HIV Health Literacy (HALTRA) Model: A New Model Based on Information and Motivation to Eradicate Social Stigma

ABSTRACT

Background and Objectives: HIV-related health literacy is essential to influence people's beliefs about HIV/AIDS. It is also expected to reduce social stigma in the community. This study aimed to develop a model of HIV health literacy based on information and motivation toward social stigma in society.

Materials and Methods: Cross-sectional designs are applied in these studies, conducted in five administrative areas of Bandung City, West Java Province, Indonesia, between March and April 2023. Sample recruitment used proportional cluster sampling in which one hundred and sixty-one community members participated in this study with criteria: aged more than 19 years old, not having HIV disease, and having the ability to read and use digital communication tools. Data analysis used a structural equation modeling approach.

Results: HIV information, situational factors, and motivation influenced HIV health literacy. However, individual beliefs about HIV/AIDS moderated the impact of health literacy on social stigma. The HIV Health Literacy model also has a high goodness of fit index of 0.502.

Conclusion: Information and motivation factors effectively shape HIV health literacy in society. Adequate HIV health literacy can help change an individual's beliefs about HIV to prevent stigma and discrimination, thereby increasing social inclusion. The HIV Health Literacy model can be an alternative reference point in developing community HIV awareness and health literacy strategies.

Paper Type: Research Article

Keywords: Discrimination, Health Literacy, HIV, Society, Social Stigma.

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Introduction

The human immunodeficiency virus (HIV) is considered a deadly disease because it cannot be cured, and people living with HIV become marginalized (1). Policies to address social stigma are embodied in the Three Zero HIV program (zero infection, zero death, and zero discrimination) of the United Nations Programme on HIV and AIDS (UNAIDS) and adopted by Indonesia's National AIDS Commission (2). Health campaigns and education are conducted to increase understanding of HIV, correct misconceptions, and reduce negative attitudes towards people with HIV in the community. However, several reports show that there are still many instances of stigma and discrimination against people with HIV, so the programs and efforts made are considered ineffective (3–7).

HIV social stigma is an opposing view that demeans humiliates, and discriminates against people with HIV from the external environment (8,9). Social stigma arises from inaccurate, incomplete, or exaggerated information and societal misconceptions, leading to disease myths (10,11). A society that believes in disease myths and lacks the desire or motivation to rectify incorrect beliefs will result in prejudice, discriminatory behavior, and difficulty accepting the presence of people with HIV in the community (1,12,13). Similarly, inadequate literacy in HIV information reinforces social stigma (14). Developing health literacy with comprehensive information and motivational support is necessary to uncover beliefs, behavior change, and a more humane response to people with HIV.

Low levels of health literacy can hinder an individual's capacity to comprehend and accept a disease or a social issue caused by a disease (15). Low levels of health literacy are attributable to the inaccurate perception of diseases, fears, and concerns regarding their transmission, and a lack of social support, leading to various misconceptions and myths surrounding the illness (10,11,13,16). If inaccurate myths about HIV arise, they may lead to social stigmatization against people with HIV within the community (10,17,18).

The stigma associated with HIV remains a challenging issue, with complex barriers to effective resolution within the community (19,20). Factors such as knowledge of HIV/AIDS transmission, awareness of HIV disease, and information media are essential predictors of stigma and discrimination against people with HIV (10,18). Motivation to understand HIV information and control prejudice against people with HIV, neighborhood interactions, and social support contribute to health literacy and determine the incidence of stigma (21,22). In addition, individual factors such as age, gender, and education characteristics influence health literacy and result in stigma toward people with HIV (23,24).

Unresolved social stigma against people with HIV will lead to rejection of people with HIV by community members, hinder disease management, and prevent access to HIV treatment services (1). The stigma surrounding people with HIV, which creates a hesitancy to seek treatment, can exacerbate their health status. Failure to treat the disease can boost the spread of infection and, in turn, undermine efforts to lower the

frequency of new conditions in the broader community (25).

