

Original Article

## The representation of HIV/AIDS and hepatitis B in the dentistry context

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### Abstract

**Introduction:** HIV/AIDS and hepatitis B are diseases with major epidemiological and social impacts, with important effects in the dentistry context. This study aimed to compare the knowledge, presence, and manifestation of discriminatory and stigmatizing acts of dental surgeons, dental assistants, and dental students concerning social representations of HIV/AIDS and hepatitis B.

**Methodology:** This cross-sectional, quantitative study was carried out in Brazil with primary health care dental surgeons (n = 219) and dental assistants (n = 152) in 40 municipalities and dental students of a public university (n = 179). The z-test for proportions ( $p \leq 0.05$ ) was used for data analysis to compare the three groups.

**Results:** We found statistically significant differences regarding knowledge about HIV/AIDS and hepatitis B, with a higher percentage of correct answers by dental surgeons (97.7%). Regarding infection, the fear of contracting HIV/AIDS was more representative, whereas hepatitis B was more mentioned concerning the risk of infection. In general, only 30.7% and 42.2% of individuals would accept care from professionals with HIV/AIDS and hepatitis B, respectively; assistants and students had the higher proportion of refusal of care. Also, a higher proportion of assistants (47.4%) believed there are different conducts in the care of patients with HIV and hepatitis B.

**Conclusions:** The knowledge of individuals about infectious diseases is still inconsistent, especially among dental assistants and students. Moreover, these groups showed a silent and hidden presence and manifestation of discriminatory and stigmatizing attitudes, with greater representativeness for HIV/AIDS.

**Key words:** HIV; hepatitis B; dentistry.

*J Infect Dev Ctries* 2021; 15(7):979-988. doi:10.3855/jidc.12283

(Received 03 December 2019 – Accepted 28 December 2020)

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### Introduction

HIV/AIDS and hepatitis B are viral diseases of great epidemiological relevance and social impact because they have high rates of mortality and morbidity and high virulence; they are stigmatized diseases that lead to exclusion, marginalization, and discrimination of infected individuals. Even after three decades of the discovery of HIV/AIDS, the advent of antiretroviral drugs, and the creation of protocols for prevention and treatment of hepatitis B, the stigma of the representation of these diseases is still undeniable and explicit; it is one of the world's main social and public health challenges [1,2].

Stigma is understood as a negative label or mark given to people or groups, generating discredit and devaluation before social and moral assessments [3]. Thus, the pernicious stereotype created, besides corrupting the existence and social ties of individuals, hinders opportunities, fosters inequalities and

iniquities, aggravates health conditions, and provokes discrimination in health services [4].

People living with HIV/AIDS and chronic hepatitis B, besides living with the physical consequences of the diseases, sometimes suffer psychological and emotional aggression due to prejudice and discrimination of unprepared professionals, culminating in barriers to their access to health services and disruptions in their expectations for cure [5,6].

Discriminatory and stigmatizing attitudes are most often nonverbal by means of denying care, lacking empathy, touch, and eye contact, having a humiliating behavior, and violating confidentiality [5-7]. These situations affect and modify the health-disease process pathway, since they give rise to feelings of anguish, fear, anxiety, stress, and depression, which may contribute to the delay in seeking treatment or even to treatment interruption [5,8-10].

Practices and conducts in patient care, regardless of health conditions and/or pathologies, race, ethnicity,

gender identity, among other characteristics, should be based on the principles of humanization and assistance, without any distinction or discrimination. In this context, health professional training is essential, because it allows modifying moral values and promoting social justice, in addition to providing support and care to sick patients [6,11].

The major issue of HIV/AIDS and hepatitis B in the dental context concerns the high risk of virus infection, given the direct contact of the professional with the main mode of transmission of pathogens, i.e. blood and saliva, in their clinical routine [12]. Although the medical biosafety axiom has already been recognized and ways of preventing viral diseases have been proved, lack of empathy, knowledge about viral diseases and stigmatizing and discriminatory attitudes still have to be addressed by dental professionals [13]. Furthermore, dentistry is an essential part of individuals' health as a whole. It allows the diagnose of viral diseases through the presence of oral clinical manifestations and the provision of quality of life to sick patients, due to the considerable need for oral care of infected patients [14].

In this context, this study compares the knowledge, presence, and manifestation of discriminatory and stigmatizing acts by dental surgeons, dental assistants and dental students by analyzing their perceptions, attitudes, behavior, and empathy before social representations of HIV/AIDS and hepatitis B.

## Methodology

### *Study Characterization*

This study was conducted with dental surgeons and dental assistants/technicians of Primary Health Care services (PHC) and dental students of a public university.

This is a cross-sectional, quantitative, epidemiological study, which was conducted in two different scenarios: health care units and in the School of Dentistry of a public university.

