



Dentistry students' knowledge about viral hepatitis and its relevance in clinical practice


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Abstract Viral hepatitis risk of contamination can be increased by accidental injuries and by the manipulation of biological fluids during dental practice. This study aimed to assess the level of knowledge of dentistry students about viral hepatitis and its relevance in clinical practice. A cross-sectional study, with an exploratory character and a quantitative approach, was carried out with undergraduate students in Dentistry from a Brazilian public university enrolled in the year 2019. The sampling was of the intentional non-probabilistic type and the study group included 184 students who had already started clinical activities. The volunteers answered a questionnaire with open questions about general aspects of viral hepatitis and its relevance in Dentistry.

Pearson's chi-square and Fisher's tests were used to measure the association between students' knowledge and their academic stage. Values of $p \leq 0.05$ were considered significant. The response rate obtained was 40.2% ($n=74$). There was a higher proportion of correct answers about the signs and symptoms of viral hepatitis among students from the seventh to the tenth semester ($p < 0.001$). This group also showed greater knowledge about specific measures to prevent hepatitis B ($p=0.01$). Only 23% ($n=17$) of study participants were aware of the most common clinical complications of viral hepatitis. The level of knowledge of dentistry students about viral hepatitis was considered low. Undergraduate students from the two groups analyzed showed similar performance for most of the assessed items.

Descriptors: Occupational Exposure. Human Viral Hepatitis. Students, Dental.

Conocimiento de los estudiantes de odontología sobre las hepatitis virales y su relevancia en la práctica clínica

Resumen El riesgo de contaminación por hepatitis viral puede aumentar por lesiones accidentales y el manejo de fluidos biológicos durante la práctica dental. Este estudio tuvo como objetivo evaluar el nivel de conocimiento de los estudiantes de odontología sobre las hepatitis virales y su relevancia en la práctica clínica. Se realizó un estudio transversal, de carácter exploratorio y enfoque cuantitativo, con estudiantes de pregrado en Odontología de una universidad pública brasileña matriculados en el año 2019. El muestreo fue de tipo no probabilístico intencional y el grupo de estudio estuvo integrado por 184 estudiantes que ya desarrollaron actividades clínicas. Los voluntarios respondieron un cuestionario con preguntas abiertas sobre aspectos generales de las hepatitis virales y su relevancia en odontología. Se utilizaron las pruebas chi-cuadrado de Pearson y exacta de Fisher para medir la asociación entre el conocimiento de los estudiantes y su etapa académica. Se consideraron significativos valores de $p \leq 0,05$. La tasa de respuesta obtenida fue del 40,2% ($n=74$). Hubo mayor proporción de respuestas correctas sobre los signos y síntomas de las hepatitis virales entre los estudiantes del séptimo al décimo semestre ($p < 0,001$). Este grupo también mostró mayor conocimiento sobre medidas específicas para prevenir la hepatitis B ($p=0,01$). Solo el 23% ($n=17$) de los participantes del estudio conocían las complicaciones clínicas más comunes de la hepatitis viral. El nivel de conocimiento de los estudiantes de odontología sobre las hepatitis virales se consideró bajo. Los estudiantes de pregrado de los dos grupos analizados mostraron un desempeño similar en la mayoría de los ítems evaluados.

Descriptor: Exposición Ocupacional. Hepatitis Viral Humana. Estudiantes de Odontología.

Conhecimento de estudantes de Odontologia sobre as hepatites virais e sua relevância na prática clínica



