

## Conceptions of a dentistry team from the primary health care about standard precautions

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### ABSTRACT

The objective was to identify the conception of a dentistry team from the Primary Health Care (PHC) about standard precautions (SPs), obstacles to use SPs and, safety at the workplace. A descriptive-exploratory study with a quantitative approach conducted with 70.27% of the PHC dentistry team from a city in São Paulo state. We used Scales of Psychosocial and Organizational Factors that Influence Adherence to Standard Precautions. The scale domains obtained intermediate scores, and the overall value of the Cronbach's alpha coefficient was acceptable. In the domain "Safety Climate" professionals highlighted fragilities related to occupational risks, they consider the accumulation of activities and the lack of time to overcome obstacles to adhere to SPs; they also recognized the importance of continuing education about this theme. We concluded that this reality compromises clinical practice and safety for professionals and users, and there is a need to broaden discussions about biosafety during training and at the workplace.

**Descriptors:** Dentistry; Exposure to Biological Agents; Occupational Risks; Primary Health Care.

### INTRODUCTION

Health professionals are frequently exposed to risks due to contact with the biological material and a possible transmission of microorganisms. Due to this exposure, there are safety norms and

actions to guide health practice, benefiting the professional as well as the patient<sup>(1)</sup>.

The most efficient way to avoid microorganisms transmission in the workplace is to use resources to reduce professionals' exposure to biological materials, noting that standard precautions (SPs), is well defined and broadly known among health workers<sup>(2-3)</sup>. Traditionally, the risk of microorganisms transmission outside of the hospital is considered small, and it is known as a frontier in the knowledge of this field. However, there is evidence that actions conducted in different places, involving the management of biological material, the manipulation of needles and the contact with potentially infected individuals, leave patients as well as professionals exposed to an infection risk<sup>(4-5)</sup>. The Primary Health Care (PHC), the entrance door to the Unified Health System ("*Sistema Único de Saúde – SUS*") in Brazil, englobes a large number of these professionals, reinforcing an increasingly interdisciplinary practice.

Following the SUS guidelines, dentistry is increasingly present in the PHC, as evident by the Ordinance nº 267 that regulates the Ordinance nº 1.444/GM. This ordinance foresees the oral health incentive including actions of this nature in the strategy of the Family Health Strategy Program ("*Programa Saúde da Família*" - *PSF*) and the re-organization of this primary care field<sup>(2,6)</sup>. In 2004, the Brazilian Health Ministry (MS) created the "National Policy Guidelines for Oral Health" intended to re-organize actions in all attention levels; that should integrate with all other PHC activities, in a way that professionals act in a multidisciplinary and interdisciplinary fashion<sup>(6)</sup>. Nursing and Medicine are traditionally present in the PHC, and they started to also share the space and the daily practice with the dentistry team, creating needs for knowledge and work organization.

This team interacts with users and manage services to meet the population demands and, to broaden access to oral health services, and promotion, prevention, and recovery actions<sup>(6)</sup>.

In the national, as well as, in the international literature, few studies consider the exposure to occupational risks of dentistry teams in the PHC<sup>(7-9)</sup>. Dentists neglect the adherence to SPs for judging them as unnecessary or by making the professional exercise difficult, besides pointing the lack of support structure and incentive from the management of health units<sup>(3,10)</sup>. Over the past years, studies on this theme were developed, especially about the adherence of dentistry students to SPs<sup>(2,11-14)</sup>, but the knowledge about this subject among working professionals is still limited in the PHC environment<sup>(10,15)</sup>.

A study shows that regardless of the workplace, private clinics or public services, most experts of a dentistry team did not worry about biosafety measures, and they even neglected them. In the public service, 40% of participants reported not to change gloves between patients and they also demonstrated flaws regarding the use of barriers. The authors affirmed that in private clinics, the adoption of SPs was lower than in the PHC<sup>(16)</sup>.

Regardless of the infection risk being considered relatively small in PHC, there is a need for studies to systematically assess the occurrence of infections in this environment, as well as the adherence to SPs, which should be used independently of the environment where the health care is performed<sup>(17)</sup>.

Considering the constant exposure of a dentistry team to suffer contamination by microorganisms, and the relevant number of accidents with biological material<sup>(3)</sup>, the objectives of this study were: to identify

the conception of a PHC dentistry team about SPs, the obstacles for their use, and the safety climate in the workplace. Therefore, contributing to the advance in knowledge for this topic.

