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DENTAL PROFESSION STUDENTS' PERCEPTIONS OF HEPATITIS B PREVENTION AND TRANSMISSION BASED ON THE HEALTH BELIEF MODEL

Angeline Sofia Natasha[1)], Marta Juslily[2)], Goalbertus[3)]
[1)] Faculty of Dentistry, Trisakti University, Jakarta, Indonesia
[2)] Departement of Dental Public Health, Faculty of Dentistry, Trisakti University, Jakarta, Indonesia
[3)] Departement of Dental Public Health, Faculty of Dentistry, Trisakti University, Jakarta, Indonesia

ABSTRACT
Background: *Dental professional students are at high risk of being infected with the Hepatitis B virus due to their exposure to saliva, blood and droplets during most dental procedures. Various preventive measures have been taken, including education and implementation of infection control precautions. Therefore, the perceptions of dental professional students can influence their behavior in preventing transmission of the Hepatitis B virus. The Health Belief Model was used to determine the perceptions of dental professional students regarding the prevention and transmission of the Hepatitis B virus.* ***Purposes:*** *To determine the perceptions of dental professional students regarding prevention and transmission of the Hepatitis B virus based on the Health Belief Model.* ***Methods:*** *This study employed a qualitative descriptive approach with in-depth interviews. Information was collected from 10 informants and 1 key informant through in-depth interviews.* ***Results:*** *8 of 10 informants perceived high susceptibility to Hepatitis B due to patient contact. Prevention of the Hepatitis B virus provided benefits to the informants even though there were several obstacles to its implementation, such as unfavorable environmental factors and financial limitations. Despite environmental and financial barriers, strong self-efficacy and institutional cues supported preventive behaviors. These findings suggest that reinforcing institutional support and addressing external barriers may enhance preventive behaviors among dental professional students.* ***Conclusion:*** *Based on their perceptions, it is very possible for informants to maintain preventive behavior against the Hepatitis B virus inside and outside the hospital area.*

Keywords: *dental professional students, health belief model, hepatitis B, perception, prevention.*

***Correspondence**: Marta Juslily, Departement of Dental Public Health, Faculty of Dentistry, Trisakti University, Jl. Kyai Tapa No.260, West Jakarta, DKI Jakarta, Indonesia, (+62) 8161102227, E-mail: marta@trisakti.ac.id

INTRODUCTION

World Health Organization (WHO) estimates that 254 million people worldwide live with hepatitis B and every year one million people die from hepatitis. In Southeast Asia, WHO estimates that there are around 61.4 million people living with hepatitis B.[1] Indonesia is ranked third as the country with the highest number of hepatitis sufferers in the world, after India and China, and is in second place after Myanmar among WHO SEAR member countries (South East Asian Region).[2] In endemic areas such as Indonesia, hepatitis B infection generally occurs during perinatal transmission (from pregnant mother to baby) or during childhood. This infection can cause acute hepatitis, fulminant (severe) hepatitis, and chronic hepatitis which has the potential to develop into cirrhosis or liver cancer.[3,4]

Dental professionals are at risk of occupational exposure to the hepatitis B virus (HBV). WHO reported in 2017 that approximately 66,000 healthcare workers are infected with HBV annually.[5] A special study was conducted in 2017 on 644 healthcare workers (HCW) (male/female 134/510; average age 28, 16-71 years) from four regions in South Sulawesi Province (East Luwu, Palopo, Makassar, and Bantaeng) and one hospital (Gading Pluit) in Jakarta. The prevalence of HBsAg, anti-HBc and anti-HBs was 4.7%, 18.5% and 36.7%, respectively, while 57.3% were negative for all seromarkers, indicating susceptibility to Hepatitis B virus infection.[6] Based on hepatitis B vaccination screening data for professional students at the Trisakti University Dental and Oral Hospital, of the 109 students there are 19 students who are not required to vaccinate and the rest are required to be given a complete dose of vaccination.

