

How to Cite:

Angraeni, T. A., Anwar, A. I., Akbar, F. H., Abdullah, M. T., Ruslin, M., & Nugroho, J. J. (2022). Effect of endodontist knowledge and risk perception on COVID-19 infection control. *International Journal of Health Sciences*, 6(S1), 12936–12944. <https://doi.org/10.53730/ijhs.v6nS1.8224>

Effect of endodontist knowledge and risk perception on COVID-19 infection control

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Abstract---Background: The pandemic condition felt by all parts of the world due to the very fast spread of COVID-19 threatens the safety of various health care sectors. Until now, the pandemic has been going on and has given rise to various new variants of COVID-19. Dental and oral health services are not spared from this, this condition is exacerbated by the fact that the virus spreads more easily through aerosols produced during treatment, especially by endodontists. Therefore, the researcher wanted to know the effect of knowledge and perception of endodontic risk on the control of COVID-19. Methods: This study uses an analytical descriptive research design with a cross-sectional study approach. Samples were obtained from all endodontists registered with IKORGI and completed filling out the questionnaire to completion. Questionnaires were distributed online via google forms. The research was carried out in November 2021. Result: Based on the results of research conducted on endodontists

throughout Indonesia, it was found that the difference in perception on criterion control was sufficient with a mean value of 9.84 and a median value of 10.0, the difference in knowledge on criterion control was sufficient with a mean value of 6.99 and a median value of 7.0. The results of the statistical test show a value of $p = 0.000$ for the knowledge variable and risk perception of COVID-19 control. Conclusions: Based on the results of research on the influence of knowledge and perception on the control of covid-19 in endodontists throughout Indonesia.

Keywords---Knowledge, risk perception, COVID-19 control, endodontics, dental and oral health.

Introduction

An international public health emergency due to the rapid increase in the number of cases and evidence of human-to-human transmission with the high number of deaths occurring (Zavala-flores, 2020) (WHO, 2020). Currently, several new variants of the Covid-19 virus have been developed, one of which is the Delta variant (B.1.617.2) which is said to have a very high infectious ability and triggers infected patients to experience more severe symptoms. (Hafeez *et al.*, 2021). Until now the virus is still spreading throughout the world and changing all aspects of human life, it is also one of the toughest public health challenges in the modern world. (Azim and Shabbir, 2020) (Arora *et al.*, 2020) (Barabari and Moharamzadeh, 2020) (Mustafa, Alshali and Bukhary, 2020). In all affected countries, the spread of Covid-19 poses a significant challenge in the field of dentistry because Covid-19 is identified in the saliva of infected patients, thus demanding the responsibility of professionals in the dental and oral health sector to protect against transmission of the Covid-19 disease (Li *et al.*, 2020) (Zhurakivska, Troiano and Pannone, 2020) (Bds *et al.*, 2020) (Shetty *et al.*, 2020).

The main way of transmitting the Covid-19 virus is through the air, when sneezing, coughing and breathing, both symptomatic and asymptomatic patients can transmit this virus by polluting the air around them. (Azim and Shabbir, 2020) (Ahmadi, Ebrahimi and Ghorbani, 2020). Nosocomial transmission occurs most often through salivary infections associated with direct or indirect respiratory tract secretions. However, another possible route of transmission is fecal-oral transmission. This puts dental health practitioners such as endodontists in a very high position to have a very high risk of infection from the Covid-19 virus because their field of work is directly related and very close to patients. In addition, endodontic treatment procedures usually use instruments such as syringes and handpieces that are contaminated with the patient's saliva and blood fluids, which will produce infectious droplets in the work area. The presence of the Covid-19 virus in saliva (91.7% of patients) makes endodontists very vulnerable to contracting the disease (Mustafa, Alshali and Bukhary, 2020)

Endodontists work in an aerosol environment, airborne material can be dispersed within 18 inches of the operator's location. Research evidence regarding human-to-human transmission of Covid-19 mainly occurs through close physical contact

(within 1-3 m) and droplet discharge (>5-10 m in diameter), this causes very serious concern for endodontists (Loch et al., 2020) (Arora et al., 2020) (Kochhar et al., 2020). This infectious working environment is a potential vehicle for virus transmission, therefore it is important to have knowledge and risk perception that includes aspects of infection control in dentistry during the Covid-19 pandemic (Patel, 2020) (Ayub and Alani, 2020).

