

Brazilian Dental Students' Attitudes About Provision of Care for Patients Living in Poverty

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Abstract: The aims of this study were to investigate dental students' attitudes toward people living in poverty and the extent to which their perceptions were associated with their willingness to treat those patients in their future practice. All 910 dental students enrolled in three Brazilian public universities in 2010 were invited to take part in a cross-sectional survey. A total of 766 students (83.7% response rate) completed the self-administered questionnaire on their perceptions of and attitudes about poverty and their intention to provide dental care to poor people. The responding students showed slightly positive attitudes about people living in poverty; however, a high percentage (35%) reported thinking they were different from the rest of the population. Nevertheless, most of these students expressed willingness to provide care to underserved populations in their future practice; this willingness was found to be associated with their beliefs about poverty (OR 1.65; 95% CI=1.41-1.94). Overall, the study found that these dental students had altruistic views toward people living in poverty. However, they seemed to lack a deep understanding of poverty that may prevent them from acting on their good intentions.

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Disadvantaged and socially marginalized populations experience a higher prevalence of oral diseases.^{1,2} Evidence has consistently shown that inequalities in access to dental care are one pathway by which differences in oral health status emerge.³⁻⁵ Dental providers play an important role in socially marginalized populations' access to dental care.⁶ Dentists' beliefs, stereotypes, and comfort level with people living in poverty can encourage or discourage the use of dental services by this population. The growth of the specialized dental workforce and dentists' individual approaches also contribute to deficient access to dental care.⁷ These factors in turn may lead to high levels of unmet dental care needs.

Some studies have been published on dental students' perspectives regarding the provision of care for patients from low socioeconomic groups,⁸⁻¹² and one study found that the opportunity to build relationships with people living in poverty helped enhance

students' understanding of poverty and motivated altruism.¹³ Indeed, community-based experiential learning programs have been found to contribute to increased comfort and future willingness of dental students to treat poor patients.¹⁴⁻¹⁶

A better understanding of dental students' perceptions of and attitudes toward low-income and minority populations would help to clarify their impact on the relationship between dental providers and patients and how those attitudes can act as a barrier to the provision of care for patients living in poverty. Moreover, deepening our knowledge of students' willingness to treat poor people is crucial for community planning purposes, particularly considering that they constitute the future dental workforce. Consequently, the aims of this study were to investigate dental students' attitudes toward people living in poverty and the extent to which their perceptions were associated with their willingness to treat those patients.

Methods

The study received approval from the Ethics Committee of Araraquara Dental School, São Paulo, Brazil. This project was part of a large survey conducted in 2010 to investigate the profile and perceptions of Brazilian dental students about poverty.¹⁷ Three of the seven public dental schools located in the state of São Paulo, Brazil, were selected as a convenience sample for this study. All 915 dental students attending those schools were invited to complete the survey. Participation was voluntary and anonymous. Participants signed an informed consent form.

Dental schools in Brazil are divided into public and private institutions. The public dental schools are fully funded by the Brazilian government; therefore, admission to these universities is an extremely competitive process. Professors and researchers in Brazilian public universities have permanent jobs and higher salaries compared to those in private universities. Moreover, research activities are a low priority for private universities in Brazil, unlike the situation in public universities. The combination of these factors makes public institutions the more prestigious programs, which attract the best students. The three dental schools included in this study are among the most renowned institutions in the country. To pass the entrance exam and be admitted, applicants need a strong secondary education, which is usually achieved in private and expensive secondary schools. The dental schools in this study have curricula that comply with recent Brazilian Ministry of Health policies that aim to regulate the training of health professionals for the public sector.¹⁸ Although we did not conduct document analysis of the schools' curricula or courses related to poverty, contextual knowledge suggests that there is no specific commitment to discuss poverty issues in their curricula.

The survey on students' perceptions of and attitudes toward poverty consisted of 32 items derived from studies by Atherton and Gemmel¹⁹ and Gilens.²⁰ The items were organized into four categories of issues related to poverty: poverty and social issues (ten items); characteristics of poor people (eight items); poverty and employment (five items); and poverty and public policies (nine items). Each item was evaluated on a five-point Likert scale from 1=strong agreement to 5=strong disagreement. To make the factor scores more cohesive, 15 items were reverse-coded, so that a higher score reflected a more positive perception of or attitude toward this population.

