrupted by phone or visitors, having too much responsibility but little authority, resolving differences with superiors, having excessively high self-expectation, and preparing manuscripts for publication. Women reported more stress about their own goals being incompatible with those of the department or institution and inadequate mentoring for themselves as a chair. However, the only statistically significant difference was that men were more stressed out by a heavy workload ($p=0.001$).

There were, however, some similarities between the sexes. Women and men did agree on the importance of competence in a variety of management, leadership, and personal areas. They worked approximately the same number of hours a week, with 80% working more than 40 hours a week. Both men and women also had similar motivations for becoming a department chair, with the top four reasons being "to help lead my department", "to develop my personal leadership skills", "to advance department programs" and "to prepare for higher leadership positions".

DISCUSSION

There is no repository of records for dental workforce in most countries[6] and the majority of published studies on workforce and gender trends were done in the US. One exception in pediatric dentistry was a study by Peretz et al.[31] that found gender equality in the specialty in Israel overall, but they did not delve into details about gender differences in academic life. We could not identify any studies on gender disparities in academic leadership in pediatric dentistry, which adds to the difficulty to compare our data across different cultures.

In the past few decades, the number of female academic leaders has increased at all levels.[2,8,9,21,29,32] Our findings suggest that gender is significantly related to the demographics, perceptions of the skills and abilities required for job performance, time management and job satisfaction for pediatric dentistry department chairs in American and Canadian institutions. Our sample showed a higher percentage of female chairs (29.5%) in pediatric dentistry than in dentistry in general (22.3%) [26] and restorative dentistry (15.4%).[33]

Although pediatric dentistry has more female chairs than other dental[26,33] and medical fields, [14,17,34] except in OBGYN,[11,35] women are still underrepresented in leadership positions compared to the overall composition of the US pediatric dentistry workforce.[27,28] Most female faculty desire roles of greater responsibility, showing special interest in becoming assistant/associate deans and department chairs.[21] That was clear in our survey, with both men and women clearly indicating they wanted the department chair position in preparation for higher leadership opportunities in the academic setting. Interestingly, most female dental faculty in India thought they would make better leaders than men.[5] Hence, the number of women in leadership positions should be expected to accelerate in the coming years.

There are a number of reasons why women may be underrepresented in academic leadership, including pediatric dentistry. A 2003 survey of full-time dental faculty found that more female respondents agreed with statements that indicated gender inequality and a less supportive work environment for themselves, which mirrored the findings in medical schools.[36] Women also report more gender discrimination and barriers to career development[5,6,8,17,22,36-38] as well as more difficulties obtaining leadership positions as their work tends to be given less value by both men and women.[25] Even letters of recommendation are fundamentally different: men are usually described in more agentic terms, such as "assertive", "forceful", "independent", and "confident", while women are described with social communal terminology, such as "kind", "agreeable", "tactful", and "warm", and more likely to have comments regarding physical appearance.[39,40] Women are also less likely than men to

achieve full professor status in US medical schools and dental schools in India.[5,41] Similarly, most male chairs in our survey were full professors compared to only 18% of the women and twice as many men had tenure. However, that could be simply a reflection of men's longer years in academic life.

In our survey, women had significantly fewer years of experience as chair compared to men. This is not surprising as the numbers of female faculty educators has been slowly increasing and it will take time for them to accrue years in leadership positions.[28] Women in academic leadership roles also have fewer female role models due to the vicious cycle of fewer women in leadership positions leading to fewer mentoring opportunities.[2,16,22,23,40] Women in our survey also expressed that inadequate mentoring for themselves as a chair added more to stress to the job. With the advent of the #MeToo and Time's Up movements, some men in positions of power are afraid to participate in mentoring relationships with women.[42] Female dental faculty in India pointed out that men felt uncomfortable working with them in leadership positions.[5] If men are unwilling to mentor women and there is a lack of female mentors, the gender gap in academic health care will likely be perpetuated.[42]

Women and men reported no difference in the hours worked in our survey, which was similar to OBGYN chairs[11] and dental faculty in general.[36] However, they allocated time differently, with women spending more time in personnel management than men. This may be due to different leadership styles between men and women but also to the female chairs' perception of a strained relationship with the faculty. Men are typically perceived to lead through agentic styles and to be logical, independent leaders.[25] Conversely, women typically lead through communal styles, [24,25,40] and are described as transformational leaders,[17,25] which requires more time to establish relationships. There is also the fear that transformational leadership can be invisible [25] and credit for accomplishments may disappear.[24]

