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ORIGINAL ARTICLE

Career motivation and satisfaction of dental hygiene students in associate versus bachelor degree programs: A national survey

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Abstract

Objectives: Entry-level dental hygiene programs give associate (AD) and bachelor degrees (BD). The objectives were to compare how AD versus BD students differ in career-related role models and information sources, career motivations, and satisfaction and to explore the relationships between career motivations and satisfaction.

Methods: Two hundred seventy-one students in AD and 269 students in BD programs responded to a survey.

Results: AD students were older than BD students (26.71/23.6; $p < 0.001$). Both groups were most likely to name a nurse/dental hygienist (37.6%/37.3%) as role models in their families, were likely to have shadowed a dental hygienist (77.6%/75.0%), and had talked to a health professional (27.7%/23.7%) prior to program application. BD students decided earlier to become dental hygienists (17.20/19.97 years; $p < 0.001$) and were less likely to have been dental assistants before than AD students (28.3%/36.9%; $p = 0.034$). Both groups agreed strongly that they wanted to become dental hygienists to help patients (5-point scale with 5 = agree strongly: 4.88/4.86), make a difference in the life of patients (4.88/4.86) and because it is a flexible career (4.83/4.80). Open-ended responses showed that 62.4% of AD students compared to 35.3% of BD students choose their career because of lifestyle considerations ($p < 0.001$), while 47.2% of BD students versus 38.0% of AD students wanted to work in the healthcare field ($p < 0.001$). Both groups had high job satisfaction (3-point scale: 2.94/2.97). For AD students, job satisfaction correlated with wanting to help patients ($r = 0.49$; $p < 0.01$) and with making a difference in the life of patients ($r = 0.52$; $p < 0.001$). For BD students, wanting to work in a team ($r = 0.34$; $p < 0.001$) and having a dentist in the family ($r = 0.32$; $p < 0.001$) correlated with job satisfaction.

Conclusions: Dental hygiene students in AD versus BD programs differ in the factors that are associated with job satisfaction. Dental hygiene educators can utilize these findings when recruiting future students. The findings related to motivational determinants of job satisfaction can guide educational efforts.

KEYWORDS
associate versus bachelor degree, career choice, dental hygiene, dental hygiene education, dental hygiene students, motivation

1 | INTRODUCTION

According to the American Dental Hygiene Association, there are 75 baccalaureate and 258 associate dental hygiene programs across the United States.[1] The majority of community college programs take at least 2 years to complete, with graduates receiving an associate degree (AD). Receiving this degree allows a dental hygienist to take a licensure examination and become licensed, ready to work at a dental office. University-based or dental school-based dental hygiene programs are likely to grant baccalaureate degrees (BD) and generally require two or more years of dental hygiene education. A BD degree may be required for becoming a dental hygiene educator.[2,3]

In 2021, US News and World Reports ranked "dental hygienist" as number 32 on the list of the 100 best jobs in the United States.[4] This positive ranking was based on the job characteristics of the dental hygiene profession. One interesting question is whether dental hygiene students' and dental hygienists' career satisfaction is consistent with this high ranking. A survey from 2015 found that 84% of the participating dental hygienists were satisfied with their career.[5] However, this survey identified a trend in career satisfaction that deserves attention: While 88% of the dental hygienists who had graduated in the 1980s and the 1990s were satisfied, only 76% of the graduates in the 2000s and 78% of the graduates after 2010 reported to be satisfied. This finding raises the question which factors might predict higher career satisfaction of dental hygiene students and should therefore be considered when recruiting and admitting students into dental hygiene programs.

Research about why students choose dental hygiene as their career dates back to the 1980s.[6] Over the past three decades, having dental hygienists as role models and receiving information about the dental hygiene profession have been discussed as influential in the literature. Already in 1989, Carr found that having had interactions with dental hygienists was highest ranked by students as being influential in their decision to select dental hygiene as their career.[6] Later research confirmed this finding.[7] Research also found that interactions with dentists had a positive influence on students' decisions to choose dental hygiene as their career.[8,9] In addition, having role models such as family members with a career in dental hygiene also made it more likely that students pursued this profession.[9,10] One way to have extensive exposure to dental hygiene role models could be in a career as a dental assistant. It is therefore not surprising that research found that having been a dental assistant positively influenced the decision to become a dental hygienist.[8]

