

Pengetahuan Dan Sikap Mahasiswa Profesi Dokter Gigi Terhadap Infeksi Virus: Studi di Rumah Sakit Gigi dan Mulut Universitas Syiah Kuala

Knowledge And Attitudes Of Dental Students Toward Virus-Infections: A Study at The Universitas Syiah Kuala Dental and Oral Hospital

Yuli Fatzia Ossa¹, Vera Yulina², Nuzulul Ismi³

¹ Department of Oral Medicine, Faculty of Dentistry Universitas Syiah Kuala, Banda Aceh, Indonesia

² Department of Pediatric Faculty of Dentistry Universitas Syiah Kuala, Banda Aceh, Indonesia

³ Department of Periodontic Faculty of Dentistry Universitas Syiah Kuala, Banda Aceh, Indonesia
Correspondence email to: yulifatziaossa@unsyiah.ac.id

Received: 27 September 2023; Revised: 30 Mei 2024; Accepted: 10 June 2024; Published: 29 June 2024

ABSTRAK

Kebanyakan infeksi virus dapat memiliki manifestasi di rongga mulut dengan tampilan klinis yang menyerupai satu sama lain. Penelitian ini bertujuan untuk menilai pengetahuan dan sikap mahasiswa profesi dokter gigi dalam mengenali infeksi virus. Penelitian dilakukan secara *cross sectional* terhadap 205 mahasiswa profesi kedokteran gigi Universitas Syiah Kuala pada tahun 2022. Kuesioner terdiri dari data demografi, etiologi infeksi virus, manifestasi rongga mulut, foto klinis lesi, dan sikap terhadap infeksi kontrol. Hasil menunjukkan responden penelitian 24,9% laki-laki dan 75,1% perempuan. Hampir keseluruhan responden mengetahui etiologi herpes labialis (92,7%), 51,7% tidak tahu mengenai etiologi dari herpagina dan hand-foot and mouth disease. Namun, responden tidak mengetahui dengan benar mengenai foto klinis infeksi virus di rongga mulut, stomatitis aphthous recurrent mayor (52,7%), oral hairy leukoplakia (52,7%), dan pseudomembranous candidiasis (62,4%) bukan merupakan infeksi virus. Status proteksi diri terhadap infeksi virus dilihat dari status vaksinasi, 37,6% responden belum mendapatkan vaksin Covid-19 dan 33,7% belum vaksinasi hepatitis. Kebanyakan dari responden sudah menerapkan prinsip universal precaution ketika menangani pasien. Kesimpulan: Level pengetahuan responden dalam mengenali etiologi dan manifestasi rongga mulut terkait infeksi virus sudah baik, akan tetapi kemampuan mengenali foto klinis masih rendah. Perlindungan diri masih rendah jika dilihat dari status vaksinasi, dan sikap terhadap proteksi diri juga sudah baik. Mahasiswa profesi harus mempelajari lebih dalam mengenai infeksi virus yang bermanifestasi di rongga mulut.

Kata Kunci: Infeksi Virus, Manifestasi Rongga Mulut, Pengetahuan, Sikap

ABSTRACT

Oral manifestation of viral infections has similar clinical appearances. This study aims to determine the knowledge and attitudes of dental students in recognizing virus infections. A cross-sectional study was conducted on 205 clinical dental students of Universitas Syiah Kuala in 2022 with a questionnaire consisting of demographic data, etiology of viral infections, oral manifestation, clinical photos of lesions, and attitude toward infection control procedure. Results show that almost all knew the etiology of herpes labialis (92.7%), but not the etiology of herpangina and hand-foot and mouth disease. The respondents did not know that clinical photos of stomatitis aphthous recurrent major (52.7%), oral hairy leukoplakia (52.7%), and pseudomembranous candidiasis (62.4%) were not virus infections. The vaccination status of respondents was 37.6% of respondents who had been fully vaccinated against COVID-19, and 33.7% had a hepatitis vaccine. Most of the respondents have applied the principle of universal precautions when working with patients. In conclusion, the knowledge level of respondents in recognizing the etiology, and oral manifestations of viral infection is good, however, the ability to recognize clinical photos is low. Self-protection from viral infections is low based on vaccination status, and attitudes toward self-protection when practice is already good. Dental students need to learn more about viral infections related to oral cavities so that they become more skilled in treating patients with viral infections.