Women in our study reported spending more time in curriculum and teaching, in agreement with Nesbitt et al.[36] Women who consider careers in academic medicine are also more interested in teaching than in biomedical research,[22] which may be a result of greater flexibility and availability of teaching roles rather than a primary lack of research interest.[16] The gender gap in publications, grants awarded to women and the general perception in medicine that women are less interested in research may contribute to the angst over time spent grant writing that women reported in our survey.[1,2,6,9,19,22,43] In addition to that, a workload filled with immediate administrative and teaching needs leaves little time to write grants, which in turn are becoming more difficult to obtain due to less funding available. However, a recent study showed that the number of women in research and in leadership positions in the American Association of Dental Research have increased significantly over the years.[2]

Female chairs reported a conflict between their expectations for the position and what they actually encountered in professional relationships after they took the job. They felt less support from faculty than expected, which strained relationships. The fact that women are more likely to adopt or be judged by a communal leadership style may make them place higher emphasis on faculty relationships,[24,25,40] and thus feel deeply disappointed and dissatisfied if relationships do not work well. If women avoid this communal, relationship-driven leadership style, they may be in a double bind where they may prompt negative responses if they violate societal gender norms by demonstrating agentic competence.[17,24]

Women were significantly less satisfied in their job as chair than men. This agrees with Nesbitt et al.[36] who found that female faculty members generally agreed with the statement "gender–specific biases to career satisfaction are present in my academic environment". A study of medical faculty did not reveal significant differences in job satisfaction on the basis of sex, but analyses by age and sex showed that women 46 years and older were less satisfied than men with their workplace.[43] We found no significantly different factors that negatively contributed to job satisfaction for men and women, but the latter did report gaining more satisfaction from service/patient care than men, as it occurs in medicine.[43]

The job dissatisfaction may be also related to the poorer relationships female chairs perceived to have with the faculty. Froeschle and Sinkford[44] found that work relationships were of great importance for a positive job perception by dental faculty members. Faculty attitudes, wages, work inequalities, poor leadership, budget cuts and workload were reasons that contributed to negative views of the work climate, all of which may be magnified for women in senior positions. Furthermore, the female chairs reported spending more time in teaching, which may be seen as less valued than research and thus negatively influence promotion and tenure decisions.[44] This may contribute to job dissatisfaction, although faculty often cite interactions with students as a positive side of academia.[44] Women in our cohort also reported being stressed out by the lack of good mentoring in the job, which certainly leads to a sense of less support and affirmation. Only 23% of our female chairs had leadership training, which was much lower than what Gadbury-Amyot et al.[21] found (48.9%). Little or poor mentorship also leads to fewer opportunities for advancement and potentially less retention of female leaders.[21] Thus, the importance of leadership skills development and mentorship cannot be overlooked by dental school, hospital and university administrators. Stress and burnout are a topic of interest for department chairs.[45] We found that the same tasks elicited different stress levels in men and women, although there was only one statistically significant difference–men were more affected by a heavy workload than women. That may not be surprising as women around the world tend to multitask between many different roles in their lives and may be more adept at handling interruptions in their activities than men.[4-6]

To our knowledge, this is the first study to explore the relationship between gender and the chair's role in pediatric dentistry. A limitation of the study is that not all chairs may have had the opportunity to participate due to the lack of a central repository of department chairs in pediatric dentistry. Subjects self-selected to participate, which may have introduced sampling bias. Due to the anonymity of the survey, it was not possible to know who responded but an analysis of the list of chairs surveyed shows that almost one third of them were women, making it a representative sample. Future studies must investigate workforce issues and gender disparities in academic dentistry around the world as well as initiatives to ameliorate or correct the issue.

We showed many differences between men and women in leadership positions in academic pediatric dentistry. All three hypotheses we set out to test were proven. Therefore, administrators in American and Canadian dental schools, hospitals and universities must improve their efforts to promote women to senior level positions, through good mentorship, leadership development and opportunities for advancement.

CONCLUSIONS

Based on results of this study, we can conclude that female chairs of pediatric dentistry departments in the US and Canada:

1. are a minority in number;
2. had fewer years of experience than men;
3. had different views and perceptions of the job, and spent their time differently from male chairs;
4. perceived themselves to have a strained relationship with the faculty and felt they received less faculty support as a chair;
5. were less satisfied in the job.

