

# Knowledge and stigma towards people living with HIV/AIDS: A study among dental hygiene students



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## Abstract

**Objective:** This study aims to assess the level of HIV/AIDS-related knowledge and stigma among dental hygiene' students towards people living with HIV/AIDS.

**Material and Methods:** A cross-sectional survey conducted to a senior year dental hygiene student in Politeknik Kesehatan (POLTEKKES) Bandung in November 2019. The sample size determined by a total sampling technique gives rise to 71 participants out of 75 (response rate 94.67%). A self-administered questionnaire was attempted, covered demographic information, participants' sources of HIV/AIDS knowledge, eleven items concerned to knowledge and five items related to stigma towards PLWHA.

**Results:** The average score for the HIV/AIDS knowledge items and the level of stigma were 8.36 and 3.53. Most of the participants considered as having a high knowledge (71.84%). None of them categorized as a low level of knowledge. Our study also found 66.2% of participants willing to treat PLWHA.

**Conclusion:** The level of HIV/AIDS knowledge considered moderate. However, we still found several mistakes due to the transmission mode of HIV. The stigma's assessment of PLWHA was low. Nevertheless, unwillingness to live in the same community with PLWHA still indicated.

**Keywords:** Dental Hygiene Students, HIV/AIDS, Level of Knowledge, PLWHA, Stigma  
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## Introduction

Human Immunodeficiency Virus (HIV) is a retrovirus belongs to the family of lentiviruses that invade CD4<sup>+</sup> T-cell thus suppressed the human immune system leading to various symptoms known as Acquired Immune Deficiency Syndrome (AIDS).<sup>1,2</sup> Those who were infected by HIV and have developed AIDS were referred as 'People Living With HIV/AIDS' (PLWHA). United Nations Programme on HIV and AIDS (UNAIDS) reported there were around 37.9 million PLWHA globally by the end of 2018, 640.000 of them were from Indonesia. PLWHA often receive discrimination as a result of the stigma develop in society. They experienced isolation, loss of a job, relationship and lack of social support, they also find it difficult to access an HIV care service due to the fear of being stigmatized and discriminated against.<sup>3</sup> Erving Goffman describes stigma as a significantly discrediting attribute, constructed based on the social identity that occurs as a discrepancy between virtual social identity and their actual social identity.<sup>4,5</sup>

Recent scope review has examined qualitative research contribution to the HIV care cascade in Indonesia. Seventeen publications that took place in Aceh, West Java, DKI Jakarta, Sulawesi, and Papua were reviewed, concluded that the high stigma towards PLWHA still becomes a major barrier to engage maximum HIV care service

to PLWHA in Indonesia.<sup>6</sup> A study done in one of the hospital in Banda Aceh found that 57% of the healthcare provider admitted they had experienced direct contact with PLWHA, however, the experience they had didn't contribute to a lower stigma as it expected. In contrast, the case was found differently in a healthcare service specially provided for PLWHA.<sup>7</sup> Another study was done to a group of homosexuals, asking them to describe their experience in HIV care service. Based on their opinion, the level of HIV/AIDS knowledge of the nurse was fairly well but their expectation on how they should be treated hasn't fulfilled yet. Therefore, this study impacted by resident's subjectivity.<sup>8</sup>

Dental hygiene as a part of the HIV care service provider has a major role in providing well service to PLWHA particularly in dental settings. The importance of their role has been reinforced since they were a dental hygiene's students. Despite a high level of knowledge, the students also expected to have a low stigma in order to increase willingness and reduce discrimination during treatment towards PLWHA. Considering from the statement above, we examine that it is necessary to assess and evaluate the level of HIV/AIDS-related knowledge and stigma among dental hygiene' students towards people living with HIV/AIDS

## Material and Methods

### Questionnaire's design

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**Table 1. Participant's sources of HIV knowledge**

Sources of HIV/AIDS Knowledge	(n)	%	Number of sources	(n)	%
Television	57	80.3	1	2	2.81
Internet (Web, Blog)	66	93	2	3	4.22
Books	48	67.6	3	7	9.85
Newspaper/Magazines	32	45.1	4	20	28.1
Phamphlet/Brochure	30	42.3	5	12	16.9
Seminar	32	45.1	6	5	7.04
Journal	24	33.8	7	9	12.6
Friends	54	76.1	8	2	2.81
Family	32	45.1	9	11	15.67