Keywords: Virus Infections, Oral Manifestation, Knowledge, Attitude

INTRODUCTION

The oral cavity is one of the most venerable places for various infections one of which is viral infections.¹ Viral infection that mostly affects the oral cavity is from Human Herpes Viruses such as herpes simplex and herpes zoster virus. Besides, Coxsackie, Human Immunodeficiency Virus, and Human Papillomavirus.² Since the World Health Organization (WHO) issued the status of the COVID-19 pandemic world in 2020 caused by Severe Acute Respiratory-Cov 2 (SARS-Cov 2) Virus which caused the emergence of a new disease with very fast spread infection and also has oral manifestations.^{3,4,5,6}

Manifestation of viral infection in the oral cavity can occur due to cellular damage caused by the virus itself as a consequence of immune reaction and also damage caused by the viral protein.⁷ Oral manifestation of viral infection may appear as an early sign of diseases, an important concomitant symptom of viral infection, or the only observable sign of viral infection. Viral infections cause many symptomatic and asymptomatic signs in oral cavity with clinical features ranging from normal condition, ulceration, benign, or malignant soft-tissue growth.^{1,2}

During dental procedures, the transmission of infection can occur directly from patients to operator and dental assistants; from patients to environment through contaminated blood, direct splashing of saliva on mucous membranes, contaminated equipment, needles, droplets, and aerosols.^{8,9} This research aims to examine the level of knowledge and attitude of dental clinic students regarding oral manifestations of viral infections and control infection.

METHOD

This cross-sectional study was conducted on clinical dental students from the Faculty of Dentistry Universitas Syiah Kuala Banda Aceh in 2022 with ethical approval number 327/KE/FKG/2022.

This research uses a questionnaire completed with a validity and reliability test. It consisted of demographic data, etiology, signs, and symptoms of viral infections, oral manifestation, clinical photo of lesions, and attitude toward infection control procedures and vaccination status. Knowledge of the causes/etiology of viral infections that

commonly occur in the oral cavity by providing several questions with right and wrong answer choices. Each correct answer will be given a score of 1 and for wrong questions a score of 0. Knowledge of clinical pictures of the lesions associated with viral infection is done using photos of the lesions taken from the book Color Atlas of Maxillofacial Disease by Neville et al 2019.¹⁰ The Score for correct answers is 1 and for the wrong answer is 0. The attitude aspect that is assessed is the student's attitude towards infection control procedures carried out at work, there are several questions using a Likert scale: never, sometimes, and always. Data in this study were analyzed using SPSS version 23 for the percentage of demographic respondents, the correlation between willingness and infection control procedure was done with Pearson's correlation analysis.

RESULT

The number of respondents who take part in this study was 205 respondents, with 24.9% male and 75.1% female respondents, and the majority of respondents were 21-23 years old (60.5%). The demographic data of respondents can be seen in Table 1. Knowledge regarding viral infection were divided into 2 aspects; knowledge about oral manifestations of viral infections in general, and knowledge about clinical photos of viral infections and the data is presented in tabular form. 92.7% of respondents answered correctly about the cause of herpes labialis, but 51.7% of respondents answered incorrectly about the cause of herpangina and hand-foot-mouth disease. The number of respondents who correctly answered about the oral manifestations of HIV infection was 57.1%, and 38 % of the total respondents answered incorrectly regarding the oral manifestations of Covid-19. The clinical photos used can be seen in (Figure 1.)

Table 1. Respondent Demographic Characteristic

Characteristic	n (%)
Sex	
Man	51 (24.9%)
Woman	154 (75.1%)
Age	
16-20 years old	3 (1.5%)
21-23 years old	124 (60.5%)
24-26 years old	78 (38%)
The year starts with clinical experience	
2021-2022	99 (48.3%)
2018-2020	85 (41.5%)
2014-2017	21 (10.2%)

Figure 1. Clinical picture used in this research.¹⁰

Knowledge of oral manifestations based on clinical photos; this study used clinical photo of oral lesions that commonly found in oral cavity as oral manifestation of viral infection. Those pictures were oral pseudomembranous candidiasis, herpes labialis, herpangina, oral hairy leukoplakia, geographic tongue, and major aphthous stomatitis. Not all those conditions caused by viral infections. Some of them is fungal infection (oral pseudomembranous candidiasis), others caused by immune alterations (major aphthous stomatitis and

geographic tongue). The respondents were incorrectly answer of these lesions, 63.4% for oral candidiasis pseudomembranous, 52.7% for major aphthous stomatitis, and 52.7% for oral hairy leukoplakia (Figures 2 and Figure 3).