Adequate knowledge about hepatitis B transmission and prevention is essential for dental profession students, as they play a critical role in infection control. Preventive practices include hand hygiene, personal protective

equipment, and immunization.[7] Understanding their perceptions is important, as it influences their willingness to adopt such measures. The Health Belief Model (HBM) provides a useful framework to analyze how students perceive their susceptibility to disease, its severity, the benefits of prevention, and the barriers to taking action.[8]

However, few studies have explored in depth the perceptions of dental profession students regarding hepatitis B prevention using a qualitative approach grounded in the Health Belief Model.

MATERIALS AND METHODS

A qualitative case study was used to explore in depth the perception of prevention and transmission of the Hepatitis B virus among dental profession students. This research was conducted from 13 August to 13 September 2024. Data was collected through in-depth interviews with 10 professional students, and the Deputy Director of Medical Services at Trisakti University Dental and Oral Hospital. All informants are professional students who practice at the Trisakti University Dental and Oral Hospital, Faculty of Dentistry, which provides patient services. The sampling technique used was simple random sampling, and each population has the same opportunity to be sampled according to the research criteria.[9] The inclusion criteria were dental professional students from Trisakti University who were currently undergoing professional education who were willing to participate in the study by signing an informed consent form. The exclusion criterion was students who were ill during the data collection period.

Ethical approval for this research was obtained from the Health Research Ethics Committee, Trisakti University Faculty of Dentistry (number 858/S1/KEPK/FKG/7/2024). Informants' written consent was obtained before each interview, after receiving an explanation of the benefits and aims of the research. The results of the interviews were transcribed and coded. Answers are grouped thematically and plotted in a matrix. Content analysis was carried out on the transcripts.

Steps of Procedure

The process of analyzing the interview results was used thematic analysis. Thematic analysis (TA) is one of the most widely used methods for analyzing qualitative data, offering a structured yet flexible approach to identifying, analyzing, and reporting patterns or themes within a dataset. Since its inception, the Braun and Clarke six-phase framework has been extensively adopted across disciplines, including health research, education, and social sciences.[10] The method emphasizes researcher reflexivity and the importance of theoretical transparency to ensure rigor and credibility in qualitative research.[11]

The analysis beginning with verbatim transcription of all recorded interviews. Each audio recording was transcribed word-for-word to capture the full context and nuances of participants' responses. After transcription, the researchers conducted familiarization, reading the transcripts repeatedly to gain an overall understanding of the data.[10,12]

The next step was initial coding, which involved manually highlighting meaningful units of data such as sentences or phrases that were relevant to the research questions. These segments were then assigned descriptive labels or codes. Coding was performed independently by two researchers to reduce bias and improve reliability.[10,12]

Following coding, the researchers proceeded to theme development. Codes with similar content were grouped together to form broader themes that reflected patterns across participants. These themes represented key concepts or recurring ideas related to the perceptions of Hepatitis B prevention and transmission.[10,12] The emerging themes were organized in a thematic matrix, which allowed for comparison across different informants and identification of consistencies or variations. This matrix also helped in structuring the data for further interpretation.[10,12]

In the final stage, a content analysis was carried out, where each theme was reviewed in detail and interpreted in the context of the study's objectives. Themes were refined, defined, and supported with representative quotes from participants.[10,12] Throughout the process, data triangulation with institutional perspectives from the Deputy Director of Medical Services at Trisakti University Dental and Oral Hospital was conducted to enhance the validity of findings. Member checking was also performed by presenting key themes to several participants to ensure the interpretations accurately reflected their perspectives.[13]

RESULTS

The informants for this research were 10 people consisting of 7 female and 3 male with an age range of 21-27 years who were students of the Competency Based Learning class 24 and 25 Dentistry profession at Trisakti University. The interview guide contains 15 questions whose validity and reliability have been tested on 10 informants.