**Table 2. Participant's level of knowledge and stigma**

Level of Knowledge	Score	n	%
	0	0	0
Low	1	0	0
	2	0	0
	3	0	0
	Σ Low Knowledge's Participants	0	0
Moderate	4	3	4.22
	5	5	7.04
	6	5	7.04
	7	7	9.85
	Σ Moderate Knowledge's Participants	20	28.16
High	8	12	16.90
	9	14	19.71
	10	19	26.76
	11	6	8.48
	Σ High Knowledge's Participants	51	71.84
Total		71	100
Average Knowledge Score	8.36		
Level of Stigma	Score	n	%
	0	0	0
High	1	3	4.2
	2	11	15.4
Σ High Stigma's participant		14	19.8
Low	3	20	28.16
	4	16	22.5
	5	21	29.74
Σ Low Stigma's participant		57	80.2
Total		71	100
Average Stigma Score	3.53		

The questionnaire was modified and adapted from numerous former studies performed by Ali et al,<sup>9</sup> Kumar et al,<sup>10</sup> Li et al<sup>11</sup> and Lee et al.<sup>12</sup> The originated English questionnaire was translated back and

forth to Indonesia and English. The translated questionnaire then pre-tested to sophomore year dental hygiene students in the same institution in order to test the validity and reliability. Both tests utilized to quantify the quality of the survey tool to measure what it is supposed to. The validity test was applied using the Spearman coefficient rank to confirm the questionnaire precision, the items resulted <0.50 were eliminated.<sup>13,14</sup> Moreover, the Alpha Cronbach test performed to verify questionnaire reliability and consistency. The questionnaire proved to be reliable in accordance with the result >0.60. The reliability test of HIV/AIDS knowledge and stigma items consecutively was 0.78 and 0.63.<sup>15,16</sup>

The questionnaire constructed of four parts. The first part requested participants demographic information including, name, sex, age, and address, the second part was a quick survey to examine participant sources of HIV/AIDS knowledge, third part consisted of eleven items managed to assess the level of HIV/AIDS knowledge including transmission method, prevention, symptoms, HIV/AIDS-related oral lesion and the last part contains six items to assess the level of stigma which involved preparedness and willingness to treat PLWHA. The correct answer to HIV/AIDS knowledge items receives 1 score while the false answer was 0. The total score of HIV/AIDS knowledge calculated according to the accumulation of the correct answer. The level of knowledge divides into three categories: low, moderate, and high. Low level of knowledge considered from scored 0-3, moderate from 4-7 and high level from 8-11. The stigma part asses based on the positive and negative attitude, due to our consideration that there was no correct or false answer for this part. The positive attitude due to the stigma related questions will receive 1 score and the negative attitude scored 0. The total score of the positive attitude then divided into two categories; low stigma scored from 4-6 and high stigma from 1-3.

A cross-sectional survey was conducted using a self-administered questionnaire performed in POLTEKKES Bandung in November 2019. The number of participants was determined using total sampling technique to 71 senior year dental hygiene students. The preliminary considerations of the participant criteria assemble the purpose of this study to also seek readiness and willingness of the senior year dental hygiene students to provide good healthcare service to PLWHA. The students were informed before the study and the data was taken after the class session.

**Table 3.** Participant's level of knowledge based on gender and age

Variable	Low		Mean $\pm$ SD		Moderate		Mean $\pm$ SD		High		Mean $\pm$ SD		Mean Total $\pm$ SD
	n	%			n	%			n	%			
Gender													
Male	0	0	0 $\pm$ 0		1	25	6 $\pm$ 0		3	75	9 $\pm$ 0		8.2 $\pm$ 1.5
Female	0	0	0 $\pm$ 0		19	28.3	5.7 $\pm$ 1.1		48	71.7	9.3 $\pm$ 1		8.3 $\pm$ 1.9
Age													
19	0	0	0 $\pm$ 0		4	36	6.2 $\pm$ 0.9		7	64	9 $\pm$ 0.8		8 $\pm$ 1.6
20	0	0	0 $\pm$ 0		11	25.5	5.2 $\pm$ 1.1		32	74.5	9 $\pm$ 0.9		8.4 $\pm$ 1.8
21	0	0	0 $\pm$ 0		5	38.4	5.6 $\pm$ 1.1		8	61.6	9.3 $\pm$ 1		7.9 $\pm$ 2.1
24	0	0	0 $\pm$ 0		0	0	0 $\pm$ 0		1	100	11 $\pm$ 0		11 $\pm$ 0
25	0	0	0 $\pm$ 0		0	0	0 $\pm$ 0		1	100	9 $\pm$ 0		9 $\pm$ 0
40	0	0	0 $\pm$ 0		0	0	0 $\pm$ 0		1	100	10 $\pm$ 0		10 $\pm$ 0
44	0	0	0 $\pm$ 0		0	0	0 $\pm$ 0		1	100	11 $\pm$ 0		11 $\pm$ 0

