



Knowledge, Attitude, and Behavior of Clinical Dental Students in the Oral Care of HIV/AIDS Patients

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Abstract

Introduction In the future, clinical dental students, as health service providers, will play a key role in the oral care of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) patients. Clinical dental students need to increase their knowledge of HIV because it is vital for the diagnosis and management of HIV/AIDS patients that they have a positive attitude regarding oral care behavior toward HIV/AIDS patients. This study aims to explain the relationship between the knowledge, attitudes, and behavior of clinical dental students in the oral care of HIV/AIDS patients at Airlangga University Dental Hospital.

Materials and Methods This study used a cross-sectional approach with a sample of 132 respondents. The sample was taken by purposive sampling technique. The independent variable in this study was the attitudes and behavior of clinical dental students toward the care of HIV/AIDS patients. The dependent variable in this study was the knowledge and attitudes of clinical dental students toward the oral care of HIV/AIDS patients. The research data obtained were analyzed using Spearman's rho at ≤ 0.05 .

Result There was significant correlation between knowledge and attitudes ($p = 0.001$, $r = 0.596$); knowledge and behavior ($p = 0.001$, $r = 0.637$); attitudes and behavior ($p = 0.001$, $r = 0.699$) of dentistry students in the care of HIV/AIDS patients oral cavity.

Conclusion Clinical dental students' knowledge of HIV/AIDS will influence their attitudes toward HIV/AIDS patients and their behavior in the oral care of HIV/AIDS. It is hoped that future research can be conducted by adding other independent variables to determine a wider range of factors that affect oral care in HIV/AIDS patients.

Keywords

- ▶ attitudes
- ▶ behavior
- ▶ HIV/AIDS
- ▶ knowledge

Introduction

Oral cavity treatment by dentists is a common treatment that cannot be separated from contact with microorganisms in the blood and saliva of the patients, one of which is the human immunodeficiency virus/acquired immunodeficiency syndrome HIV/AIDS patients.¹ This means that dentist run the risk of contracting dangerous diseases caused by HIV.² This risk discourages some dentists from treating HIV/AIDS patients.³ Not only is there the risk of infection but the considerable stigma attached to HIV/AIDS patients also affects the care received by HIV/AIDS patients.⁴

Most clinical dental students indicated that they were afraid of contracting HIV/AIDS while treating patients with this condition.⁵ Clinical dental students are increasingly likely to treat HIV/AIDS patients with oral manifestations because the numbers of HIV/AIDS patients in the world have continued to grow rapidly this last decade. The rate of increase in HIV/AIDS in Indonesia is one of the fastest in Asia.⁶ Indonesia is the country with the second-highest increase in HIV/AIDS cases in Asia after India.⁷ In 2017, the rise in HIV/AIDS cases in Indonesia mostly occurred in East Java Province with 8,201 new cases.^{8,9} Surabaya, as the capital of East Java, is at the center of this recent increase in HIV cases with an additional 915 cases.⁸ It is the right, meanwhile, of every HIV/AIDS patient to receive equal care and not to experience discrimination at the hands of health services.¹⁰

The factors that influence the oral care provided by clinical dental students are knowledge, attitudes, and actions against the disease. The knowledge that a person has will influence the decisions they make. Whereas action is a response that can be seen by others, knowledge and attitude are responses that are not visible and so are less likely to be noticed or perceived by others. Therefore, in theory, a person's knowledge will influence their attitudes, which, in turn, will influence their actions.¹¹

As future health care providers, clinical dental students will play a key role in the treatment of HIV/AIDS patients. This means that it is important for them to increase their knowledge of HIV.³ Knowledge is needed in the diagnosis and management of HIV/AIDS patients so that students have a positive attitude regarding oral care behavior toward them.¹² Therefore, the purpose of this study is to explain the relationship between knowledge, attitudes, and behavior of clinical dental students in the oral care of HIV/AIDS patients.

Materials and Methods

Study Design and Participants

This correlational study analyzed the relationship between knowledge, attitudes, and behavior of clinical dental students in the oral care of HIV/AIDS patients at the Airlangga University Dental Hospital. The approach used was cross-sectional, where the measurement or observation of independent data and dependent data was carried out only one at a time.