### *PHC Dental Staff*

This study population includes all dental surgeon and dental assistants/technicians of PHC units in all the 40 municipalities covered by the Regional Health Department of Araçatuba (DRS-II). Araçatuba is at the northwest of the state of São Paulo, with an estimate of 774,441 inhabitants, 276 surgeon dentists and 179 dental technicians or assistants in the public health care system.

Eligibility criteria were all dental professionals of the 40 municipalities of DRS-II who have been actively practicing their profession. Health units whose

managers did not authorize the research were excluded. Moreover, those professionals who were away from work, in maternity leave, retired or were absent after two visits for data collection were excluded of the sample.

### *Dental Students*

In the academic field, all dental students of a public university who developed clinical activities (n = 218) were invited to participate in the research. At this higher education institution, the dentistry undergraduate course is divided into 10 semesters, with a total of 4,190 hours. According to the pedagogical political project, professional training is based on theoretical, laboratory and clinical content, divided into four guiding axes: Basic Sciences, Social and Human Sciences, Preclinical Practices, and Clinical Practices. In addition, the subjects are correlated on relevant topics, with the aim to improve the technical-scientific skills of future dental surgeons.

The inclusion criteria comprised students who developed clinical activities during data collection and who agreed to participate in the research. Individuals who attended only theoretical and/or laboratory courses, and those who were suspended, on sick or maternity leave, and absent on the day data was collected were excluded.

### *Data Collection*

For data collection, we created a semi-structured survey exclusively for this study with relevant questions to the objective of this study. Thus, the research instrument was divided into three dimensions: Characterization of Socio-Educational Profile, Knowledge and Perceptions; and Practices and Conducts. By using a survey with objective and exploratory questions, we could verify through the patterns of responses the attitudes and behaviors of respondents concerning representations of the diseases. In addition, prior to this research, a pilot study was conducted with 55 (10% of the sample) dental surgeons of a municipality that is not included in the sample, in order to ensure its validity, feasibility, and reliability. All the subjects who accepted participating in the study signed the Informed Consent.

To collect data with dental surgeons and assistants, two researchers went to every municipality and conducted the survey at respondents' workplaces without interrupting patient flow and care. The interviews were postponed when respondents were unable to participate on the scheduled day due to

professional appointments or due to the high demand for health care on that day.

In the academic context, we conducted the survey in the classrooms with teachers' authorization or after clinical care, without disturbing academic activities. Data collection was rescheduled when there was not enough time to complete the survey with all students. In both study scenarios, the authorities involved consented to the conduct of the survey.

### Data Analysis

We performed data tabulation and statistical analysis using the Statistical Package for the Social Sciences (SPSS for Windows, version 22.0, Chicago, IL). We used descriptive statistics to characterize the sample by absolute and percentage numbers.

The data analysis was composed of a descriptive analysis, where the variables categorical were expressed by their absolute and relative frequencies. The distribution of metric variables was assessed by determining their measures of central position and variability (median, mean and standard deviation).

The z-test for proportions was used in data analysis to compare the three study groups (dental surgeons, dental assistants, and dental students). The hypothesis tested concerned the proportions of answers that did not differ between the groups. When the *p*-value was significant ( $p \leq 0.05$ ), this hypothesis was rejected, thus setting a difference between the percentages. Dissimilar letters were assigned to highlight statistically significant differences, given the impossibility of

presenting all the *p*-values found. These explanations were categorized based on technical Bardin content analysis.

### Ethical and Legal Aspects

This research was approved by the Ethics and Research Committee (Protocol no. CAAE: 54227416.0.0000.5420) and it complied with all ethical principles for research with human beings according to Resolution no. 466/2012 of the Brazilian National Health Council, which is in accordance with the Declaration of Helsinki and the Nuremberg Code.

### Results

Out of the population, 550 participants were part of the study (86%): dental surgeons (219) and dental assistants/technicians (152) of 37 municipalities, and dental students (179).

Most of participants were female (77.6%), single (47.5%), and white (78.7%). The average age was 36.6 years; the average time after undergraduate course conclusion was 21.06 years; the average time of professional experience as dental assistant/technician was 12.13 years, and the average time of professional experience in public services by both groups was 14.11 years. Regarding educational characteristics, most of dental surgeons concluded their specialization course (48.9%), the dental students were in their 5th year at the dentistry course (35.2%), and the dental assistants completed high school (33.6%) (Tables 1-3).

**Table 1.** Description of the sociodemographic profile of study participants (n = 550). Araçatuba, São Paulo, Brazil, 2019.

