



ISSN: 2230-9926

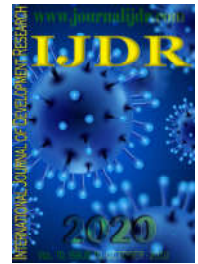
Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research

Vol. 10, Issue, 10, pp. 41770-41776, October, 2020

<https://doi.org/10.37118/ijdr.20312.10.2020>



RESEARCH ARTICLE

OPEN ACCESS

BIOSAFETY AND KNOWLEDGE ABOUT CROSSINFECTION AMONG UNDERGRADUATE DENTISTRY STUDENTS IN A PUBLIC BRAZILIAN UNIVERSITY

Izabelly Tacconi Arruda^{1*}, Augusto Alberto Foggiano^{1,2}, João Lopes Toledo Neto¹ and Douglas Fernandes Silva^{1,2}

¹Health Sciences Center, State University of Northern Paraná, Jacarezinho, PR, Brazil

²Medical and Dental Institute of Phototherapy Foggiano, Jacarezinho, PR, Brazil

ARTICLE INFO

Article History:

Received 20th July, 2020
Received in revised form
19th August, 2020
Accepted 16th September, 2020
Published online 30th October, 2020

Key Words:

Biosafety, Disinfection,
Contamination,
Asepsis, SARS-CoV-2.

*Corresponding author:

Izabelly Tacconi Arruda

ABSTRACT

Biosafety is a general concern in health service, including dentistry, once the infection control, mainly the cross infection, is extremely important. Nowadays, the world is facing the new coronavirus pandemic and following the standards and measures that protect professionals, patients and the population is essential. This study aimed to evaluate the knowledge of dental students of a public Brazilian university about biosafety and disinfection processes to control the cross contamination and how they deal with it, especially during COVID-19 crisis. The study was realized based on self applied questionnaire, answered by 129 students of Dentistry Clinic in a public Brazilian university. As a result, it was observed that the knowledge about biosafety increases according to academics' evolution in the graduation. It was clear, with the analysis, that there are some points to reinforce and improve, but they can be easily solved by the university. Besides that, the students have shown sufficient and appropriated knowledge to avoid risks of contamination and cross infection in certain health activities.

Copyright © 2020, Izabelly Tacconi Arruda et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Izabelly Tacconi Arruda, Augusto Alberto Foggiano, João Lopes Toledo Neto and Douglas Fernandes Silva. "Biosafety and knowledge about crossinfection among undergraduate dentistry students in a public Brazilian university", *International Journal of Development Research*, 10, (10), 41770-41776.

INTRODUCTION

The aim of the health professionals is to cure a patient's disease without recontamination or a new condition. Therefore, biosafety is the obtaining of asepsis and the guarantee of safe caregivers (YOUNES *et al.*, 2017). The right protection is extremely necessary to avoid the contamination of SARS-CoV-2 (COVID-19), because breaking the chain of asepsis, for example, could result in cross infection, spreading the new coronavirus to patients, professionals and dental team (CROSP, 2020). The transmission of SARS-CoV-2 occurs from one contaminated person to another through droplets eliminated through coughing or sneezing, surfaces or contaminated objects (BRASIL, 2020a). Thus, it's important to reinforce the need of a correct cleaning of materials and equipment, objects and surfaces, and to use the Personal Protective Equipment (PPE), based on the biosafety rules and measures imposed by competent organs (BRASIL, 2020b). This way, professionals of health services can keep a safe patient care.