Social stigma is resolved by strengthening the health literacy of each community member (10,16,26,27). Therefore, to overcome this stigma, an HIV health literacy model needs to be developed and tested conceptually and methodologically. This literacy model refers to the capacity to obtain, understand, evaluate, and apply HIV information, as described in the Integrated Model of Health Literacy theory (28). The HIV health literacy model is structured and enhanced by a solid base of reliable information and self-motivation to search for knowledge and combat stigma. This statement refers to the theory of the Information-Motivation-Behavioural Skills Model (29).

Information plays a significant role in reducing knowledge gaps regarding HIV disease, consequently altering false beliefs and perceptions (30,31). Preventing HIV stigma requires motivation to acquire objective disease information. This knowledge can reduce prejudice due to ambiguity about the disease (32,33). Good self-motivation in applying information and controlling prejudice helps to counter inappropriate information by raising awareness of the potential for stigmatization (21). Furthermore, neither informational nor motivational models for HIV health literacy have been established, and there is no evidence of their impact on HIV-related social stigma in the community. Thus, this study aimed to develop an HIV health literacy (HALTRA) model based on information and motivation towards social stigma in the community.

Materıals and Method

Design Study and Participant

Cross-sectional designs with structural equation modeling (SEM) are applied in these studies. This study was conducted in five administrative areas of Bandung City, West Java Province, Indonesia, between March and April 2023. The study focuses on citizens residing in Bandung City. The selected sample is composed of individuals who meet the inclusion criteria. All participants were required to complete the specified criteria for this research. The inclusion criteria consisted of 1) being more than 19 years old, 2) not having HIV disease, and 3) having the ability to read and use digital communication tools. Residents who moved and became ill during the study were excluded. The necessary sample size for Maximum Likelihood estimation in structural equation modeling is 5-10 times the number of parameters that need to be measured (34). According to the rule of thumb, this study's sample size was 7 x 23 indicators/parameters, or 161 people.

Proportional cluster sampling was used for sample recruitment. The study used two random selection processes to conduct a proportional cluster sampling technique at two levels. The initial classification of Bandung City's residents was based on six administrative areas: Bojonagara, Cibeunying, Bandung Kulon, Maleer, Gedebage, and Ujung Berung. The second stage was to draw the selected sub-districts from each administrative area using a digital recruitment application with Picker Wheel (https://pickerwheel.com). The sample size of the six selected sub-districts was determined proportionally based on population. Participant recruitment for this

study has the potential to involve people living with HIV in the community because of their hidden HIV status. However, the selection of participants was more rigorous, with a more transparent letter of introduction to the research, but in language that was friendlier and did not offend people living with HIV.

Data Collection

Data collection used a digital questionnaire application. Participants were required to complete the questionnaire through an internet-accessed link with the JotForm application (https://www.jotform.com). All participants filled out all questionnaires entirely and correctly.

The application of digital questionnaires makes it possible to set each question as mandatory and not be able to answer the following question if you miss filling in the question. The questionnaires were designed to measure HIV information factors, personal factors, situational factors, motivational factors, HIV health literacy, HIV-related beliefs, and social stigma.

HIV information factor

HIV information factors in this study are facts about HIV disease that are processed and have meaning for making appropriate decisions related to the disease (35,36). The HIV information factors questionnaire has 21 items with three indicators: HIV knowledge, awareness of HIV disease, and use of information media.

Personal factors

Personal factors were evaluated using a questionnaire on unique characteristics, including age, gender, education, marital status, occupation, and income.

Situational factor

In this study, situational factors are social and environmental conditions and situations related to HIV disease that are external to individual community members (37,38). The questionnaire of situational factors comprises 24 items with four dimensions: fear of HIV, neighborhood environment, neighborly behavior, and social support.

Motivational factor

Motivational factors are indicated as personal and social drives that trigger individuals to behave and act about HIV (39). Motivational factors were assessed using the HIV-related motivation questionnaire encompassing two indicators: the need to seek HIV-related information (six items) and the need to control HIV prejudice (six items).