Variables	Groups						Total	
	Dental Surgeons		Assistants		Students		n	%
	n	%	n	%	n	%	n	%
<b>Sex</b>								
Female	144	65.8	146	96.1	137	76.5	427	77.6
Male	75	34.2	6	3.9	42	23.5	123	22.4
<b>Marital status</b>								
Single	51	23.3	34	22.4	176	98.3	261	47.5
Married/Common-law marriage	151	68.9	96	63.2	3	1.7	250	45.5
Divorced	13	5.9	18	11.8	-	-	31	5.6
Widow/Widower	4	1.8	4	2.6	-	-	8	1.5
<b>Skin color</b>								
White	176	80.4	113	74.3	144	80.4	433	78.7
Black	4	1.8	7	4.6	5	2.8	16	2.9
Brown	7	3.2	31	20.4	22	12.3	60	10.9
Yellow	32	14.7	1	.7	8	4.5	40	7.5
<b>Working hours per week in public service</b>								
10 hours	22	10.1	-	-	-	-	22	4.0
20 hours	114	52.1	4	2.6	-	-	118	21.5
30 hours	12	5.4	12	7.8	-	-	24	4.4
40 hours	71	32.4	136	89.6	-	-	207	37.6
NA – Students	-	-	-	-	179	100.0	179	32.5
<b>Total</b>	<b>219</b>	<b>100.0</b>	<b>152</b>	<b>100.0</b>	<b>179</b>	<b>100.0</b>	<b>550</b>	<b>100.0</b>

NA: Not applicable.

The results showed statistically significant differences concerning receiving guidance on hepatitis B and HIV/AIDS, with a higher percentage of dental surgeons (97.7%) compared to the other groups. When asked where they obtained information, most dental surgeons (49.5%) and dental students (72.4%) answered undergraduate course, while assistants (54.4%) answered the courses and lectures they attended at their workplace. Moreover, 92% of all participants did not participate in any refresher course on infectious contagious viral diseases.

In general, when asked about the compulsory disease notification form, only 15.8% were aware of it.

When analyzing this percentage between the study groups, dental surgeons (26.0%) showed a significant statistical difference, which is the group with more knowledge on the topic. We found the same result when investigating knowledge on public health policies focused on individuals with hepatitis B and HIV/AIDS (63.5%) and which were those government actions (55.4%).

In general, HIV/AIDS was representative regarding the fear of infectious diseases; however, there were not statistical differences between the groups. Concerning hepatitis B, which ranked second, a higher percentage of students (49.2%) than dental surgeons (35.6%)

**Table 2.** Sample characteristics according to age, years after course conclusion or of work experience as dental assistant and years in public service (n = 550). Araçatuba, São Paulo, Brazil, 2019.

Groups	Variables	n	Lowest Value	Highest Value	Median	Mean	Standard Deviation
Dental Surgeon	Age	219	21	67	45.00	44.09	10.41
	Years after course conclusion	219	1.00	42.00	22.00	21.06	10.02
Assistant	Years in the public health care service	219	1.00	35.00	15.50	15.74	9.08
	Age	152	19	66	41.00	40.68	11.18
	Years working as dental assistant	152	1.00	35.00	10.00	12.13	8.90
Students	Years in the public health care service	152	1.00	36.00	10.00	11.76	8.97
	Age	179	20	45	22.00	22.93	2.57
	Years at work	0	-	-	-	-	-
Total	Years in the public health care service	0	-	-	-	-	-
	Age	550	19	67	35.00	36.26	12.93
	Years after course conclusion/working as dental assistant	370	1.00	42.00	18.00	17.39	10.53
	Years in the public health care service	370	1.00	36.00	14.00	14.11	9.23

**Table 3.** Characterization of study participants, according to their level of education (n = 550). Araçatuba, São Paulo, Brazil, 2019.

Variables	Groups						Total	
	Dentists		Assistants		Students		n	%
	n	%	n	%	n	%	n	%
<b>Schooling</b>								
3rd year of undergraduate course	-	-	-	-	56	31.3	56	10.2
4th year of undergraduate course	-	-	-	-	60	33.5	60	10.9
5th year of undergraduate course	-	-	-	-	63	35.2	63	11.5
Undergraduate Course	100	45.7	-	-	-	-	100	18.2
Specialization	107	48.9	-	-	-	-	107	19.5
Master's Degree	9	4.1	-	-	-	-	9	1.6
PhD	3	1.4	-	-	-	-	3	0.5
Complete Higher Education	-	-	47	30.9	-	-	47	8.5
Incomplete Higher Education	-	-	17	11.2	-	-	17	3.1
Technical course of dental assistant	-	-	33	21.7	-	-	33	6.0
High School	-	-	51	33.6	-	-	51	9.3
Nursing technician/assistant	-	-	4	2.6	-	-	4	0.7
<b>Total</b>	<b>219</b>	<b>100.0</b>	<b>152</b>	<b>100.0</b>	<b>179</b>	<b>100.0</b>	<b>550</b>	<b>100.0</b>

judged their fear as "high." Regarding the perception of participants about the risk of contracting viral diseases, hepatitis B (77.3%) was considered more dangerous compared to HIV/AIDS, and assistants (83.6%) had a higher percentage of "high" answers than dental surgeons (71.2%) (Table 4).