The subjects in this study were 132 clinical dental students who studied dental professional education at the Faculty of Dentistry, Airlangga University, in 2020. This study used a nonprobability sampling type of purposive sampling where the researchers took samples according to the research inclusion and exclusion criteria. The inclusion requirement for this study was that subjects were clinical dental students in the class of 2020 who were willing to participate in the research and had given their prior consent, while clinical dental students who had already treated HIV/AIDS patients, those students who had attended training HIV/AIDS patient care, and those who refused to participate in the research were excluded. The independent variable in this study was the level of knowledge of clinical dental students in the oral care of HIV/AIDS patients. The dependent variable in this study was the attitudes and behavior of clinical dental students in the oral care of HIV/AIDS patients.

Questionnaire Format

The research instrument used was a self-reported questionnaire of knowledge, attitudes, and behavior toward HIV/AIDS patients. All types of questionnaires have been tested for validity and reliability using the IBM Statistical Package for the Social Sciences (SPSS). The knowledge practice questionnaire about HIV/AIDS was taken and modified from Singh et al's study titled "Knowledge and attitude of dental students toward HIV/AIDS patients."¹³ The questionnaire consisted of 10 questions that were given in the form of a questionnaire with a Guttman scale. Each question item had an answer option with a score of 0 and 1: a score of 1 if the answer was correct and a score of 0 if the answer was wrong. The question items consisted of the basic concepts of HIV/AIDS, oral manifestations, and transmission of HIV. After the questionnaire was answered and the percentage was known, the categories of knowledge about HIV/AIDS were interpreted and placed into four categories, namely very poor: less than 25%, less: 25 to 50%, good: 51 to 75%, and very good: more than 75%.

The questionnaire to assess attitudes toward HIV/AIDS patients was also modified from Singh et al's study titled "Knowledge and attitude of dental students toward HIV/AIDS patients."¹³ There were 10 questionnaires given in the form of a Likert scale. The question items consisted of readiness, stigma, and discrimination. After the questionnaire was answered and the percentage was known, the results of the scores were interpreted by categorizing them into three groups, namely negative: less than 50%, passive: 50 to 75%, and positive: more than 75%.

The questionnaire to assess behavior while treating HIV/AIDS patients was modified from a study by Halboub et al (2015) titled "Knowledge, Attitudes, and Practice of Infection Control among Dental Students at Sana'a."¹ Ten questionnaires were given in the form of a Likert scale. The question items consisted of behavior before, during, and after treatment. After the questionnaire was answered and the percentage was known, the results of the scores were interpreted and placed into three categories, namely negative:

Table 1 Respondents' frequency distribution based on gender and age among dental professional students of Airlangga University in 2020

Category	Gender		Total	Age					Total
	Women	Man		21	22	23	24	25	
Frequency	109	23	132	10	55	60	6	1	132
%	82.6	17.4	100	7.6	41.7	45.5	4.5	0.8	100

less than 50%, passive: 50 to 75%, and positive: more than 75%.

This research was conducted online with a research team located at the Faculty of Dentistry, Airlangga University, Surabaya. The research was conducted from June to August 2020. Respondents were given the right to freedom to participate or refuse to participate in research. If the respondents were willing, they filled out a questionnaire related to demographic data and a questionnaire related to the knowledge, attitudes, and behavior of clinical dental students toward HIV/AIDS patients.

Statistical Analysis

The statistical test in this study used Spearman's correlation. The test was used to analyze the significance of the relationship between knowledge, attitudes, and behavior of clinical dental students in the oral care of HIV/AIDS patients with a significance level of $\alpha = 0.05$. Statistical data were analyzed using the IBM SPSS version 25.

Results

Respondents' Distribution Based on Gender and Age

Based on ►Table 1, of the 132 students in this study, it was found that the majority were female, numbering 109 respondents (82.6%), while there were 23 male respondents (17.4%). Based on age characteristics, the group with the highest representation comprised students aged 23 (45.5%), followed by those aged 22 (41.7%), 21 (7.6%), 24 (4.5%), and 25 (0.8%).

Knowledge Relationship with Attitude

Based on ►Table 2, it can be seen that 63 respondents (47.7%) have knowledge categorized as good, and the majority, 74 respondents (56.1%), have a neutral attitude regarding oral care in HIV/AIDS patients.

After a statistical test was conducted using Spearman's rho, the value of $p = 0.001$ and the value of $r = 0.596$, which means that there is a relationship with a sufficiently strong correlation between HIV/AIDS-related knowledge and the attitudes of dentistry students in the oral cavity care of HIV/AIDS patients. The direction of the relationship is positive, so it can be interpreted that the better the knowledge, the more positive the attitude shown by students of the dental profession.