HIV Health Literacy

HIV health literacy refers to an individual's capability to access, understand, evaluate, and apply HIV-related health information (28,40). HIV literacy comprises 15 items with four dimensions: access to HIV information, understanding of HIV information, evaluation of HIV information, and application of HIV information. This questionnaire has a validity value with a correlation coefficient of 0.373-0.835 and Cronbach's Alpha reliability value of 0.937.

Individual Beliefs Regarding HIV Disease

Beliefs held by individuals regarding HIV are often rooted in a sense of certainty that they possess the truth about the description of the disease. This attitude can be subjective, lacking objectivity and a willingness to consider alternative perspectives (41). The individual beliefs questionnaire related to HIV disease consists of 24 items with four indicators: the perceived threat, perceived

benefits, perceived barriers, and self-efficacy. This questionnaire has a validity value with a correlation coefficient of 0.368-0.807 and Cronbach's Alpha reliability of 0.926.

HIV Social Stigma

The HIV social stigma is seen as an opposing view or judgment that demeans PLHIV by non-HIV members of the community (42). The HIV-stigma questionnaire for PLHIV consists of 22 items with five indicators: labeling, prejudice, stereotyping, segregation, and discrimination. This questionnaire has a validity value with a correlation coefficient of 0.432-0.942 and Cronbach's Alpha reliability value of 0.967.

Data Analysis

Model testing in this study used Partial Least Squares - Structural Equation Modelling (PLS-SEM). PLS is used to establish relationships for which there is no theoretical basis or to test propositions. We analyze the measurement and structural models from the HIV health literacy model based on information and motivation.

Ethical Consideration

This study received ethical approval from the Research Ethics Committee of the Faculty of Nursing, Universitas Airlangga, Indonesia (number 2802-KEPK). Before completing the questionnaire, participants were informed about the purpose of the study, the benefits of the study, the risks of the research, and the study procedures. The study information was explained both verbally and in writing on the digital information sheet given to the participants. Informed consent was obtained from all participants who agreed to participate in this study. The researcher kept all participants' identities confidential and stored the data securely for the required period.

Results

The personal characteristics of people without HIV are shown in Table 1. A total of 161 people participated in this study. In this study, all respondents recruited according to the inclusion criteria agreed to participate in the research entirely, and no respondents refused or dropped out. All respondents are citizens of Bandung City, West Java Province, Indonesia. Most respondents are between 19 and 45, and most are female (55.3%). Most citizens have a university degree (67.7%), and most respondents are married (67.1%). Most respondents were employed (76.4%), with almost all earning less than the regional minimum wage (55.2%).

Measurement Model Analysis

The measurement model specifies the relationship between the estimated indicators or parameters and their latent variables. Measurement model testing is carried out using convergent validity, discriminant validity, and construct validity assessments.

Convergent validity

Convergent validity is assessed using the loading factor and average variance extracted (AVE). Indicators are considered valid if the loading factor value is more significant than 0.5, and the AVE value is good if it is more important than 0.5 (43). Figure 1 shows the loading factor in the initial test, where there are several manifest variables with a loading factor value >0.5 so that they are declared valid. Meanwhile, several manifest variables have a loading factor value <0.5 and are declared invalid. These indicators include disease awareness (DA), age (AG), marital

status (MS), occupation (OC), income (IN), fear of HIV (FH), perceived threat of the disease (PT), and perceived benefits of the interaction (PE). In addition, the indicator model is re-estimated after removing indicators with a loading factor value <0.5 from the model. Table 2 shows the estimate of a further test of the model, which shows the convergent validity index as seen through the AVE value of all latent variables. The results of the AVE for each construct are > 0.5. However, the AVE of the personal factor is 0.426, so it is not valid.