Table 5 shows that, although 88.5% and 95.1% of all study participants respectively answered they have always followed the biosafety protocol and used Personal Protective Equipment (PPE), more than half of them (51.1%) have used incomplete PPE.

**Table 4.** Comparative analysis of variables related to knowledge and perception in the study groups. Araçatuba, São Paulo, Brazil, 2019.

Variables	Groups						Total	Sign	
	Dental Surgeons		Assistants		Students				
	n	%	n	%	n	%	n	%	
<b>Have you received any guidance on hepatitis B or HIV/AIDS?</b>									
Yes	214	97.7 <sub>a</sub>	125	82.2 <sub>b</sub>	163	91.1 <sub>b</sub>	502	91.3	< 0.050
No	5	2.3 <sub>a</sub>	27	17.8 <sub>b</sub>	16	8.9 <sub>b</sub>	48	8.7	< 0.050
<b>If yes, where have you received it?</b>									
Undergraduate course	106	49.5 <sub>a</sub>	29	23.2 <sub>b</sub>	118	72.4 <sub>c</sub>	253	50.4	< 0.050
Courses	47	22.0 <sub>a</sub>	68	54.4 <sub>b</sub>	1	0.6 <sub>c</sub>	116	23.1	< 0.050
TV, Internet, Media	20	9.3 <sub>a</sub>	28	22.4 <sub>b</sub>	43	26.4 <sub>b</sub>	91	18.1	< 0.050
Work	41	19.2 <sub>a</sub>	0	0.0 <sub>i</sub>	1	0.6 <sub>b</sub>	24	8.4	< 0.050
<b>Have you attended any course in the past two years?</b>									
Yes	19	8.7 <sub>a</sub>	17	11.2 <sub>a</sub>	9	5.0 <sub>a</sub>	45	8.2	ns
No	200	91.3 <sub>a</sub>	135	88.8 <sub>a</sub>	170	95.0 <sub>a</sub>	505	91.8	ns
<b>Do you know the compulsory disease notification form?</b>									
Yes	57	26.0 <sub>a</sub>	11	7.2 <sub>b</sub>	19	10.6 <sub>b</sub>	87	15.8	< 0.050
No	162	74.0 <sub>a</sub>	141	92.8 <sub>b</sub>	160	89.4 <sub>b</sub>	463	84.2	< 0.050
<b>Have you ever used this notification form?</b>									
Yes	7	3.2 <sub>a</sub>	3	2.0 <sub>a</sub>	4	2.2 <sub>a</sub>	14	2.5	ns
No	212	96.8 <sub>a</sub>	149	98.0 <sub>a</sub>	175	97.8 <sub>a</sub>	536	97.5	ns
<b>Are there public policies for patients with hepatitis B and HIV/AIDS?</b>									
Yes	139	63.5 <sub>a</sub>	46	30.3 <sub>b</sub>	21	11.7 <sub>c</sub>	206	37.5	< 0.050
No	80	36.5 <sub>a</sub>	106	69.7 <sub>b</sub>	156	87.2 <sub>c</sub>	342	62.2	< 0.050
No information	-	-	-	-	2	1.1	2	0.4	-
<b>What are they?</b>									
He/She knows	77	55.4 <sub>a</sub>	15	32.6 <sub>b</sub>	8	38.1 <sub>a,b</sub>	100	48.5	< 0.050
He/she does not know	61	43.9 <sub>a</sub>	29	63.0 <sub>a</sub>	10	47.6 <sub>a</sub>	100	48.5	< 0.050
No information	1	0.7 <sub>a</sub>	2	4.3 <sub>a,b</sub>	3	14.3 <sub>b</sub>	6	2.9	< 0.050
<b>What is your level of fear of providing oral care for patients with hepatitis B?</b>									
High	78	35.6 <sub>a</sub>	72	47.4 <sub>a,b</sub>	88	49.2 <sub>b</sub>	238	43.3	< 0.050
Medium	75	34.2 <sub>a</sub>	51	33.6 <sub>a</sub>	56	31.3 <sub>a</sub>	182	33.1	ns
Low	65	29.7 <sub>a</sub>	28	18.4 <sub>b</sub>	34	19.0 <sub>b</sub>	127	23.1	< 0.050
No information	1	0.5 <sub>a</sub>	1	0.7 <sub>a</sub>	1	0.6 <sub>a</sub>	3	0.5	ns
<b>What is the risk of contracting hepatitis B?</b>									
High	156	71.2 <sub>a</sub>	127	83.6 <sub>b</sub>	142	79.3 <sub>a,b</sub>	425	77.3	< 0.050
Medium	58	26.5 <sub>a</sub>	18	11.8 <sub>b</sub>	35	19.6 <sub>a,b</sub>	111	20.2	< 0.050
Low	4	1.8 <sub>a</sub>	7	4.6 <sub>a</sub>	1	0.6 <sub>a</sub>	12	2.2	ns
No information	1	0.5 <sub>a</sub>	0	0.0 <sub>i</sub>	1	0.6 <sub>a</sub>	2	0.4	ns
<b>What is your level of fear of providing oral care for patients with HIV?</b>									
High	127	58.0 <sub>a</sub>	81	53.3 <sub>a</sub>	115	64.2 <sub>a</sub>	323	58.7	ns
Medium	73	33.3 <sub>a</sub>	32	21.1 <sub>b</sub>	41	22.9 <sub>a,b</sub>	146	26.5	< 0.050
Low	19	8.7 <sub>a</sub>	39	25.7 <sub>b</sub>	23	12.8 <sub>a</sub>	81	14.7	< 0.050
<b>What is the risk of contracting HIV?</b>									
High	128	58.4 <sub>a</sub>	97	63.8 <sub>a</sub>	142	79.3 <sub>b</sub>	367	66.7	< 0.050
Medium	63	28.8 <sub>a</sub>	29	19.1 <sub>a,b</sub>	28	15.6 <sub>b</sub>	120	21.8	< 0.050
Low	27	12.3 <sub>a</sub>	26	17.1 <sub>a</sub>	9	5.0 <sub>b</sub>	62	11.3	< 0.050
No information	1	0.5 <sub>a</sub>	0	0.0 <sub>i</sub>	0	0.0 <sub>i</sub>	1	0.3	-