Biosafety is a set of measures used to prevent, minimize or eliminate inherent risks in research, production, teaching, technological development and provided services. These processes may result in impairment on individuals and animals health, the environment or the quality of the work performed (TEIXEIRA; VALLE, 2010). In dentistry, these actions are applied to protect the dental team and the patient in a clinical setting (PIMENTEL *et al.*, 2015). The correct use of PPE is very important to avoid cross infection, such as hat, eye glasses and face shield, waterproof long sleeves apron, gloves and N95 or PFF-2 respirator masks (BRASIL, 2020b). Some specific methods of microbial control can also be adopted, such as washing hands with soap and water or using alcohol gel when washing is not possible; disinfect contaminated/exposed surfaces with alcohol or hydrogen peroxide; autoclaving materials and instruments (WHO, 2020a). All biosafety measures are important to combat any microbial disease and cross infection, especially in a pandemic situation (COVID-19) that worries the entire human society in

the current year of 2020. However, following the rules appropriately, it's possible to minimize and to control cross infection and the spread of SARS-CoV-2 (COVID-19) (WHO, 2020b). Microorganisms and viral particles can survive at places with a variety of physical conditions, but there are some limitations in their ability at critical places, which have been used as a resource for microbial growth control (JORGE, 2012). In case of the new coronavirus (SARS-CoV-2), its persistence depends on what type of surface and in which temperature it is. In metal and paper, for example, the virus remains for 5 days; on glass and plastic, about 4-5 days; in the surgical glove, the new coronavirus persists for approximately 8 hours and in the disposable apron, for 2 days (KAMPF *et al.*, 2020). The main reasons for developing microorganisms control are the prevention of diseases and infection transmission, contamination or growth of pathogens and the materials damage caused by these microorganisms (BORGES, 2018).

The establishment of biosafety standards and routines in higher education is essential, because then, the professional will follow the measures and customs that were adopted during his academic life. The emergence of infections is related to the number of microorganisms present, virulence, invasive character, host susceptibility and exposure to vehicles that will transmit pathogenic elements, such as potentially contaminated fluids (TRIPODI, 2015). According to Brazilian Association of Dentistry (*Associação Brasileira de Odontologia – ABO*) (BORGES, 2018), cross infection is the transmission of infectious agents among the dental team and patients, in a clinical setting. This transmission may be the result of person-to-person contact or contact with contaminated objects. During the clinical practice, cross infection can occur with a pathogens transmission between patients and health professionals inside a clinical place (IBRAHIM *et al.*, 2017). There are many ways to stop pathogenic microorganisms transmission, interrupting the cross contamination (PIMENTEL *et al.*, 2012). This study evaluated the knowledge about biosafety and its correlation with the new coronavirus pandemic (SARS-CoV-2) based on the students of a public Brazilian university of Dentistry.

METHODS

This study was based on literature review and field research and is classified as descriptive and exploratory-quantitative and qualitative. Data were collected by means of a questionnaire with closed and open questions about asepsis of instrumentals, equipment and surfaces, the use of protective equipment, knowledge about biosafety and cross infection answered by students of undergraduate Dentistry. The study was conducted with the approval of the Research Ethics Committee (technical opinion approved by *Plataforma Brasil*: 2.856.907). The sample of this study consisted of 129 students from first to fourth year of the undergraduate course in dentistry at a public Brazilian university. To compose the sample, participants had to be at least 18 years old, without restriction of gender or race. The interviewees were asked to sign a free and informed consent form to then answer the questionnaires. The questionnaire included 28 closed questions and two open questions about asepsis, student/professional protection and important concepts about universal standards of biosafety, the questions were based on several studies in the literature (HELENA *et al.*, 2007; PIMENTEL *et al.*, 2012; SANTANA *et al.*, 2012; SCHROEDER *et al.*, 2010). Before answering the questionnaires, the interviewees were properly

instructed about the objectives of this study. To minimize the chances of bias, was opted for anonymity in the questionnaires, as suggested by Severino (SEVERINO, 2017). The open questions were treated and analysis of qualitative data by content analysis was chosen (BARDIN, 1977). The results were collected and tabulated in tables and graphs according to the statistical analysis with the *IBM SPSS Statistics software* (version 25).