**Table 4.** Participant's level of stigma based on gender and age

Variable	Low		Mean $\pm$ SD		High		Mean $\pm$ SD		Mean Total $\pm$ SD		
	n	%			n	%					
Gender											
Male	2	50		5 $\pm$ 0	2	50		2 $\pm$ 0		3.5 $\pm$ 1.73	
Female	55	82		3.98 $\pm$ 0.45	12	18		1.75 $\pm$ 0.85		3.5 $\pm$ 2.1	
Age											
19	8	72.7		3.75 $\pm$ 1.5	3	27.3		1.67 $\pm$ 0.95		3.18 $\pm$ 1.25	
20	35	81.3		4.1 $\pm$ 0.82	8	18.7		1.75 $\pm$ 0.46		3.67 $\pm$ 1.2	
21	10	76.9		3.9 $\pm$ 0.87	3	23.1		2 $\pm$ 0		3.46 $\pm$ 1.12	
24	1	100		5 $\pm$ 0	0	0		0		0	
25	1	100		3 $\pm$ 0	0	0		0		0	
40	1	100		5 $\pm$ 0	0	0		0		0	
44	1	100		3 $\pm$ 0	0	0		0		0	

The participation of this study was done voluntarily. The informed consent was acquired former to the study and was approved by the ethical committee of Padjadjaran University. The names of the participants will not be published to keep the participants' identity private. The questionnaire was distributed through google form alongside the paper-based questionnaire to the participant who was unable to access the google form. The google form questionnaire was set to be fully completed and the paper-based questionnaire was evaluated one by one before collecting to prevent any skipped items.

### Statistical analysis

Statistical analysis was done using Microsoft Excel version 2002 (Build 1257.20988 Click-to-Run) the data then analysed using descriptive analysis, examining average score, median, modus, and standard deviation. Frequency and percentage were used to describe the distribution.

### Results

There were 75 students registered as senior year dental hygiene students, four of them were applied for leave. On this ground, the four leaving students were excluded from the population, leaving 71 respondents received (response rate 94.6%). Each participants allow to choose more than one sources. Most of the participants were female (94.4%), while the rest (5.6%) were male. Most of the participants were 20 years old (60.5%), followed by 21 (19.1%) and 19 (16.2%) years old. Others included 24 (1.05%), 25 (1.05%), 40 (1.05%) and 44 years old (1.05%). The average age of the participants was 20.7 $\pm$ 3.7. A major part of the participant obtains HIV/AIDS knowledge from the Internet (Web, Blog) (93%) followed by television (80.3%) and their friends (76.1%) [Table 1](#).

Most of the participants selected four HIV/AIDS knowledge sources (28.1%). Eleven participants