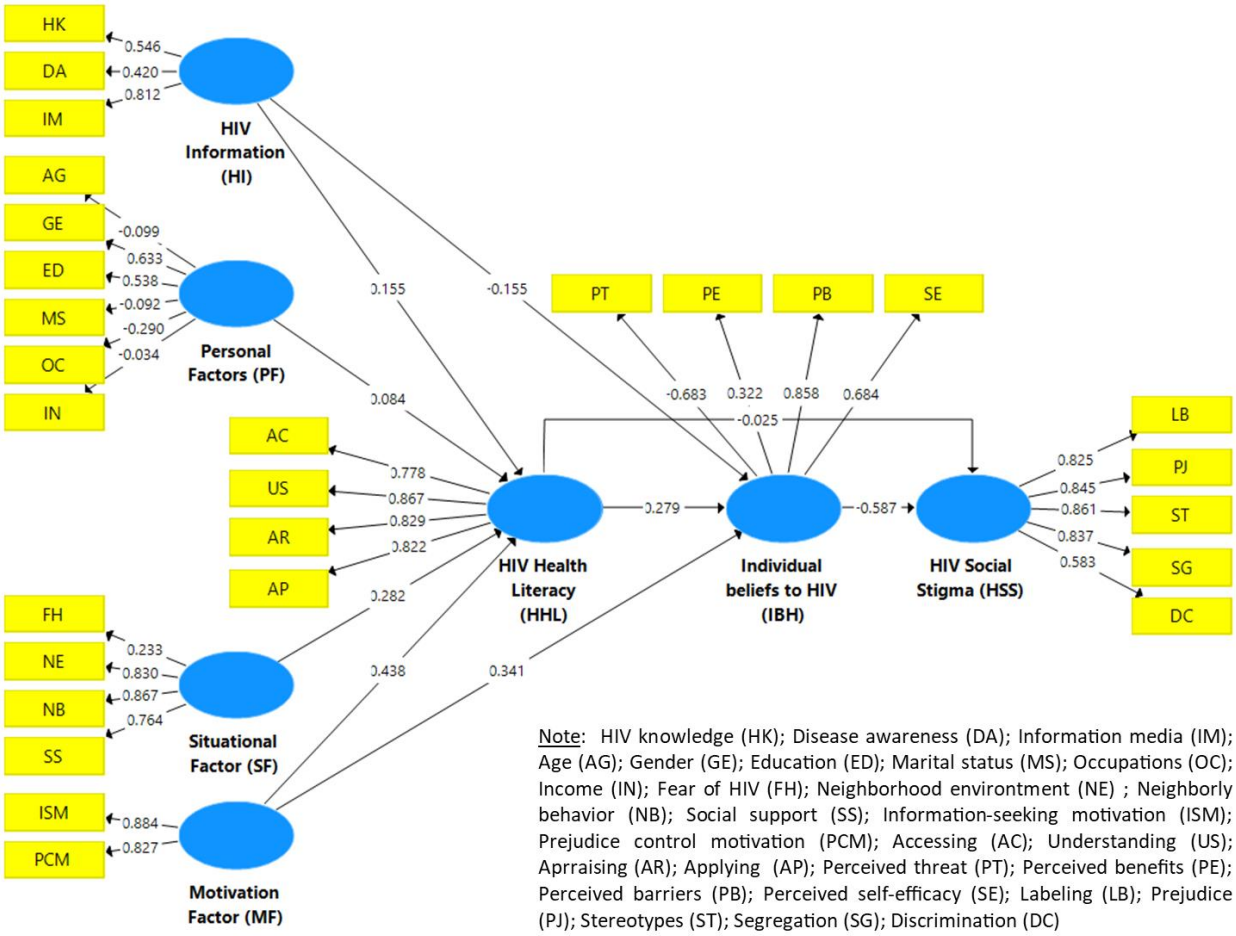
Table 1. Personal Characteristics of People without HIV (n=161)

Characteristics		Frequency (f)	Percentage (%)
Age	19-25 years	65	40.4
	26-45 years	69	42.9
	More than 45 years	27	16.8
Gender	Male	72	44.7
	Female	89	55.3
Education	Junior secondary school	7	4.3
	Senior secondary school	58	36.0
	College/university	96	67.7
Marital status	Not married	51	31.7
	Married	108	67.1
	Widower/widow	2	1.2
Employment	Not working	35	21.7
	Working	123	76.4
	Retired	3	1.9
Income	Below the minimum wage of IDR 3,774,860-	89	55.2
	Equal to UMR IDR 3,774,860-	15	9.3
	Above the minimum wage IDR 3,774,860,-	57	35.4
Domicile by administrative region	Bojonagara Region	30	18.6
	Bandung Wetan Region	11	6.8
	Bandung Kulon Region	51	31.7
	Maleer Region	31	19.3
	Gedebage Region	23	14.3
	Ujung Berung Region	15	9.3