Knowledge Relationship with Behavior

Based on ►Table 3, it can be seen that 63 respondents (47.7%) have knowledge categorized as good, and the majority, 72 respondents (54.5%), have neutral behavior related to oral care in HIV/AIDS patients.

After a statistical test was conducted using Spearman's rho, the value of $p = 0.001$ and the value of $r = 0.637$, which means that there is a relationship with a strong correlation between HIV/AIDS-related knowledge and the behavior of dentistry students in the oral care of HIV/AIDS patients. The direction of the relationship is positive, so it can be interpreted that the better the knowledge, the more positive the behavior shown by students of the dental profession.

Table 2 Results of the statistical analysis of knowledge with the attitudes of the dental profession students of the Faculty of Dentistry, Airlangga University in 2020

Variable	Attitude							
	Positive		Neutral		Negative		Total	
	f	%	F	%	f	%	f	%
Very good	33	25.0	12	9.1	0	0.0	45	34.1
Good	19	14.4	44	33.3	0	0.0	63	47.7
Enough	0	0.0	18	13.6	3	2,3	21	15.9
Less	0	0.0	0	0.0	3	2,3	6	2,3
Total	52	39.4	74	56.1	6	4.5	132	100

Spearman's rho (p): 0.001

Coefficient correlation (r): 0.596

Table 3 Results of the statistical analysis of knowledge with the behavior of dental profession students, Faculty of Dentistry, Airlangga University in 2020

Variable	Behavior							
	Positive		Neutral		Negative		Total	
	f	%	f	%	f	%	f	%
Very good	36	27.3	9	6.8	0	0.0	45	34.1
Good	19	14.4	44	33.3	0	0.0	63	47.7
Enough	0	0.0	19	14.4	2	1.5	21	15.9
Less	0	0.0	0	0.0	3	2,3	3	2,3
Total	55	41.7	72	54.5	5	3.8	132	100

Spearman's rho (p): 0.001

Coefficient correlation (r): 0.637

Attitude Relationship with Behavior

Based on **Table 4**, it can be seen that the majority, 74 respondents (56.1%), have an attitude categorized as neutral, and 72 respondents (54.5%), also a majority, have neutral behavior related to oral care in HIV/AIDS patients.

After a statistical test was conducted using Spearman's rho, the value of $p = 0.001$ and the value of $r = 0.699$, which means that there is a relationship with a strong correlation between the attitudes and the behavior of dentistry students in the care of the oral cavity of HIV/AIDS patients. The direction of the relationship is positive, so it can be interpreted that the more positive the attitude shown, the more positive the behavior shown by dental students.

Discussion

Based on the results of the study, it can be seen that knowledge of HIV/AIDS was related to the attitudes toward HIV/AIDS patients during oral care. This is in line with Widayanti et al's research titled "The relationship between knowledge about HIV/AIDS and student attitudes toward PLWHA," which states that there is a relationship between knowledge about HIV/AIDS and student attitudes toward people living with HIV/AIDS (PLWHA).¹⁴

The results of this study indicate that there is a relationship with a strong correlation value between knowledge of

HIV/AIDS and the attitudes toward HIV/AIDS patients during oral care. The correlation coefficient number has a positive value, which means that the relationship between knowledge of HIV/AIDS and attitudes toward HIV/AIDS patients when carrying out oral care has the same direction. The relationship in the same direction means that if knowledge about HIV/AIDS is getting better, then the attitude toward HIV/AIDS patients will also be better, or vice versa. This is in line with Ab-Murat et al's¹⁵ research, which states that knowledge and attitudes have quite a strong relationship.¹⁴ It is also in line with Kumar et al's research, which states that knowledge will greatly influence the attitudes of clinical dental students because if they know how to control infection and the transmission process, they will not be afraid of contracting it.¹⁶

The results of this study are in line with several previous studies, one of which is the Golkari et al's study, which took data on several students in Iran, stating that knowledge is positively related to attitudes in general toward PLWHA. Knowledge of HIV/AIDS will lead to a positive attitude toward HIV/AIDS and PLWHA.¹⁷

The respondents in this study were clinical dental students who had received university-level education. Several studies show that there is a positive relationship between the level of education with increased knowledge and reduced attitudes of rejection toward PLWHA. This result shows that

Table 4 Results of the statistical analysis of attitudes with the behavior of dental professional students of the Faculty of Dentistry, Airlangga University in 2020

Variable	Behavior							
	Positive		Neutral		Negative		Total	
	f	%	F	%	f	%	f	%
Positive	43	32.6	9	6.8	0	0.0	52	39.4
Neutral	12	9.1	61	46.2	1	0.8	74	56.1
Negative	0	0.0	2	1.5	4	3.0	6	4.5
Total	55	41.7	72	54.5	5	3.8	132	100

Spearman's rho (p): 0.001

Coefficient correlation (r): 0.699

the higher the level of education, the better the level of knowledge.