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Resumo O risco de contaminação das hepatites virais pode ser acentuado por lesões acidentais e pela manipulação de fluidos biológicos durante a prática odontológica. Este estudo teve como objetivo avaliar o nível de conhecimento dos estudantes de Odontologia sobre as hepatites virais e sua relevância na prática clínica. Realizou-se um estudo transversal, de caráter exploratório e abordagem quantitativa, com graduandos em Odontologia de uma universidade pública brasileira matriculados no ano de 2019. A amostragem foi do tipo não-probabilística intencional e o grupo de estudo incluiu 184 estudantes que já desenvolviam atividades clínicas. Os voluntários responderam a um questionário com perguntas abertas sobre aspectos gerais das hepatites virais e sua relevância na Odontologia. Empregou-se os testes do qui-quadrado de Pearson e exato de Fisher para mensurar a associação entre o conhecimento dos estudantes e a sua fase acadêmica. Considerou-se como significantes valores de $p \leq 0,05$. A taxa de respostas obtidas foi de 40,2% (n=74). Houve uma maior proporção de respostas corretas sobre os sinais e sintomas das hepatites virais entre os estudantes do sétimo ao décimo semestre ($p < 0,001$). Esse grupo também demonstrou maior conhecimento sobre as medidas específicas de prevenção contra a hepatite B ($p = 0,01$). Apenas 23% (n=17) dos participantes do estudo estavam cientes quanto às complicações clínicas mais comuns das hepatites virais. O nível de conhecimento dos estudantes de Odontologia sobre as hepatites virais foi considerado baixo. Os graduandos dos dois grupos analisados exibiram um desempenho similar para a maioria dos itens avaliados.

Descritores: Exposição Ocupacional. Hepatite Viral Humana. Estudantes de Odontologia.

INTRODUCTION

Viral hepatitis represents a huge public health challenge worldwide and is associated with approximately 1.4 million deaths annually¹. Hepatitis B virus (HBV) and hepatitis C virus (HCV) are the main causes of cirrhosis globally, in addition to being strongly related to the indication for liver transplantation². In Brazil, HCV infection is the major cause of death among viral hepatitis, followed by HBV infection^{3,4}.

The main routes of transmission of hepatitis B and C viruses include blood and other organic fluids, such as saliva, which are frequently manipulated in dental practice⁵. The risk of contamination can be heightened by accidental injuries during patient care. Thus, strict adherence to infection control guidelines should be implemented among dental students, given that this group is at greater risk of infection during practice due to less clinical experience.^{6,7}

For students and professionals to perform clinical procedures more safely, it is essential that they have knowledge about disease transmission in dental offices⁸. However, several studies have shown gaps in the knowledge of these individuals regarding the most relevant viral hepatitis in clinical practice^{6,7,9-15}. Lack of information is also one of the main justifications given by dental students and professionals for not adhering to the proper immunization protocol against hepatitis B^{9,16,17}.

Dentistry courses have the responsibility to provide their students with adequate instructions regarding infection control measures⁷. Although graduation is one of the main sources of information about viral hepatitis for dentistry students, it has been shown that knowledge is not being sufficiently assimilated, as most of these individuals are unaware of aspects related to the disease¹¹.

It is suggested that the low level of knowledge of undergraduate students in Dentistry about occupational infections may be related to flaws in the curriculum structure, as well as the scarcity of continuing education programs about this content¹⁸.

There are, in the specific literature on the subject, findings that correlate the adequate degree of knowledge about viral hepatitis with the adoption of safe practices among undergraduate students in Dentistry^{18,19}. Therefore, it is important to keep students and professionals in the area informed and updated, in order to reduce the occupational risk of these infections²⁰.

This study aimed to assess the level of knowledge of dentistry students about viral hepatitis and its relevance in dental practice.

METHOD

This study corresponds to a section of the research project approved by Resolution 052/2019 of the Superior Council for Teaching, Research and Extension of the State University of Feira de Santana (UEFS) and by the Ethics Committee in Research with Human Beings of the same institution, by number 3,104,578.

A cross-sectional exploratory study, with a quantitative approach, was conducted with Dentistry undergraduate students at a public teaching institution located in northeastern Brazil. Sampling was intentional non-probabilistic and a total of 184 dentistry students who had already started clinical activities were included in the study group. The sample included undergraduates enrolled between the third and tenth semester who agreed to participate. Students in the first and second semesters were excluded, as they were not involved in clinical activities, and those who were not present when the instrument was applied or did not agree to participate in the study. The invited students were informed about the research objectives and all volunteers previously signed an Informed Consent Form. The sample included undergraduates enrolled between the third and tenth semester who agreed to participate. Students in the first and second semesters were excluded, as they were not involved in clinical activities, and those who were not present when the instrument was applied or did not agree to participate in the study. The invited students were informed about the research objectives and all volunteers previously signed an Informed Consent Form.

