

Attitudes of Dental Students in Indonesia About Infection Control During the COVID-19 Pandemic

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Abstract

Proper and adequate attitudes about infection control is important for clinical dental students, who may be exposed daily to virus. This study aimed to assess the attitudes of clinical dental students in Indonesia about infection control during the coronavirus disease 2019 (COVID-19) pandemic. In a cross-sectional study conducted from May to June 2021, an electronic survey was administered to the dental students in clinical training at Indonesian dental schools. The online self-administered questionnaire consisted of two sections: sociodemographic information and attitude about infection control. The participants were 238 clinical dental students. Most of them were female, with an average age of 23.8 years (± 3.3 years). The analysis of sociodemographic variables of the respondents showed that the more years of clinical training the students had, the stronger was their willingness to wear personal protective equipment (PPE). Clinical dental students in Indonesia in general have a positive attitude about infection control. However, courses at dental schools still need to include information about the additional roles of dentistry that account for pandemics.

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Introduction

Coronavirus disease 2019 (COVID-19) is a global health concern.¹ The measures taken to stop the spread of this disease have included isolation, contact tracing and quarantine, social distancing, hygiene measures, and lockdown.²⁻⁴ The awareness of and attitudes about disease symptoms, transmission mode, infection control, and preventive measures in dental schools should be explored further.^{5,6} An attitude is the degree to which an object, behavior, person, institution, event, or any other discriminable aspect is favored.⁷ According to the expectancy-value theory, attitudes develop reasonably from beliefs about an object when it is associated with certain attributes, such as other objects, characteristics, or events.⁷

Several studies have shown that negative attitudes about infection control may lead to inappropriate practice of infection control.⁸ As a result of inappropriate attitudes about COVID-19, the reopening of dental schools is problematic.⁹ Infection control is essential in providing a secure environment for patients and workers in healthcare settings generally and in the dental practices more specifically.¹⁰ During dental procedures, the virus may be transmitted through direct contact with saliva, oral fluids, blood, or airborne droplets containing infectious agents or through indirect contact via contaminated objects.^{10,11} Therefore, the control of the spread of infectious diseases such COVID-19 must be taken seriously in dentistry.^{5,11}

The dental education curriculum in Indonesia consists of 4 years of academic (preclinical) training and 2 years of professional (clinical) training.¹² Clinical training could be extended to 2 more years, depending on a student's study progress and test performance. The student's attitudes about learning may affect their study performance.¹³ During the COVID-19 pandemic, the courses delivered in student-centered learning settings were moved to full online learning settings.¹⁴ Students' attitudes

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about infection control must be assessed, especially with regard to a pandemic. In Indonesia, few studies of such attitudes among dental students in clinical training have been conducted. Therefore, this study aimed to assess the attitudes of such students in Indonesia about infection control during the COVID-19 pandemic.

Materials and methods

This study was approved by the Ethics Committee of the Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia (No. 80/Ethical Approval/FKGUI/II/2021 No. Protocol 030841220) and was an analytic cross-sectional survey. The present study was performed in Indonesia in 2021, and was reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement. An online self-administered questionnaire was distributed to students in clinical training at 24 dental schools in Indonesia. This questionnaire consisted of two sections: one concerning sociodemographic information and one concerning attitudes about infection control. The attitude section comprised 12 items, rated on a seven-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither disagree nor agree, 5 = slightly agree, 6 = agree, and 7 = strongly agree). The higher the score, the better the attitude about infection control. For each respondent, the total attitude score was the sum of the answers; thus, the total score could range from 12 to 84. The questionnaire included one global rating question about the willingness to wear personal protective equipment (PPE): "Out of the next 10 patients you treat, for how many patients would you expect to wear PPE?"

Sample size estimation indicated that a total of 193 respondents would be sufficient for detecting statistical significance ($P < 0.05$) with a power of 80% and a significant correlation of 0.2. Assuming a response rate of 80%, the number of participants to be invited needed to be at least 232 individuals. The inclusion criteria were being a dental student, being in years 1–3 of professional (clinical) training and being willing to complete the questionnaire. The Mann–Whitney *U* test and Kruskal–Wallis test were used to compare sociodemographic variables, attitudes, and answers to the global rating question. Cronbach's alpha was used to analyze internal reliability and correlation between the items.

Results

Overall, 238 dental students participated in this survey. A link to the electronic questionnaire was sent to the coordinators of the dental schools in each of the 24 universities in Indonesia, who then distributed the links to their dental students. The completion of the survey was unsupervised and nonobligatory. The survey period was limited to 1 month. The mean age of the respondents was 23.8 years (± 3.3 years). The attitudes and willingness to wear PPE, as well as sociodemographic variables of the respondents, are listed in Table 1. The more years of clinical training the students had, the more willing they were to wear PPE.