After the relationship analysis test was carried out, the results showed a relationship between knowledge of HIV/AIDS and oral care behavior toward HIV/AIDS patients. The correlation coefficient number has a positive value, which means that knowledge of HIV/AIDS with oral care behavior toward HIV/AIDS patients shows the same direction, which means that if knowledge increases, the oral care behavior toward HIV/AIDS patients will get better. This is in line with Widayanti's et al's research, which states that there is a relationship with quite a strong correlation between the level of dentists' knowledge and their alertness behavior to infectious diseases. Knowledge is very important in the formation of action because knowledge will cause inner responses in the form of attitudes, and further responses will arise in the form of actions. A dentist's sound knowledge regarding the prevention of infectious diseases can determine the right actions to prevent infectious diseases.¹⁴

Knowledge of HIV/AIDS is a very important asset in shaping the behavior of clinical dental students in providing oral care. This is in line with Rogers' theory in Notoatmodjo (2018), which states that behavior that is not based on knowledge, awareness, and attitude will not last long.¹⁸ Behavior in performing oral care is a response and action to the needs of patients. In carrying out health services, dentists must be able to prevent or restrain the disease process because treatment at a dental clinic is needed to overcome problems in the oral cavity, especially oral manifestations in HIV/AIDS patients.¹⁹

Attitude was associated with behavior in the oral care of HIV/AIDS patients. In this study, there was a relationship with a strong correlation between attitude and the behavior in the oral care of HIV/AIDS patients. The correlation coefficient value has a positive value, so it means that the relationship between attitudes and behavior in the oral care of HIV/AIDS patients is in the same direction or it can be said that the more positive the attitude toward HIV/AIDS patients, the more positive the behavior toward the patient's oral care.

This is in line with the research of Shokoohi et al, which states that there is a strong relationship between the attitude of clinical dental students and behavior in carrying out oral care for HIV/AIDS patients. If clinical dental students have an attitude in responding to HIV/AIDS patients, the behavior shown will be the same as that attitude.²⁰

If the formation of clinical dental students' behavior in the oral care of HIV-infected patients starts with a good understanding of information about HIV/AIDS, then the attitude shown will follow the knowledge of clinical dental students regarding HIV/AIDS. This attitude will then lead to a response in the form of behavior or action against the stimulus or object.²¹

Conclusion

From this study, it can be concluded that the knowledge of clinical dental students about HIV/AIDS will influence atti-

tudes toward HIV/AIDS patients and behavior in the oral care of HIV/AIDS. It is hoped that further research can be conducted by adding other independent variables to determine a wider range of factors that affect oral care in HIV/AIDS patients.

Ethical Approval

This study has received an ethical clearance certificate from Universitas Airlangga Faculty of Dental Medicine Health Research Ethical Clearance Commission under registered number 464 / HRECC.FODM / X / 2020 on October 2020.

Authors' Contributions

NT designed the study, conducted the experiment, analyzed and interpreted data, and wrote the original draft of the article. FYM designed the study, supervised, analyzed and interpreted data, and wrote the original draft of the article. DSE designed the study, supervised, analyzed and interpreted data, and revised the final article. MDSC supervised and revised the final article. AR and YAA revised the final article.

All authors have critically reviewed and approved the final draft and are responsible for the content and similarity of the index of the manuscript.

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Conflict of Interest

None declared.