ns: non-significant.

**Table 5.** Comparative analysis of variables related to practices and conducts in the study groups. Araçatuba, São Paulo, Brazil, 2019.

Variables	Groups						Total	Sign	
	Dental Surgeons		Assistants		Students				
	n	%	n	%	n	%	n	%	
<b>Do you follow the biosafety protocol?</b>									
Always	200	91.3 <sub>a</sub>	126	82.9 <sub>b</sub>	161	89.9 <sub>a,b</sub>	487	88.5	< 0.050
Sometimes	18	8.2 <sub>a</sub>	24	15.8 <sub>a</sub>	18	10.1 <sub>a</sub>	60	10.9	ns
Never	1	0.5 <sub>a</sub>	2	1.3 <sub>a</sub>	0	0.0 <sub>1</sub>	3	0.5	ns
<b>Do you wear Personal Protective Equipment (PPE)?</b>									
Always	208	95.0 <sub>a</sub>	141 <sub>a</sub>	92.8 <sub>a</sub>	174	97.2 <sub>a</sub>	523	95.1	ns
Sometimes	10	4.6 <sub>a</sub>	8	5.3 <sub>a</sub>	5	2.8 <sub>a</sub>	23	4.2	ns
Never	1	0.5 <sub>a</sub>	3	2.0 <sub>a</sub>	0	0.0 <sub>1</sub>	4	0.7	ns
<b>PPE use?</b>									
Complete	140	63.9 <sub>a</sub>	61	40.1 <sub>b</sub>	68	38.0 <sub>b</sub>	269	48.9	< 0.050
Incomplete	79	36.1 <sub>a</sub>	91	59.9 <sub>b</sub>	111	62.0 <sub>b</sub>	281	51.1	< 0.050
<b>No safety glasses?</b>									
Yes	73	92.4 <sub>a</sub>	85	93.4 <sub>a</sub>	111	100.0 <sub>1</sub>	269	95.7	ns
<b>No cap?</b>									
Yes	18	22.8 <sub>a</sub>	45	49.5 <sub>b</sub>	0	0.0 <sub>1</sub>	63	22.4	< 0.050
<b>No coat?</b>									
Yes	0	0.0 <sub>1</sub>	3	3.3 <sub>a</sub>	0	0.0 <sub>1</sub>	3	1.1	-
<b>No mask?</b>									
Yes	0	0.0 <sub>1</sub>	12	13.2 <sub>a</sub>	0	0.0 <sub>1</sub>	12	4.3	-
<b>Do you wash your hands after each clinical appointment?</b>									
Always	173	79.0 <sub>a</sub>	121	79.6 <sub>a</sub>	114	63.7 <sub>b</sub>	408	74.2	< 0.050
Sometimes	46	21.0 <sub>a</sub>	26	17.1 <sub>a</sub>	65	36.3 <sub>b</sub>	137	24.9	< 0.050
Never	0	0.0 <sub>1</sub>	5	3.3 <sub>a</sub>	0	0.0 <sub>1</sub>	5	0.9	-
<b>Have you ever provided care for any patient with hepatitis B?</b>									
Yes	72	32.9 <sub>a</sub>	59	38.8 <sub>a</sub>	28	15.6 <sub>b</sub>	159	28.9	< 0.050
No	147	67.1 <sub>a</sub>	93	61.2 <sub>a</sub>	151	84.4 <sub>b</sub>	391	71.1	< 0.050
<b>How did you find it out?</b>									
You asked the patient (anamnesis)	48	66.7 <sub>a</sub>	37	62.7 <sub>a</sub>	21	75.0 <sub>a</sub>	106	66.7	ns
The patient informed it spontaneously.	17	23.6 <sub>a</sub>	20	33.9 <sub>a</sub>	7	25.0 <sub>a</sub>	44	27.7	ns
Other.	7	9.7 <sub>a</sub>	2	3.4 <sub>a</sub>	0	0.0 <sub>1</sub>	9	5.7	ns
<b>Are patients afraid to inform they have hepatitis B?</b>									
Yes	144	65.8 <sub>a</sub>	104	68.4 <sub>a,b</sub>	139	77.7 <sub>b</sub>	387	70.4	< 0.050