Variables representing different dimensions of students' perceptions of poverty were computed from their responses. The internal consistency of the items was assessed with Cronbach's alpha. We used Horn's parallel analysis for categorical responses with simulated and resampled data to inform the number of factors to be retained in further analysis.²¹ This method has been shown to be superior and robust compared to the use of eigenvalues and scree plots.²² Because our survey items were answered on a Likert scale, we performed an exploratory factor analysis using a polychoric correlation matrix, instead of a Pearson's correlation matrix to identify the latent factors. We applied a direct oblimin rotation to the resulting factors because we expected that variables used to measure perceptions of poverty would be correlated. In addition to being a method for data reduction, exploratory factor analysis served as evidence of the items' construct validity. Factor scores were generated through "tenBerge" method to preserve the correlation between factors from an oblimin.¹²

The instrument had satisfactory internal consistency: Cronbach's alpha (95% CI)=0.76 (0.73-0.78). Eigenvalues from Horn's parallel analysis were used to determine how many factors to retain. In the parallel analysis, five factors were retained from the number of factors that existed above the crossing point of the two plots (Figure 1). Therefore, we decided to extract five factors. These factors were consecutively named and based on the general theme of the items loaded on them as follows: perceptions of poverty and poor people, poverty and public policy, poverty and social issues, poverty and employment, and willingness to treat the poor. To fulfil the aims of this study, we used two factors—perceptions of poverty and poor people and willingness to treat the poor—as the main exposure and outcome variables, respectively. The extracted five factors jointly explained 33% of the total variance in the items; of those, these two factors of interest accounted for approximately half of the total variance explained (15%).

Descriptive statistics were used to explore the distribution of data. A cumulative link mixed model was fit to investigate the association between dental students' perceptions of poverty and their willingness to care for people living in poverty. This model was chosen to account for the correlation between the data obtained from students at same university. Gender, year of study, type of high school, and adjusted family income were considered as potential confounders of the association. Adjusted family income was measured by gross monthly household

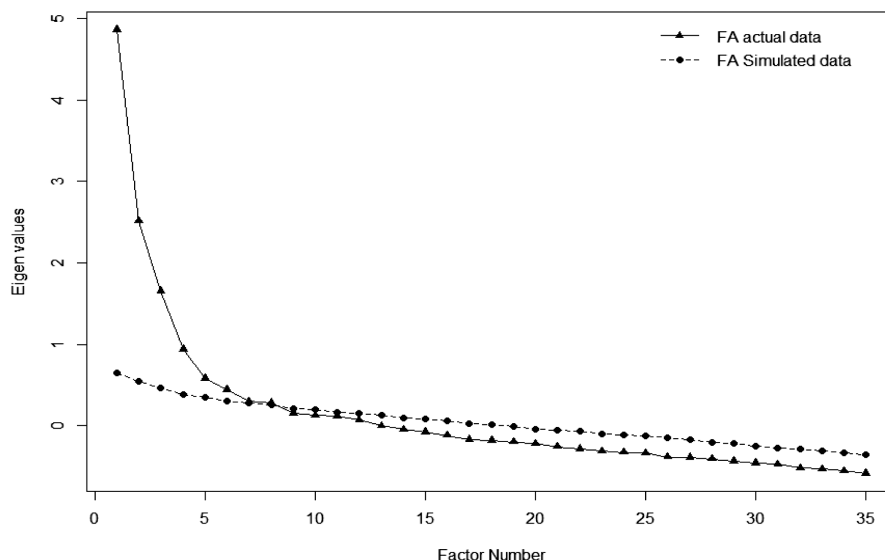


Figure 1. Plot of eigenvalues from Horn's parallel factor analysis (FA)

income divided by the square root of the number of people living in the household.²³ We categorized the variable median adjusted family income based on its frequency distribution: that is, we divided our population according to family income values into four equal groups (quartiles). Although we would have preferred to present our findings using this variable as continuous, we believe that showing the results in quartiles makes the interpretation of our findings more meaningful. Because participants' age and year of study were highly correlated, age was not considered in any of the models. All analyses were performed with R version 3.1.1 using the "Ordinal" package "clmm" function (R Core Team, R: A Language and Environment for Statistical Computing, Vienna, Austria) and factor analysis using "pysch" package for R (Regression Models for Ordinal Data, R package version). Odds ratios (OR) and 95% confidence intervals (95% CI) are reported.

Results

Of the 915 students invited to participate in the study, 766 responded, for a response rate of 83.7%. The response rate for the three universities ranged from 91.6% (N=350) to 76.9% (N=253) (Table 1). In the total sample, 67.6% of the students were female. Their ages ranged from 18 to 34 years with a mean of 21.53 (SD=2.03). Their socioeconomic

characteristics were similarly distributed across the three universities.