Personal Characteristics of People Without HIV

Construct Validity

Construct validity measures concept consistency using Cronbach's Alpha or composite reliability (ρc). This value reflects the reliability of all indicators in the model. The minimum value is 0.6 - 0.7, ideally 0.8 or 0.9 (43). From Table 2, each variable generates an ideal composite reliability value. The composite reliability (ρc) index for HIV information, situational factors, motivational factors, HIV health literacy, HIV-related beliefs, and social stigma in the model were reliable, with ρc values between 0.674 and 0.895. However, one variable, personal factors, has a reasonably reliable ρc value of 0.592 (ρc < 0.6).



Note: HIV knowledge (HK); Disease awareness (DA); Information media (IM); Age (AG); Gender (GE); Education (ED); Marital status (MS); Occupations (OC); Income (IN); Fear of HIV (FH); Neighborhood environtment (NE) ; Neighborly behavior (NB); Social support (SS); Information-seeking motivation (ISM); Prejudice control motivation (PCM); Accessing (AC); Understanding (US); Aprraising (AR); Applying (AP); Perceived threat (PT); Perceived benefits (PE); Perceived barriers (PB); Perceived self-efficacy (SE); Labeling (LB); Prejudice (PJ); Stereotypes (ST); Segregation (SG); Discrimination (DC)

Figure 1. Factor loadings resulting from running the first iteration

Discriminant Validity

Discriminant validity tests how much the latent construct differs from other constructs. Discriminant validity is assessed using the Fornell-Larcker criterion for each construct. The Fornell-Larcker criterion is good if the AVE's square root on the construct is higher than the construct's correlation with other latent variables (43). Based on the measurement of the Fornell-Larcker criterion test, the results in Table 2 show that the square root of the AVE of all latent variables is between 0.653 and 0.856 and is more significant than the correlation value with other latent variables. The constructs in the model can explain the **phenomenon** measured.

Structural Model Analysis

Structural model showing is a test to explain the causal relationship between latent variables or evaluate the goodness of fit of a model. In testing this inner model, the test is obtained by performing a bootstrapping or resample procedure of 1000 samples.

Hypothesis testing was used to confirm statistically significant values and to test hypothesis relationships between constructs. Hypotheses are tested using the t-statistic test. The criteria for hypothesis testing indicate whether the T-statistic value ≥ T-table (1.96) or p-value ≤ 0.05 (α = 5%) (43).

Table 2. AVE Index, Cronbach's Alpha, Composite Reliability, and Fornel-Larcker Criterion in the Advanced Measurement Model

Latent Variables	AVE	Cronbach's Alpha	Composite reliability (ρc)	Fornell-larcker criterion
HIV Information (HI)	0.521	0.591	0.674	0.722
Personal Factors (PF)	0.426	-0.361	0.592	0.653
Situational Factors (SF)	0.688	0.773	0.869	0.829
Motivation Factors (MF)	0.733	0.638	0.846	0.856
HIV Health Literacy (HHL)	0.680	0.843	0.895	0.825
Individual Belief to HIV (IBH)	0.698	0.578	0.821	0.835
HIV Social Stigma (HSS)	0.633	0.853	0.894	0.796

Path coefficients are a value that indicates the direction of the relationship, whether the hypothesis has a positive or negative direction.

If the value in the range 0 to 1 is positive, the value in the range -1 to 0 is negative. Table 3 shows that HIV information factors, situational factors, and motivational factors positively influence HIV health literacy. Motivational factors and HIV health literacy also positively influence HIV-related beliefs. Similarly, HIV-related beliefs had a significant adverse effect on social stigma. However, there was no significant effect of personal factors on HIV health literacy, HIV information factors on HIV beliefs, or HIV health literacy on social stigma. Therefore, we reduced the non-significant pathways to create the final model.