No	73	33.3 <sub>a</sub>	48	31.6 <sub>a,b</sub>	40	22.3 <sub>b</sub>	161	29.3	< 0.050
No information	2	0.9 <sub>a</sub>	0	0.0 <sub>1</sub>	0	0.0 <sub>1</sub>	2	0.4	-
<b>Do you have different clinic conducts when providing care for patients with hepatitis B?</b>									
Yes	86	39.3 <sub>a,b</sub>	72	47.4 <sub>a</sub>	61	34.1 <sub>b</sub>	219	39.8	< 0.050
No	133	60.7 <sub>a,b</sub>	80	52.6 <sub>a</sub>	118	65.9 <sub>b</sub>	331	60.2	< 0.050
<b>If the dentist has hepatitis B, is he/she obliged to inform the patient?</b>									
Yes	69	31.5 <sub>a,b</sub>	33	21.7 <sub>a</sub>	61	34.1 <sub>b</sub>	163	29.6	< 0.050
No	150	68.5 <sub>a,b</sub>	119	78.3 <sub>a</sub>	118	65.9 <sub>b</sub>	387	70.4	< 0.050
<b>Would you receive care from a dentist with hepatitis B?</b>									
Yes	106	48.4 <sub>a</sub>	56	36.8 <sub>a</sub>	70	39.1 <sub>a</sub>	232	42.2	ns
No	113	51.6 <sub>a</sub>	96	63.2 <sub>a</sub>	108	60.3 <sub>a</sub>	317	57.6	ns
No information	0	0.0 <sub>1</sub>	0	0.0 <sub>1</sub>	1	0.6 <sub>a</sub>	1	0.2	-
<b>If the dentist has HIV, is he/she obliged to inform the patient?</b>									
Yes	70	32.0 <sub>a,b</sub>	34	22.4 <sub>a</sub>	69	38.5 <sub>b</sub>	173	31.5	< 0.050
No	149	68.0 <sub>a,b</sub>	118	77.6 <sub>a</sub>	110	61.5 <sub>b</sub>	377	68.5	< 0.050
<b>Would you receive care from a dentist with HIV?</b>									
Yes	70	32.0 <sub>a</sub>	48	31.6 <sub>a</sub>	51	28.5 <sub>a</sub>	169	30.7	ns
No	149	68.0 <sub>a</sub>	104	68.4 <sub>a</sub>	128	71.5 <sub>a</sub>	381	69.3	ns
<b>If the dental assistant has hepatitis B, is he/she obliged to inform the patient?</b>									
Yes	38	17.4 <sub>a</sub>	25	16.4 <sub>a</sub>	75	41.9 <sub>b</sub>	412	74.9	< 0.050
No	181	82.6 <sub>a</sub>	127	83.6 <sub>a</sub>	104	58.1 <sub>b</sub>	138	25.1	< 0.050
<b>If the dental assistant has HIV/AIDS, is he/she obliged to inform the patient?</b>									
Yes	42	19.2 <sub>a</sub>	24	15.8 <sub>a</sub>	80	44.7 <sub>b</sub>	146	26.5	< 0.050
No	177	80.8 <sub>a</sub>	128	84.2 <sub>a</sub>	99	55.3 <sub>b</sub>	404	73.5	< 0.050
<b>Would you hire an assistant with hepatitis B?</b>									
Yes	75	34.2 <sub>a</sub>	116	76.3 <sub>b</sub>	62	34.6 <sub>a</sub>	253	46.0	< 0.050
No	144	65.8 <sub>a</sub>	36	23.7 <sub>b</sub>	117	65.4 <sub>a</sub>	297	54.0	< 0.050
<b>Would you hire an assistant with HIV?</b>									
Yes	44	20.1 <sub>a</sub>	97	63.8 <sub>b</sub>	45	25.1 <sub>a</sub>	186	33.8	< 0.050
No	175	79.9 <sub>a</sub>	55	36.2 <sub>b</sub>	134	74.9 <sub>a</sub>	364	66.2	< 0.050

ns: non-significant.