Table 2 shows the frequency distributions of students' responses for each item loading on the two factors investigated. For the factor "perceptions of poverty and poor people," the items were predominantly negative. The results showed that the majority of the respondents strongly disagreed with the stereotypes that poor people are less honest, less intelligent, or different from the rest of the society. However, for individual causes of poverty, a high percentage reported believing that poor people had different values (35%) and created their own difficulties (31%).

For the factor "willingness to treat the poor," the majority of these dental students agreed that dental providers have a responsibility to offer dental care to people living in poverty, whereas 13.3% of the students disagreed. Moreover, 49.3% reported that they planned to provide dental care for patients from different social levels in their future practice.

Results from the cumulative link mixed model ordinal regression showed that these dental students' perceptions of poverty were associated with their willingness to treat the poor (Table 3). Students who reported positive beliefs about the poor had a higher probability of expressing willingness to treat this population of patients (OR=1.65; 95% CI=1.41-1.94). This finding was independent of year of graduation, family income, and sociodemographic factors.

Table 1. Distribution of selected variables by university and total

Variable	University A N=350 (45.7% of Total)	University B N=253 (33.0% of Total)	University C N=163 (21.3% of Total)	Total N=766 (100%)
Age				
Mean±SD	21.77±2.02	21.45±2.10	21.15±1.86	21.53±2.03
Range	(18.0-27.9)	(18.0-34.2)	(17.8-27.1)	(17.8-34.2)
Gender				
Male	98 (28.0%)	88 (34.8%)	62 (38.0%)	248 (32.4%)
Female	252 (72.0%)	165 (65.2%)	101 (21.3%)	518 (67.6%)
Year of study				
First	71 (20.3%)	71 (28.1%)	42 (25.8%)	184 (24.0%)
Second	74 (21.1%)	65 (25.7%)	47 (28.8%)	186 (24.3%)
Third	72 (20.6%)	47 (18.6%)	40 (24.5%)	159 (20.8%)
Fourth	133 (38.0%)	70 (27.7%)	34 (20.9%)	237 (30.9%)
High school				
Public	42 (12.0%)	36 (14.2%)	16 (9.8%)	94 (12.3%)
Private	308 (88.0%)	217 (85.8%)	147 (90.2%)	672 (87.7%)
Mother's education				
Elementary	24 (6.9%)	19 (7.5%)	8 (4.9%)	51 (6.7%)
High school	92 (26.3%)	65 (25.7%)	33 (20.2%)	190 (24.8%)
University	179 (51.1%)	127 (50.2%)	90 (55.2%)	396 (51.7%)
Postgraduate	55 (15.7%)	42 (16.6%)	32 (19.6%)	129 (16.8%)
Father's education				
Elementary	28 (8.0%)	27 (10.7%)	8 (4.9%)	63 (8.2%)
High school	81 (23.1%)	56 (22.1%)	28 (17.2%)	165 (21.5%)
University	178 (50.9%)	133 (52.6%)	96 (58.9%)	407 (53.1%)
Postgraduate	63 (18.0%)	37 (14.6%)	31 (19.0%)	131 (17.1%)
Family income				
1 st quartile	79 (22.6%)	72 (28.5%)	30 (18.4%)	181 (23.6%)
2 nd quartile	80 (22.9%)	64 (25.3%)	45 (27.6%)	189 (24.7%)
3 rd quartile	88 (25.1%)	56 (23.3%)	34 (20.9%)	181 (23.6%)
4 th quartile	103 (29.4%)	58 (22.9%)	54 (33.1%)	215 (28.1%)
Factor score: perceptions of poverty and poor people (mean±SD)	0.04±0.89	-0.04±0.92	0.05±0.80	0.00±0.88
Factor score: willingness to treat the poor (mean±SD)	0.07±0.95	-0.12±0.87	0.04±0.95	0.00±0.93

Note: Factors were standardized to a mean of 0 and variance of 1. Percentages may not total 100% because of rounding.