While these earlier studies had explored different sources for information and professional experiences as factors that might motivate students to choose dental hygiene, no research could be found in the literature that would differentiate these findings for students in AD versus BS degree granting programs. Later research considered the role of different motivations for choosing dental hygiene as a career. For example, research showed that lifestyle-related considerations such as flexible work schedules and good salaries as well as patient interactions and wanting to help others motivated students to enter the dental hygiene profession.[8,9,11,12] In 2018, Shaikh and Inglehart analyzed open-ended responses by 783 dental and of 256 dental hygiene students to the question, "Why did you choose your profession?"[13] They identified 10 underlying motivations. The four most frequently named motivations by dental hygiene students were, "wanting a profession in the health care field" (46%), "wanting to help others" (36%), "own dental experiences" (22%), and "being inspired by others" (19%). The four least frequently cited reasons were "hands-on aspects of the profession" (4%), "science-related considerations" (4%), "business-related considerations" (4%), and "life style-related considerations" (7%). "Human interaction aspects of the profession" (11%) and "wanting a meaningful profession" (11%) were also identified as two additional motivations. Additional recent research in Japan[14] and Canada[15] showed that exposure to the dental hygiene profession at a younger age seemed to result in more positive later experiences.

One interesting question is whether the motivations that influence students to choose dental hygiene as their career correlate with their career satisfaction. A person-environment fit hypothesis would suggest that a good fit between persons' career motivations and their actual work environment would result in more positive job satisfaction than a lack of a good fit. Based on this hypothesis, one could predict that students in a dental hygiene program with a strong motivation to work with patients, be part of a team and work in a healthcare field, would be more satisfied than students with a lower interest in these aspects of their professional lives.[8]

The fact that research showed differences in the educational and career paths of dental hygienists with an AD versus a BD[3] raises the question whether these two groups of professionals might also differ in their career motivations. One previous study by DeVore et al.[16] in 1993 investigated this question. However, no research since then revisited this topic of interest. Furthermore, no research so far analyzed whether different career motivations of these two groups of students would result in different degrees of career satisfaction.

In summary, the objectives were to compare how dental hygiene students in AD versus BD programs differ in their career-related role models, information sources about dental hygiene careers, career choice motivations and satisfaction, and to explore relationships between career motivations and career satisfaction.

2 | METHODS

This study was determined to be exempt from institutional review board (IRB) oversight by the Health Sciences and Behavioral Sciences IRB at the University of Michigan (HUM#00132452). It is based on survey research and has a quasi-experimental study design.

2.1 | Respondents

An a priori power analysis with the G3.1.3. Power Analysis Program (http://www.psycho.uni-duesseldorf.de/abteilungen/aap/gpower3/)[17,18] was conducted to determine the number of respondents needed in each of the two groups to have the power to test hypotheses about differences in the average responses of students in AD versus BD programs with independent sample *t*-tests. We assumed two-sided hypotheses, a medium to small effect size of $d = 0.25$, an alpha error probability of 0.05, a power of 0.80, and an allocation ratio of 1. The results showed that 253 respondents in each of the two groups would be needed to have the power to test such hypotheses.

In January and February 2019, data were collected from 271 dental hygiene students in AD programs and 269 dental hygiene students in BD programs. Currently, there are 331 dental hygiene programs listed on the ADHA website. Two hundred sixty-nine of these programs grant AD degrees, and 71 grant BS degrees.[1] However, 15 of these programs grant both of these degrees.

In early January 2019, email addresses were obtained for program directors in 333 dental hygiene programs, and students from 65 of these programs responded to the anonymous survey (19.5%). Recruitment emails were sent to the 333 program directors. The emails explained the purpose of the research and asked the directors to forward the emails to their students. It is unclear how many directors actually forwarded the emails, and if they forwarded the emails to all of their students or only to students in a specific grade. Response rates can therefore only be computed for the represented programs out of the total number of existing programs and not accurately out of the number of programs that had informed students. Student respondents from 44 programs were enrolled in one of the 257 AD granting programs (response rate for AD granting programs: 17.1%), and student respondents from 21 programs were enrolled in one of the 71 programs that granted BD (response rate: 29.6%). Given that there is no information about which program directors had forwarded the recruitment email to their students, it is impossible to determine the response rate based on the number of students in these programs.