Statistically, dental students (62.0%) and dental assistants (59.9%) had the highest percentages compared to dental surgeons (36.1%). Concerning the PPE, safety glasses are the most overlooked item, especially by students (100%).

According to the perception of respondents, patients are afraid of informing they have hepatitis B. We found statistical differences between the groups analyzed, with a higher percentage of students (77.7%) than of dental surgeons (65.8 %). The main reasons are presented below:

- “... due to the existence of prejudice and, therefore, not to receive health care”
- “... fear of discrimination...”
- “... fear that the professional treat them differently or refuse to provide care ...”
- “... ashamed of their condition ...”
- “... ashamed to answer how they contracted the disease ...”
- “... maybe because people feel disgusted by being around with this person ...”

We also found percentage differences between assistants (47.4%) and dental students (34.1%), who believe there are different clinical conducts when providing care for patients with hepatitis B.

- “... to strengthen the protective equipment and sterilize all equipment...”
- “... to double the PPE, wearing two gloves and two masks...”
- “... whenever possible, to schedule the patient as the last appointment of the day, so as not to have problems with other patients, and to sterilize all equipment and disinfect the whole office with alcohol...”
- “...antibiotic therapy before and after providing care to the patient ...”
- “... to double care in order not to cut myself...”

When asked if professionals with hepatitis B or HIV/AIDS are obliged to inform their patients about their health condition, most of them gave the wrong answer, with statistical differences mainly for students (34.1% concerning hepatitis B, and 38.5% concerning HIV/AIDS).

In general, when asked if they would accept to receive care from professionals with hepatitis B and HIV/AIDS, only 42.2% and 30.7%, respectively, answered “yes”. The highest percentages of “no” answers were given by assistants and students. When asked if they would hire an assistant with hepatitis B or HIV/AIDS, we found statistical differences, with greater acceptance by the group of assistants (76.3% for

hepatitis B, and 63.8% for HIV/AIDS), as opposed to dental surgeons (34.2% for hepatitis B, and 20.1% for HIV/AIDS).

## Discussion

In this comparative research on the perception and manifestation of discriminatory acts among dental surgeons, dental assistants, and dental students regarding the social representations of HIV/AIDS and hepatitis B, we found the presence of veiled discrimination, mainly due to HIV/AIDS stigma.

Discussions about viral diseases in the health care professional context are necessary considering the exponential increase of infectious diseases caused by viruses in recent decades and their strong consequences in epidemiological and social conjunctures [12]. However, this dilemma must be approached consciously and free of stigmas, as the problematization of viral diseases associated with negative moral idiosyncrasies may block empathy in the care of sick patients and foster discriminatory attitudes and prejudice. Therefore, considering dentistry is a critical and vulnerable area for viral pathogens, we reinforce the importance of investigating the impact and influence of HIV/AIDS and hepatitis B representations in this context.

In this study, knowledge and perception were important factors to unveil discriminatory attitudes, which silently and even ignorantly affected professional conducts in a segregated manner, especially dental assistants'. In this scenario, we raised two hypotheses. The first one is the large number of dental technicians/assistants without professional technical training, and the second one is the lack of proper training and qualification provided by the training schools to assistants.

In a study conducted in the northeastern of Brazil, the same socio-educational profile of dental assistants was found: most of them only completed high school, without previous proper training to work in such posts. The authors concluded that individuals who had been trained to work as a dental assistant had greater awareness of biosafety procedures and the best practices of self-care for health professionals [15]. In a survey conducted with dental assistants from Kuwait, despite the good rates concerning knowledge about HIV/AIDS by analyzing the variables individually, the authors found that approaching this subject was still necessary. They also pointed out the lack of empathy and the negative attitudes in the care of infected patients, highlighting the importance of knowledge and proper professional training [16].

In Brazil, after the inclusion of the Oral Health Team – Equipe de Saúde Bucal (ESB) in the Family Health Strategy – Estratégia Saúde da Família (ESF), dental technicians/assistants became more representative and received more acknowledgment as social actors for the promotion, prevention and recovery of oral health and for patient care based on humanized practices, using care and bonding as guiding axes [17]. Considering that those professionals directly and indirectly assist every type of patient, their professional practices and conducts must be free of any discrimination and prejudice.

