

## GENERALIZED CONFIRMATORY FACTOR ANALYSIS FOR KNOWING IMPACT OF KNOWLEDGE, ATTITUDES, AND BEHAVIORAL FACTORS HIV/AIDS IN INDONESIA

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### ABSTRACT

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#### Keywords:

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The cumulative number of detected HIV/AIDS cases in the January – March 2021 is 9,327, consisting of 7,650 HIV and 1,677 AIDS reported by 498 districts and cities from 514 districts and cities in Indonesia. Human Immunodeficiency Virus (HIV) is the virus that causes Acquired Immunodeficiency Syndrome (AIDS). Several factors that influence the spread of HIV/AIDS include knowledge, attitudes, and behavior about HIV/AIDS. Someone who gains knowledge about HIV/AIDS will have high self-confidence and a positive outlook on life and be more optimistic in taking HIV/AIDS prevention actions. The main objective of this study is to determine the influence of external factors, which include demographic, social, and economic aspects, as well as internal factors, which include knowledge, attitudes, and behavior to the level of transmission of HIV/AIDS. Using the CFA approach, it can be seen which indicators have the greatest influence on the latent variables of knowledge, attitudes, and behavior, or called loading factors. The data used is secondary data from a 5-year survey from the Central Statistics Agency, namely the 2017 Indonesian Demographic and Health Survey (IDHS) published at the end of 2018. The CFA results show that the P11 variable (about known infections) has the largest loading factor value, which is 0.613. In the Attitude latent variable, the S1 variable (about identifying how the respondent knows someone is infected with HIV/AIDS) has the largest loading factor value of 0.514. While the behavioral latent variable, the variable R8 (whether men have been infected with sexually transmitted diseases (STI) with symptoms) has the largest loading factor value, which is 0.954.



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## 1. INTRODUCTION

HIV (Human Immunodeficiency Virus) is a type of virus that infects white blood cells and causes a decrease in the human immune system. AIDS, or Acquired Immune Deficiency Syndrome, is a collection of symptoms of diseases that arise due to decreased immunity caused by infection with HIV. A decrease in the immune system causes a person to be easily exposed to various infectious diseases that are often fatal. People with HIV need treatment with Antiretroviral (ARV) to reduce the amount of HIV virus in the body so it doesn't enter the AIDS stage, while people with AIDS require ARV treatment to prevent opportunistic infections with various complications [1]. Sexuality has long been a taboo subject, but it has undergone sweeping changes over centuries. On top of that, the emergence of HIV-AIDS has overwhelmed the entire world. The specific issue of AIDS is definitely a problem that has no short-term solution [2]. The long-term social consequences of HIV/AIDS would certainly add to the gravity of the current health problem. HIV/AIDS contributes to the first trajectory involved in state collapse in that care for sufferers adds to the resource burden countries face and intensifies competition over scarce resources [3].

In Indonesia, the cumulative number of HIV/AIDS cases detected in the January – March 2021 period was 9,327, consisting of 7,650 HIV and 1,677 AIDS reported by 498 districts and cities from 514 districts and cities. The Ministry of Health reported that the number of HIV cases decreased 16.5%, on the other hand, AIDS cases increased by 22.78% [4]. In Indonesia, the main transmission of HIV-AIDS in Indonesia is the use of unsafe injecting needles among users of narcotics and illegal drugs (drugs), followed by heterosexual intercourse, and transmission from mother to fetus during pregnancy, childbirth, or breastfeeding [5].

Previous research has shown that the clinical condition of HIV/AIDS patients was significant to predisposing factors, supporting factors, and reinforcing factors, with each loading factor value is 0.342, 0.544, and 0.143, respectively. Predisposing factors include people's knowledge and attitudes towards health, traditions, and public trust in matters relating to health, the value system adopted by the community, education level, socio-economic level, and so on [6]. In this predisposing factor is measured through indicators of knowledge, attitudes, and self-concept. Enabling factors include the availability of facilities and infrastructure or public health facilities. These facilities basically support or enable the realization of Health Behaviors [6]. These contributing factors include ARV therapy. Reinforcing factors includes the attitude and behavior factor of community leaders, religious leaders, and officials' Health [7].

Meanwhile, research by [8] shows that the five dimensions of collaboration significantly describe the function of collaboration in the prevention and control of HIV/AIDS. The governance dimension is the most important contribution dimension, followed by the organizational dimensions of autonomy, administration, and cohesion. The dimension norm is the smallest dimension contribution. This can be said as an external factor. The study by [9] highlights several misconceptions about HIV transmission, intolerance, stigma and discrimination against PLHIV, and risky sexual practices, which need to be addressed. HIV/AIDS related education programs should include specific interventions to change practices, together with knowledge and attitudes.