## METHODS

We conducted a cross-sectional, descriptive-exploratory study with a quantitative approach. It was carried on between January and February of 2014 with the dentistry team of a PHC unit from a city in the interior of São Paulo state.

The study population was all professionals working in the dentistry team from the local PHC unit, composed of 39 dentists and 35 oral health assistants and technicians, totaling 74 professionals. We excluded those who were on vacation or health-related leave.

We used the instrument Scales of Psychosocial and Organizational Factors that Influence Adherence to Standard Precautions, translated and validated for Brazil and adapted for the population of dentists<sup>(18)</sup>, and we analyzed three domains using a Likert-type scale. Domain 1 – “Obstacles to Standard Precautions,” containing four items; domain 2 – “Knowledge of occupational transmission of HIV” with six items; and domain 3 – “Safety climate”, with 17 items. Each item has five response options in a progressive sequence of five points: “Strongly Agree”, “Agree”, “Undecided”, “Disagree” and “Strongly disagree”, respectively. The instrument scores used were previously classified as high, for values greater than 4.5; intermediate, for values between 3.5 and 4.49 and, low, for values lower than 3.5<sup>(3,18)</sup>.

We analyzed the data using the software IBM Statistical Package for Social Science (SPSS), version 19.0, and Microsoft Excel 2010. We also assessed the scores regarding its absolute and relative frequencies, as well as, measures of central tendency (mean, median, minimum and maximum) and dispersion measures (standard deviation). The reliability of results was verified using the Cronbach’s Alpha Coefficient.

The Ethics Committee for Research with Human Beings from Universidade de São Carlos (UFSCar) approved the project, protocol nº 311.141, on August 13<sup>th</sup> of 2013, and we collected data after participants read and signed the Free and Informed Consent Term.

## RESULTS

From the 74 eligible professionals, 52 (70.27%) participated in the study. From those, 40 were female (76.93%); 26 (50%) were dentists and 26 (50%) were oral health assistants. Twenty-two professionals did not participate in the study, three of them were on vacation or medical leave, four denied participation, nine reported lack of time, three withdrew during data collection, and we were not able to contact three professionals.

We analyzed the magnitude of the dentistry team perceptions with the scale “Psychosocial and Organizational Factors that Influence Adherence to Standard Precautions among dentists”<sup>(18)</sup>, and we verified the 27 items and each of the three domains. We respected the average scores’ classification as high ( $\geq 4.5$ ), intermediate (3.5 to 4.49) and low ( $< 3.5$ ). We obtained intermediate scores for all domains; 2.22 for

“Obstacles to Standard Precautions”; 4.18 for “Knowledge of occupational transmission of HIV”, and 3.58 for “Safety Climate”.

About the reliability of the instrument used, the general value of the Cronbach’s Alpha Coefficient was 0.815. We considered acceptable Alpha values higher than 0.70 and lower than 0.95<sup>(18)</sup>.

But when we calculated it per domain, the domain one (Obstacles to Standard Precautions) had low reliability,  $\alpha = 0.515$ , and the domains two (Knowledge of occupational transmission of HIV) and three (Safety Climate) were reliable, with  $\alpha = 0,850$  and  $\alpha = 0,855$ , respectively.

Domains related to work – “Obstacles to Standard Precautions”, individual ones – “Knowledge of occupational transmission of HIV”, and organizational ones – “Safety Climate” – showed mean intermediate scores of 4.22; 4.18 and 3.58 respectively (Table 1).

**Table 1:** Distribution of domains and calculations of mean, median, standard deviation, minimum, and maximum that influenced adherence to Standard Precautions in Primary Health Care. São Carlos, SP, 2014.

Domain	Mean			Standard Deviation			Minimum			Maximum		
	D <sup>a</sup>	OHA <sup>b</sup>	T <sup>c</sup>	D <sup>a</sup>	OHA <sup>b</sup>	T <sup>c</sup>	D <sup>a</sup>	OHA <sup>b</sup>	T <sup>c</sup>	D <sup>a</sup>	OHA <sup>b</sup>	T <sup>c</sup>
Obstacles to Standard Precautions	4.2	4.2	4.2	1.1	0.9	1.0	1	1	1	5	5	5
Knowledge of occupational transmission of HIV	4.3	4.1	4.2	1.2	1.0	1.1	1	1	1	5	5	5
Safety Climate	3.6	3.6	3.6	1.4	1.2	1.3	1	1	1	5	5	5

<sup>a</sup>D: Dentist; <sup>b</sup>OHA: Oral Health Assistant; <sup>c</sup>T: Total of professionals.