The results of the in-depth interviews include: susceptibility to the Hepatitis B virus, severity of contracting the Hepatitis B virus, benefits of preventing transmission of the Hepatitis B virus, barriers and triggers for measures to prevent transmission of the Hepatitis B virus and self-confidence in preventing transmission of the Hepatitis B virus.[14]

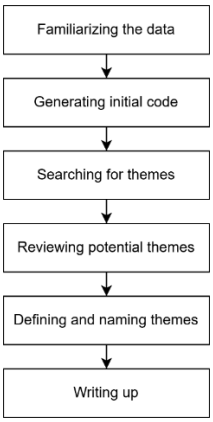

Figure 1. Six phases in thematic analysis

Description	Total	Percentage
Age (Year)		
21	2	20%
22	3	30%
23	4	40%
27	1	10%
Gender		
Male	3	30%
Female	7	70%
Competency Based Learning		
24	5	50%
25	5	50%

Table 1. Demographic Characteristics of Informants

Perceived Susceptibility towards Hepatitis B Virus: Most informants, 8 out of 10 people, felt susceptible to contracting the Hepatitis B virus because of the risks of their work. This job requires them to have direct contact with patients, so they are easily exposed to splashes of body fluids such as saliva and blood. Following are some of the informants' statements:

"I feel susceptible to Hepatitis B because we as students are undergoing clinics at this boarding school, that's because we are in direct contact with patients." (Informant 5)

"I feel susceptible because I work directly with patients." (Informant 9)

There were 2 informants who did not feel susceptible because they had been vaccinated against Hepatitis B and had no history of Hepatitis B transmission in the surrounding environment. Here are some of their statements:

"I'm not susceptible, because no one in my family has ever had Hepatitis B, and as far as I know, no one in my neighborhood has ever had Hepatitis B either." (Informant 2)

"Maybe I'm not too susceptible because I also had the vaccine yesterday" (Informant 8)

Perceived Severity of Hepatitis B Virus: All 10 informants considered that the Hepatitis B virus could have bad consequences because it could disrupt their daily lives as students of the dental profession and be bad for their personal health. An informant also felt that the Hepatitis B virus was easily transmitted to other people. Here are some of their statements:

"It's bad because it can disrupt the host's daily life as a student." (Informant 1)

"Yeah, it's pretty bad because it's quite contagious, so yeah, it's pretty bad." (Informant 8)

Perceived Benefits of Hepatitis B Prevention: All 10 informants perceived that actions such as Hepatitis B vaccination and use of level 2 PPE (head coverings, goggles) safety goggles, surgical masks, disposable gloves), are useful for preventing transmission of the Hepatitis B virus. Another benefit is to keep the body healthy and provide a sense of security for patients. Other informants perceive that the benefit is to stop the spread of the Hepatitis B virus. The following are the statements of the informants:

"What is definitely very useful is disease. The spread will continue if we don't prevent it now." (Informant 6)

"The benefit is that we can be healthy. We can also make the patient not afraid if we are the ones working on him." (Informant 9)

Perceived Barriers towards Hepatitis B Prevention: 8 out of 10 informants did not feel that there were any obstacles preventing them from taking action to prevent transmission of the Hepatitis B virus within the RSGM FKG Usakti environment. Following are the statements of several informants:

"So far there have been no obstacles because all the SOPs have been explained so the possibility of transmission is getting smaller." (Informant 1)

"So far, there haven't been any obstacles. There may not be any outside either (Informant 4)

However, 2 informants felt that there were financial obstacles in carrying out the Hepatitis B vaccination and felt lazy and that work was a higher priority. Some informants also felt obstacles from external factors, such as the behavior of other people who ruled out the Hepatitis B virus by not wearing masks.