2.2 | Procedure

In January 2019, an email was sent to the directors of the AD and BD dental hygiene programs in the United States. This recruitment email explained the purpose of the research and asked the directors to forward an attached recruitment email to their students. It is unknown how many of these directors actually forwarded the recruitment email to their students. What is known is that students from 53 programs responded.

2.3 | Materials

The recruitment for the students explained the purpose of the research and invited the students to participate in an anonymous online survey. They could access this Qualtrics survey by using a web link that was provided in the email.

The online survey was developed based on the results of previous studies, in particular the study by Shaikh and Inglehart.[13] Seven dental hygiene students participated in a pilot test. Their feedback led to the final version of the survey. This survey consisted of four parts. Part 1 inquired about the students' background; part 2 assessed the degree to which they had professional role models and which dental hygiene-related information sources they had had prior to becoming dental hygiene students. Part 3 consisted of 16 Likert style items that described different career choice considerations and an open-ended question about the reasons for their career choice. The answer categories for the Likert items ranged from 1 = disagree strongly, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = agree strongly. The types of career choice considerations listed in

the 16 included items were formulated based on the findings by Shaikh and Inglehart.[13] Part 4 consisted of three questions, namely if the respondents would choose dental hygiene as a career again, if they would recommend dental hygiene as a career to a friend or to their child. These three yes/no answer items were adapted from the professional satisfaction scale by Shugerman et al.,[19] which measures general job satisfaction. The original scale has four "yes/no" questions asking whether the respondents would choose dentistry and their workplace again and would recommend dentistry and their workplace to their child. For the purpose of this study in which the students did not have a workplace, the scale was revised as described above. In addition to analyzing the responses to each item, a sum score was computed by adding one point for each "yes" response to the three items. This sum score could range from 0 (= only "no" responses) to 3 (= all "yes" responses).

2.4 | Statistical analysis

The data were downloaded from Qualtrics as an SPSS (Version 26) data file. Two coders (author 1 and author 2) coded the open-ended responses to the question, "Why did you want to become a dental hygienist?" independently based on the previously identified categories by Shaikh and Inglehart.[13] After both coders had independently coded all responses, a comparison of the responses showed that the percentage of consistent ratings was 94%, which is an excellent level of interrater consistency.[20] Descriptive statistics such as frequency distributions, percentages, and means were computed to provide an overview of the responses to the closed-ended questions. The Likert scale items were factor analyzed (extraction method: Principal Component analysis; rotation method: Varimax with Kaiser normalization) to identify the underlying factor structure of these career motivation items. A four-factor solution resulted and items with factor loadings over 0.40 were considered for creating four indices. However, when Cronbach alpha coefficients were computed to assess the inter-item consistency of the four indices, only one index had an alpha value of over 0.70.[21,22]

Based on this finding, only a "patient-related motivation" index was constructed by averaging the responses to the items loading on this first factor. The other items were used in the correlation analyses as single item indicators. Pearson correlation coefficients were used to determine the relationships between the job satisfaction sum score and the index and the single item indicators. Contingency coefficients were used to determine the relationship between the three yes/no answer satisfaction items and the items assessing the degree to which the respondents had role models, had received prior information about the dental hygiene profession and their career motivations. In order to account for the relatively high number of statistical tests, a Bonferroni correction was used, and the level of significance was set at $p < 0.01$.[23,24]

TABLE 1 Overview of the demographic characteristics of respondents who will graduate with an associate versus a bachelor degree

Background characteristics	Degree: Associate $N = 271$ %	Degree: Bachelor $N = 269$ %	p-Value
Gender			
- Male	3.3%	4.8%	0.373
- Female	96.7%	95.2%	
Age	**Mean/SD**	**Mean/SD**	
	26.71	23.61	<0.001
	6.014	4.822	
Ethnicity/Race	%	%	
- European American	74.2%	71.2%	0.437
- Non-European American	25.8%	28.8%	
Program year	%	%	
- 1	38.0%	16.3%	<0.001
- 2	59.0%	42.8%	
- 3	2.6%	25.4%	
- 4	0.4%	15.5%	

3 | RESULTS

Table 1 provides an overview of the background characteristics of the respondents who attended either an AD or a BD program. There was no difference in the percentage of female versus male students in these two groups. In the AD and in the BD programs, the absolute majority of students were female (96.7% vs. 95.2%; $p < 0.373$). The students in the BD programs were on average younger than the students in the AD programs (23.61 vs. 26.71 years; $p < 0.001$). More than seven of 10 students in each of the two groups were from European American backgrounds (AD: 74.2% vs. BD: 71.2%; $p = 0.437$). In the AD programs, only one student was in the fourth year of education, and seven were in the third year, while in the BD programs, 25.4% of the students were in their third year and 15.5% in their fourth year ($p < 0.001$).