Internal factors such as knowledge, attitudes, and behavior also influence the transmission of HIV/AIDS. Previous research [10] shows that adequate knowledge of HIV/AIDS enables a person to make an early diagnosis and protect himself from the risk of transmission. Knowledge affects the formation of attitudes and behavior because, from experience and research, it turns out that behavior based on knowledge will last longer than behavior that is not based on knowledge [10]. Although students are knowledgeable about HIV/AIDS, they have little personal concern about becoming infected and do not take appropriate safe sex precautions. The findings of the present study show that gender, ethnic background, and knowing someone infected by HIV/AIDS influence students' level of concern about infection [11]. The 2017 IDHS report presents data and information related to knowledge, perceptions, and behaviors about HIV-AIDS at the national and provincial levels according to background characteristics such as demographic, social, and economic aspects [1].

Through the CFA (Confirmatory Factor Analysis) method, confirmation of the theory is carried out to measure the accuracy of the parameters. In measuring the latent variable, the t-test statistic is used as the significance of the indicator. This is because the standardized estimate regression in the CFA is the loading factor ( $\lambda_i$ ) [12]. The CFA approach is used to determine the indicators that have the greatest influence on the latent variables of knowledge, attitudes, behavior about HIV/AIDS in Indonesia. Previous research that conducted by Gusti [7] used FIMIX-PLS with several factors including predisposing factors with indicators

in the form of knowledge, attitudes and self-concept which gave the result that the clinical picture of HIV/AIDS patients was significant to these factors.

The purpose of this research is to support the National Research Master Plan (RIRN) 2017-2045 and the National Research Priority (PRN) 2020 – 2024, which stipulates national research products for the health sector [4], namely infectious diseases that are still dominant. In addition, as an illustration of which indicators are the most influential in increasing the rate of recovery. The results of the study are expected to contribute to statistical science in the health sector, especially in supporting government programs, namely the achievement of three zero HIV/AIDS elimination by 2030, namely no more transmission of new HIV infections, no more deaths from AIDS, and no more stigma and discrimination against people living with HIV/AIDS (ODHA).

Compared to previous studies, this study uses Generalized Confirmatory Factor Analysis, which is suitable for IDHS survey data with a nominal data scale. From this analysis, it can also be developed into GSEM (Generalized Structural Equation Modeling) analysis which is a combination of SEM and GLM [13].

## 2. RESEARCH METHODS

### 2.1. Data

The data used is secondary data from the Indonesia Demographic and Health Survey (IDHS) 2017 jointly carried out by the Central Statistics Agency (BPS), the National Population and Family Planning Agency (BKKBN), and the Ministry of Health (Kemenkes). Data collection took place from 24 July to 30 September 2017 in all regions of Indonesia. The implementation of the IDHS uses 4 (four) types of questionnaires, namely household questionnaires, women of childbearing age, married men, and teenage boys, where women of childbearing aged 15-49, never married aged 15-24. Of the 1,650 households selected by the IDHS, 1,607 households were found, and of these 1,594 or 99.2% of the households were successfully interviewed. Good data can be obtained from the measurement process using research instruments, generally in the form of a questionnaire [14].

### 2.2. Confirmatory Factor Analysis (CFA)

CFA is an analysis to determine whether some indicator variables represent a construct. The purpose of the CFA is to confirm the existing theory in measuring the accuracy of the parameters. CFA defines the relationship between measured and latent variables in loading factors ( $\lambda_i$ ) [15]. Therefore, the significance of the indicator in measuring the latent variable was determined using the t-test statistic [16]. The hypothesis used is as follows.

$H_0: \lambda_i = 0$  (loading factor is not significant in measuring the latent variable)

$H_1: \lambda_i \neq 0$  (loading factor is significant in measuring the latent variable)

Where  $i = 1, 2, \dots, p$  predictor variables.

T-test statistics, standard error and variance are calculated by Equation (1-3).

$$T = \frac{\hat{\lambda}_i}{SE(\hat{\lambda}_i)} \quad (1)$$

$$SE(\hat{\lambda}_i) = \sqrt{\frac{\hat{\sigma}^2}{n}} \quad (2)$$

$$\hat{\sigma}^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n-1} \quad (3)$$

Decision: If  $|T| > t_{\alpha/2, df}$ , then  $H_0$  is rejected, and it can be concluded that  $\lambda_i$  is significant in measuring the latent variable. The value of construct reliability ( $p_c$ ) is used to determine the reliability of the latent variable which is calculated by Equation (4).

$$\hat{p}_c = \frac{\sum_{i=1}^p \hat{\lambda}_i^2}{[\sum_{i=1}^p \hat{\lambda}_i^2 + \sum_{i=1}^p \hat{\delta}_i]} \quad (4)$$

If  $p_c \geq 0.7$ , then the latent variable is said to be reliable [17].