Data collection took place through an anonymous questionnaire with twelve open questions about general aspects of viral hepatitis and its influence on dental practice, which was developed based on validated instruments used in other studies^{17,20,21}. In order to verify possible limitations of the questionnaire, such as the existence of ambiguous and/or biased questions, as well as to ensure its validity, a pilot test was carried out with a sample of twenty dentistry students who were not included in this study. The researcher herself conducted the application of the final instrument in the classrooms, with the prior authorization of the responsible teachers. The participants recorded the data in the questionnaire and then deposited it in an urn, which was used in order to guarantee the anonymity of those involved. The responses obtained were analyzed individually and classified into previously created categories, whose validation was based on a solid theoretical basis.

Data were tabulated in Microsoft Excel® and submitted to statistical analysis in the Statistical Package for the Social Sciences (SPSS)® version 21.0. Pearson's chi-square test or Fisher's exact test were used to measure the correlation between knowledge and academic stage. When it was possible to consider the chi-square, the Mantel-Haenszel test was also used to obtain the odds ratio (OR) and the confidence interval (CI). Values of $p \leq 0.05$ were considered significant.

RESULTS

The response rate was 40.2% (74 out of 184 students). Among the participants, 55 (74.3%) were female and 19 (25.7%) were male, with a mean age of 23.11 ± 3.14 years. As for the academic phase, 44 (59.5%) participants were studying the initial semesters and 30 (40.5%) the advanced semesters.

Table 1 shows the distribution of responses obtained for some items in the questionnaire. Only 10.8% of study participants knew all types of viral hepatitis. Among those who mentioned one to four types, all knew at least one viral hepatitis capable of parenteral transmission.

As for the possible routes of transmission of viral hepatitis, 94.6% ($n=70$) of the participants were aware of the parenteral route. Of this total, 57.1% ($n=40$) mentioned, in addition to direct contact with blood through percutaneous exposure and/or sharing of sharps, other forms of transmission, such as sexual contact, vertical transmission and contact with other biological fluids.

There was a higher proportion of correct answers about signs and symptoms of viral hepatitis among students in advanced semesters (OR: 5.18; CI: 1.89-14.21). This group also demonstrated greater knowledge regarding specific

prevention measures against HBV ($p=0.00$). Overall, 74.3% of study participants were aware of the availability of a hepatitis B vaccine.

Table 1. Analysis of knowledge of dentistry students about viral hepatitis according to academic stage ($n=74$).

