Accuracy of Dental Students' Predictions Regarding Treating Underserved Populations Post-Graduation

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Background

- Many populations face difficulties in accessing dental care.[1,2,3,4]
- Dental students have been shown to exhibit more positive attitudes towards treating underserved populations compared to dentists.[5,6,7]
- However, previous studies have not followed students longitudinally to assess whether they treat underserved populations post-graduation.

Objective

To investigate the concordance between dental students' anticipated willingness to treat underserved populations five or more years post-graduation and the populations they report treating as dentists.

Methods

- **Study population**: Alumni from the University of Iowa College of Dentistry who graduated from the DDS program between 2009-2018 (N=741).
- **Data sources**: Surveys that participants completed as dental students (D1 and D4 years) which were linked to a survey they received as practicing dentists in Fall 2023 (alumni survey).
  - Student surveys asked participants about their anticipated willingness to treat 13 different underserved populations five or more years post-graduation.
  - Alumni surveys asked about their current treatment of the same populations.
- **Statistical analyses**:
  - Descriptive statistics.
  - McNemar's test ($p<0.05$) to compare differences between students' and alumni's responses for each population.
- Student responses were re-categorized with "yes" indicating "**willing to treat**" versus "yes, but limited number of patients; unsure; or no" as "**not willing to treat**" the population.
- Alumni responses were re-categorized with "Yes" indicating "**treating**" the population versus "yes, but I limit the number of patients; no, I do not accept this type of patient; and no, none seek treatment" as "**not treating**" the population.

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Results

- 227 alumni responded (response rate=30.6%)
  - ~90% white, non-Hispanic
  - 77.8% private practice general dentists
- 135 D1 surveys and 155 D4 surveys were matched to their alumni surveys.
- **Table 1: Alumni respondents reported treating most of the populations.**
  - Homebound/nursing home, Medicaid, incarcerated, and unhoused individuals were the least frequently treated populations.
- **Tables 2 and 3: McNemar's tests indicated significant disagreement ($p<0.05$) between student and alumni responses for 7 (D1) and 8 (D4) populations.**
  - A substantial percentage of students who did not anticipate treating certain populations post-graduation ended up doing so as alumni.

    [D1 or D4-No, do not anticipate treating and Alumni-Yes, treating]
  - Respondents overestimated their predictions about treating: homebound/ nursing home, Medicaid, and incarcerated populations.

    [D1 or D4-Yes, anticipate treating and Alumni-No, are not treating]

Table 1. Descriptive frequencies for populations treated by alumni

Population	Yes	Yes, but I limit the number of patients	No, I do not accept this type of patient	No, none seek treatment
	n (%)	n (%)	n (%)	n (%)
Other ethnic groups	224 (99.1)	0	0	2 (0.9)
Limited English proficiency	210 (92.9)	7 (3.2)	1 (0.4)	8 (3.5)
LGBTQ+ adults	205 (90.7)	0	7 (3.1)	14 (6.2)
Medically complex	198 (87.7)	24 (10.6)	3 (1.3)	1 (0.4)
HIV+/known AIDS	196 (87.1)	2 (0.9)	2 (0.9)	25 (11.1)
Children under age 3	187 (82.5)	8 (3.5)	16 (7.0)	16 (7.0)
Frail elderly	180 (79.6)	12 (5.3)	21 (9.3)	13 (5.8)
Mentally compromised	176 (77.9)	34 (15.0)	7 (3.1)	9 (4.0)
Illicit drug users	134 (60.1)	8 (3.6)	16 (7.2)	65 (29.1)
Unhoused	108 (48.9)	3 (1.4)	10 (4.5)	100 (45.2)
Incarcerated	62 (27.8)	3 (1.3)	41 (18.4)	117 (52.5)
Medicaid	56 (25.1)	59 (26.5)	96 (43.0)	12 (5.4)
Homebound/nursing home	32 (14.3)	9 (4.0)	114 (50.9)	69 (30.8)

Table 2. Agreement/disagreement (§) between D1's anticipated willingness to treat underserved populations (D1) and their treatment of the same populations as alumni (A)

Population	n	D1 Students			
		D1-Yes/A-Yes	D1-Yes/A-No	D1-No/A-Yes	D1-No/A-No
		n (%)	n (%)	n (%)	n (%)
Other ethnic groups*	132	122 (99.2)	1 (0.8)	9 (100.0%)	0
LGBTQ+ adults	21	20 (95.2)	1 (4.8)	-	-
Limited English proficiency*	132	97 (95.1)	5 (4.9)	29 (96.7)	1 (3.3)
Medically complex*	132	85 (93.4)	6 (6.6)	31 (75.6)	10 (24.4)
HIV+/known AIDS*	130	71 (89.9)	8 (10.1)	42 (82.4)	9 (17.6)
Mentally compromised*	133	72 (83.7)	14 (16.3)	35 (74.5)	12 (25.5)
Frail elderly	134	92 (82.9)	19 (17.1)	17 (73.9)	6 (26.1)
Children under age 3	133	79 (82.3)	17 (17.7)	30 (81.1)	7 (18.9)
Illicit drug users	132	48 (65.8)	25 (34.2)	36 (61.0)	23 (39.0)
Unhoused	131	38 (63.3)	22 (36.7)	32 (45.1)	39 (54.9)
Incarcerated	131	20 (40.8)	29 (59.2)	22 (26.8)	60 (73.2)
Medicaid*	129	23 (30.3)	53 (69.7)	11 (20.8)	42 (79.2)
Homebound/nursing home*	133	13 (16.5)	66 (83.5)	7 (13.0)	47 (87.0)