Regarding the domain items, we present the four items from “Obstacles to Standard Precautions” in Table 2. The highlighted items are: 2 – “I cannot always follow SP because the needs of my patients come first” and 4 – “Following SP makes my job harder”, attributed to the answers “disagree” or “strongly disagree” by 92.3% and 94.3% of interviewed professionals, respectively.

**Table 2:** Distribution of the relative frequency of the Domain “Obstacles to Standard Precautions”, according to the answers from professionals of the dentistry team in the Primary Health Care. São Carlos, SP, 2014.

	1		2		3		4		5	
	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
	n	%	n	%	n	%	n	%	n	%
1. The accumulation of daily activities often interferes with my ability to follow SP	3	5.8%	7	13.5%	2	3.8%	1	0.4%	9	36.5%
2. I cannot always follow SP because the needs of patients come first	0	0.0%	2	3.8%	2	3.8%	2	42.3%	6	50.0%
3. Sometimes there is not enough time to use SP	1	1.9%	5	9.6%	2	3.8%	9	36.5%	5	48.1%
4. Following SP makes my job harder	2	3.8%	1	1.9%	0	0.0%	0	38.5%	9	55.8%

Within the obstacles to follow SPs, we noted that among the three professionals who strongly agreed with the affirmative “the accumulation of daily activities often interferes with my ability to follow SP” was a dentist, and two assistants; while among the seven professionals who agreed, five were assistants and two were dentists. In parallel to this, one dentist and one assistant were undecided about the answer to this topic.

Still on the domain mentioned above, when questioned, one assistant and one dentist agreed that “I cannot always follow SP because the needs of my patients come first”; the same proportion was undecided when answering this item. About the affirmative “Sometimes there is not enough time to use SP”, one dentist strongly agreed with it, four dentists and one assistant agreed and, one dentist and one assistant were undecided about it.

Another affirmative about the obstacles to follow SP, “Following SP makes my job harder”, one dentist and one oral health assistant strongly agreed, and one dentist agreed with it.

About “Knowledge of occupational transmission of HIV”, we observed a satisfactory consistency of answers, considering that in all items, at least 73.1% of professionals chose the answer options “Agree” and “Strongly Agree”. We noted the item 9 – “Pricking or cutting myself with sharp objects contaminated with blood or other secretions”, which 98.1% of participants highlighted it in both answers (Table 3).

**Table 3:** Distribution of the relative frequency of the Domain “Knowledge of occupational transmission of HIV”, according to the answers from professionals of the dentistry team in the Primary Health Care. São Carlos, SP, 2014.

	1		2		3		4		5	
	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
	n	%	n	%	n	%	n	%	n	%
5. Dressing a wound in an HIV-infected without wearing gloves	19	36.5	2	42.3	2	3.8	6	11.5	3	5.8
6. Performing anesthesia and/or puncture on na HIV-infected person without using gloves	22	42.3	1	40.4	3	5.8	3	5.8	3	5.8
7. Having my mouth or eyes splattered with blood or other body fluids from HIV-infected patients	27	51.9	8	34.6	5	9.6	1	1.9	1	1.9
8. Having contact with HIV-positive blood or dried or cracked hands	22	42.3	6	30.8	6	11.5	6	11.5	2	3.8
9. Pricking or cutting myself with sharp objects contaminated with blood or other secretions	40	76.9	1	21.2	0	0.0	0	0.0	1	1.9
10. Pressing bleeding sites of HIV-infected patients without wearing gloves	24	46.2	7	32.7	5	9.6	4	7.7	2	3.8

In this domain, one dentist and one assistant seemed undecided with the affirmative “Dressing a wound in an HIV-infected without wearing gloves”, while one dentist and five assistants disagreed; two dentists and one assistant strongly disagreed. For the affirmative “Performing anesthesia and/or puncture on an HIV-infected person without using gloves”, three assistants were undecided; the same proportion of assistants seemed to disagree, and three dentists strongly disagreed.