We also found that the dental professionals had inconsistent perceptions of the diseases. Although they knew the risk of infection is high in case of hepatitis B (77.3%), their fear to be infected by HIV/AIDS was higher (58.7%). This inconsistency may be explained by the stigma attached to HIV/AIDS. Historically individuals with this disease have been marginalized, labeled, and discriminated [18]. Therefore, although there is a critical awareness about the virulence and pathogenesis of HIV compared to hepatitis B, the lack of empathy when providing care to patients with HIV/AIDS is marked by prejudice and discrimination [12,19-21].

There was also inconsistency in professional conducts when providing care to patients with hepatitis B. The results showed that, although most of participants believed patients were afraid of informing their health condition to dental professionals due to its stigma, they also answered that they believe to have different conducts when providing care for patients with hepatitis B. The proportions of responses were statistically higher among dental assistants and lower among students. Individuals with chronic hepatitis B, besides living with the consequences of the disease, suffer from discrimination in health services, which intensify the feeling of guilt, anxiety, stress, and reclusion. As a result, this situation delays the serological detection of the disease and discourage the search for treatment and its continuity, which perpetuates the cycle of infection of hepatitis B virus [6,22].

Le *et al.* [23] conducted a study in Vietnam and found a low prevalence of feelings of guilt, judgment, and self-perceived shame among individuals with chronic hepatitis B. However, this research indicated high rates of stigma in health services, due to untrained health professionals. This same condition of ignorance among health professionals was found in researches conducted in Ghana [24], Japan [25], China [6], and Australia [26]. For this reason, corroborating the

conclusion of other studies [6,12,23,27], we emphasize that greater knowledge about the natural pathways of hepatitis B and its modes of transmission, prevention, and treatment make possible to demystify the beliefs attributed to it, avoiding stigma and discrimination, hence upholding social justice and the principles of human rights.

When we asked if the participants would “receive care by a professional with HIV and hepatitis B” and “hire an assistant with HIV/AIDS and hepatitis B”, we found the recurrence of silent and hidden discriminatory attitudes, which was identified by observing their perception and attitudes. HIV/AIDS presented a more negative perception, with higher statistical proportions among dental assistants and students. Professional conducts based on discriminatory, biased and stigmatizing perspectives build barriers and negatively interfere with sick patients’ access, bond, and continuity to treatment [28]. A study by Elizondo *et al.* [14] supports this assumption. It reported that most people living with HIV/AIDS who sought dental care omitted their immunological condition because they were afraid of not receiving care or being rejected by professionals.

Historically, HIV/AIDS has been presented in such a biased and segregated way that even among health professionals, who know there are more infectious pathogens, are influenced by the stigma of the disease [21]. This situation can also be found in the opposite direction: the participant as a professional. In a study conducted in Taiwan with dental students, individuals were more willing to treat a patient with hepatitis B (89%) than with HIV/AIDS (49%) [29]. Brailo *et al.* [30] found that first-year students presented higher rates of denying care to patients with hepatitis B in Croatia, whereas final-year students had higher rates of denying care to patients with HIV. In the Brazilian context, Garbin *et al.* [12] found that the fear and risk of contracting HIV/AIDS was higher than contracting hepatitis B according to students' opinion. Final-year students had the highest rates of fear.

Major challenges concerning HIV/AIDS and hepatitis B go beyond the control of epidemiological indices and the development of preventive and healing technologies. One of the major challenges includes incentives to possibilities of fighting those diseases, such as equity-based health actions, monitoring the quality of life of sick individuals, constitutional support, and better professional training in patient care. Therefore, improving education and discussing about the main infectious viral diseases in the dental context



in technical and higher education is essential to break the constant stigmatizing and discriminatory cycles.

The main limitation of this study is the methodological approach employed. As it is a quantitative cross-sectional study, the causality of the results found cannot be inferred. In addition, as we used a survey instrument, the recall factor that covers the variables analyzed related to knowledge may be a confounding factor among participants. Answers about the presence and manifestation of discriminatory acts may have been dissembled by respondents, who may have omitted their real conduct and perception on the topic.

### Conclusions

The knowledge of dental surgeons, dental assistants, and dental students about hepatitis B and the ways of notifying it and supporting patients is inaccurate, especially among assistants. According to participants' perceptions, attitudes, and behavior, the presence and manifestation of discrimination and stigma was silent and hidden, especially among students and assistants, with a greater representation of HIV/AIDS. Thus, the study demonstrated that even with the vast access to information today, there is still a lack of knowledge on the subject by health professionals, which is undoubtedly a gap for be repaired as soon as possible.

### Acknowledgements

We would like to thank the Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES).

### Authors' contributions

CAS Garbin and OA Saliba Junior outlined the study, designed the collection tool and wrote the article. B Wakayama and AJS Garbin carried out the collection, analysis and interpretation of data and wrote the article. AJI Garbin outlined the study, and review critical the article.

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**Conflict of interests:** No conflict of interests is declared.