RESULTS

Most undergraduate dentistry students are 18 to 25 years old, only 6.2% are 25 or older. Graduation classes have approximately the same number of students, about 32 per class. Comparing the gender, it is visible that the vast majority are female, with only 24.8% male (Figure 1).

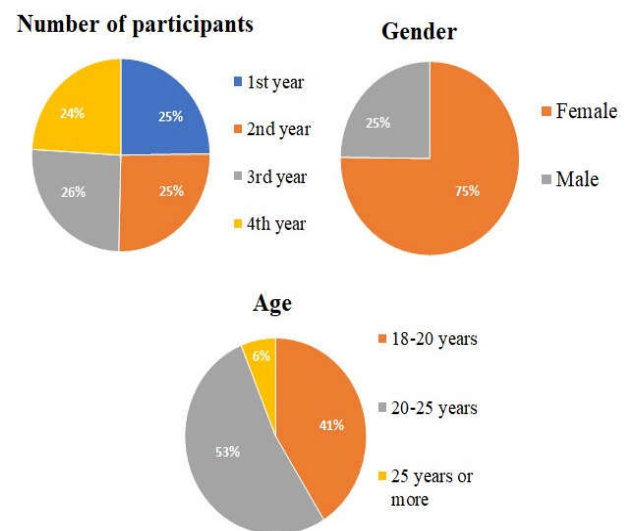


Figure 1. Study participants according to the grade, average age and gender of students of Dentistry Clinic in a public Brazilian university

Table 1: Answers obtained when the participants were asked about: “Preparation for a possible dental care at the Clínica Odontológica at the university”; “Washing the instruments before sterilization”; “Disinfection of surfaces before service”; “Disinfection of instruments before washing”; “Sterilization of instruments before assistance”

Questions	Answers	Frequency	Percentage
If you had to attend at the dental school clinic, would you know exactly how to take care of yourself?	Yes	101	78,3%
	No	27	20,9%
	No answer	1	0,8%
Do you wash the instruments before sterilization?	Always	122	94,6%
	Only if it's too dirty	3	2,3%
	Don't do	3	2,3%
	No answer	1	0,8%
Do you disinfect the surfaces before attending?	Yes	105	81,4%
	No	12	9,3%
	Sometimes	10	7,8%
	No answer	2	1,6%
Do you disinfect the instruments before washing?	Yes	88	68,2%
	No	40	31,0%
	No answer	1	0,8%
Do you sterilize instruments before attending?	Yes	127	98,4%
	No	2	1,6%

Table 1 showed results about basic care in clinical care, such as disinfection and personal care. Thus, it was evident that 78.3% of the undergraduates know how to take care of

themselves in clinical care at Dentistry Clinic, while 20.8% would not know what should be done and 0.8% did not answer the question.

Table 2. Answers obtained when the participants were asked about: "Knowledge about biosafety", "Knowledge about CNTBIO"; "Participation in a course/lecture about biosafety"; "Knowledge of the meaning of PPE"; "Avoid touching objects with gloved hands"

Questions	Answers	College serie			
		1st	2nd	3rd	4th
Do you know what "biosafety" means?	Yes	62,5%	93,9%	100,0%	100,0%
	No	37,5%	3,1%	0,0%	0,0%
	No answer	0,0%	3,0%	0,0%	0,0%
Do you know what "CNTBio" means?	Yes	6,3%	27,3%	24,2%	29,0%
	No	93,8%	72,7%	75,8%	71,0%
Have you ever been in a course/lecture about biosafety?	Yes	12,5%	97,0%	84,8%	90,3%
	No	87,5%	3,0%	15,2%	9,7%
Do you know what personal protective equipment (PPE) means?	Yes	68,8%	100,0%	100,0%	100,0%
	No	31,2%	0,0%	0,0%	0,0%

*Pearson's chi-square $p < 0.05$

Table 3. Results obtained when the participants were asked about: "Known sterilization means"; "Hand washing before and after wearing gloves"; "Changing pairs of gloves after service"