For the affirmative “Having contact with HIV-positive blood or dried or cracked hands”, one dentist and five assistants were undecided; three dentists and three assistants disagreed, while two dentists strongly disagreed. For the affirmative “Pressing bleeding sites of HIV-infected patients without wearing gloves”, one dentist and two assistants disagreed while two dentists strongly disagreed.

On the domain “Safety Climate” we noted values higher than 75% for the options “agree” and “strongly agree” with the importance of the teamwork, availability, the use and disposal of potentially HIV-contaminated materials, and their perception of the importance of continuing education through biosafety

training and lectures.

Within the 17 items composing the scale “Safety Climate”, the items composing Table 4 are those that participants’ answers demonstrated fragility when the dentistry team already is exposed to biological risks.

**Table 4:** Distribution of the relative frequency of the Domain “Safety Climate” that point fragilities when facing occupational risk, according to answers from professionals from the dentistry team in the Primary Health Care. São Carlos, SP, 2014.

	1		2		3		4		5	
	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
	n	%	n	%	n	%	n	%	n	%
12. Prevention of occupational exposure to HIV is a priority for the management of this health unit	15	28.8	3	25.0	4	7.7	9	36.5	1	1.9
13. This health unit offers specific training on blood-borne infections	7	13.5	4	26.9	7	13.5	1	40.4	3	5.8
14. At this health unit, improvisations are not made when it comes to protecting employees from infectious diseases	8	15.4	2	42.3	6	11.5	1	21.2	5	9.6
20. At this health unit, top management is personally involved in safety activities	3	25.0	7	32.7	3	5.8	2	23.1	7	13.5
21. At this health unit, there is a safety committee	1	1.9	4	7.7	4	26.9	6	30.8	7	32.7

For the domain “Safety Climate”, the affirmative “Prevention of occupational exposure to HIV is a priority for the management of this health unit”, two dentists and two assistants were undecided, eight dentists and 11 assistants disagreed, and one assistant strongly disagreed. For the affirmative “This health unit offers specific training on blood-borne infections”, three dentists and four assistants were undecided; 10 dentists and 11 assistants disagreed while three dentists strongly disagreed.

Still related to the domain “Safety climate”, the affirmative “At this health unit, improvisations are not made when it comes to protecting employees” had six assistants undecided about it, three dentists and eight assistants disagreeing, while five dentists strongly disagreed. For the affirmative “At this health unit, top management is personally involved in safety activities”, three dentists seemed undecided, three dentists and nine assistants disagreed, and four dentists and three assistants strongly disagreed. The affirmative “At this health unit, there is a safety committee.” had eight dentists and six assistants undecided, five dentists and 11 assistants disagreeing with it, and 11 dentists and six assistants strongly disagreeing.

## DISCUSSION

The number of dentistry teams in family health teams shows that there is an odontology presence intensification in the PHC. In 2012, there were 22,139 teams implemented in 4,907 Brazilian cities. In October of 2013, the Health Ministry identified 70.6 billions of Brazilians attended by 22,213 teams, and 90% of the cities have at least one team working for ten years in the Program “Smiling Brazil” (“*Brasil Sorridente*”)<sup>(6,10)</sup>.

Equally to all other health professionals, the dentistry team is exposed to occupational risks, including the biological risk, which requires intervention measures aiming biosafety for this professionals and minimizing the transmission of microorganisms in the workplace<sup>(19)</sup>. In practice, these professionals conduct

complex procedures that expose them to biological risks, requiring preparation to deal with working accidents and certainly with infection control in health establishments<sup>(2)</sup>.

An integrative review targeting biosafety and odontology identified an increase in the number of publications about this theme in the past years, correlating with the publication of the regulatory norm (NR) 32, from the Brazilian Ministry of Labor and Employment (MTE). This publication made biosafety measures mandatory between health professionals, emphasizing the need to adopt SPs, which consequently, affects odontology professionals. However, the same review observed that although there is knowledge referring to biosafety methods to prevent the transmission of microorganisms, these professionals do not adopt them<sup>(19)</sup>.

The scores obtained in the dimensions assessed in the present study were intermediate ( between 3.5 and 4.49). The professionals' perception about the theme is acknowledged, but with limited knowledge, once considering its importance. It is important to remember that the dentistry team, as well as, all other health workers, when thinking about their own and the users' safety, should have access to biosafety training, regardless of their professional career. This training should be continuous, and it should consider the exposure risks during working activities<sup>(20)</sup>.