Variables	Attitude		Global Rating Question	
	Mean (SD)	p-value	Mean (SD)	p-value
Gender		0.332		0.093
Male (38)	73.7 (11)		8.2 (3.1)	
Female (200)	76.6 (6.3)		8.6 (2.8)	
Types of University		0.079		0.093
Public (193)	75.7 (7.6)		8.7 (2.8)	
Private (45)	78 (5.6)		8.2 (3)	
Location of University		0.201		0.072
Java Island (121)	76.8 (6.5)		8.7 (2.7)	
Out of Java Island (117)	75.4 (7.9)		8.4 (3)	
Year of clinical education		0.302		0.002
1 (52)	76 (9)		7.9 (3.4)	
2 (88)	75.2 (7.5)		8.7 (2.7)	
3 (98)	77.1 (5.9)		8.8 (2.6)	

Table 1. Analysis of attitude between socio demographic variables of the respondents (N=238).

Most students (99.2%) reported having been trained for infection control in their formal education at the university. Floor and ceiling effects were not apparent in the answers to the questionnaire. Cronbach's alpha coefficient was 0.839, indicating good internal consistency (Table 2). No corrected item–total correlation value was lower than 0.30; thus, the data analysis could include all items in the instrument. These findings showed that the questionnaire was valid and reliable. Internal reliability measured by Cronbach's alpha showed a high relationship of all items with the overall item's mean score.

Items	Reliability			
	Mean	SD	Alpha if deleted	CITCC
Wearing PPE when performing dental treatment to every patient is a pleasant conduct.	4.82	1.789	0.861	0.350
Most of my colleagues would approve me to wear PPE when performing dental treatment to every patient.	6.46	0.864	0.816	0.668
I am confident that I can wear PPE when performing dental treatment to every patient.	6.68	0.783	0.823	0.585
I intent to wear PPE when performing dental treatment to every patient.	6.65	0.758	0.815	0.721
Wearing PPE when performing dental treatment to every patient is a good practice.	6.76	0.671	0.819	0.696
Doctors and nurse in my clinic would like me to wear PPE when performing dental treatment to every patient.	6.66	0.766	0.825	0.547
I plan to wear PPE when performing dental treatment to every patient	6.61	0.829	0.821	0.592
Wearing PPE when performing dental treatment to every patient is beneficial	6.74	0.621	0.819	0.734
It is expected of me that I wear PPE when performing dental treatment to every patient;	6.68	0.663	0.821	0.656
For me, wearing PPE when performing dental treatment to every patient is extremely easy	4.95	1.696	0.857	0.346
I want to wear PPE when performing dental treatment to every patient.	6.60	0.794	0.815	0.701
In the past one months, I have worn PPE when performing dental treatment to every patient.	6.52	1.026	0.831	0.443

Table 2. Items characteristics and reliability analysis of attitude questionnaire (The 12 items attitude questionnaire had a Cronbach alpha of 0.839).

Discussion

Most of the participants in this study were women. In previous studies, the majority of dental students in Indonesia have been women.^{14,15} The analysis revealed no differences in the attitude about infection control between public or private universities or between schools in or outside of Java. The reason might be that the competencies of Indonesian dental students, including infection control competency, are stipulated by law.¹²

Furthermore, this study showed that the more years of clinical education the students had, the stronger was their willingness to wear PPE. Among clinical dental students, willingness to wear PPE was higher for third-year clinical students was higher than for first-year clinical students. Thus, senior dental students are more aware of proper behavior in protecting themselves from infection and reducing the transmission of the virus.¹⁶ Another factor that contributed to this finding might be that senior dental students had learned more clinical dental science theory and procedural knowledge and skills.^{14,17}

The clinical dental students agreed that wearing PPE when performing dental treatment in every patient was good practice. This may be explained by students' belief that "personal protective equipment" referred to wearable

equipment and that the PPE was designed to provide protection from exposure to or contact with infectious agents.^{18,19} In this study, clinical dental students' expectation to wear PPE was positively associated with their intention to control and limit the spread of infection and with colleagues' approval when they performed dental treatment for every patient. These findings agree with those of a previous study, in which most dental residents feared being infected by contact with patients and preferred to follow the standard treatment guidelines about wearing PPE in their practice.²⁰ Another study showed that healthcare professionals perceived that wearing PPE were beneficial to reduce risk of COVID-19 exposure and providing self-protection and sense of security for them.²¹ Results described that clinical dental students' attitudes and willingness to wear PPE were positive.^{22,23}

The limitation of this study is that the test-retest reliability was not analyzed; therefore, stability in terms of the time and sensitivity of the questionnaire was not tested. The cross-sectional design of the study allowed recording the attitudes of the clinical dental students at the time of the survey, but improvements in attitude that could occur with time were not monitored.²² Moreover, nonprobability sampling was used; therefore, the generalizability of the results is limited. An online questionnaire was used in this study because it had several advantages over paper-based questionnaires, such as lower cost, shorter time requirement, easier data management, and lower likelihood of missing data.²⁴ The collected data are very likely to be skewed because the students who participated in this study basically had positive attitudes about infection control. Despite these limitations, the results of this survey offer valuable information about the current attitudes of Indonesian dental students about infection control, since this topic has been sparsely investigated in Indonesia. This study thus contributes to information about infection control among dental students, educational programmers, and policymakers in Indonesia.

Conclusions

Proper and adequate attitudes about infection control are important for clinical dental students who may be exposed daily to the virus. Although the students in Indonesia showed a

positive attitude about infection control, dental schools must nonetheless expand their courses to include information about the additional roles of dentistry that account for pandemics.

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Declaration of Interest

The authors report no conflict of interest.

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