Questions	Answers	College serie			
		1st	2nd	3rd	4th
Knownsterilizationmeans	Drying oven	43,8%	57,6%	60,6%	58,1%
	Autoclave	96,9%	100,0%	100,0%	100,0%
	Chemical substances	28,1%	36,4%	69,7%	53,5%
Do you wash your hands before and after using gloves?	Yes	93,8%	78,8%	84,8%	77,4%
	No	6,3%	21,2%	15,2%	22,6%
Do you use a new pair of gloves for each patient?	Yes	96,9%	100,0%	100,0%	100,0%
	No	3,1%	0,0%	0,0%	0,0%

When the participants were asked about: "Do you wash the instruments before sterilization?", it was observed that 94.6% of the students always do the washing. The rest don't wash or do it if the material is very dirty. About the disinfection of surfaces, when was asked: "Do you disinfect the surfaces before attending?", 81.4% of the students said yes, 7.8% said do the disinfection sometimes, 9.3% don't do it and 1.6% didn't answer the question. To the question "Do you disinfect the instrumental before washing?", 68.2% of the students said "yes", while 31.9% said "no" and 0.8% didn't answer. Table 2 showed the knowledge about biosafety and personal protective equipment (PPE) among the participants. This way, it was possible to observe that, by relating two variables, "Which graduation year at Dentistry undergraduate are you?" and "The knowledge about the meaning of biosafety", as the students advance the course series, they obtain a greater degree of knowledge, until everyone has a proper learning ($p < 0.05$). In the question: "Are you aware about the meaning of biosafety?", 62.5% of the graduates of 1st year, 93.9% of 2nd year and 100.0% of 3rd and 4th years said "yes".

In comparison, when asked about the meaning of CNTBio, "Are you aware about what the acronym CNTBio means?", only 21.7% of the students said "yes". However, when were related to the year of graduation, only 6.3% of 1st year manifested knowledge, against 27.3% of 2nd year, 24.2% of 3rd year and 29.0% of 4th year, showing us a statistical difference, increased according graduation levels. In addition, it was clear that this knowledge increases as students get in

touch with courses or lectures that approach the topic - "Have you ever been in a course/lecture about biosafety?" (Table 2). In this question, only 12.5% of 1st year students answered "yes", in contrast to the other years, which more than 80% answered this question positively. Comparing the level of knowledge of dentistry students at the State University of Northern Paraná about PPE - "Do you know what means personal protective equipment (PPE)?" - and the year in which they are enrolled, their understanding of the subject increased according to the series attended (68.8% for the 1st year and 100% for the 2nd, 3rd and 4th years) ($p < 0.05$). When the participants were asked about the use of certain PPE:

"What type of PPE do you use routinely?", there was a statistical difference between the years and the types of equipment; the most used at 1st year are mask and gloves, while more than 90% of the second, third and fourth year stated that they use all PPE frequently during visits. The comparison between "Known sterilization means" and the "Graduation year" - it was also found that as students progress through the course series, it became evident that they gain a greater degree of knowledge over the years (Table 3) ($p < 0.05$). These results are compatible with the answers when asked "Do you always sterilize the instruments before the service?", because 98.4% of the interviewees said they did the sterilization (Table 1). In addition, 1.6% stated that "Sterilizes all instruments in a single box and uses in more than one patient", 35.7% "Sterilizes all instruments in a single box and uses only in one patient" and 62, 8% "Makes individual packages of kits for each patient".