### 2.3. Goodness of Fit

Goodness of fit models are taken from 4 measures, namely Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Residual (RMSR). The explanation regarding 4 measures can be seen in **Table 1 [17]**.

**Table 1. Goodness of Fit Criteria**

No	Goodness of Fit Test	Criteria
1	CFI	> 0.90
2	TLI	> 0.90
3	RMSEA	< 0.08
4	RMSR	< 0.08

The model is said to be appropriate if it has a CFI value of more than 0.90, a Tucker-Lewis Index value of more than 0.90, an RMSEA value of less than 0.08, and an RMSR value of less than 0.09. The model is said to be inappropriate if it has a model suitability test value that does not match the criteria.

### 2.4. Research Variables

The variables of knowledge, attitude, and behavior about HIV/AIDS are the variables of this study as described in **Table 2**.

**Table 2. Research Variables**

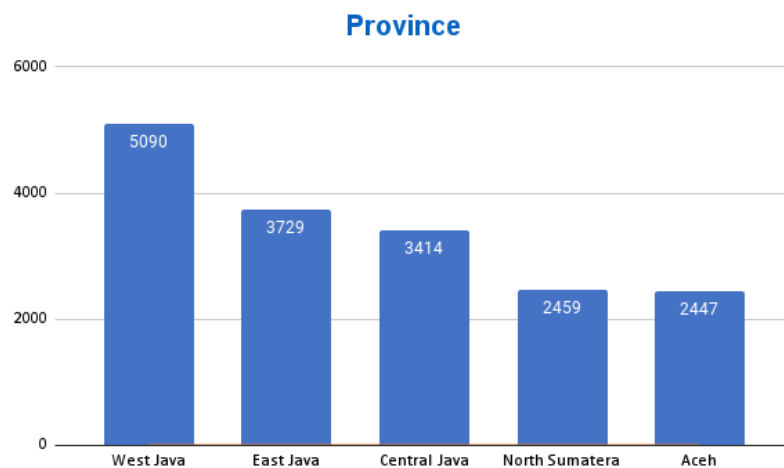
Variables	Indicators	Sub-Variables	Description	Scale	
Education (X)	Risk Source	P1	Have you ever heard of a disease called HIV-AIDS?	Nominal	
		P2	Where did you know about HIV-AIDS? Was there any other source?	Nominal	
	Risk	P3	Can a person reduce the risk of contracting HIV-AIDS by limiting sex to only someone who is not infected?	Nominal	
		P4	Can a person get the HIV-AIDS virus through mosquito bites?	Nominal	
		P5	Can a person reduce the risk of contracting the HIV-AIDS virus by wearing a condom every time they have sex?	Nominal	
		P6	Can someone get the HIV-AIDS virus by eating together on one plate with people who are infected with the HIV-AIDS virus?	Nominal	
		P7	Can a person get the HIV-AIDS virus because of witchcraft?	Nominal	
		P8	Can the virus that causes HIV-AIDS to be transmitted from a mother to her child: a) During pregnancy? b) During childbirth? c) By breastfeeding?	Nominal	
	Mother and Child	Risk	P9	Apart from AIDS, have you heard of other infections that can be transmitted through sexual intercourse?	Nominal
			P10	Have you ever heard of infections that can be transmitted through sexual intercourse?	Nominal
Attitude (Y)	Infection Identification	P11	What infections do you know of?	Nominal	
		S1	How do you know if someone is infected with HIV-AIDS?	Nominal	
	Habit	S2	Have you ever discussed with your wife/partner how to avoid contracting the virus that causes AIDS?	Nominal	
		S3	Are you going to buy fresh vegetables from farmers or sellers whom you know are infected with HIV-AIDS?	Nominal	
		S4	If a family member is infected with HIV-AIDS, will you keep it as secret?	Nominal	
		S5	If a family member is infected with HIV-AIDS, will you take care of him at home?	Nominal	
		S6	Do you think that children with HIV-AIDS can go to school together with children who are not HIV-AIDS sufferers?	Nominal	
S7	I feel ashamed if one of my family is infected with HIV-AIDS.	Nominal			