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REFERENCES

1. Whelton H, Wardman MJ. The landscape for women leaders in dental education, research, and practice. J Dent Educ 79: S7-S12, 2015.
2. Li J, de Souza R, Esfandiari S, Feine J. Have women broken the glass ceiling in North American dental leadership? Adv Dent Res 30: 78-84, 2019.
3. McKay JC, Quinonez CR. The feminization of dentistry: implications for the profession. J Can Dent Assoc 78: c1, 2012.
4. Kfouri MG, Moyses SJ, Moyses ST. Women's motivation to become dentists in Brazil. J Dent Educ 77: 810-816, 2013.
5. Tandon S, Kohli A, Bhalla S. Barriers to leadership positions for Indian women in academic dentistry. Intern Dent J 57: 331-337, 2007.
6. Tiwari T, Randall CL, Cohen L, et al. Gender inequalities in the dental workforce: Global perspectives. Adv Dent Res 30: 60-68, 2019.
7. American Dental Education Association. ADEA Snapshot of Dental Education 2019-20. https://www.adea.org/uploadedFiles/ADEA/Content_Conversion_Final/deansbriefing/2019-20_ADEA_Snapshot_of_Dental_Education.pdf
8. Ioannidou E, D'Souza RN, Macdougall MJ. Gender equity in dental academics: gains and unmet challenges. J Dent Res 93: 5-7, 2014.
9. Yuan JC-C, Lee DJ, Kongkiatjkamon S, et al. Gender trends in dental leadership and academics: A twenty-two-year observation. J Dent Educ 74: 372-380, 2010.
10. American Dental Education Association. Survey of Dental School Faculty, 2016-17. Full-time dental scholl faculty by gender, and race and ethnicity, 2016-17 academic year. https://www.adea.org/faculty/
11. Gabbe SG, Hagan Vetter M, Nguyen MC, Moffatt-Bruce S, Fowler JM. Changes in the burnout profile of chairs of academic departments of Obstetrics and Gynecology over the past 15 years. Am J Obstet Gynecol 219: 303.e1-303.e6, 2018.
12. Turaga KK, Green DE, Jayakrishnan TT, Hwang M, Gamblin TC. Attributes of a surgical chairperson associated with extramural funding of a department of surgery. J Surg Res 185: 549-554, 2013.
13. Weiss A, Lee KC, Tapia V, et al. Equity in surgical leadership for women: more work to do. Am J Surg 208: 494-498, 2014.
14. Eloy JA, Blake DM, D'Aguillo C, Svider PF, Folbe AJ, Baredes S. Academic benchmarks for Otolaryngology leaders. Ann Otol Rhinol Laryngol 124: 622-629, 2015.
15. Han J, Stillings S, Hamann H, Terry R, Moy L. Gender and subspecialty of Urology faculty in department-based leadership roles. Urology 110: 36-39, 2017.
16. Humberstone E. Women deans' perceptions of the gender gap in American medical deanships. Educ Health (Abingdon) 30: 248-253, 2017.
17. Lantz PM. Gender and leadership in healthcare administration: 21st century progress and challenges. J Healthc Manag 53: 291-301, 2008.
18. Travis EL, Doty L, Helitzer DL. Sponsorship: a path to the academic medicine C-suite for women faculty? Acad Med 88: 1414-1417, 2013.
19. Doyle M, Pederson A, Meltzer-Brody S. Demographic and personal characteristics of male and female chairs in academic Psychiatry. Acad Psychiatry 40: 402-409, 2016.
20. Blood EA, Ullrich NJ, Hirshfeld-Becker DR, et al. Academic women faculty: are they finding the mentoring they need? J Womens Health (Larchmt) 21: 1201-1208, 2012.
21. Gadbury-Amyot CC, Pyle MA, Van Ness CJ, Overman PR, West KP. Which way to lean? A national study of women dental faculty members' career aspirations and choices. J Dent Educ 80:1392-1404, 2016.
22. Edmunds LD, Ovseiko PV, Shepperd S, et al. Why do women choose or reject careers in academic medicine? A narrative review of empirical evidence. Lancet 388: 2948-2958, 2016.
23. Kirchheimer B. A woman's place is in...healthcare, as Modern Healthcare's Top 25 Women connote explosive growth in the number of female executives in C-suites. Mod Healthc 37: 6-7, 20, 22, 2007.
24. Isaac C, Griffin L. Women chairs in academic medicine: engendering strategic intuition. J Health Organ Manag 29: 498-514, 2015.
25. Kaatz A, Carnes M. Stuck in the out-group: Jennifer can't grow up, Jane's invisible, and Janet's over the hill. J Womens Health (Larchmt) 23:481-484, 2014.
26. Rodriguez TE, Zhang MB, Tucker-Lively FL, et al. Profile of department chairs in U.S. and Canadian dental schools: Demographics, requirements for success, and professional development needs. J Dent Educ 80: 365-373, 2016.
27. Oral Health Workforce Research Center. A National Study of the Practice Characteristics of Women in Dentistry and Potential Impacts on Access to Care for Underserved Communities. Center for Health Workforce Studies, School of Public Health, University of Albany, State University of New York, pp. 1-84, 2019.
28. Wood AJ, Gaid GG. Pediatric dentistry academic workforce survey. Pediatr Dent 40: 340-345, 2018.
29. Feldman CA. Attaining and sustaining leadership for U.S. women in Dentistry. J Dent Educ 79: S13-S17, 2015.
30. da Fonseca MA, Townsend JA, Rodriguez TE, LeHew CW. Characteristics and professional development needs of pediatric dentistry chairs in the United States and Canada. Pediatr Dent 41: 293-298, 2019.
31. Peretz B, Ram D, Gleicher H, Mamber E. Professional education and practice arrangements: are there gender differences among paediatric dentists in Israel? Intern Dent J 50:390-394, 2000.
32. Reed MJ, Corry AM, Liu YW. The role of women in dental education: Monitoring the pipeline to leadership. J Dent Educ 76: 1427-1436, 2012.
33. Wee AG, Weiss RO, Wichman CS, Sukotjo C, Brundo GC. Characteristics identified for success by restorative dental science department chairpersons. J Dent Educ 80: 275-280, 2016.
34. Bissing MA, Lange EMS, Davila WF, et al. Status of women in academic Anesthesiology: A 10-year update. Anesth Analg 128: 137-143, 2019.
35. Hofler L, Hacker MR, Dodge LE, Ricciotti HA. Subspecialty and gender of Obstetrics and Gynecology faculty in department-based leadership roles. Obstet Gynecol 125: 471-476, 2015.
36. Nesbitt PE, Inglehart MR, JC S. Work environment perceptions of full-time dental educators: Does gender matter? J Dent Educ 67: 916-924, 2003.
37. Spickard A, Jr., Gabbe SG, Christensen JF. Mid-career burnout in generalist and specialist physicians. JAMA 288: 1447-1450, 2002.