When they were asked about the use of gloves (Table 3), it was clear that knowledge has also increased over the years ($p < 0.05$), with 100% of 4th year students avoiding touching objects after putting on gloves. Still about the 4th year students, 100% answered affirmative to "Do you use a new pair of gloves for each patient?". However, only 77.4% said that "Wash your hands before and after wearing gloves". About the disinfected surfaces, 74.4% of the students said they disinfected the focus, 86.0% disinfected the handpiece and the dental table, 82.2% disinfected the chair, 83.7% disinfected the triple syringe, 69.8 % disinfects the spit bowl and 9.3% does not disinfect. However, when were asked "How often do the surfaces are disinfected", 30.2% said "At the beginning and end of the clinical day", 3.9% "Once a day", 62.8% "Between each service" and 3.1% "Others".

DISCUSSION

According to the analysis, 129 students of the dentistry course in a public Brazilian university were questioned. Figure 1 was shown the following data: number of participants according to the grade, age and gender. Among them, 52.7% (68) are between 20 and 25 years, 41.1% (53) are between 18 and 20 years old and the rest, 6.2% (8), 25 years old or more. Still, 75.2% (97) of these are female and only 24.8% (32) are male. In addition, 94.6% (122) of them affirmed washing the instruments before sterilizing; 68.2% (88) said they disinfected the instruments before washing and 98.4% (127) said they sterilized the instruments before attending. In addition, 105 (81.4%) of the participants claimed to disinfect the surfaces before attending. So, to minimize difficulties facing a service situation, the college could provide a course, with theoretical and practical classes, to guide the students, such as, what care

Supplementary file I

Board I. Questionnaire applied in this study

Questionnaire A

Gender:

1. How old are you?
 18-20 20-25 25 or more

2. Are you a student or a dentistry professional?
 Student Professional

In case you are a professional, skip to question 4

3. In which dentistry college series are you at?
 1st year 2nd year 3rd year 4th year

4. Do you know what "biosafety" means?
 Yes No

5. Have you ever been in a course/lecture about biosafety?
 Yes No

6. Have you ever observed which equipment your dentist uses during attendance?
 Yes No

7. Do you know what personal protective equipment (PPE) means?
 Yes No

8. Name which ones you know.

9. If you had to attend at the dental school clinic, would you know exactly how to take care of yourself?
 Yes No

10. What type of PPE do you use routinely?
 Mask Cap Eyeglasses Gloves Others

11. What is your doubt regarding prevention in the dental office?

12. Do you know any biosafety standard?
 Yes No

13. Are you aware about what the acronym CTNBio means?
 Yes No

14) Do you remember any subject that taught biosafety measures to control crossinfection?
 No It wasn't taught Yes

Which one? _____.

should be taken with the environment and the surface of work, patient care, professional and dental team and, mainly, the necessary care to be taken with contaminated materials (BORGES, 2018). Currently, the world faces the pandemic of the new coronavirus (SARS-CoV-19), which was discovered after cases were registered in Wuhan, China (ANVISA, 2020a; BRASIL, 2020c). In view of the current situation in which human society lives, with the pandemic of COVID-19, compliance with biosafety measures is essential, in order to contain cross infection and the spread of Sars-CoV-2 virus. According to the Ministry of Health of Brazil (BRASIL, 2020c), once diagnosed with the virus, the patient must start the treatment prescribed by the doctor and follow his recommendations. There is still no effective vaccine against SARS-CoV-2, so the best way to prevent it is to avoid contact with the virus and follow biosafety measures, thus being able to avoid several cross infections (BORGES, 2018), as well as against the new coronavirus (WHO, 2020a), mainly during clinical visits to the population. Among all the ways to control microbial growth and biosafety, the best way to avoid contact with infectious agents during clinical care is using the PPE (hat, glasses and face shield, waterproof apron, gloves and respirators, such as the N95) (BRASIL, 2020b).