To ensure the effectiveness of preventive measures, it is necessary to control infection to reduce the spread of Covid-19 disease. However, the success of controlling the Covid-19 infection depends on the compliance of the community and in this case the Endodontist as a dental health service provider towards infection prevention and control measures. This compliance is highly dependent on knowledge and perception of risk which can be a key factor in influencing endodontist behavior. Knowledge and risk perception have the most significant effect on infectious disease prevention behavior. Endodontists' perceptions of the risks associated with Covid-19 and relevant knowledge can provide valuable information for controlling Covid-19 infections during a pandemic and even in the future under similar circumstances (Id et al., 2020) (Lee et al., 2020) (Zhong, Liu and Lee, 2020). Until now, it is not clear how the knowledge and risk perception of Endodontists regarding Covid-19 infection control measures during the pandemic is not known. So that later in this study, it is hoped that endodontists can provide effective, efficient dental care and maintain the safety of themselves and their team with good infection control. Based on some of these theories and research, the researchers wanted to know the effect of knowledge and risk perception on controlling COVID-19.

Metods

The type of research used in this study is observational analytic with a cross-sectional study approach. Each research subject is only carried out once and all research subjects are observed at the same time (Utami and Putri, 2013). To answer the problem through careful measurement techniques on certain variables, so as to produce conclusions that can be generalized, regardless of the context of time and situation as well as the type of data collected.

This research was conducted in November 2021, where the method of collecting knowledge and risk perception data on covid-19 control was carried out by distributing online questionnaires to endodontists registered with IKORGI throughout Indonesia. The number of respondents in this study were all respondents who filled out the online questionnaire to completion, namely a total of 253 endodontists. Decision-making related to COVID-19 control is in the form of the total amount of knowledge value and risk perception of each respondent.

Each variable in the study has criteria based on the total value of each answer obtained in filling out the questionnaire. The knowledge variable is divided into two criteria, namely sufficient and good criteria. Then the risk perception variable has sufficient and good criteria. Furthermore, after summing the values on the knowledge and risk perception variables, the value of the control variable is obtained which is divided into two criteria, namely sufficient and good. Analysis of the data used to assess the effect of independent and dependent variables used

independent samples t-test. The questionnaire in this study has tested the validity and reliability of the data using the Kolmogorov-Smirnov test and obtained p value = 0.000.

Result

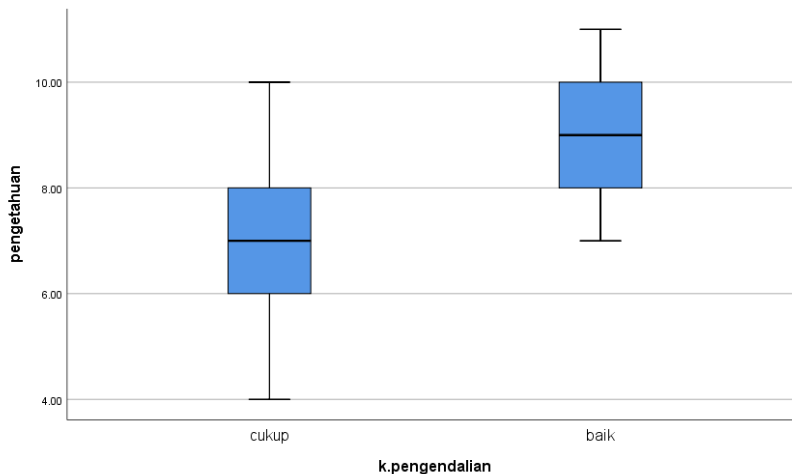
Based on the acquisition of data related to knowledge and perceptions of the control of covid-19 in endodontists throughout Indonesia in 2021, the following results were obtained:

Table 1. Characteristics of respondents on knowledge and perception of risk to control covid-19