"In my opinion, maybe I think it's because Covid doesn't exist anymore, so we're ignoring Hepatitis B. If there are obstacles outside, there will definitely be more, because there are a lot of people who don't want to wear masks, for example, they already know they're sick with a cough, but they're still walking confidently like that without caring about the environment around me." (Informant 9)

"Maybe firstly from a financial perspective, because we know that Hepatitis B also takes 3 injections for the vaccine, which is definitely more expensive and also sometimes from yourself, sometimes you like being lazy or

having work or something like that, so what "It's like we're too lazy to get vaccinated because there's a schedule and a date, so if for example that date isn't available, we don't prioritize it." (Informant 10)

Cues to Action of Hepatitis B Prevention: Several factors encouraged informants to continue preventing transmission of the Hepatitis B virus, such as their own desires, feelings of fear of being infected and infecting other people, as well as the existence of regulations and SOPs in hospitals. Reminders from friends and co-workers to use personal protective equipment such as goggles also encouraged them to be more compliant with preventing transmission of the Hepatitis B virus. Apart from that, an informant stated that there had been Hepatitis B infections among students in other professions, which was the reason why he was preventing transmission of the virus. Here are some of their statements:

"Because the hospital already has an SOP, usually it's like using a syringe." (Informant 1)

"At that time, if I'm not mistaken, my senior had Hepatitis B." (Informant 5)

"Maybe it's more for my friends and myself, that's why it's like buying googles like that." (Informant 7)

Self-Efficacy towards Hepatitis B Prevention: 9 out of 10 informants stated that they were confident that they were able to prevent transmission of the Hepatitis B virus properly, such as Hepatitis B vaccination, wearing level 2 PPE and following the instructions given by RSGM. Here's their statement:

"Confident because I have taken appropriate precautions" (Informant 5)

"I am confident because I have carried out several procedures ordered in the hospital instructions, such as wearing PPE, recommendations for routine vaccines." (Informant 6)

However, there was one informant who was not too sure because the environment was not clean.

"Actually, I can say that I'm sure, but I'm not too sure, because in a hospital environment, it doesn't necessarily mean that everything is clean." (Informant 7)

DISCUSSION

Students in the dental profession have a high risk of contracting Hepatitis B. This is due to the nature of their work which often involves direct contact with patients. Various steps and protocols for preventing the Hepatitis B virus have been implemented within Trisakti University Dental and Oral Hospital by considering the risk of Hepatitis B transmission among patients and professional students during dental treatment. Therefore, before entering the professional level, students are equipped with knowledge of preventing Hepatitis B transmission.

The results obtained in this study showed that the majority of informants stated that they were susceptible to contracting the Hepatitis B virus. This was also believed by key informants who felt that dental profession students were susceptible to contracting the Hepatitis B virus because they had a lot of direct contact with patients. Hepatitis B is a disease caused by the Hepatitis B virus (HBV) which usually does not show clear symptoms unless it has entered a chronic stage which can be transmitted through blood transfusions contaminated with the Hepatitis B virus and people who frequently receive hemodialysis or dialysis. In addition, Hepatitis B can enter the body through wounds or abrasions on the skin, for example needle sticks or sharp object wounds. The use of medical instruments and dental care tools that are less than perfectly sterilized can transmit the Hepatitis B virus.[15] Treatment for Hepatitis B using antiviral drugs has limited effect, so it is necessary to carry out prevention in the form of Hepatitis B vaccination.[16]

Participants acknowledged the serious consequences of hepatitis B, including liver cirrhosis and cancer. The results of this study were supported by key informants who stated that the negative impact of contracting the Hepatitis B virus could cause liver cirrhosis and even liver cancer, which are major contributors to cancer-related deaths in Indonesia. This aligns with global and national data showing a rising trend in liver cancer cases and fatalities. Awareness of these outcomes appears to drive motivation for preventive behavior among students. The Hepatitis B virus can develop into a chronic infection in the form of liver cirrhosis if chronic pathological injury occurs, the liver will experience excessive fibrosis and manifest as cirrhosis, then ultimately liver cancer. Liver cancer will develop as a result of continuous damage and regeneration of liver cells in a mutagenic inflammatory environment. Liver cancer in Indonesia is the fourth cancer with the highest number of new cases and deaths, namely 21,392 new cases and a total of 20,920 deaths or around 8.9% of all cancer deaths in 2020. The number of new cases of liver cancer is also predicted to increase over the years. 2020 and 2040 by 55.0% or around 1.4 million new diagnoses, while deaths from liver cancer are predicted to increase by 56.4% or 1.3 million deaths.[17]