Variables	Indicators	Sub-Variables	Description	Scale	
Behavior (Z)	Knowing	S8	Are you afraid of contracting HIV-AIDS if you are exposed to the saliva of an HIV-AIDS sufferer?	Nominal	
		S9	If a wife finds out that her husband has a sexually transmitted infection, do you think she has the right to ask her husband to use a condom during sexual intercourse?	Nominal	
		S10	Is a wife justified in refusing to have sex with her husband when she finds out that his husband is having sex with another woman?	Nominal	
		R1	Can someone get the HIV-AIDS virus from sharing the same needle?	Nominal	
		R2	Do you know about the HIV/AIDS test?	Nominal	
		R3	Do you know where to get HIV-AIDS testing services?	Nominal	
		R4	In your opinion, for someone who hesitates to take an HIV test, is it because they are worried about the reaction of others if the test result is positive?	Nominal	
		R5	In your opinion, will people say bad things about people living with HIV-AIDS or people who are suspected of being HIV-AIDS sufferers?	Nominal	
		R6	In your opinion, do people with HIV-AIDS or people who are suspected of being HIV-AIDS sufferers will not respected others?	Nominal	
		Information	R7	Where did you get your information about sexually transmitted infections (STIs)?	Nominal
		Symptoms	R8	If a man has been infected by a sexually transmitted infection (STI), what are the symptoms?	Nominal
		Symptoms (woman)	R9	If a woman has been infected by a sexually transmitted infection (STI), what are the symptoms?	Nominal
		R10	During the past 12 months, have you had any sexually transmitted diseases?	Nominal	
		R11	During the past 12 months, have you experienced any abnormal changes in your genitals?	Nominal	
R12	During the last 12 months, have you had any sores/pains or ulcers in the genital area?	Nominal			
R13	Are you looking for advice or treatment?	Nominal			
R14	Where did you go for advice or treatment? Are there more?	Nominal			

### 3. RESULTS AND DISCUSSION

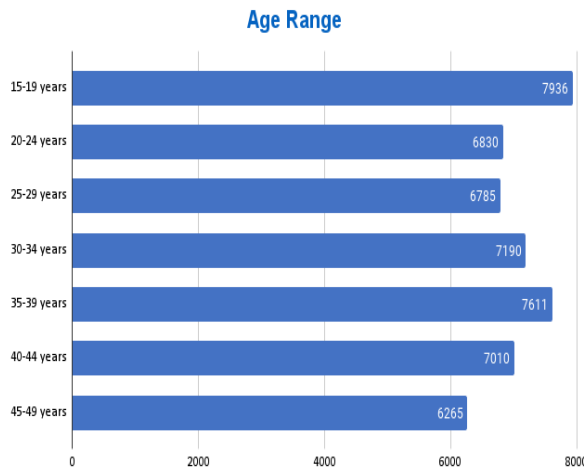
#### 3.1. Descriptive Statistics

Characteristics of respondents can be known through several variables shown in the following pictures

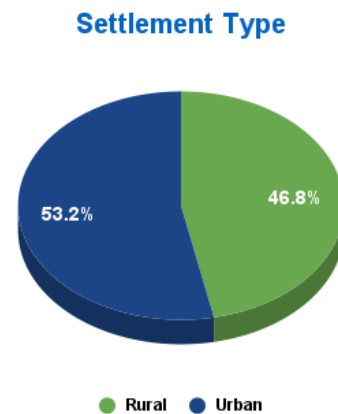


**Figure 1. Province origin**

Based on **Figure 1**, it can be seen that the largest distribution of provincial origins came from West Java Province, which was 5,090 people (10.26%). A total of 3,729 people (7.51%) were respondents from East Java Province. A total of 3,414 people (6.88%) were respondents from Central Java Province.