A study that addressed the knowledge of hepatitis C transmissibility, and biosafety measures corroborate this scenario, where 151 dentists (from those, 64.2% reported previous puncture or cutting accidents) were questioned about accidents, and although they were knowledgeable about it, biosafety measures were still missing in its use<sup>(21)</sup>.

The biosafety application during procedures is essential to control infections in odontology clinics, and it is needed to teach professionals about mechanisms to improve safe activities for the worker and the environment<sup>(21)</sup>. The regulatory norm 32 reports that all employees with a possibility of exposure to biological agents should use adequate and comfortable work clothing, given by the employer<sup>(6)</sup>. The equipment for individual protection (EIP) should be sufficient for all professionals, immediate or reposition, and professionals should request and use them correctly as foreseen in the NR-6 of the MTE<sup>(6)</sup>. Such information compared to our study findings is concerning once our participants reported to not have time to follow the protection measures due to the accumulation of daily activities (19%) and lack of time (11%).

Also, the results revealed the vulnerability of these health professionals, who considered their working routine as an obstacle to adhere to SPs. It is necessary to comprehend the working process and not to let the routine interfere with the use of healthy practices to minimize exposure to biological risk.

In this sense, many infectious diseases were associated with contamination by puncture/cutting accidents. However, we should also consider those caused by splatters of mucous fluids, as the ocular mucosa<sup>(12)</sup>. In our study, 86.5% (n=45) participants agreed that the professional could be contaminated by having the mouth or the eyes splattered with blood or other secretions from HIV patients, recognizing the biological risk in their daily job.

It was also possible to observe that 11.5% (n=6) professionals disagreed and 9.6% (n=5) were undecided about the affirmative referring to the transmission of HIV. The lack of EIPs suggests that

professionals can underestimate the transmission potential of microorganisms in dentistry practice<sup>(10)</sup>.

The data presented here suggest that professionals know about the HIV transmission and the environment climate in their workplace, but the identification and consequently recognition of risks are still flawed. The vulnerability of health professionals is given by many interdependent factors, as the individual and institutional conditions, highlighting that the behavior is only one aggravating factor; contextually, collective conditions and the resources used to minimize risks increase the disregard facing the exposition<sup>(22)</sup>.

The recognition of exposure risk and the forms of contamination with biological material in the professional environment not always guarantee an adequate use of EIPs, as this directly connects to the comprehension about risks and their susceptibility<sup>(23)</sup>. Studies suggest that the lack of understanding of health professionals and the general population causes spreading of microorganisms in the health environment, through practices sustained by superficial knowledge and little evidence<sup>(24)</sup>.

The literature shows and suggests continuing education and, to update professionals to promote and reinforce the biosafety need in the workplace. It is important to implement continuing education programs to address issues as the exposition to biological material and biological accidents, clarifying the magnitude of SPs' adoption and biosafety norms<sup>(13)</sup>.

To insert this theme in the training environment is a strategy to improve biosafety measures and its application in the professional practice. A study conducted with health students at Paraíba demonstrated that there are remaining knowledge gaps about infectious diseases, occupational risks and immune-preventable diseases<sup>(11)</sup>. Another study suggests that odontology students and a dentistry team should have continuing education in biosafety<sup>(1)</sup>. A third study still considers a re-assessment of biosafety subjects addressed to odontology students necessary<sup>(14)</sup>.

It is important to note the subjectivity of each professional, highlighting their ways of working and their experiences, preparing them for a multi-professional perspective of work. A safer work process requires an inter-disciplinary and inter-sectorial action, including prevention and health promotion actions for the worker<sup>(22)</sup>.

## CONCLUSION

We concluded that the analysis of the perception magnitude of an odontology team identified intermediate scores, showing fragilities when these professionals in this workplace approached this theme, particularly in the domain "Safety Climate", besides the accumulation of activities and the lack of time considered as primary obstacles to adhere to SPs.

We also identified lack of awareness about working activities that could transmit microorganisms, as verified in the domain about HIV transmission. Also, this reality compromises professional practice and safety for the professional and health service users. Thus it is necessary to broaden biosafety discussions during training and in the workplace.

These results collaborate for the expansion of biosafety knowledge of a PHC dentistry team,

particularly because it used a previously validated instrument. However, the use of an instrument validated for dentists applied in all members of an odontology team is a study limitation.

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