Verbeek *et al.* (VERBEEK *et al.*, 2020), in their study, concluded that some modifications in the design of the PPE, such as the implementation of flaps to help removing it, can reduce the risk of contamination. In addition, they stated that face-to-face training on the use of PPE can reduce errors, compared to training with printed materials. Another important point in clinical biosafety is the disinfection and sterilization of surfaces (BRASIL, 2020d). Some processes for cleaning equipment, utensils, instruments and surfaces are necessary to avoid contamination and cross infections (BORGES, 2018), such as, for example, antiseptics, disinfection, asepsis and sterilization. As shown in literature (ANVISA, 2020b; BORGES, 2018; BRASIL, 2020d; CROSP, 2020; THOMÉ *et al.*, 2020); many chemical products are used for disinfecting surfaces and instruments after clinical care, such as 70% alcohol, 1% sodium hypochlorite, degerming substances and chlorine. And for the current conditions, some disinfectants can be used against COVID-19, such as sodium hypochlorite, alcohol (70%), quaternary ammonium compounds, hydrogen peroxide (0.5%) (WHO, 2020a). In Table 2, it was shown that knowledge about subjects such as biosafety, CNTBio, PPE and watching a course/lecture about biosafety increased according to the progress of students in the undergraduate grades.

Supplementary file II

Board II: Questionnaire applied in this study

Questionnaire B

1. Which sterilization means do you know?
() Drying oven () Autoclave () Chemical substances () Others
- 2) Do you wash the instruments before sterilization?
() Always () Only if it's too dirty () Don't do (in negative case, skip to question 4)
- 3) To wash the material, you:
() Without gloves () Procedure gloves () Rubber gloves
- 4) Do you disinfect the instruments before washing?
() Yes () No
- 5) Do you sterilize instruments before attending?
() Yes () No
- 6) Do you know what kind of sterilization is done in your material?
() Autoclave () Drying oven () I'm not sure
- 7) For sterilization, you:
() Sterilizes all instruments in a single box and uses in more than one patient
() Sterilizes all instruments in a single box and uses only in one patient
() Makes individual packages of kits for each patient
() Others. Which one: _____
- 8) Do you disinfect surfaces before the attendance?
() Yes () Sometimes () No (in negative case, skip to question 10)
- 9) Which surfaces do you disinfect?
a) Focus..... Yes () No ()
b) Chair bottoms..... Yes () No ()
c) Handpiece..... Yes () No ()
d) Chair..... Yes () No ()
e) Triple syringe..... Yes () No ()
f) Spit bowl..... Yes () No ()
g) Dental table... Yes () No ()
- 10) How often do the surfaces are disinfected
() At the beginning and end of the clinical day () Once a day () Between each service () Others. Which one: _____
- 11) Do you sterilize or disinfect the handpiece?
() Sterilize () Disinfect
- 12) Do you sterilize or disinfect dental burs?
() Sterilize () Disinfect
- 13) If you disinfect, how many minutes do you submerge them in disinfectant? About:
() 5 minutes () 10 minutes () 20 minutes () 30 minutes () Others, which one? _____
14. Do you avoid touching objects (door knob, telephone, files, others) after putting on gloves?
() Yes () No
15. Do you wash your hands before and after using gloves?
() Yes () No
16. Do you use a new pair of gloves for each patient?
() Yes () No

Most of the 1st year students (62.5%) claimed to know what biosafety means, while in the last years, 100.0% claimed to know. The same happened about personal protective equipment (PPE). Related to the courses/lectures that talk about biosafety, 12.5% of the 1st year has already participated in an event, compared with 84.8% of the 3rd year and 90.3% of the 4th year. Some students didn't know what the acronym "CNTBio" means, but the rule continues, with 6.3% of 1st year students knowing the mean against 29.0% of 4th year students. This way, it was possible to conclude that the sooner the undergraduate students know and have contact with biosafety rules and measures, the better. Because, as dictated by the Regional Council of Dentistry – PR (THOMÉ *et al.*, 2020), knowledge about biosafety and the use of PPE is essential for everyone, professionals and students, during clinical practice. This knowledge is extremely important nowadays, because as well discussed in the literature (WHO, 2020a), PPE are now used every day to combat the new coronavirus, in order to further restrict the contact of pathogens with the skin and mucous membranes, both from professionals and the general population. As a result, waterproof disposable long-sleeved aprons, face shields and respiratory protection equipment (N95 or PFF-2, replacing the conventional surgical mask used in aerosol-generating procedures) were implemented (ANVISA, 2020b; CROSP, 2020).