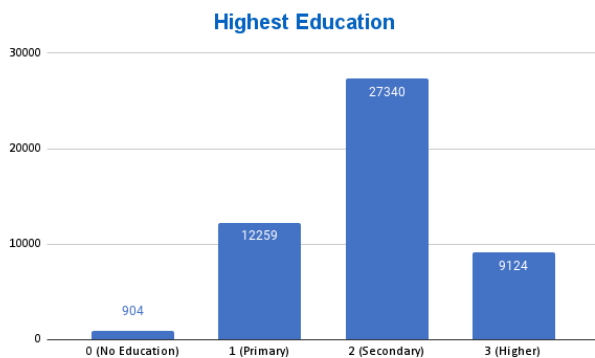


**Figure 2.** Age range

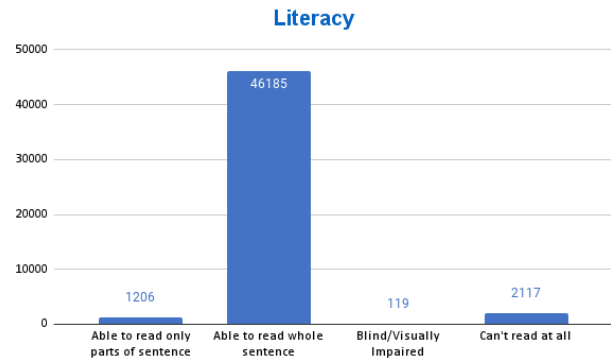


**Figure 3.** Settlement type

Based on **Figure 2**, it can be seen that the distribution of the age range of respondents is 7,936 people (15.99%) are respondents aged 15-19 years. A total of 6,830 people (13.76%) were respondents aged 20 – 24 years. A total of 6,785 people (13.67%) were respondents aged 25-29 years. Based on **Figure 3**, it can be seen that the type of rural settlement is 23,202 people (46.8%) and as many as 26,425 people (53.2%) are respondents who live in urban areas.



**Figure 4.** Highest education



**Figure 5.** Literacy level

Based on **Figure 4**, it can be seen that the most recent education taken is 27,340 people (55.09%) who are respondents with the highest education in secondary schools. Based on **Figure 5**, it can be seen that the literacy level of most research respondents is 46,185 people (93.06%) are respondents who can read all sentences.

### 3.2. Confirmatory Factor Analysis

Before performing the confirmatory factor analysis, the goodness of fit was tested. If the model meets the criteria of goodness, then the model is said to be good. The results of the model goodness test are presented in **Table 3**.

**Table 3.** Goodness of fit latent variables of knowledge, attitudes, and behavior

Goodness of Fit Test	Knowledge	Attitude	Behavior
CFI > 0.90	0.780	0.880	0.766
TLI > 0.90	0.763	0.863	0.755
RMSEA < 0.08	0.085	0.087	0.083
RMSR < 0.08	0.096	0.092	0.070*

\*) model eligible

**Table 3** shows the results of the goodness of fit test. The latent variables knowledge and attitude have CFI and TLI values less than 0.90. The RMSEA and RMSR values are more than 0.08 or do not meet the criteria for the goodness of the model, so it can be said that the model does not fit.

The latent variable Behavior has a CFI and TLI value less than 0.90. The RMSEA value is more than 0.08, while the RMSR is less than 0.08. Only the RMSR criteria meet the goodness of the model. The conclusion can be said that the model does not fit.

### 3.2.1. CFA of Knowledge Latent Variables

The loading factors value of each indicator on three variables can be seen in **Table 4**.

**Table 4.** Loading factor latent variable source, mother and child, infection, and risk

Source Indicators	Loading Factor	Mother and Child Indicators	Loading Factor	Infection Indicators	Loading Factor	Risk Indicators	Loading Factor
P2.1	0.564	P8.1	0.837	P11.1	0.355	P1	0.978
P2.2	0.314	P8.2	0.821	P11.2	0.474	P3	0.319
P2.3	0.475	P8.3	0.828	P11.3	0.739	P4	0.261
P2.4	0.613			P11.4	0.772	P5	0.322
P2.5	0.445			P11.5	0.790	P6	0.243
P2.6	0.879			P11.6	0.527	P7	0.154
P2.7	0.388			P11.7	0.528	P9	0.289
P2.8	0.604			P11.8	0.418	P10	0.979
P2.9	0.335			P11.9	0.633		
P2.10	0.628						
P2.11	0.399						
P2.12	0.907						
P2.13	0.890						
P2.14	0.915						

As seen in **Table 4**, indicator P2.14 has the highest loading factor value of 0.915, which means that the influence of indicator P2.14 on latent variable Sources is 91,5% compared to 13 other indicators. This shows that the statement P2.14, namely "Source for AIDS knowledge: other," has the greatest impact and is important to "How did people know about the HIV-AIDS virus."

On the latent variable mother and child, indicator P8.1 has the highest loading factor value of 0.837. This means that the influence of indicator P8.1 on the latent variable mother and child is 83.7% compared to 2 other indicators. This shows that the statement P8.1, namely "HIV transmitted during pregnancy," has the greatest impact and is important to "Can the virus that causes HIV-AIDS be transmitted from a mother to her child: a) pregnancy, b) birth, c) breastfeeding."

The indicator on latent variable infection that has the highest loading factor value of 0.790 is P11.5, which means that the influence of indicator P11.5 on latent variable infection is 79% compared to 8 other indicators. This shows that the statement P11.5, namely "Know STI: Chlamydia," has the greatest impact and is important to "What infections do you know of?"