**Table 5. Participants answer to knowledge and stigma questionnaire**

Knowledge Statement	Yes		No	
	n	%	n	%
HIV/AIDS are diseases which ONLY infect homosexual and bisexual groups	18	25.4	53*	74.6*
Heterosexual group will not be infected with HIV/AIDS	14	19.7	57*	80.3*
Cough and sneezing do not spread HIV	39*	54.9*	32	45.1
Washing genitals after sexual intercourse prevents a person from getting infected with HIV	34	47.9	37*	52.1*
A person infected with HIV immediately shows severe disease symptoms	22	31	49*	69*
A person with HIV may look and feel normal	60*	84.5*	11	15.5
A person will not be infected with HIV if he/she consumes antibiotics.	13	18.3	58*	81.7*
Conducting sexual intercourses with more than one partner may increase the chance for someone to be infected with HIV	67*	94.4*	4	5.6
Autoclave, dry heat, boiling, glutaraldehyde and Hydrogen Peroxide are high-level sterilization and disinfection methods for dental and medical equipment to kill/deactivate HIV Virus	60*	84.5*	11	15.5
A person will be infected with HIV since he/she shared a glass of water with another person suffering from HIV	20	28.2	51*	71.8*
Herpes Simplex lesion and Oral Hairy Leukoplakia are oral manifestations related to HIV/AIDS	63*	88.7*	8	11.3
Stigma Statement	Yes		No	
	n	%	n	%
Are you willing to live with a person suffering from HIV/AIDS within a community?	7*	2.1*	4	7.9
Do you not like to conduct physical contacts with HIV/AIDS patients	8	5.4	3*	4.6*
Do you accept students or colleagues infected with HIV in similar workplace or classroom?	7*	6.2*	4	3.8
Caring HIV patients will make me uncomfortable	1	5.5	0*	4.5*
Are you willing to treat patients living with HIV/AIDS safely with no hesitation?	7*	0.3*	4	9.7

\*CORRECTED ANSWER

selected all the listed. sources (15.67%) and only two participants (2.81%) selected one resource [Table 1](#). According to our study, there were no participants categorized as a low level of HIV/AIDS knowledge. Most of them considered as having a high knowledge (71.84%) and the remains were having a moderate level of knowledge (28.16%) The modus score for the HIV/AIDS-related knowledge items were 10 out of 11 (26.76%) thus, we certainly appreciate this achievement. For that matter, most of the participants are capable to accomplished almost to the maximum score. In addition to that, six participants (8.48%) work their way to achieve a perfect score for HIV/AIDS-related knowledge items [Table 2](#).

Three out of four male participants (75%) considered as having a high level of knowledge alongside the percentage of female participants that accomplished 71.7%, with an average score of

both male and female participants consecutively were  $8.2 \pm 1.5$  and  $8.3 \pm 1.9$ . The entire participants' average scores were 8.36 and relatively determined as a moderate level of knowledge. All the participants above 20 years old were classified as a high level of knowledge [Table 3](#). Only 54.9% of participants answer yes to cough and sneezing do not spread HIV. There were 47.9% of participants agree that washing genitals after sexual intercourse prevents a person from getting HIV. Most of the participants answer yes (94.4%) to conducting sexual intercourses with more than one partner may increase the chance for someone to be infected with HIV [Table 5](#).

According to our study, most of the participants considered having a low level of stigma with an average score of 3.53. We figured there were only 14 participants (19.8%) included in high-level stigma [Table 2](#). There were 47.9% participants that does not

willing to live with a person suffering from HIV/AIDS within a community, 25.4% of participants don't like to conduct physical contacts with HIV/AIDS patient and 80.3% willing to treat PLWHA with no hesitance [Table 5](#). Male participant shares the same percentages (50%) between those who has low stigma and high stigma, while most of the female participants (82%) considered as having a low stigma. All the participants above 21 years old are having a low stigma [Table 4](#).

## Discussion

In the second section, each participant allowed to select more than one sources of HIV/AIDS-related knowledge they had. This section added in purpose to discover the number of sources they commonly had, and which sources contributed the most to their HIV/AIDS-related knowledge apart from their regular classes. We found only 33.8% of participants obtain knowledge from the journal (33.8%) and less than half of the participants had ever attended an HIV/AIDS seminar (45.1%). This becomes a disadvantage considering our opinion that qualified journals able to be an adequate source of knowledge since the process of journal making required a critical and advanced effort.

Alongside of that, attending a seminar certainly beneficial to encourage their HIV/AIDS knowledge, as well as providing an opportunity to discuss directly to the expert. Conversely, obtain information from friends and relatives might provoke some misinformation since the information is given cannot be validated related to their unconfirmed various background. HIV/AIDS-related information available on the internet could not be fully confirmed as well due to the varieties of the internet platform, such as social media, website or even blog. As we all know, the internet contains various personal opinions since anyone is able to generate their assumption, emotion, belief, and point of view that may or may not influence others.<sup>17-19</sup> The organization's official website is an exception, considering the information they provided can be confirmed.