Table 2. Respondents' agreement with items in factors "perceptions of poverty and poor people" and "willingness to treat the poor," by percentage of total respondents to each item (N=766)

Factor/Item	Totally Agree	Agree	No Opinion	Disagree	Totally Disagree
Perceptions of poverty and poor people					
The poor will remain poor regardless of what is done for them.	0.7%	2.3%	7.4%	64.2%	25.3%
Poor people are less honest compared to others.	0.4%	0.4%	3.7%	41.9%	53.7%
Poor people are different from the rest of the society.	0.4%	2.7%	6.0%	42.8%	48.0%
Poor people are less intelligent than others.	0.3%	1.8%	4.0%	43.9%	50.0%
Poor people have different values compared to others.	3.0%	20.0%	11.5%	35.8%	29.8%
Poor people are responsible for their own difficulties.	0.8%	9.7%	20.5%	49.0%	20.1%
Poor people do not care about their health.	0.7%	3.8%	8.5%	58.1%	29.0%
I could trust a poor person who worked for me. ^a	35.0%	55.6%	6.9%	1.7%	0.8%
Willingness to treat the poor					
Dentists have the responsibility to serve the poor. ^a	28.1%	44.6%	14.0%	11.5%	1.8%
Every person is entitled to receive dental care regardless of their ability to pay for it. ^a	52.9%	36.0%	6.3%	4.3%	0.5%
I will treat patients from different social levels. ^a	49.3%	40.2%	8.4%	1.4%	0.7%

^aItem was reverse-coded to create score.

Note: Percentages may not total 100% because of rounding.

Table 3. Ordinal regression model for the factor "willingness to treat the poor"

Variable	Fully Adjusted Model OR (95% CI)
Perceptions of poverty and poor people	1.65 (1.41-1.94)
Gender	
Female	Ref
Male	0.83 (0.62-1.11)
Year of study	
First	Ref
Second	0.66 (0.51-0.86)
Third	1.09 (0.83-1.43)
Fourth	1.53 (1.15-2.03)
High school	
Public	Ref
Private	0.62 (0.40-0.94)
Family income	
1 st quartile	1.66 (1.13-2.44)
2 nd quartile	1.26 (0.87-1.83)
3 rd quartile	0.93 (0.64-1.36)
4 th quartile	Ref

Discussion

Overall, the Brazilian dental students in this study showed altruistic views about people living in poverty. However, some students reported believing that poor people have different values and blamed them for their own plight. These contrasting findings suggest that these students lacked a deep understanding of poverty. Moreover, the students' favorable beliefs about the poor were associated with their willingness to provide care to people from different social levels, including those living in poverty.

Poverty impacts one's life materially and psychosocially through social and economic exclusion, educational difficulties, stigma, and constrained access to health services.²⁴ Despite the reduction in poverty rates in recent years,²⁵ Brazilian society remains characterized by mass poverty, high levels of social inequalities, social exclusion, and negative stereotypes of people living in poverty. In our study, we recognize that dental students' values are highly reflective of societal values. These dental students' beliefs regarding the poor were complex and ambivalent. While they disagreed about common stereotypes of the poor, some also showed negative attitudes about those living in poverty. Such attitudes may represent social disdain, which has been found

to correlate with people's unwillingness to help those in need.²⁶ Therefore, it is very likely that these future dental providers may face difficulties in establishing and maintaining positive rapport with disadvantaged patients in their practices. In fact, cultural and behavioral differences from their patients may mean that dental providers experience difficulties in treating people living in poverty.^{27,28} Such barriers in the dentist-patient relationship make access to health services difficult and dehumanize oral health care.

In the health sciences, the concept of professional responsibility emphasizes that the needs of patients should take precedence over providers' individual and private interests.^{29,30} The majority of the dental students in our study expressed willingness to provide care for people living in poverty. These expressions of comfort signify an awareness of dental students' and dentists' responsibility to address societal and community needs. Although we recognize that these attitudes may not translate into students' future practice decisions, this finding may be of considerable importance in predicting future access to oral health care for people living in poverty.

Despite universal health coverage in Brazil, inequalities in access to oral health services persist.³¹ The poor suffer from a disproportionate burden of disease but have less access to oral health care, whether measured by availability, financial accessibility, acceptability, or quality of care.³² Two-thirds of the Brazilian dental workforce is in the private sector, and, currently, the percentage of specialists (25%) is higher than in developed countries such as the United States (21%). The concentration of dental providers in the most profitable markets is incompatible with the needs of underserved populations. Indeed, care for patients living in poverty is largely dependent on the willingness of dental professionals to accept them as patients in their practices. The ordinal logistic regression in our study found that the students' willingness to treat the poor was influenced by their beliefs. Indeed, health care providers' attitudes about different groups of patients are strongly rooted in their own previous relationships and experiences. Some may experience difficulties in trusting particular groups of patients, including poor people, while discriminatory behavior and negative beliefs on the part of health professionals toward the poor interfere with the provision of patient-centered care and impair equitable access for all patients.³³⁻³⁵ Those same studies found that experiences of discrimination have emerged as an important cause of sub-utilization of health services by disadvantaged communities. Thus, our findings emphasize the need for learning activities related to poverty in dental schools to help

the future dental workforce develop social empathy for disadvantaged persons and to promote movement away from negative stereotypes. Indeed, exposure and direct experience with people living in poverty have been shown to enhance understanding of the social context of poverty and inhibit apathy.^{13,36}