The result of Covid-19 vaccination status was 37.6% of respondents had received the complete Covid-19 vaccination (1st dose, 2nd dose, and booster), and 56.6% had just received the Covid-19 vaccine 1st dose and 2nd dose. Meanwhile, 7.8% only got 1st dose of Covid-19 vaccination. The hepatitis vaccination status of this study showed that 66.3% of respondents had not been vaccinated, and only 33.7% had received hepatitis vaccination.

Student attitudes regarding infection control procedures can be seen in figure 4. 99.5% of respondents always use eye protection, and 12.2% of respondents sometimes changed gloves between patients. 9.3% of respondents sometimes wash their hands before contact with patients. However, 11.7% of respondents sometimes wash their hands after contact with patients. Generally, most of the respondents in this study used universal precautions when working with patients (99%). In addition, 83.4% of respondents answered that they were willing to treat patients with the oral manifestation of viral infection, and they are still 16.6% of respondents who were not willing to treat patients with oral manifestations of viral infection. Most respondents agree that infection control procedures during dental treatment are included in the Dentistry curriculum (99.5%). The correlation between knowledge about the oral manifestations of viral infections and students' attitudes towards infection control was based on Pearson correlation test $r = -0.102$, meaning that the higher level of knowledge is inversely proportional to students' attitudes.