A study found participants' knowledge on sexual transmission of HIV/AIDS have been comprehended well, unfortunately, close to the half of the participant were not aware to the fact that coughing, and sneezing do not transmit HIV (45.1%). We also indicated a few misunderstandings in the act of prevention for HIV, for example washing genitals after having sexual intercourse. Washing genitals after sexual intercourse does not contribute to preventing HIV transmission. It has

been speculated that it could remove any genital fluid that neutralize HIV.<sup>20</sup> To our knowledge, this topic hasn't been revealed enough, thus we tolerate why almost half of the participants (47.9%) were choosing a wrong answer. Most of the participants had recognized that PLWHA can feel and look normal particularly those who were in the initial stage would not show any severe symptom as well as those who maintain a proper amount of CD4+. the participant had known what sterilization method and what types of disinfectants can be used to inactivated HIV

The discrepancy between participants who expressed willingness to live alongside with PLWHA and to those who do not are only 3 participants apart. Essentially, only 37 out of 71 (52.1%) participants willing to live with PLWHA. By comparison, the percentage of the participants that willing to accept students or colleagues infected with HIV/AIDS PLWHA attain 66.2%. As we observed, both questions direct the same intention, to assess participants willingness and acceptance to live alongside with PLWHA. We noticed question number three delivered in more specific terms. We conclude the difference of the result most likely associated with their professionalism regarding their future profession as dental hygiene in this manner, we also assume uncertainty to live with PLWHA in one community possibly persuade by several personal considerations and opinions. The link between stigma and HIV/AIDS epidemic has been observed and generate as a theoretical framework. The framework was established by Parker and Aggleton.<sup>3</sup>

They believe that stigma plays a key role in producing and reproducing relations overpower and control. In another word, pre-existing power imbalances and can be expected to intensify the stigmatization of some individuals and groups. HIV stigma is a form of social or structural level of phenomenon that exist when labelling, stereotyping, status loss and discrimination occur within power structure.<sup>21</sup> Earlier, collimore also states that HIV/AIDS-related stigma constitutes by the relations of power within society those associated with race, ethnicity, economic status, sexual orientation, and women's low social status.<sup>3</sup>

To we all know, PLWHA is likely associated with other stigmatized groups in the society such as homosexual, sex workers or drug users. As we concerned, there were several factors possibly impact stigma, regardless of the level of knowledge. Stigma may occur as a result of the irrational fear of the transmission. Adequate knowledge of

HIV and appropriate practical skills is required to deliver an excellent HIV/AIDS care service, but if they overwhelmed by their fear, the stigma still able to emerge.<sup>7</sup> We found both the low and high-level category on male participant shares the same percentages (50%), while most of the female participants (82%). This is a contrast with several studies found in Saudi Arabia, where the male participants reported as having a lower stigma.<sup>10</sup> A similar result also found in Belize and China where female health care workers tend to be more stigmatizing. On the other hand, some studies also found that sex was not significantly impacted stigma.<sup>7</sup> One of the limitations of this study is that we are not able to represent a valid result between male and female participants due to the lack of male participants.

We also found all the participants above 21 years old were having a low stigma, contrarily to others study that found older participants tend to have a higher stigma, they assumed may not receive the same HIV/AIDS curriculum standard and information. In addition to that, some studies found that age was a negative predictor for stigmatized and discriminatory attitudes.<sup>7</sup> Unfortunately, we could not provide an appropriate amount of participants age above 21 years old, thereby we could not draw any specific conclusion. Nevertheless, our study approved participant readiness and willingness to treat PLWHA. Most of them (80.3%) also confirmed that they are willing to treat PLWHA safely with no hesitation. Regardless of 25.4% participant who admits they do not like to conduct physical contact with PLWHA, we still profoundly appreciate their confidence to treat PLWHA.

### Limitation of the study

The number of male participants in this study is minimal, due to the total sampling of participants is only 71 based on our criteria, thus we hope there will be another similar study with a larger number of samplings to see if it is relevance to our result.

### Conclusion

Our study reveals that the senior year dental hygiene students in POLTEKKES Bandung is having a good HIV/AIDS-related knowledge. However, HIV transmission mode requires some improvement considering a few misunderstandings we indicated. Regarding stigma, we still discover unwillingness to accept PLWHA in the same community, although we value their preparedness and willingness to treat PLWHA. We also suggest an additional experience in the dental hygiene curriculum to interact and treat PLWHA through internship or

community service, as an effort not only to reduce but to diminished stigma amongst dental hygiene students as well.

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### Conflict of Interest

The authors report no conflict of interest.

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