In Table 3, the sterilization methods known by students were addressed, including the drying oven, autoclave and chemical substances. Almost 100% of the students said they know the autoclave, an average of 60% of them said they know the drying oven and about the chemical substances, they are little known among 1st and 2nd year (28.1% and 36.4%, respectively). 3rd and 4th year had more students with knowledge about this sterilization method (69.7% and 53.5%, respectively). Understanding the importance of types and performing sterilization of instruments is necessary and has a great importance in dental practice, especially in the current world scenario, of the SARS-CoV-19 pandemic (ANVISA, 2020b). Regarding the gloves, 83.7% of the students said they wash their hands before and after using them. And when were asked about changing gloves for each patient, 3.1% of 1st year students answered "no" to the change and all other years reported changing (100.0%). Changing gloves is extremely important to avoid cross infection, as it comes in contact with highly contaminating body fluids (saliva and blood, for example). Furthermore, facing the new coronavirus, this conduct is essential (CROSP, 2020; WHO, 2020a). In view of the data and results exposed, it was clear the importance of knowledge of the issues that address biosafety, to avoid accidents and contamination, in addition to cross infection, among patient and professional, and among the dental team.

Care must be redoubled in times of the new coronavirus pandemic, to protect not just only patients, but also professionals who are at the forefront of attending clinical emergencies. Participating in courses and lectures that address the topic is a good way to get to know the subject and always be up to date. Therefore, the sooner good habits begin within the university, the better the professional's performance in your office will be in the future.

Conclusion

After all this, this work concludes that, in general, undergraduate dentistry students from a Brazilian public university evaluated have knowledge about biosafety and its importance in academic clinical practice. It is a positive point, especially given the health crisis that the world has been facing recently, with the pandemic caused by SARS-CoV-19. As the course grades progress, their previous knowledge is improved, which is a positive point for students, patients and the university. Besides that, the security measures adopted during graduation will influence the professional conduct of these students in their private office in the future. Thus, it's evident the need to approach the theme "*biosafety*" in universities to have a safe clinical practice. In general, dentistry students at the Health Science Center performed well and answered the questionnaire in a satisfactory and expected manner. For unsatisfactory results, measures may be taken to reverse this dissatisfaction.

Acknowledgments

The authors wish to thank State University of Northern Paraná - UENP, Jacarezinho, Parana.

REFERÊNCIAS

- Anvisa, A. N. DE V. S.-. O Que É O Novo Coronavírus? Disponível Em: <<https://www.gov.br/anvisa/pt-br/acesoainformacao/perguntasfrequentes/paf/coronavirus>>.
- Anvisa, A. N. DE V. S. Orientações Para Serviços De Saúde: Medidas De Prevenção E Controle Que Devem Ser Adotadas Durante A Assistência Aos Casos Suspeitos Ou Confirmados De Infecção Pelo Coronavírus (SARS-Cov-2). Anvisa Agência Nacional De Vigilância Sanitária, V. 1, N. 1, P. 1–73, 2020b.
- Bardin, L. Bardin_Análise De Conteúdo_1977.Pdf, 1977.
- Borges, L. Biossegurança E Segurança Do Paciente. Associação Brasileira De Odontologia, P. 52, 2018.
- Brasil, M. DA S. Sobre A Doença - Transmissão. Disponível Em: <<https://coronavirus.saude.gov.br/sobre-a-doenca#transmissao>>.
- Brasil, M. DA S. Saúde E Segurança Do Trabalhador (EPI). Disponível Em: <<https://coronavirus.saude.gov.br/saude-e-seguranca-do-trabalhador-epi>>.
- Brasil, M. DA S. Sobre A Doença - O Que É COVID-19. Disponível Em: <<https://coronavirus.saude.gov.br/sobre-a-doenca#o-que-e-covid>>.