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References

- 1 Halboub ES, Al-Maweri SA, Al-Jamaei AA, Tarakji B, Al-Soneidar WA. Knowledge, attitudes, and practice of infection control among dental students at Sana'a University, Yemen. *J Int Oral Health* 2015;7(05):15–19
- 2 Coulthard P, Tappuni AR, Ranauta A. Oral health and HIV: what dental students need to know. *Oral Dis* 2020;26(Suppl 1):47–53
- 3 Agarwal J, Agarwal RS, Shrivastava A, Shrivastava S. Analysis of information, impact and control of HIV amongst dental professionals of Central India. *J Clin Diagn Res* 2015;9(07):ZC80–ZC84
- 4 Kontomanolis EN, Michalopoulos S, Gkasdaris G, Fasoulakis Z. The social stigma of HIV-AIDS: society's role. *HIV AIDS (Auckl)* 2017; 9:111–118
- 5 Alawad M, Alturki A, Aldoghayyim A, Alrobaee A, Alsoghair M. Knowledge, attitudes, and beliefs about HIV/AIDS and people living with HIV among Medical Students at Qassim University in Saudi Arabia. *Int J Health Sci (Qassim)* 2019;13 (05):22–30
- 6 Gedela K, Wirawan DN, Wignall FS, et al. Getting Indonesia's HIV epidemic to zero? One size does not fit all. *Int J STD AIDS* 2021;32 (03):290–299
- 7 Kempton J, Hill A, Levi JA, Heath K, Pozniak A. Most new HIV infections, vertical transmissions and AIDS-related deaths occur in lower-prevalence countries. *J Virus Erad* 2019;5(02):92–101

- 8 Famil M. Analysis of HIV/AIDS health problems in Pacitan District East Java 2020. *Indonesia J Trop Infect Dis* 2021;9(03):143–155 cited 2022 Apr 14
- 9 Dewi DMSK, Sari JDE, Fatah MZ, Astutik E. Stigma and Discrimination Against People Living with HIV and AIDS in Banyuwangi,. East Java, Indonesia . In: *Proceedings of the 4th International Symposium on Health Research (ISHR 2019)Paris, FranceAtlantis Press2020:54–59*
- 10 Koester KA, Johnson MO, Wood T, et al. The influence of the 'good' patient ideal on engagement in HIV care. *PLoS One* 2019;14(03): e0214636
- 11 Rostamzadeh M, Afkhamzadeh A, Afrooz S, Mohamadi K, Rasouli MA. Dentists' knowledge, attitudes and practices regarding Hepatitis B and C and HIV/AIDS in Sanandaj, Iran. *BMC Oral Health* 2018;18(01):220
- 12 Li R, Dong W, He W, Liu Y. Chinese dental students' knowledge and attitudes toward HIV/AIDS. *J Dent Sci* 2016;11(01):72–78
- 13 Singh VP, Osman IS, Rahmat NA, Bakar NAA, Razak NFNA, Nettem S. Knowledge and attitude of dental students towards HIV/AIDS patients in Melaka, Malaysia. *Malays J Med Sci* 2017;24(03):73–82
- 14 Widayanti LP, Hidayati S, Lusiana N, Ratodi M. The Correlations Between Student's HIV/AIDS Knowledge and Their Attitude Toward PLWHA. *Journal of Health Science and Prevention* 2018;2(02):100–107
- 15 Ab-Murat N, Zahari NH, Mohd-Noor NH, Razak IA. Knowledge and attitudes about HIV/AIDS among Malaysian dental students. *Southeast Asian J Trop Med Public Health* 2018;49(06):992–1001
- 16 Kumar S, Tadakamadla J, Areeshi AYBH, Tobaigy HAWM. Knowledge and attitudes towards HIV/AIDS among dental students of Jazan University, Kingdom Saudi Arabia. *Saudi Dent J* 2018;30(01):47–52
- 17 Golkari A, Homayouni M, Ranjbar Z, Sabokseir A. Knowledge, attitude, and the real practice of general dental practitioners in shiraz, Iran towards accepting HIV-positive patients. *Shiraz E Med J* 2020;21(09):1–7
- 18 Notoatmodjo S. *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta 2018:191
- 19 Priyanto A, Juwariyah T. The correlation of knowledge level and the preventive behavior of Diabetic Wound. *Jurnal Ners dan Kebidanan (Journal of Ners and Midwifery)* 2018;5(03):233–240
- 20 Shokoohi M, Karamouzian M, Mirzazadeh A, et al. HIV knowledge, attitudes, and practices of young people in Iran: Findings of a national population-based survey in 2013. *PLoS One* 2016;11(09):e0161849
- 21 Monintja TCN. Relationship Between Individual Characteristic, Knowledge, Attitude With PSN DBD Behavior Of Community In Kelurahan Malalayang I Kecamatan Malalayang City Of Manado. *Jurnal Ilmu Kesehatan Masyarakat Unsrat* 2015;5(2b):503–519