Questions	Early Semesters n (%)	Advanced Semesters n (%)	Total n (%)	p-value
<i>What types of viral hepatitis do you know?</i>				
Don't know or didn't answer	1 (2.3%)	0 (0.0%)	1 (1.4%)	1.00
Mentioned one to four types	40 (90.9%)	25 (83.3%)	65 (87.8%)	
Quoted all kinds	3 (6.8%)	5 (16.7%)	8 (10.8%)	
<i>What are the routes of transmission of the mentioned hepatitises?</i>				
Don't know or didn't answer	3 (6.8%)	0 (0.0%)	3 (4.0%)	0.14
He cited only the oro-fecal route	1 (2.3%)	0 (0.0%)	1 (1.4%)	
Quoted via parenteral	40 (90.9%)	30 (100%)	70 (94.6%)	
<i>What are the signs and symptoms of viral hepatitis?</i>				
Answered correctly	11 (25%)	19 (63.3%)	30 (40.5%)	0.00*
Answered incorrectly/did not answer	33 (75%)	11 (36.7%)	44 (59.5%)	
<i>What are the main clinical complications of viral hepatitis?</i>				
Answered correctly	9 (20.5%)	8 (26.7%)	17 (23%)	0.53
Answered incorrectly/did not answer	35 (79.5%)	22 (73.3%)	57 (77%)	
<i>Are there specific ways to prevent hepatitis B? If yes, which ones?</i>				
Answered correctly	28 (63.6%)	27 (90%)	55 (74.3%)	0.01*
Answered incorrectly/did not answer	16 (36.4%)	3 (10%)	19 (25.7%)	
<i>Are there specific ways to prevent hepatitis C? If yes, which ones?</i>				
Answered correctly	3 (6.8%)	3 (10%)	6 (8.1%)	0.68
Answered incorrectly/did not answer	41 (93.2%)	27 (90%)	68 (91.9%)	
<i>What care is needed in the dental care of patients with viral hepatitis?</i>				
Answered correctly	38 (86.4%)	28 (93.3%)	66 (89.2%)	0.46
Answered incorrectly/did not answer	6 (13.6%)	2 (6.7%)	8 (10.8%)	
<i>Is it possible for the dental surgeon to help in the diagnosis of viral hepatitis? if so, in what way?</i>				
Answered correctly	18 (40.9%)	17 (56.7%)	35 (47.3%)	0.18
Answered incorrectly/did not answer	26 (59.1%)	13 (43.3%)	39 (52.7%)	
<i>What is the minimum rate (IU/mL) of antibodies needed to ensure immunity against the hepatitis B virus?</i>				
Answered correctly	3 (6.8%)	0 (0%)	3 (4.1%)	0.27
Answered incorrectly/did not answer	41 (93.2%)	30 (100%)	71 (95.9%)	
<i>What would you do after suffering an accident with sharp objects whose source patient is a carrier of hepatitis B?</i>				
Totally proper conduct	7 (15.9%)	5 (16.7%)	12 (16.2%)	0.68
Partially adequate conduct	28 (63.6%)	20 (66.6%)	48 (64.9%)	
Inappropriate conduct	8 (18.2%)	5 (16.7%)	13 (17.6%)	
Did not answer	1 (2.3%)	0 (0.0%)	1 (1.4%)	
<i>What should be done if immunity against hepatitis B is not acquired after administration of the complete vaccination schedule?</i>				
Proper conduct	35 (79.5%)	20 (66.6%)	55 (74.3%)	0.21
Inappropriate conduct	2 (4.5%)	5 (16.7%)	7 (9.5%)	
Did not answer	7 (16.0%)	5 (16.7%)	12 (16.2%)	

* Statistically significant difference. The "early semesters" category comprises students enrolled between the third and sixth semesters; the "advanced semesters" group comprises students from the seventh to the tenth semester.

When questioned about the existence of specific measures for the prevention of HCV infection, 51.4% ($n=38$) of the study participants could not answer and 40.5% ($n=30$) answered "yes", but did not indicate which ones. What would these measures be or did they mention general biosecurity precautions. Only 8.1% ($n=6$) of students were aware of the lack of specific measures to prevent HCV. Most study participants stated that they acquired knowledge about viral hepatitis through formal sources, such as school and/or graduation (Figure 1).