Indicator P10 has the highest loading factor value of 0.979, which means that the influence of indicator P10 on latent variable risk is 97.9% compared to 9 other indicators. This shows that the statement P10, namely "Ever heard of a Sexually Transmitted Infection (STI)," has the greatest impact and is important to latent variable risk.

Furthermore, it will be seen among several variables, source, mother and child, infection, and risk, which has the greatest influence on the latent variable knowledge.

**Table 5.** Loading factor latent variable knowledge

Variable	Loading Factor	p-value
Source	0.002	0.000
Mother and Child	-0.037	0.000
<b>Infection</b>	<b>0.613</b>	<b>0.000</b>
Risk	0.182	0.000

Variable infection has the highest loading factor value of 0.613, which means that the influence of infection on latent variable knowledge is 62.3% compared to 3 others variables. This shows that the statement Infection “What infections do you know of?” has the greatest impact and is important to latent variable knowledge.

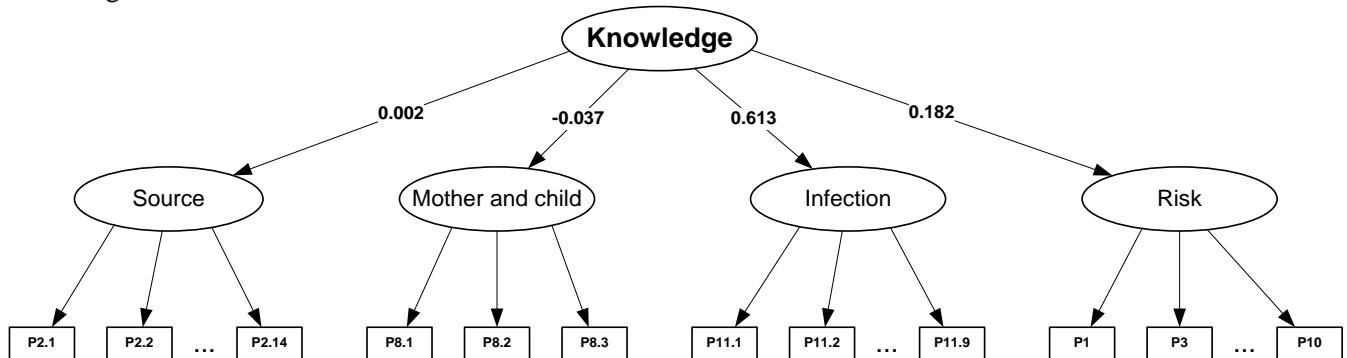


Figure 6. Knowledge variable CFA path diagram

### 3.2.2. CFA of Attitude Latent Variables

Table 6. Loading factor latent variable identification and habit

Identification Indicators	Loading Factor	Habit Indicators	Loading Factor
S1.1	0.019	S2	0.084
S1.2	0.022	S3	0.425
S1.3	0.020	S4	0.524
S1.4	15.849	S5	0.517
S1.5	0.028	S6	0.480
		S7	0.433
		S8	0.455
		S9	0.078
		S10	0.129

As seen in Table 6, the indicator S1.4 has the largest loading factor value of 15,849, which means that the influence of the indicator S1.4 on the latent variable identification is 1584,9% compared to the other 4 indicators. This shows that statement S1.4, namely "Identifying someone with HIV-AIDS using other methods," has the most influence big and important way to identify someone with HIV-AIDS. While the value of loading factors is less than 0.5 which causes the variables S1.1, S1.2, S1.3, and S1.5 to have no significant effect. This shows that S1.1 (identify through physical changes), S1.2 (identify through changes in behavior), S1.3 (identify through blood tests), and S1.5 (don't know how to identify) have no significant effect on latent variable identification.

Indicator S4 has the highest loading factor value of 0.524, which means that the influence of the S4 indicator on the latent variable habit is 52.4% compared to the other 8 indicators. This shows that the statement S4, namely "Would want HIV infection in family to remain secret", has the greatest and most important influence on the latent variable habit. While the loading factor value is less than 0.5 which causes the variables S2, S3, S6, S7, S8, S9, S10 to not have a significant effect on the latent variable habit.

Furthermore, it will be seen among several variables, identification and habit, which has the greatest influence on the latent variable knowledge.

Table 7. Loading factor latent variable attitude

Variable	Loading Factor	p-value
Identification	0.514	0.000
Habit	0.432	0.000

Variable Identification has the higher loading factor value of 0.514, which means that the influence of Identification on the latent variable Attitude is 51.4% compared to the other variable. This shows that the statement “How do you know if someone is infected with HIV-AIDS?” has the greatest and most important influence on the latent variable Attitude.