Table 3. Model Hypothesis testing

Hypothesis	Path	Original Sample (O)	T-statistics	p-value	Decision
H1	HIV Information (HI) → HIV Health Literacy (HHL)	0.174	2.628	0.003	Supported
H2	Personal Factors (PF) → HIV Health Literacy (HHL)	0.053	1.001	0.158	Not supported
H3	Situational Factors (SF) → HIV Health Literacy (HHL)	0.280	4.569	0.000	Supported
H4	Motivation Factors (MF) → HIV Health Literacy (HHL)	0.457	6.316	0.000	Supported
H5	HIV Information (HI) → Individual Belief in HIV (IBH)	-0.155	1.317	0.094	Not supported
H6	Motivation Factors (MF) → Individual Belief to HIV (IBH)	0.354	4.268	0.000	Supported
H7	HIV Health Literacy (HHL) → Individual Belief in HIV (IBH)	0.295	3.928	0.001	Supported
H8	HIV Health Literacy (HHL) → HIV Social Stigma (HSS)	-0.043	0.496	0.310	Not supported
H9	Individual Belief in HIV (IBH) → HIV Social Stigma (HSS)	-0.500	6.581	0.000	Supported

Coefficient of Determination R2 (R-square)

The coefficient of determination is a number that shows the amount of influence exogenous latent variables have on endogenous latent variables. The coefficient of determination is used to determine the magnitude of the contribution of exogenous variables to endogenous variables (43). As a cut-off value, an R2 value of 0.10 is the minimum acceptable value for the model. R2 values greater than 0.67 are considered substantial, values between 0.67 and 0.33 are considered moderate, and values less than 0.33 are considered weak (44).

The calculation of the coefficient of determination R2 of this model is shown in Table 4. Based on the calculation results, 37.0% of the variability of beliefs related to HIV disease is moderately influenced by HIV health literacy, HIV information factors, and motivational factors. In contrast, the rest is influenced by other variables not included in the model. Likewise, the variability value of social stigma of 25.1% is weakly influenced by HIV health beliefs and HIV health literacy in the model, and the rest is influenced by other variables not included in the model. Information, personal, situational, and motivational factors moderately influenced the variability of HIV health literacy of 51.9%. In contrast, the rest was influenced by other variables not included in the model.

Prediction Relevance Q2 (Q-square)

The predictive relevance test Q2 (Q-square) or Stone-Geisser is performed to measure how well the observations produced by the model and its parameter estimates match. If the Q2 value is greater than 0 (zero), the model has predictive relevance or is relevant if applied to different areas. However, if the Q2 value is less than 0 (zero), the predictive relevance is lower (43). The results of the predictive relevance test Q2 of the dependent variable in the model are more significant than 0 (zero), as shown in Table 4. This indicates that the model has satisfactory predictive relevance and is suitable for predicting endogenous variables.

Table 4. Coefficient of Determination R2 and Prediction Relevance Q2 for Endogenous Variables

Dependent Variable	R-square	Remark	Q2)\(=1-SSE/SSO)
HIV Health Literacy (HHL)	0.519	Moderate	0.337
Individual Belief to HIV (IBH)	0.370	Moderate	0.228
HIV Social Stigma (HSS)	0.251	Weak	0.147

Effect Size (f2)

The effect size (f2) indicates the degree of relict influence of exogenous latent variables on endogenous latent variables with an average change in R2. It is calculated as the increased R2 of the latent variables whose paths are connected. Based on the guidelines introduced by Cohen (45), an effect size can be assessed if the F2 value is less than 0.02, which indicates no effect size, 0.02 to 0.15 indicates a small effect, 0.15 to 0.35 indicates a medium effect size and more than 0.35 indicates a significant impact of the endogenous latent variable. Table 5 shows the effect size of the exogenous latent variables on the endogenous latent variables in the final model. The table shows that the effect size of some exogenous variables is low (0.058 - 0.115) and medium (0.286 - 0.334).