Table 2 provides the results related to responses about having a dental hygiene role model and information about the dental hygiene profession prior to entering the dental hygiene program. About half of the students in both program types had a family member who worked in health care as a role model (48.3% vs. 50.4%; $p = 0.637$). A lower

TABLE 2 Responses concerning role models and information sources about the dental hygiene profession of respondents who will receive an associate versus a bachelor degree

	Degree		
Role models: Do you/did you have a family member who was/is:	**Associate** ***N* = 271** **%**	**Bachelor** ***N* = 269** **%**	***p*-Value**
- In health care? Yes	48.3%	50.4%	0.637
- A dentist or MD? Yes	9.2%	17.2%	0.006
- A dental hygienist or nurse? Yes	37.6%	37.3%	0.938
- Another health professional? Yes	13.7%	14.2%	0.846
# Family members in healthcare:			
- 0	51.7%	49.4%	0.044
- 1	32.8%	33%	
- 2	12.5%	9.4%	
- 3 or 4	2.9%	7.9%	
I shadowed a dental hygienist.			
- Yes	77.6%	75.0%	0.499
- No	22.4%	25.0%	
	Associate	**Bachelor**	
	***N* = 271**	***N* = 269**	
Information sources about dental hygiene	**%**	**%**	***p*-Value**
Has anybody talked to you about being a dental hygienist? Yes	47.0%	45.3%	0.690
Who talked to you about becoming a dental hygienist?			
a. Family members	10.7%	12.2%	0.579
b. Friends	13.3%	8.1%	0.054
c. Professionals	27.7%	23.7%	0.290
Earliest age of thinking about becoming a dental hygienist	**Mean/SD**	**Mean/SD**	
	19.97/6.139	17.20/5.026	<0.001
	Range: 5–51	**Range**: 4–37	
Dental assistant prior to being in dental hygiene program: Yes	36.9%	28.3%	0.034

percentage of students in AD programs had a dentist as a role model in their families compared to the students in the BD program (9.2% vs. 17.2%; $p = 0.006$). In both programs, slightly more than a third of the students had a dental hygienist or nurse as a role model (37.6% vs. 37.3%; $p = 0.938$). About three quarters of the students in both groups agreed that they had shadowed a dental hygienist before becoming a dental hygiene student (77.6% vs. 75.0%; $p = 0.499$).

Both groups of students were most likely to have had information from dental hygiene professionals before becoming dental hygiene students (AD: 27.7% vs. BD: 23.7%; $p = 0.290$). They were less likely to have had information from family members (10.7% vs. 12.2%; $p = 0.579$) and friends (13.3% vs. 8.1%; $p = 0.054$). However, students in AD programs were more likely to have worked as a dental assistant before they started their program than students in BD programs (36.9% vs. 28.3%; $p = 0.034$). They were also on average older when they decided to become a dental hygienist than students in BD programs (19.97 vs. 17.20 years; $p < 0.001$).

In addition to considering which role models and information about the dental hygiene profession the two groups of students had, Table 3 provides an overview of the average responses concerning the respondents' specific career choice motivations. On average, both groups of students agreed strongly that they wanted to help patients have good dental health (5-point scale with 5 = agree strongly: AD: 4.88 vs. BD: 4.86), wanted to make a difference in the life of patients (4.88 vs. 4.86), and wanted to work with patients (4.75 vs. 4.74). In addition, both groups agreed strongly that they wanted to help their community (4.72 vs. 4.78) and educate others about preventing dental disease (4.72 vs. 4.66). Both groups were also strongly motivated by non-clinical motivations such as liking that it is a flexible career (4.83 vs. 4.80) and wanting to work in a team (4.53 vs. 4.41). The only motivational difference was found in response to the question whether they wanted to become a dentist.