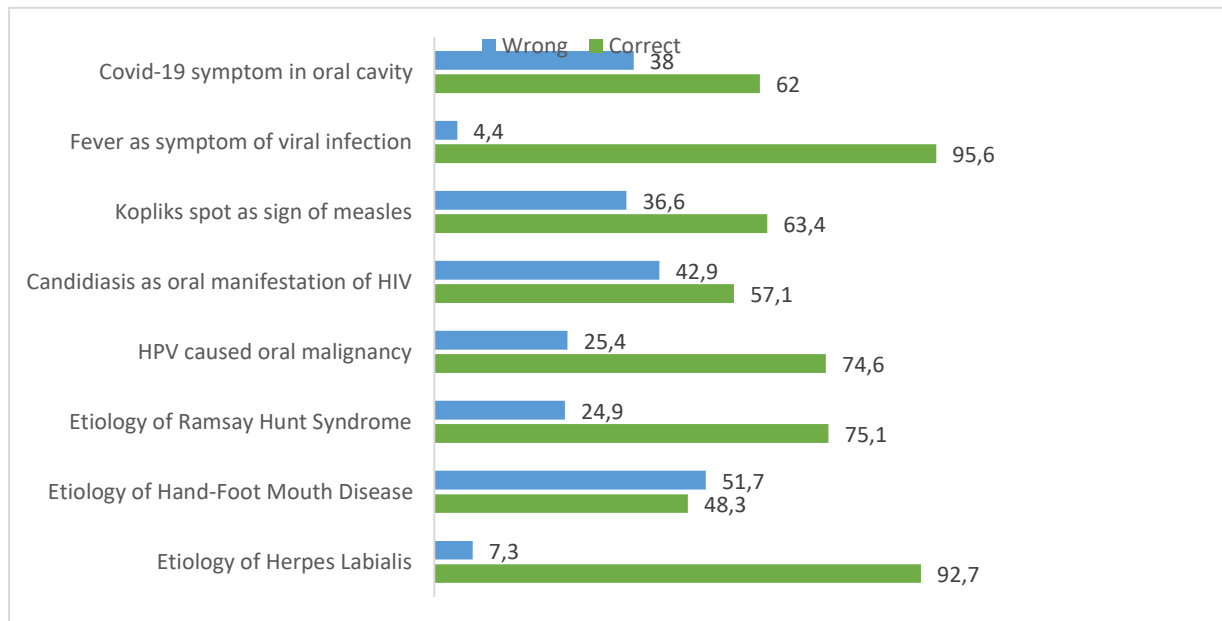


Figure 2. Knowledge of etiology and oral manifestations of viral infections

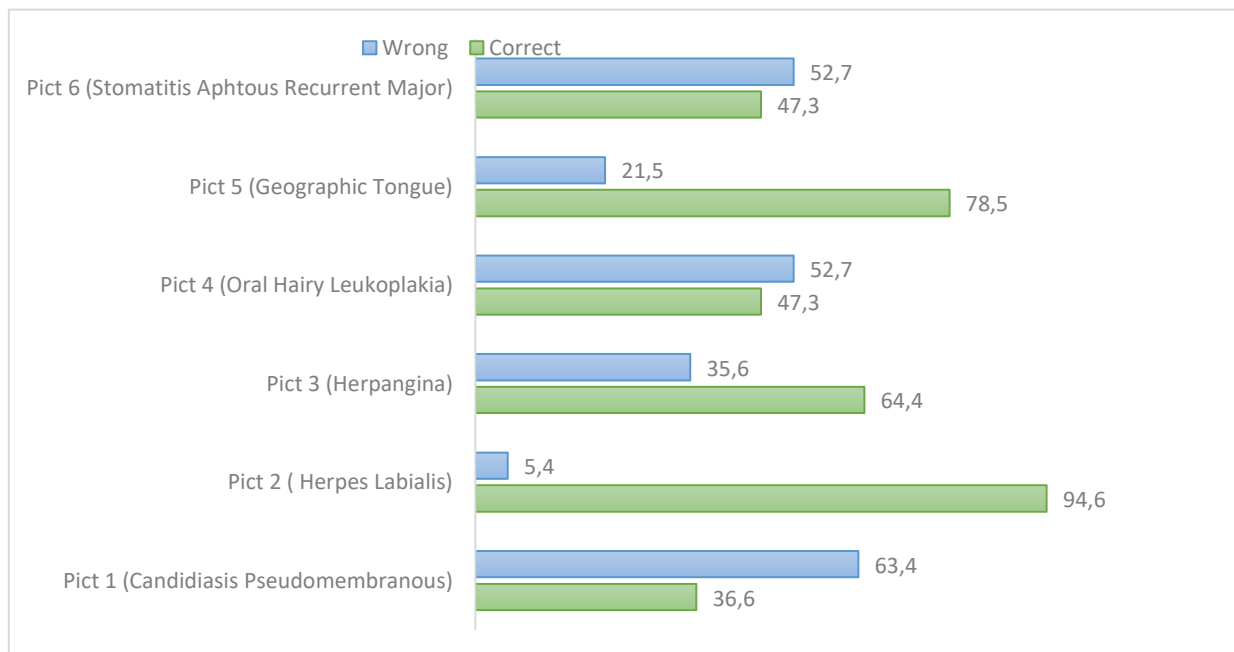


Figure 3. Knowledge of clinical oral lesions caused by a virus

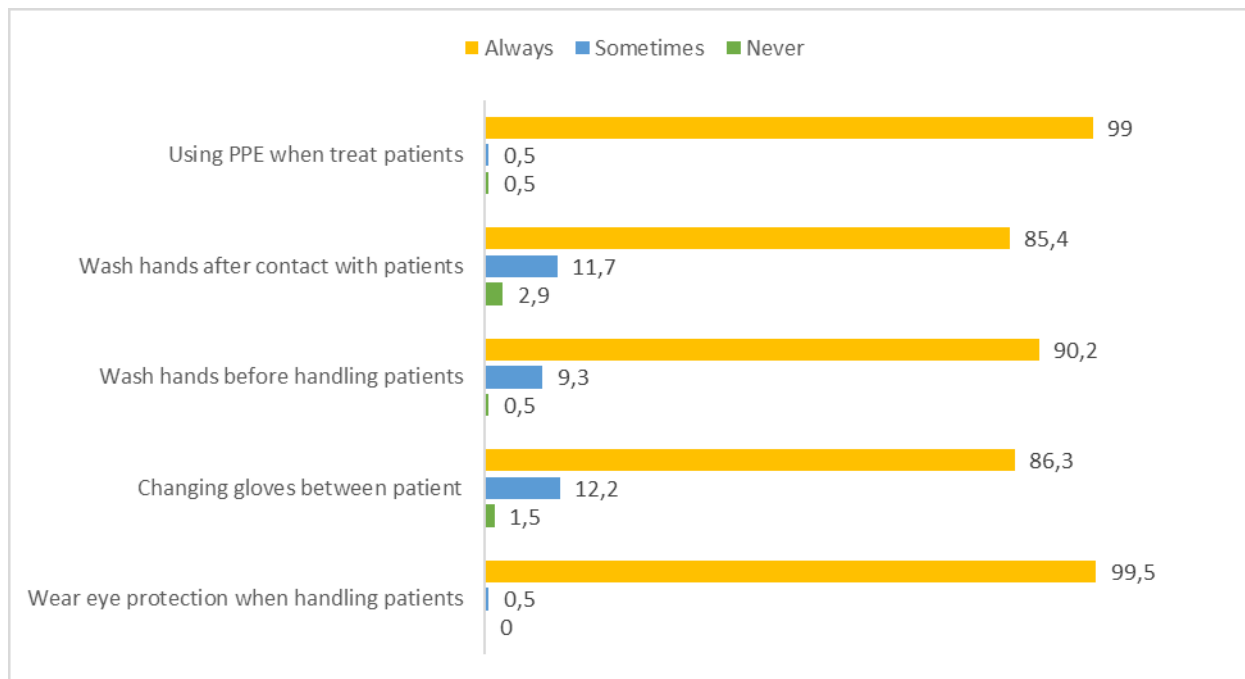


Figure 4. Frequency distribution of student's attitudes toward infection control

DISCUSSION

Oral manifestation of viral infection can occur due to cellular damage caused by the virus itself, as a consequence of immune reactions, and also damage caused by viral proteins.¹¹ Oral manifestation of viral infections can appear as early signs of disease, important join symptoms of viral infection, or the only observable sign of viral infection. Viral infections often cause many symptomatic and asymptomatic infections of the oral cavity with clinical features ranging from no change to ulceration and benign or malignant soft-tissue growth.¹²

From this study, most respondents already knew about some of the oral manifestations of viral infections. The most common viral infection affecting humans and manifesting in the oral cavity is herpes infection. From the questions asked respondents answered correctly that herpes labialis was caused by reactivation of herpes infection (92.7%) and they were also able to regard the clinical appearance of herpes labialis lesion through clinical photos shown in the questionnaire (94.6%). This study showed a majority of respondents in this study already know and can recognize the clinical picture of herpes infection as in a study conducted on dental students in Chennai by Sanggaya and India by Bansal et al.^{13,14} Apart from herpes

simplex, Coxsackie virus infection is also one of the most common in the oral cavity. Research respondents already knew the clinical appearance of herpangina infection (64.4%), but only 48.3% of respondents knew that hand-foot and mouth disease and herpangina were caused by the Coxsackie virus infection. This number is larger when compared to a similar study conducted by Sree et al 2020 in Chennai.¹⁵