In Brazil, which is a society highly stratified along class lines, family socioeconomic status plays a strong role in access to educational opportunities; therefore, the majority of students enrolled in dental schools are from private high schools. Dental students' socioeconomic status thus contrasts with that of patients living in poverty, which may in turn affect students' interactions with and perceptions of poor people. This separation can explain our findings that students from private high schools and higher socioeconomic status families were more likely to report unwillingness to provide dental care to the poor. These results are consistent with those of similar studies in the United States.^{8,11,37} The low percentage of dental students from lower socioeconomic groups in universities in Brazil may reinforce negative stereotypes of people living in poverty and can also promote further discrimination.

The overt aspects of professionalism include personal qualities such as altruism and empathy alongside responsibility and accountability.³⁸ Although personal qualities are an integral component of the dentist-patient relationship, studies have found that dental students' empathy and altruism decrease during dental school.³⁹⁻⁴¹ Dental students, like all health professions students, are taught to provide care as objective professionals, which may distance them from the human aspects of their patients. The recent substantial increase in the number of dental schools in Brazil and, consequently, in the dentist-to-population ratio has led many dentists to choose public service as a career path.⁴² All Brazilian citizens have free access to public health services including oral health care; however, socioeconomically disadvantaged families are the primary users.

It should also be mentioned that Brazil has been struggling with a major political-economic crisis since 2015, and an increase is expected in utilization of the public health care system during this economic downturn. The findings of our study are even more relevant considering the current situation of the country. Our findings highlight the importance of providing the dental workforce with an understanding of poverty and social issues as determinants of health and access to health care. In fact, our study found that year in program had a significant impact on dental students' willingness to treat people living in poverty. Interestingly, fourth-year students were more likely

to respond positively about treating people living in poverty than were first-year students. This difference constitutes a promising finding concerning senior students' critical consciousness to address societal and community needs. Engaging dental students in reflexive praxis is fundamental to promote awareness of the needs and perspectives of diverse populations and their responsibilities to the provision of care to the poor.^{43,44} Thus, dental education should be guided by a concern for equity and social justice and should ensure the provision of oral health care for people living in poverty.^{37,45}

Several limitations should be considered when interpreting our findings. First, this was a cross-sectional study, so we cannot infer whether the students' perceptions and beliefs evolved over time. Second, our sample was drawn from three dental universities in Brazil. Although this group of students is likely to be similar to students from comparable universities, our results cannot be generalized to dental students elsewhere in Brazil. However, our study had a high response rate and included renowned public institutions, which are very likely to present similar characteristics as other public dental schools in the country and thus provide an overview of the future dental workforce trained by these institutions. Finally, social desirability bias could have affected the students' responses. Although we cannot completely rule out the possibility of measurement errors, the questionnaires were completely anonymous, and the students were assured of the confidentiality of the results, which increased the validity of our data. Despite these limitations, our findings raise important issues related to dental students' perceptions of and beliefs about people living in poverty and the challenges for future access to dental care. Dentists are key actors for reducing oral health care disparities; however, the dental profession is not keeping pace with the need and the demand imposed by society's oral health needs.

Conclusion

To our knowledge, ours is the first study to provide a portrait of Brazilian dental students' perceptions of and attitudes about people living in poverty. Our results uncovered generally positive beliefs held by dental students. However, some students endorsed individualistic explanations for poverty. These observed inconsistencies may prevent the students from acting on their good intentions. These findings deserve the attention of academic dental institutions,

since the inclusion of a curricular component to address prejudice toward underprivileged groups and oral health disparities may prepare the future dental workforce to be socially accountable professionals. Moreover, our findings demonstrated that dental students' beliefs about the poor were associated with their willingness to provide care to disadvantaged and socially marginalized populations. One potential avenue to improve dental students' willingness to provide care for these groups is to admit more students from lower socioeconomic backgrounds to dental schools based on their sensitivity and empathy to the value of providing care to the poor. Taken together, these findings suggest that future Brazilian dentists may not provide equal provision of dental care for all patients. Due to the importance of this topic, we would argue that there should be a specific commitment in dental schools in Brazil and around the world to incorporate in their curricula a comprehensive approach to increase students' consciousness about health care disparities and to enhance their professional responsibility to people living in poverty.

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