TABLE 3 Mean responses (Standard Deviation) concerning career motivations of associate versus bachelor degree students

Patient-related motivation	**Associate degree**	**Bachelor degree**	***p*-Value**
I want to help patients have good dental health.	4.88[1]	4.86	0.623
	(0.490)	(0.548)	
I want to make a difference in the life of patients.	4.88	4.86	0.548
	(0.356)	(0.395)	
I want to work with patients.	4.75	4.74	0.834
	(0.490)	(0.548)	
I want to help the community.	4.72	4.78	0.182
	(0.554)	(0.525)	
I want to educate others about preventing dental disease.	4.72	4.66	0.225
	(0.585)	(0.593)	
Patient-related motivation Index (alpha = 0.781)	*4.79*	*4.78*	*0.754*
	(0.346)	*(0.358)*	
Non-clinical motivation	**Associate degree**	**Bachelor degree**	***p*-Value**
I like that it is a flexible career.	4.83	4.80	0.426
	(0.424)	(0.462)	
I like the science aspect of dental hygiene.	4.16	4.22	0.521
	(1.01)	(0.942)	
I like to teach dental hygiene.	3.87	3.79	0.441
	(1.20)	(1.24)	
I like to work with my hands.	4.58	4.59	0.865
	(0.633)	(0.682)	
I want to work in a team.	4.53	4.41	0.072
	(0.665)	(0.807)	
I want to work in the health care field.	4.74	4.74	0.925
	(0.578)	(0.597)	
I like that dental hygienists can work in business related to dental care products.	4.33	4.38	0.572
	(0.913)	(0.870)	
Positive attitude toward dentistry	**Associate degree**	**Bachelor degree**	***p*-Value**
I always loved to go for a dental visit.	4.18	4.18	0.983
	(1.15)	(1.20)	
I shadowed a dental hygienist.	3.98	3.89	0.514
	(1.47)	(1.58)	
I was influenced by my own dental hygienist.	3.62	3.78	0.181
	(1.39)	(1.35)	
I want to become a dentist.	2.41	2.77	0.004
	(1.38)	(1.47)	

Note: Answers ranged from 1 = disagree strongly, 2 = disagree, 3 = neutral, 4 = agree to 5 = strongly agree.

Only 22% of the AD program students compared to 31.2% of the BD program students agreed/strongly agreed with this statement (means: 2.41 vs. 2.77; $p = 0.004$).

In addition to these closed-ended questions, an open-ended question asked the students about why they had wanted to become a dental hygienist. Overall, the students in both groups provided a large number of responses. Table 4 shows that the 271 AD program students made 535 open-ended remarks, and the 269 BD program students made 504 remarks. The most frequent responses were lifestyle-related considerations, with 62.4% of the AD program students and 35.3% of the BD students considering lifestyle as motive for their dental hygiene career choice ($p < 0.001$). The second most frequent response category was concerned with wanting to help others; 47.2% of the AD and 50.2% of the BD students responded positively that they wanted to help others ($p = 0.828$). The third most frequent response category focused on wanting a

TABLE 4 Frequencies of open-ended responses concerning the respondents' motivations to choose dental hygiene as their profession

	Associate degree	**Bachelor Degree**
Motivated by lifestyle consideration	***N* = 271**	***N* = 269**
Support a family/good pay	55	23
Life style/flexibility	38	38
Good hours	37	19
Great balance work/family	17	4
Less schooling/no residency	15	6
Good/Stable job	7	5
Subtotal	**169 (62.4%)**	**95 (35.3%)**
		***p* < 0.001**
Motivated by wanting to help others	**Associate degree**	**Bachelor degree**
Helping others	76	70
Improve health	16	20
Educate	12	18
Create beautiful smiles	17	15
Better serve community/underserved	7	12
Subtotal	**128 (47.2%)**	**135 (50.2%)**
		***p* = 0.828**
Motivated by wanting a profession in the healthcare field	**Associate degree**	**Bachelor degree**
Love/Interested in teeth/dentistry	36	40
Liked medical field	21	15
Being in health care/oral health care	17	24
Patient relationships	10	12
Wanted to be a dentist/dentistry-related	9	14
Dental atmosphere	8	11
Preventative care	2	11
Subtotal	**103 (38.0%)**	**127 (47.2%)**
		***p* = 0.111**
Motivated by dental experience	**Associate degree**	**Bachelor degree**
Own dental experiences	23	28
I worked as a dental assistant.	21	17
Subtotal	**44 (16.2%)**	**45 (16.7%)**
Motivated by others	**Associate degree**	**Bachelor degree**
Dental hygienist	12	14
Shadowing/working in dental office	12	14
Inspired by others: Family/Friend	11	12
Dentist/Pediatric dentist/Orthodontist	4	27
Subtotal	**14.4%**	**24.9%**
		***p* = 0.082**
Motivated by wanting a meaningful career	**Associate degree**	**Bachelor degree**
Independence	10	1
Meaningful/Rewarding career	13	8
Subtotal	**8.5%**	**3.4%**
Other reasons	**Associate degree**	**Bachelor degree**
Many reasons/not sure	13	12
Work with hands	7	5
Science-based career/research	5	4
Business aspects/stepping stone	4	4
Being artistic	0	1
Subtotal	**29 (10.70%)**	**26 (9.67%)**
Total # of open ended remarks	**535**	**504**
Total # of subjects	**271**	**2.69**