Table 5. Effect Size (f2) for the model

Exogenous Latent Variable	Endogenous Latent Variable	f-squared (f2)	Effect Size
HIV Information (HI)	HIV Health Literacy (HHL)	0.058	Weak
Situational Factors (SF)	HIV Health Literacy (HHL)	0.115	Weak
Motivation Factors (MF)	HIV Health Literacy (HHL)	0.286	Moderate
	Individual Belief to HIV (IBH)	0.109	Weak
HIV Health Literacy (HHL)	Individual Belief to HIV (IBH)	0.075	Weak
Individual Belief to HIV (IBH)	HIV Social Stigma (HSS)	0.334	Moderate

Goodness of fit (GoF)

PLS model testing can identify global optimization criteria for the Goodness of Fit (GoF) index. GoF index criteria include 1) 0.00-0.10 low category, 2) 0.25-0.37 medium category, and 3) 0.38-1.00 high category (43, 46). The GoF index is calculated manually using the following formula:

$$\boldsymbol{GoF} = \sqrt{\overline{\boldsymbol{AVE}}\ \boldsymbol{x}\ \overline{\boldsymbol{R^2}}}$$

$$GoF = \sqrt{0.659\ x\ 0.382}$$

$$GoF = \sqrt{0.252}$$

$$GoF = 0.502$$

Based on the above calculations, the GoF index of the final model is 0.502, which is a considerable GoF measure, as it is in the range of 0.38-1.00, which is in the high category(43,46). Thus, the final HALTRA model based on information and motivation against social stigma in the community is powerful in explaining the research variables.

Final Model Fit of the HIV Health Literacy Model

The final model in this HALTRA model is a fit model that has reduced the relationship between variables with no significant effect, as shown in Figure 2 Based on this figure, the final model of the HIV health literacy model based on information and motivation is formed from several latent variables, including HIV information factors, situational factors, motivational factors, HIV health literacy, individual belief in HIV, and social stigma.

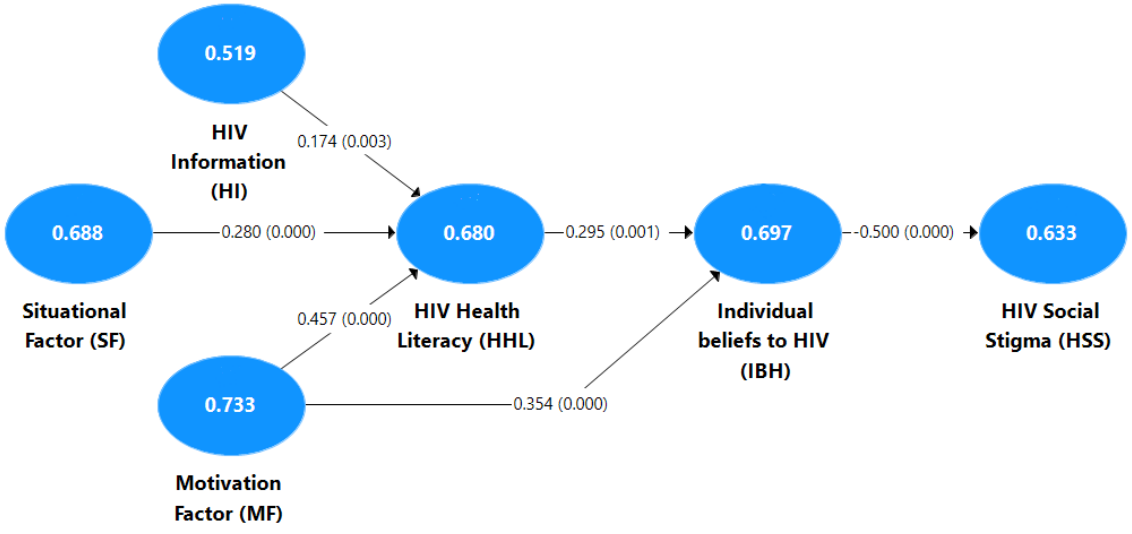


Figure 2. Final Model of HIV Health Literacy Model

Discussion

The study findings show that the HIV health literacy (HALTRA) model based on information and motivation has a significant effect on social stigma in the community. In addition, this recent study revealed various findings. First, HIV-related information factors positively influenced adequate HIV health literacy. Consistent with the Integrated Model of Health Literacy proposed by Sørensen et al. (28), health literacy is a concept based on informational factors and cannot be formed without information. Even concerning the Information-Motivation-Behavioural Skills Model (IMB) theory, health information is required to create healthy behavior through the intermediary of behavioral skills (29).