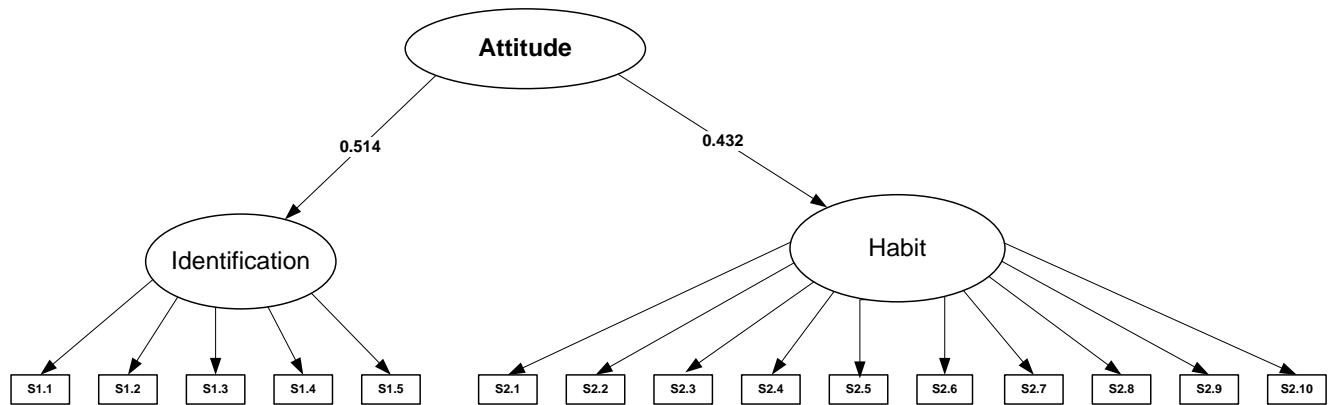


Figure 7. Attitude variable CFA path diagram

### 3.2.3. CFA of Behaviour Latent Variables

Table 8. Loading factor variables information, symptom, symptom (men), and knowing

Information Indicators	Loading Factor	Symptom indicators	Loading Factor	Symptom (men) indicators	Loading Factor	Knowing Indicators	Loading Factor
R7.1	0.798	R8.1	0.773	R9.1	0.730	R1	0.386
R7.2	0.401	R8.2	0.427	R9.2	0.547	R2	0.134
R7.3	0.593	R8.3	0.627	R9.3	0.448	R3	0.111
R7.4	0.792	R8.4	0.572	R9.4	0.596	R4	0.478
R7.5	0.535	R8.5	0.664	R9.5	0.646	R5	0.746
R7.6	0.922	R8.6	0.601	R9.6	0.684	R6	0.691
R7.7	0.438	R8.7	0.643	R9.7	0.654		
R7.8	0.721	R8.8	0.761	R9.8	0.765		
R7.9	0.343	R8.9	0.529	R9.9	0.497		
R7.10	0.615	R8.10	0.634	R9.10	0.656		
R7.11	0.448	R8.11	0.643	R9.11	0.661		
R7.12	0.867	R8.12	0.859	R9.12	0.856		
R7.13	0.863	R8.13	0.909	R9.13	0.937		
		R8.14	0.826	R9.14	0.798		
		R8.15	0.937	R9.15	0.951		
		R8.16	0.388	R9.16	0.415		

As seen in Table 8, indicator R7.6 has the highest loading factor value, which is 0.922, which means that the influence of indicator R7.6 on the latent variable information is 92.2% compared to the other 12 indicators. This shows that statement R7.6, namely "Source for STI knowledge: religious institutions," has the greatest and most important influence on "Where did you get information about sexually transmitted infections (STI)?"

On latent variable symptom, indicator R8.15 has the highest loading factor value of 0.937, which means that the influence of indicator R8.15 on latent variable symptoms is 93.7% compared to 15 other indicators. This shows that the statement R8.15, namely "Male STI symptoms: no symptoms: has the greatest impact and is important to If a man contracts a sexually transmitted infection (STI), what are the symptoms?"

The indicator that has the highest loading factor value of 0.951 is R9.15, which means that the influence of indicator R9.15 on latent variable symptoms (men) is 95.1% compared to 15 other indicators. This shows that the statement R9.15, namely "Female STI symptoms: no symptoms", has the greatest influence and is important to "If a woman contracts a sexually transmitted infection (STI), what are the symptoms?"