Variable	Frequency (n)	Persen (%)
Age group		
25-29 year	8	3.2
30-39 year	127	50.2
40-49 year	67	26.5
≥50 year	51	20.2
Gender		
Man	47	18.6
Woman	206	81.4
Work experience		
0-9 year	64	25.3
10-19 year	122	48.2
20-29 year	36	14.2
≥30 year	31	12.3
Practice Area		
Jawa	177	70
Sumatera	23	9.1
Sulawesi	39	15.4
Kalimantan	7	2.8
Papua	1	0.4
Bali	6	2.4
Workplace		
Academic	28	11.1
Government Sector	90	35.6
Private Sector	127	50.2
TNI/POLRI	8	3.2
Knowledge		
Enough	144	56.9
Good	109	43.1
Risk Perception		
Enough	116	45.8
Good	137	54.2
Control		
Enough	144	56.9
Good	109	43.1
Total	253	100

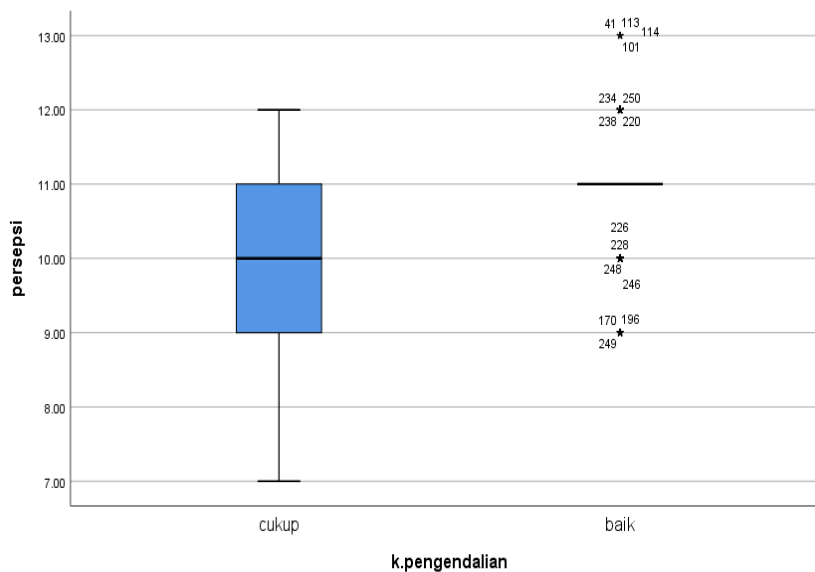
The data in table 1 shows that from a total of 253 respondents who completed to fill out the questionnaire in this study. the largest distribution based on age group was 50.2% or as many as 127 years in the 30-39 year age group. While the minimum number of 8 members or 3.2% is in the 25-29 year age group. The distribution of research respondents based on gender showed that there were 18.6% or as many as 47 respondents with male sex. then there are as many as 206 respondents with female gender or 81.4%. Based on work experience, the vulnerable work experience is 10-19 years with a total of 122 respondents or 48.2%. then on the work experience criteria, the least amount is in the vulnerable work experience of 30 years with a total of 31 respondents or 12.3%.

Furthermore, the workplace criteria contained in table 1 show that there are 50.2% or as many as 127 endodontists throughout Indonesia who work in the government sector. then the smallest number is 8 respondents or 3.2% for the TNI/POLRI. Based on the criteria for the knowledge variable which is divided into two, that there are as many as 144 respondents or 56.9% in the criteria for sufficient knowledge. then on the criteria of good knowledge there are as many as 109 respondents or 43.1% of the total respondents. Meanwhile, in the risk perception variable criteria, there were 116 respondents or 45.8% in the sufficient perception criteria. then on the criteria of good perception there are 137 respondents or 54.2% of the total respondents in this study as many as 253. A total of 144 respondents have sufficient control or 56.9% and 43.1% of respondents have good knowledge or as many as 109 respondents in this study .



Picture 1. The difference in the value of knowledge in endodontists throughout Indonesia

The difference in knowledge on the control criteria is sufficient with a mean value of 6.99 and a median value of 7.0. Then the difference in knowledge on the criteria for good control with a mean value of 9.19 and a median value of 9.0. Based on the data in Figure 4.1 shows that there is a difference between sufficient knowledge and good knowledge. The graph shows that there is an effect of level of knowledge with controlling covid-19 in endodontists throughout Indonesia.