38. Baecher-Lind L. Women in leadership positions within Obstetrics and Gynecology. Obstet Gynecol 120: 1415-1418, 2012.
39. Messner AH, Shimahara E. Letters of recommendation to an Otolaryngology/Head and Neck Surgery residency program: their function and the role of gender. Laryngoscope 118: 1335-1344, 2008.
40. Madera JM, Hebl MR, Martin RC. Gender and letters of recommendation for academia: agentic and communal differences. J Appl Psychol 94: 1591-1599, 2009.
41. Jena AB, Khullar D, Ho O, Olenski AR, Blumenthal DM. Sex differences in academic rank in US medical schools in 2014. JAMA 314: 1149-1158, 2015.
42. Soklaridis S, Zahn C, Kuper A, Gillis D, Taylor VH, C W. Men's fear of mentoring in the #MeToo era — What's at stake for academic medicine? N Eng J Med 379: 2270-2274, 2018.
43. Howell LP, Lyons ML, Thor A, Dandar V. Sex differences in workplace satisfaction and engagement of academic pathologists: Opportunities to enhance faculty diversity. Arch Pathol Lab Med 139: 936-942, 2015.
44. Froeschle ML, Sinkford JC. Full-time dental faculty perceptions of satisfaction with the academic work environment. J Dent Educ 73: 1153-1170, 2009.
45. McPhillips HA, Stanton B, Zuckerman B, Stapleton FB. Role of a pediatric department chair: factors leading to satisfaction and burnout. J Pediatr 151: 425-430, 2011.