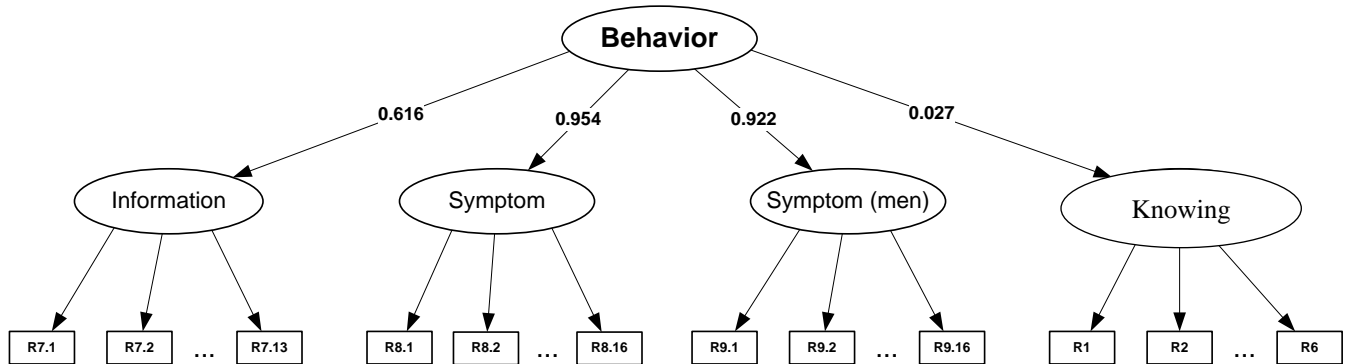
The R5 indicator has the highest loading factor value of 0.746, which means that the R5 indicator has a large influence on the latent variable knowing, which is 74.6% compared to the other 5 indicators. This shows that R5's statement, namely "People talk badly about people with or believed to have HIV", has the biggest and most important influence on latent variable knowing.

Furthermore, it will be seen among several variables, information, symptoms, symptoms (men), knowing, which has the greatest influence on the latent variable Behavior.

**Table 5. Loading factor latent variable behavior**

Variable	Loading Factor	p-value
Information	0.616	0.000
<b>Symptom</b>	<b>0.954</b>	<b>0.000</b>
Symptom (men)	0.922	0.000
Know	0.027	0.000

Variable Symptom has the highest loading factor value of 0.954, which means that the Symptom variable has a large influence on the latent variable Knowledge, which is 95.4% compared to the other 3 variables. This shows that statement “If a man has been infected by a sexually transmitted infection (STI), what are the symptoms?” has the biggest and most important influence on latent variable Knowledge.

**Figure 7. Behavior variable CFA path diagram**

Next, construct reliability (CR) is calculated to determine consistency of variable knowledge, attitudes, and behavior. Calculation results for variable knowledge can be seen as follows.

$$\hat{\rho}_c = \frac{(\sum_{i=1}^p \hat{\lambda}_i)^2}{[\sum_{i=1}^p \hat{\lambda}_i^2 + (\sum_{i=1}^p \hat{\delta}_i)]} = \frac{19.623^2}{19.623^2 + 0.367} = 0.999048$$

Based on the results of these calculations, the CR value for the variable knowledge is obtained of 0.999048 or more than 0.7. It can be concluded that the variable Knowledge has already reliable and consistent. In the same way, the CR value of the variable behavior is equal to 0.999606. The two latent variables describe a fairly high consistency or are already reliable. Variable consistency shows that significant indicators are indicators that are robust, aligned and corresponding to the formation of latent variables.

#### 4. CONCLUSIONS

The conclusion obtained from this study is that the distribution of the most respondents from the province of West Java is 5,090 people (10.26%). The top three age distributions of the respondents were 7936 people (16%) aged 15-19, 7611 people (15.3%) aged 35-39, and 7190 people (14.5%) aged 30-34. Most respondents (55.1%) were at the secondary level for the highest education level, living in urban areas (53.2%), having the poorest wealth index (22.2%), and being able to read the whole sentence (93.1%). The CFA results show that the variable P11 (about known infections) has the largest loading factor value, which is 0.613 on the knowledge latent variable. In the latent variable attitude, the variable S1 (about the identification of how respondents know someone is infected with HIV-AIDS) has the largest loading factor value of 0.514. While the behavioral latent variable, the variable R8 (if a man has ever been infected with a sexually transmitted disease (STI), what are the symptoms) has the largest loading factor value, which is 0.954. The largest loading factor value shows the most influential indicator. Suggestions for further research are to determine the relationship between latent variables using the Generalized Structural Equation Modeling (GSEM) method, so that the direction of the relationship between the three latent variables in the aggregate is known.

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