TABLE 5 Frequencies and percentages of job satisfaction responses

	Degree	
	Associate	**Bachelor**
	***N* = 271**	***N* = 269**
Job satisfaction items	**"Yes": *N*/%**	**"Yes": *N*/%**
- Would you choose dental hygiene as your career?	260/97%	251/94.7%
- Would you recommend a career in dental hygiene to a friend?	258/96.6%	250/95.1%
- Would you recommend a career in dental hygiene to your child?	243/91%	246/93.5%
Job satisfaction – sum score [1]	***Mean/SD***	***Mean/SD***
	2.94/0.903	***2.97/1.072***

[1]The sum score for the job satisfaction responses was computed by adding one point for each "Yes" response. The responses could range from 0 = worst job satisfaction to 3 = most positive job satisfaction.

profession in healthcare, with 38.0% of AD students and 47.2% of BD students providing comments related to this category ($p = 0.111$). Only about 16% of students in both groups were motivated by their own dental experiences (AD: 16.2% vs. BD = 16.7%) and only 14.4% of the AD program students, but 24.9% of the BD program students were motivated by others ($p = 0.082$).

In addition to assessing career choice-related factors, Table 5 shows the percentages of career satisfaction responses. When asked, if they would choose dental hygiene as a career again, the absolute majority agreed that they would do so again (AD: 97% vs. BD: 94.7%). The same exceptionally high job satisfaction was also expressed in responses to the questions if they would recommend a career in dental hygiene to a friend (96.6% vs. 95.1%) or to their child (91% vs. 93.5%). A "job satisfaction" sum score was computed by adding one point for each "yes" response. The responses could range from 0 = worst job satisfaction to 3 = most positive job satisfaction. Table 5 shows that on average, both groups had nearly perfect job satisfaction scores (AD: 2.94 vs. BD: 2.97).

The final objective of this study was to explore whether the two groups of students differed in which career choice-related factors correlated with their job satisfaction. Given the large number of correlations, a Bonferroni correction[24] is applied, and the significance level is set to $p < 0.01$. While wanting to work in a team correlated significantly with the job satisfaction of students in both groups (AD: $r = 0.16$; $p < 0.01$; BD: $r = 0.21$; $p < 0.001$), only AD program students' job satisfaction correlated significantly with patient-related motivations (See Table 6!). The more they wanted to help patients ($r = 0.22$; $p < 0.001$), the more they wanted to make a difference in the lives of patients ($r = 0.27$; $p < 0.001$) and the more they wanted to work with patients ($r = 0.25$; $p < 0.001$), the more satisfied they were. BD program students' satisfaction correlated significantly with the likelihood of having shadowed a dental hygienist before starting their program ($r = 0.17$; $p < 0.01$) and the degree to which they wanted to work in a healthcare field ($r = 0.21$; $p < 0.001$).

4 | DISCUSSION

According to the results of the a priori power analysis, the responses from over 500 dental hygiene students provided a sufficiently large sample size for exploring the questions of interest. In addition, the fact that these students were from 53 programs across the United States and included students working toward an associate as well as a bachelor degree indicates that a heterogeneous group of respondents was included in this sample. However, it has to be mentioned that no students from the three certificate granting dental hygiene programs were included in this study.