Picture 2. The difference in risk perception values among endodontists throughout Indonesia

The difference in perception on the control criteria is sufficient with a mean value of 9.84 and a median value of 10.0. Then the difference in perception on the control criteria is good with a mean value of 10.95 and a median value of 11.0. Based on the data in Figure 4.1 shows that there is a difference between the perception of sufficient and good perception. The graph shows that there is an influence of the level of perception with the control of covid-19 in endodontists throughout Indonesia.

Table 2. Test the difference between knowledge and perception of the control of COVID-19 in endodontists throughout Indonesia

Knowledge		Risk Perception	
Enough	Good	Enough	Good
Mean±SD	Mean±SD	Mean±SD	Mean±SD
6.99±1.15	9.19±1.12	9.84±1.03	10.95±0.85
p= 0.000		p= 0.000	

The data in table 2 shows that the knowledge variable has a mean value of 6.99 and a standard deviation of 1.15, then the good category has a mean value of 9.19 and a standard deviation of 1.12. based on the results of the analysis using the independent-samples T test, p value = 0.000. Based on these results, it can be concluded that there is an influence of knowledge on the control of covid-19 in endodontists throughout Indonesia.

Furthermore, the perception variable on the criteria is sufficient to have a mean value of 9.84 and a standard deviation of 1.03. Then the good criteria have a mean value of 10.95 and a standard deviation of 0.85. the results of statistical tests using independent-samples T test obtained p value = 0.000. Based on these results, it can be concluded that there is a perception effect on the control of covid-19 in endodontists throughout Indonesia.

Discussion

Based on the results of the study, it was obtained that there was a mean value for knowledge of 6.99 and a standard deviation of 1.15, then the good category had a mean value of 9.19 and a standard deviation of 1.12. the results of statistical tests carried out obtained p value = 0.000. This proves the influence of knowledge on the control of covid-19 in endodontists. This research is in line with research related to knowledge of COVID-19 control attitudes in dental and oral health practitioners, especially dentists. The results of the study show that there is an influence of knowledge on control during the COVID-19 pandemic (Mustafa *et al.*, 2020; Taccio and Candeiro, 2020). Most of them do not know or have contact with anyone with COVID-19. With regard to their knowledge of COVID-19 symptoms, few professionals reported dry cough, high fever, and breathing problems as symptoms, and fewer participants reported sore throat and headache. This finding shows that most of them are aware of the main symptoms of COVID-19 (Taccio and Candeiro, 2020)

In the results of research that has been carried out on endodontists throughout Indonesia, it is found that the perception with sufficient criteria obtained a mean value of 9.84 and a standard deviation of 1.03. Furthermore, the criteria for good perception obtained a mean value of 10.95 with a standard deviation of 0.85. based on the results of statistical tests obtained p value = 0.000. Based on these results, it can be concluded that there is an influence between the perception of endodontists and the control of covid-19.

The results of this study are in line with research conducted in Saudi Arabia, the majority of participants knowing who to contact if exposed unprotected to a

known or suspected COVID-19 patient (82.9%) and what to do if experiencing symptoms of COVID-19 (90.3%). This demonstrates the awareness of dentists in Saudi Arabia and their role in raising population awareness regarding infection control and prevention measures. This finding is consistent with the findings of a previous study among dentists in Jordan (Mustafa, Alshali and Bukhary, 2020). A number of cross-sectional studies have been conducted to assess awareness, knowledge, and infection control prevention measures among dental healthcare providers in Saudi Arabia during the MERS-CoV outbreak, which have demonstrated a high general level of awareness among dentists in the Saudi population. (Srivastava *et al.*, 2020; Táccio and Candeiro, 2020; Mallineni *et al.*, 2022).

Conclusions

Based on the results of research on the effect of knowledge and perception on the control of covid-19 in endodontists, which was carried out in 2021, it was concluded that there was a significant influence between knowledge and perception of endodontic risk on the control of covid-19. This is proven based on statistical tests obtained p value less than 0.05.

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