All informants felt that preventing transmission of the Hepatitis B virus was beneficial for themselves and the surrounding community. Preventive behavior is driven by the desire and motivation to maintain one's own health. Several actions such as Hepatitis B vaccination and use of level 2 PPE (head covering, glasses safety goggles, surgical masks, disposable gloves) provide a sense of security to patients and students of the dental profession.[18] The results of a similar study by Emma et al., in 2019 in Aberdeen, North-East Scotland stated that the majority of students felt the benefits of preventing transmission of the hepatitis B virus such as using sterile equipment and vaccination.[19] These results are in line with the statements of key informants who feel that forms of preventing transmission of the Hepatitis B virus, such as wearing PPE and Hepatitis B immunization, are very

useful for dentistry students to prevent infection. The key informant also said that the implementation of regulations to prevent Hepatitis B transmission had been carried out, starting from Hepatitis B vaccination, immediate treatment, reporting, medical writing, as well as post-exposure prophylaxis and the most important thing was counseling for professional students. as well as hospital support.

Several obstacles experienced by the informants include environmental factors, friends and closest relatives who are less supportive in maintaining cleanliness, expensive vaccination costs, laziness to carry out vaccinations and limited time so they have to prioritize other things such as carrying out care work for patients rather than get vaccinated. These results were supported by key informants who stated several things that could hinder the process of preventing transmission of the Hepatitis B virus to professional students, such as lack of awareness and knowledge of professional students and laziness of these students.

Most informants stated that there was encouragement or events that influenced them in preventing transmission of the Hepatitis B virus, either from within themselves or from environmental factors. With the knowledge they have, it creates a desire to maintain health by preventing transmission of the Hepatitis B virus. Key informants were of the opinion that the encouragement of dental profession students to prevent transmission of the Hepatitis B virus was based on their knowledge of protecting themselves. Similar research at Udayana University found that the majority of medical students found a significant relationship between knowledge and hepatitis B prevention behavior as well as a significant relationship between attitudes and hepatitis B prevention behavior.[20]

In terms of self-efficacy, most informants felt confident that they could prevent transmission of the Hepatitis B virus. With adequate knowledge and information, they could make as many preventative efforts as possible. This result is in line with the results of data triangulation by key informants who felt confident that the informants were able to prevent transmission of the Hepatitis B virus because of the knowledge possessed by the informants.

This study has several limitations that should be considered. The small number of informants may not adequately represent the broader population of dental profession students, limiting the generalizability of the findings. The qualitative nature of the research also carries a risk of social desirability bias, as participants might provide responses they perceive as expected or acceptable. Additionally, the study was conducted in a single institutional context, which may not reflect the perspectives of students in different educational settings.

Despite these limitations, the study provides valuable insights into the perceptions and preventive behaviors of dental profession students regarding hepatitis B. These findings underscore the importance of continuous education on infection control and the need for institutional support in reducing barriers to prevention.

It is recommended that educational institutions and dental teaching hospitals implement routine and structured hepatitis B education, ensure full vaccination coverage, and consider providing vaccine subsidies or assistance programs to increase student compliance. Strengthening these efforts may improve health outcomes and foster a safer clinical environment for both students and patients.

This research concludes that most dental profession students perceive themselves as susceptible to hepatitis B and recognize its potential severe consequences. They acknowledge the benefits of preventive measures, yet face barriers such as financial constraints, lack of motivation, and competing priorities. Facilitating factors include personal awareness and environmental support. Students generally feel confident in their ability to adopt preventive behaviors against hepatitis B.

Therefore, educational institutions and dental teaching hospitals should strengthen mandatory vaccination policies and conduct regular health education programs on hepatitis B prevention, guided by health behavior theories such as the Health Belief Model.

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