Since the world was hit by the Covid-19 pandemic, many studies have been conducted to determine the level of knowledge of dental students regarding the oral manifestations of Covid 19. From this study 62% of respondents already knew the signs and symptoms of Covid-19 infection in the oral cavity, including dysgeusia and anosmia, this is in line with various similar studies that have been conducted in various countries such as Malaysia (93%), Egypt (61.3%).^{16, 17} However, the level of self-protection so as not to be infected with Covid-19 is still low, this can be seen from the number of research respondents who have carried out complete vaccination which is only 37.6%.

In addition, knowing the etiology of each infection, this study also raised questions regarding the clinical picture of lesions caused by viral infections. The clinical picture from the results of this study shows that the ability

of dental students to recognize a clinical picture of viral infections is still low, this can be seen from the results of the answers of respondents who answered that pseudomembranous candidiasis (63.4%) and a major aphthous ulcer (52.7%) is not viral lesions respectively.

Knowledge about the risk of transmitting viral infection in Dentistry is also very good, majority of respondents know that viral infections such as Covid-19, Hepatitis B, HIV, and herpes infections can be transmitted through dental procedures. Transmission can occur through several routes including direct contamination with infectious blood, fluids from patients' oral cavities such as saliva, contact with contaminated dental instruments, as well as transmission through the air in the form of droplets and aerosols during dental procedures.^{6,18}

Prevention for the occurrence of transmission of viral infections in Dentistry is to perform complete self-protection. From the question of attitudes towards infection control procedures, the majority of respondents always take universal precautions when working with patients, such as using eye protection, washing hands, and using gloves. However, the level of self-protection by vaccination is still very low, especially for hepatitis B vaccination and Covid-19 vaccination.