The results showed that the majority of the students were satisfied with their career choice, responding positively to the career satisfaction-related questions.[19] The absolute majority would choose dental hygiene as their career again as well as recommend it to their friends and their child. Previous research on dental hygienists' career satisfaction demonstrated the same positive result that most dental hygienists were satisfied with their careers.[5,4,15,25] For example, already in 1996, Jerković-Ćosić et al. showed that in Sweden 253 of 363 surveyed dental hygienists were highly or very satisfied with their career.[26] About two decades later in 2014, Buunk-Werkhoven et al. documented that dental hygienists in the Netherland had positive job satisfaction.[27] In both studies, high job satisfaction was linked to skill development and expansion in dental hygienists' scope of practice. Moreover, other factors such as job flexibility, independence, and the satisfaction of helping others contributed to overall job satisfaction as well. Other studies explored reasons for dissatisfaction with a dental hygiene career. They found that these reasons included that the work was repetitive and lacked vari-

TABLE 6 Relationships between having role models, information sources, career choice motivations, and job satisfaction

	Satisfaction sum score	
Role models: Do you/did you have a family member who was/is:	**Associate degree**	**Bachelor degree**
Do you have a dentist in your family?	0.13	−0.12
Were you a dental assistant prior to entering the dental hygiene program?	0.10	0.06
I shadowed a dental hygienist before starting my educational program.	0.11	0.17**
Patient-related motivation	**Associate degree**	**Bachelor degree**
I want to help patients have good dental health.	0.22***	0.04
I want to make a difference in the life of patients.	0.27***	0.04
I want to work with patients.	0.25***	0.08
I want to help the community.	0.05	0.01
I want to educate others about preventing dental disease.	0.07	0.05
Non-clinical motivation	**Associate degree**	**Bachelor degree**
I like that it is a flexible career.	0.00	0.13*
I like the science aspect of dental hygiene.	−0.05	0.058
I like to teach dental hygiene.	0.12	0.04
I like to work with my hands.	0.05	0.06
I want to work in a team.	0.16**	0.21***
I want to work in the health care field.	0.16*	0.21***
I like that dental hygienists can work in business related to dental care products.	−0.01	0.05
Positive attitude toward dentistry	**Associate degree**	**Bachelor degree**
I always loved to go for a dental visit.	0.05	0.14*
I shadowed a dental hygienist.	0.11	0.14*
I was influenced by my own dental hygienist.	0.08	0.12
I want to become a dentist.	−0.04	−0.13*

*$p < 0.05$.
**$p < 0.01$.
***$p, 0 > 0.01$.

ety, was physically stressful, and had few opportunities for career advancement.[13,28–30] Having positive job satisfaction was important because it resulted in job retention.[31,32]

No research could be found so far that had explored the effects of attending an AD versus BD granting program on dental students' job satisfaction. Our results showed that the job satisfaction of dental hygiene students who attended either an AD or a BD granting program was equally positive. This high level of job satisfaction in both groups confirmed previous results[26,27,31,32] and supported the 2021 US News and World Reports ranking of "dental hygienist" as number 32 on the list of the 100 best jobs in the United States.[4]

Given this positive ranking, the question arises which factors would motivate students to enter the dental hygiene profession, and whether these factors differed for students who were enrolled in an AD versus BD granting program. The only study that had ever explored this question before was conducted in 1993 by DeVore et al.[16] These authors analyzed the responses of dental hygiene students and alumnae of one BD giving program in Ohio and the responses of students in eight different AD giving programs in the same state. The data showed that dentists and dental hygienists' influences on these students were crucial for their decision process and that "working with people" was considered as the top benefit of a hygiene career. The authors pointed to the relevance of these findings for gaining a better understanding of how to best involve dentists and dental hygienists in the recruitment process and the importance of appropriately informing other professionals such as career counselors about the benefits of dental hygiene careers.

Our research took a more comprehensive approach by considering the effects of three sets of potential motivating factors in this context. The first group was concerned with the effects of role models such as family members in the health professions or dental hygienists. Previous research showed that choosing dental hygiene as a career was clearly influenced by friends and family members in the dental field who inspired them.[3–8,13] Our results are consistent with these earlier findings, because they showed that about half of the students attending AD or BD granting programs had family members in the health care field and that about three quarters in both groups had

shadowed a dental hygienist prior to entering their dental hygiene program.

A second group of potential motivating factors is related to receiving information about dental hygiene careers. Again, the percentages of AD and BD program students who had received information from others were about equally close to 50%. However, the fact that more than a third of the AD students had been dental assistants before becoming dental hygiene students and that only a little more than a quarter of the BD students had had this career before could imply that more AD students had more information about dental hygiene careers than BD students.