§: D1-yes/A-yes=student anticipated treating=yes, and alumni is treating=yes; D1-yes/A-no=student anticipated treating=yes, and alumni is not treating=no; D1-No/A-Yes=student did not anticipate treating=no, and alumni is treating=yes; D1-No/A-No=student did not anticipate treating=no, and alumni is not treating=no

* Significant at $p<0.05$ based on McNemar's test

Table 3. Agreement/disagreement (§) between D4's anticipated willingness to treat underserved populations (D4) and their treatment of the same populations as alumni (A)

Population	n	D4 Students			
		D4-Yes/A-Yes	D4-Yes/A-No	D4-No/A-Yes	D4-No/A-No
		n (%)	n (%)	n (%)	n (%)
Other ethnic groups*	154	123 (99.2)	1 (0.8)	30 (100.0)	0
Limited English proficiency*	153	105 (94.6)	6 (5.4)	38 (90.5)	4 (9.5)
LGBTQ+ adults	82	70 (92.1)	6 (7.9)	5 (83.3)	1 (16.7)
Medically complex*	153	90 (88.2)	12 (11.8)	43 (84.3)	8 (15.7)
HIV+/known AIDS*	152	103 (88.0)	14 (12.0)	28 (80.0)	7 (20.0)
Mentally compromised*	153	59 (80.8)	14 (19.2)	56 (70.0)	24 (30.0)
Frail elderly*	154	65 (87.8)	9 (12.2)	60 (75.0)	20 (25.0)
Children under age 3	154	95 (85.6)	16 (14.4)	29 (67.4)	14 (32.6)
Illicit drug users	152	57 (62.6)	34 (37.4)	36 (59.0)	25 (41.0)
Unhoused	151	35 (59.3)	24 (40.7)	37 (40.2)	55 (59.8)
Medicaid*	150	25 (41.0)	36 (59.0)	11 (12.4)	78 (87.6)
Incarcerated	152	19 (32.2)	40 (67.8)	24 (25.8)	69 (74.2)
Homebound/nursing home*	153	7 (18.4)	31 (81.6)	16 (13.9)	99 (86.1)

§: D4-yes/A-yes=student anticipated treating=yes, and alumni is treating=yes; D4-yes/A-no=student anticipated treating=yes, and alumni is not treating=no; D4-No/A-Yes=student did not anticipate treating=no, and alumni is treating=yes; D4-No/A-No=student did not anticipate treating=no, and alumni is not treating=no

* Significant at $p<0.05$ based on McNemar's test

Discussion

- There was **limited concordance** between students' anticipated willingness to treat and their actual treatment of the same populations as alumni.
- Several respondents reported treating more populations as alumni than they anticipated treating as students.
- Similar to previous studies, dentists' treatment of Medicaid patients was low.[6,7,8,9]
- Three populations showed consistent trends between students' anticipation of not treating the populations and then not treating them as dentists: **homebound/nursing home; Medicaid; and incarcerated.**

Limitations

- Generalizability of findings.
- Non-response and social desirability bias.
- Self-reporting on treating the populations.

Conclusion

In general, dentists treat a broader spectrum of patients than they anticipated treating while they were dental students.

Future Directions

- To explore:
  - What contributes to changes in students' willingness to treat underserved populations as they progress through dental school?
  - Reasons why dentists do not treat specific populations which they anticipated treating as dental students.

References

1. Northridge ME, Kumar A, Kaur R. Disparities in access to oral health care. Annu Rev Public Health 2020;41:513-535.
2. Paisi M, Kay E, Plessas A, et al. Barriers and enablers to accessing dental services for people experiencing homelessness: A systematic review. Community Dent Oral Epidemiol 2019;47(2):103-111.
3. Mofidi M, Gambrell A. Community-based dental partnerships: Improving access to dental care for persons living with HIV/AIDS. J Dent Educ 2009;73(11):1247-1259.
4. Chattopadhyay A. Oral health disparities in the United States. Dent Clin North Am 2008;52(2):297-318.
5. Major N, McQuistan MR, Qian F. Changes in dental students' attitudes about treating underserved populations: A longitudinal study. J Dent Educ 2016;80(5):517-525.
6. McQuistan MR, Kuthy RA, Qian F, Riniker-Pins KJ, Heller KE. Dentists' treatment of underserved populations following participation in community-based clinical rotations as dental students. J Public Health Dent 2010;70(4):276-284.
7. Smith CS, Ester TV, Inglehart MR. Non-clinical experiences influence dental students' career plans to care for the underserved. J Dent Edu 2006;70(4):398-408.
8. Nasseh K, Fosse C, Vujicic M. Dentists who participate in Medicaid: Who they are, where they locate, how they practice. Med Care Res Rev 2023;80(2):245-252.
9. Logan HL, Catalanotto F, Guo Y, Marks J, Dharamsi S. Barriers to Medicaid participation among Florida dentists. J Health Care Poor Underserved 2015;26(1):154-167.