CONCLUSION

From the results of this study, the level of knowledge of dental students is good in understanding the etiology of viral infections that have manifestations in the oral cavity, but the level of knowledge in recognizing clinical pictures of viral infection is still low. The attitude of dental students towards infection control is also been very good.

ACKNOWLEDGMENT

This research was funded by Universitas Syiah Kuala by letter of agreement for the assignment of expert assistant research for 2020 number 148/UN11/SPK/PNBP/2020 dated 11 February 2022

REFERENCES

1. Sneha S, Ramasubramanian A KJ. Knowledge awareness and attitude towards oral manifestations of viral infections

- among dental students- a questionnaire-based study. *Eur J Mol Clin Med*. 2020;7(1):600-615.
2. Grinde B, Olsen I. The role of viruses in oral disease. *J Oral Microbiol*. 2010;2(2010):1-6.
3. Namrata F, Loewy ZG. Disparities in Oral Healthcare Access Due to the COVID-19 Pandemic. 2021;(January 2020):437-442.
4. Brian Z, Weintraub JA. Oral Health and COVID-19: Increasing the Need for Prevention and Access. Published online 2020:1-10.
5. La Rosa GRM, Libra M, De Pasquale R, Ferlito S, Pedullà E. Association of Viral Infections With Oral Cavity Lesions: Role of SARS-CoV-2 Infection. *Front Med*. 2021;7(January):1-8.
6. Volgenant CMC, Persoon IF, de Ruijter RAG, de Soet JJ. Infection control in dental health care during and after the SARS-CoV-2 outbreak. *Oral Dis*. 2021;27(S3):674-683.
7. Chowdhury S, Chakraborty P pratim. Universal health coverage - There is more to it than meets the eye. *J Fam Med Prim Care*. 2017;6(2):169-170.
8. Alharbi G, Shono N, Alballaa L, Aloufi A. Knowledge, attitude and compliance of infection control guidelines among dental faculty members and students in KSU. *BMC Oral Health*. 2019;19(1):1-8.
9. Ravichandran H, Brundha MP. Awareness about personal protective equipment in hospital workers (sweepers and cleaners) – Research. *Int J Pharm Sci Rev Res*. 2016;40(1):28-29.
10. Neville, B.W., Damm D.D., Allen C.M., Chi C.A. Color Atlas of Oral and Maxillofacial Disease. 1sted. Elsevier. 2018
11. Naghavi M, Abajobir AA, Abbafati C, et al. Global, regional, and national age-sex specific mortality for 264 causes of death, 1980-2016: A systematic analysis for the Global Burden of Disease Study 2016. *Lancet*. 2017;390(10100):1151-1210.
12. Fatahzadeh M. Oral Manifestations of Viral Infections. *Atlas Oral Maxillofac Surg Clin North Am*. 2017;25(2):163-170.
13. Sanggaya D MD. Awareness and Knowledge of Herpes Labialis Among Dental Students. *Int J Res Trends Innov*. 2021;6(4):30-35.

14. Bansal A, Arora D, Bansal P. Knowledge, and awareness about herpes labialis among dental clinical students: a survey. *Int J Otorhinolaryngol Head Neck Surg.* 2018;4(6):1351.
15. Monika Gayathri M, Santhosh Kumar MP. Knowledge, awareness, and attitude among dental students about hepatitis B infection. *J Pharm Sci Res.* 2016;8(3):168-170.
16. Ismail A, Ismail NH, Yasrin N, Abu M, Lestari W. Knowledge, Perceived Risk, and Preventive Behaviors amidst Covid-19 Pandemic among Dental Students in Malaysia. Published online 2021:1-12.
17. Sharaf RF, Kabel N. Awareness and knowledge of undergraduate dental students about the signs and symptoms of Corona viral infection (COVID-19), and the required infection control measures to prevent its spread. *Bull Natl Res Cent.* 2021;45(1):1-9.
18. Sudhakara Reddy R, Swapna LA, Ramesh T, Pradeep K. Knowledge, attitude and practice on hepatitis B prevention among dental professionals in India. *Brazilian J Oral Sci.* 2011;10(4):241-245.