When analyzing the responses to the third group of motivational factors that consisted of 16 different potential motivators for a dental hygiene career, the data showed again that both AD and BD students agreed strongly with both patient-related motivation statements as well as with non-clinical motivation-related statements. However, this picture changed when the two groups of students were asked in an open-ended question why they had chosen dental hygiene as their career. While nearly two thirds of the students in AD programs reported to be motivated by life-style considerations, only slightly more than a third of the BD program students provided such open-ended answers to this question.

While the large majority of responses to these three groups of questions, the exposure to role models, sources of career information and motivational considerations, did not differ between the two groups, it is interesting to explore if these factors are differentially related with the job satisfaction of the students in AD versus BD granting programs. Previous research had shown that choosing dental hygiene as a career was clearly influenced by role models such as friends and family members in the dental field who had inspired students.[3–8,13] Research also documented that the relationship between dental hygiene students and their mentors was a factor for respondents' job satisfaction: The longer a mentorship relationship had been, the higher was dental hygienists' job satisfaction.[33,34] The role of mentors could be as simple as providing information about the dental hygiene career before, during, and after students started their education. Having positive information sources could inspire students to pursue dental hygiene and even a graduate degree in that field.[35,36] The results in our study showed, however, that merely having a dentist or dental hygienist in the family was not correlated with higher job satisfaction. For BD program students only having shadowed a dental hygienist before starting a dental hygiene program was significantly correlated with their job satisfaction. This finding should encourage BD granting dental hygiene programs to encourage or even require shadowing experiences from their applicants.

In addition to considering role models and information sources about dental hygiene careers in relationship with students' job satisfaction, this study also analyzed the role of career choice motivations for AD versus BD program students. For both groups, a significant relationship existed between wanting to work in a team and their job satisfaction. However, patient-related motivations such as a desire to want to help patients have good oral health or to make a difference in the life of patients were only significantly related with AD students' job satisfaction. On the other side, for BD students, the desire to work in a health care field was associated with their job satisfaction. These findings are consistent with the results of a study by Rowe et al.[3] These authors studied educational and career pathways of graduates from AD versus BD granting programs. They found that more BD program graduates had continued their entry level program education with more advanced degrees, were more likely to be dental hygiene faculty members, and be involved with research than AD program graduates. These findings could be interpreted as a primary focus on the health care field and academic aspects of dental hygiene careers compared to the patient-focused aspects. Helping potential dental hygiene students to consider their motivations and to reflect on whether these motivations will be complementary to the actual work situation is therefore crucial. Having a clear understanding of career outcomes can make a difference in future career satisfaction.

In a previous study in Japan, one concrete career outcome, namely salary, was the only determinant of dental hygienists' dislike of their job.[14,37,38] Unfortunately, our study did not include a question concerning salaries of dental hygienists.

This study has three limitations. First, these findings are based on entry level dental hygiene students' responses. Additional information should be gathered from students in graduate dental hygiene programs to allow determining the motivational factors associated with their educational efforts and job satisfaction. An analysis of the job satisfaction of dental hygienists who had been educated in AD versus BD would also be of interest. Second, the sample size of the two groups did not allow to perform subgroup analyses. For example, the percentage of male respondents was so low that no gender comparisons were possible. No definitive determination of the factors related to male students' job satisfaction can therefore be provided. In addition, given the relative underrepresentation of students from historically underrepresented minority backgrounds in dental hygiene programs,[39] it is unfortunate that the numbers of these students were so low that no separate statistical analyses were possible. Future research should try to oversample these underrepresented subgroups to allow

investigating potential strategies to increase their numbers. Third, these data were collected in January/February 2019 before the COVID-19 pandemic. It is therefore unclear which additional considerations the pandemic had introduced in students' career planning.[40]

5 | CONCLUSIONS

These findings showed that the great majority of both AD and BD program dental hygiene students were satisfied with their career choice. Both groups were equally likely to have been exposed to role models and information sources. They also endorsed nearly all of the provided positive characteristics of the dental hygiene profession. There was a positive relationship between job satisfaction and wanting to work in a team for both groups. However, AD students' job satisfaction was significantly correlated with patient-related considerations and BD students' satisfaction with having shadowed a dental hygienist and with working in a health care field. Overall, there is room for improvement when recruiting future dental hygiene students. For example, less than 50% in both groups had received in-person information about dental hygiene careers.

The results related to which factors were correlated with AD versus BD students' job satisfaction can inform recruitment efforts of students into these two types of programs and instructional and curricular efforts throughout the students' education.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

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