- Brasil, M. DA S. Recomendações De Proteção Aos Trabalhadores Dos Serviços De Saúde No Atendimento De COVID-19 E Outras Síndromes Gripais. Biblioteca Virtual Em Saúde Do Ministério Da Saúde, 2020d.
- Crosp, C. R. DE O. DE S. P. Orientação De Biossegurança - Adequações Técnicas Em Tempos De COVID-19 CROSP. CROSP, 2020.
- Helena, R. *Et Al.* Levantamento Dos Métodos De Controle De Infecção Cruzada Auxiliares E Estudantes De Odontologia Do Município De Araraquara - SP The Study Of The Methods Of Cross Infection Control Used By Dentists , Dental. P. 7–12, 2007.
- Ibrahim, N. K. *Et Al.* Cross-Infection And Infection Control In Dentistry : Knowledge , Attitude And Practice Of Patients Attended Dental Clinics In King Abdulaziz University Hospital , Jeddah , Saudi Arabia. Journal Of Infection And Public Health, V. 10, N. 4, P. 438–445, 2017.
- Jorge, A. O. C. Microbiologia E Imunologia Oral. 2. Ed. [S.L.] Elsevier, 2012.
- Kampf, G. *Et Al.* Persistence Of Coronaviruses On Inanimate Surfaces And Their Inactivation With Biocidal Agents. Journal Of Hospital Infection, V. 104, N. 3, P. 246–251, 2020.
- Pimentel, B. J. *Et Al.* Manual De Biossegurança Odontologia. [S.L.: S.N.].
- Pimentel, M. J. *Et Al.* Biossegurança: Comportamento Dos Alunos De Odontologia Em Relação Ao Controle De Infecção Cruzada. Cadernos Saúde Coletiva, V. 20, N. 4, P. 525–532, 2012.
- Santana, K. N. DE O. *Et Al.* Biossegurança E Acidente De Trabalho: Percepção De Cirurgiões-Dentistas. Efdportes.Com, V. 17, N. 175, P. 9, 2012.
- Schroeder, M. D. DE S. *Et Al.* Biossegurança : Grau De Importância Na Visão Dos Alunos Do Curso De Graduação De Odontologia Da Univil. Rev Sul-Bras Odontol., V. 7, N. 1, P. 20–26, 2010.
- Severino, A. J. Metodologia DO Trabalho Científico. 24ª Edição Ed. SÃO Paulo - SP: Cortez, 2017.
- Teixeira, P.; Valle, S. Biossegurança: Uma Abordagem Multidisciplinar. [S.L.: S.N.].
- Thomé, G. *Et Al.* Manual De Boas Práticas Em Biossegurança Para Ambientes Odontológicos. Conselho Regional De Odontologia Do Paraná, 2020.
- Tripodi, E. S. G. S. A. L. G. J. Manual De Biossegurança - FOB/USP. 2015.
- Verbeek, J. H. *Et Al.* Personal Protective Equipment For Preventing Highly Infectious Diseases Due To Exposure To Contaminated Body Fluids In Healthcare Staff. The Cochrane Database Of Systematic Reviews, V. 5, P. CD011621, 2020.
- Who. Laboratory Biosafety Guidance Related To Coronavirus Disease (COVID-19). Interim Guidance, N. 19 March, P. 1–5, 2020a.
- Who, W. H. O. Getting Your Workplace Ready For COVID-19: How COVID-19 Spreads. N. March 19, 2020, P. 1–8, 2020b.
- Younes, T. *et al.* Biosafety In Dentistry: The Patients Point Of View. Arq. Odontol, V. 53, P. 1–10, 2017.