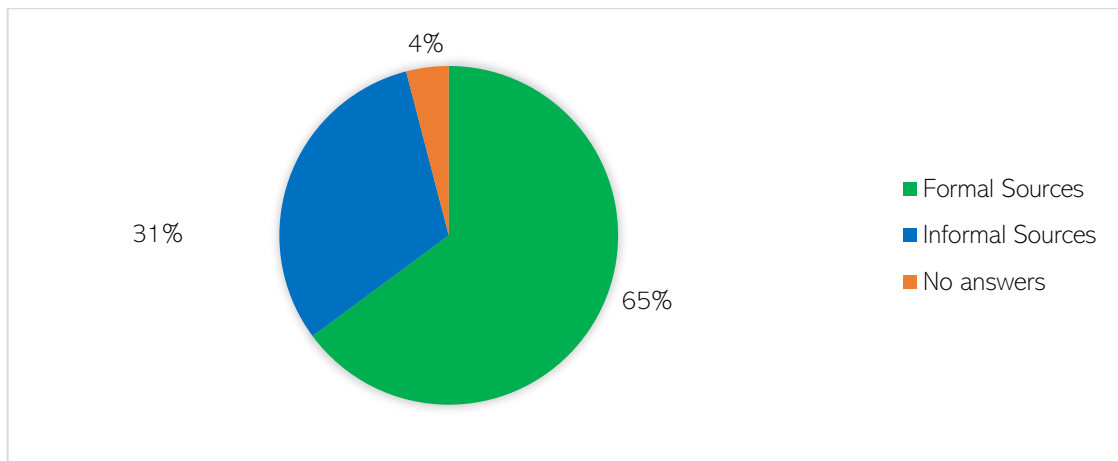


Figure 1. Percentage distribution of student responses to the question: "Where did you acquire the knowledge you have about viral hepatitis?" (n=74). Formal sources were considered: school, graduation, lectures, courses and the like. Television, radio, magazines and social media comprise informal sources.

DISCUSSION

Most study participants demonstrated knowledge of the most relevant viral hepatitis in dental practice and their forms of transmission. Students in the advanced semesters had a higher level of knowledge about the signs and symptoms of viral hepatitis and specific measures to prevent HBV. However, some important gaps were highlighted in the knowledge of students in general.

Only 40.5% of the participants were informed about the signs and symptoms of viral hepatitis, a result lower than that found by Teixeira et al. (2016)⁸, which corresponded to 79.54% of the dentistry students involved. This wide difference can be explained by the fact that the mentioned study used an instrument with multiple-choice questions, which may have influenced the participants to select suggestive answers. It should also be considered that undergraduate students are not used to treating patients with the clinical manifestations of viral hepatitis, most of which are nonspecific³, an aspect capable of contributing to the limited knowledge shown in the present study.

Clinical manifestations and complications resulting from chronic viral hepatitis tend to appear in late stages of liver involvement. In these situations, the disease has the potential to progress to cirrhosis and hepatocellular carcinoma³. In the present study, only 23% of the participants were aware of the most common clinical complications of viral hepatitis. This finding is considered alarming, as lack of knowledge about the potential evolution of the disease can reflect in the adoption of negligent practices and, consequently, increase the risk of occupational infections. The low awareness of students reinforces the need to broaden discussions about the clinical aspects of viral hepatitis in Dentistry courses.

Although 74.3% of study participants were aware of the availability of a vaccine to prevent hepatitis B, there was no mention of human anti-hepatitis B immunoglobulin (HBIG), which is indicated as post-exposure immunoprophylaxis for victims of accidents with contaminated biological materials or under strong suspicion of HBV contamination²². The lack of knowledge regarding the availability of the HBIG can contribute to the passivity of academics and professionals in Dentistry with regard to immediate post-exposure care to biological materials.

The lack of effective specific measures to prevent HCV was not recognized by the vast majority of participants. Low awareness in this regard was also evidenced in the studies by Lages et al. (2017)⁶, and Souza et al. (2015)²⁰. In the latter, it was found that only 35.6% of participants believed that there was no vaccine against hepatitis C, which, for the authors, demonstrates a low awareness of dentistry students about the lack of an immunobiological to prevent this disease. These findings reinforce the importance of deepening discussions about HCV during graduation, as insufficient knowledge and false beliefs regarding the existence of a vaccine against this pathogen can pose a risk to health professionals and, for this reason, require a lot of care. attention²³.

It was observed a gap in knowledge related to immediate care after accidents with sharps, as most academics did not highlight the need to notify the accident and perform serological testing of the exposed person, a fundamental measure to define the protocol to be instituted²⁴. This finding differs, in parts, from that found by Mazzutti et al. (2018)²⁵, which also demonstrated an unsatisfactory knowledge of the students, however, the main difficulty presented by the academics in this study was the adoption of an adequate immediate conduct. The inconsistency of learning about care after accidents with biological materials reveals the need to define a protocol for this type of occurrence and make it accessible to Dentistry students at the researched institution. In addition, it is essential that academics are trained and monitored so that this knowledge is properly applied in practice²⁶.

Participants were asked about the possibility of having a dental surgeon assist in the diagnosis of viral hepatitis. Overall, 52.7% of participants were unable to respond or responded incompletely. Knowledge about the signs and symptoms of viral hepatitis, although these are mostly nonspecific, can help dentists in recognizing suspected cases of viral hepatitis. Bearing in mind that these are notifiable diseases, dentists must report suspected cases and request serology of patients⁵. Therefore, these professionals can play an important role in collaborating for the early diagnosis of these infections.

According to the Ministry of Health, the presence of titles equal to or greater than 10 IU/ml of anti-HBs confers protection against hepatitis B²². The present study showed a large gap in students' knowledge regarding the interpretation of the anti-HBs test, which corroborates the study by Garbin et al. (2016)²⁷, in which only 41.18% of the participants claimed to have knowledge related to the meaning of the anti-HBs test result and, of this total, 19.05% did not get the interpretation right. Fernandez et al. (2013)²⁸ demonstrated that this inadequate knowledge also affects dentistry professionals. The authors showed that 91% of the dentists who participated in the study stated that they did not know the minimum concentration of antibodies necessary to be truly immunized against HBV.

Knowledge of the serological status of Dentistry students is essential, given that this resource allows you to certify whether the anti-HBs rates obtained with primary vaccination are sufficient to guarantee the protection of these individuals against HBV or whether there is a need to repeat the vaccination schedule. Thus, the monitoring of vaccination and the performance of post-vaccination serological tests must be rigorous in Dentistry courses. This can be done by requesting proof of vaccination and an updated anti-HBs test before the start of clinical practices, a measure that is adopted in the target educational institution of this study and aims to ensure better control over the immunization of students and reduce the risk of occupational infections^{9,29,30}.

The main source of knowledge about viral hepatitis reported by students was their graduation, a finding that corroborates what was found by Pilati et al. (2017)¹⁰, in which most participants stated that they acquired the information they had about hepatitis B during their undergraduate course. On the other hand, of the dentists who claimed to have some knowledge about hepatitis B in the study by Garbin et al. (2016)¹², less than half (48.3%) stated that these fundamentals were obtained in graduation. These results suggest that debates about the main occupational infections associated with dental practice, such as viral hepatitis, should be intensified in Dentistry courses, which can directly contribute to better academic learning. In addition, it is necessary to encourage constant professional updating, so that the knowledge acquired in graduation is improved and properly applied in the clinical practice of the dental surgeon.

The cross-sectional nature of the study and the reduced sample size are important limitations. As some data collected required the recall of past events, the existence of a potential memory bias is also considered. It should be emphasized that the application of the data collection instrument was carried out by the researcher in charge, which may have contributed to a smaller reach, when compared to other studies that use self-administered instruments. Despite this, this procedure allowed obtaining more reliable data, since the questionnaire was answered individually and without consultations. The open questions provided more frank answers from the participants and, consequently, a more reliable evaluation according to the purpose of the research.

As in the present study, several authors demonstrated an inconsistency in the knowledge of dentistry professionals and students regarding the most relevant viral hepatitis in dental practice^{6,7,8-12}. Therefore, it is necessary to recognize the fundamental role of educational institutions in professional training, in order to promote curricular changes aimed at

improving students' knowledge related to viral hepatitis and other occupational infections, and, consequently, making academic and professional practice safer.

CONCLUSION

This study showed a low level of knowledge of dentistry students about viral hepatitis and its relevance in clinical practice. Some important gaps were identified, which suggest that academic learning needs to be improved. It is proposed that the curriculum of the researched Dentistry course be revised, with a view to including more in-depth approaches to viral hepatitis and its potential complications, in addition to emphasizing the need to adopt preventive measures to avoid the main occupational infections related to dental practice.

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