Individuals accessing comprehensive health information are more likely to develop sufficient health literacy skills (47,48). In the context of social issues related to HIV in the community, information factors serve as the foundation for developing quality health literacy. Skilled health literacy is demonstrated through an individual's ability to use the gathered information efficiently (49,50). The information obtained underpins a person's response to a fluctuating condition, interacts, and communicates with others to expand knowledge and make decisions related to health (51). Therefore, this information factor encourages people to analyze and react in a relevant manner to social problems caused by the disease in the community. Individuals who are well-informed about HIV will ultimately be more cautious yet open to interacting with people who have HIV because they are "well-informed."

Second, the finding indicates that personal factors do not impact health literacy. The study's findings align with Guo et al. (52), who said that personal factors do not directly determine a person's health literacy. Health literacy is primarily influenced by individual characteristics such as knowledge, self-efficacy, social support, and health status. In this model, the lack of influence of personal factors on health literacy is scientifically justified. This is because the individual characteristics that make up the subjective factors in this model do not have an extensive range of differences.

Third, situational factors influence health literacy. Good neighborhood environment, neighborhood behavior, and social support will impact high health literacy related to HIV. This finding aligns with the Integrated Model of Health Literacy proposed by Sørensen et al. (28). The theory demonstrates that situational factors, including social support, family, group, and physical environment, impact health literacy. The social environment's impact is an element that can encourage social communication, interaction, and physical activity in the community (53). Those who reside within proximity offer valuable feedback for developing behavior (54). People who are active in the neighborhood have many opportunities to interact with each other. This interaction in the neighborhood will lead to mutual influence among community members. Therefore, the more significant the impact of the environment and neighborhood behavior on social interactions, the more influential the increase in adequate HIV health literacy.

Fourth, individual motivation positively influences HIV health literacy. Strong personal motivation to seek HIV information and control prejudice against PLHIV resulted in changes in HIV health literacy among community members. The study's findings align with previous research, indicating that health literacy is adequate when coupled with motivation (28,55). The motivation was related to health literacy, as individuals' health motivation influences their behavioral skills and health behaviors. Motivation is a dynamic concept that results from internal and external motives leading to decisions and behaviors through behavioral skills such as health literacy. Thus, individuals motivated to seek information significantly enhance health literacy when applying HIV-related knowledge.

Fifth, the findings show that HIV information factors do not directly influence beliefs related to HIV disease. This finding supports the Information-Motivation-Behavioural Skills Model (IMB) theory that health information helps to influence health behavior by meditating on health skills (29). Similarly, other studies mention that information does not significantly increase perceptions or beliefs about disease threats (56). Health or disease information becomes meaningful when it is processed. Information needs to be processed to be understood, interpreted, and evaluated, which is health literacy. Information that has been processed through the stages of health literacy remains intact and has an impact on efforts to uncover individual beliefs about their views on HIV disease and people with HIV.

Sixth, the finding shows that motivation influences beliefs about HIV disease. Someone who has a solid motivation to get information and prevent misinformation about HIV has a positive effect on forming the right thoughts and positive beliefs related to HIV disease. The motivation to know about HIV is a trigger for understanding the disease in depth. Motivation encourages individuals to resolve uncertainty. This uncertainty is often a barrier to action (57). Highly motivated people feel they have a better understanding of HIV, how it is transmitted, and how it can be prevented. Ultimately, this motivation encourages individuals to believe positively about the disease and people with HIV.

Seventh, HIV health literacy was found to have a significant effect on HIV-related beliefs. Adequate HIV health literacy will increase the beliefs related to HIV disease in individuals. The findings are supported by Fleary et al. (58), who state that adequate health literacy translates into awareness and influences individuals' beliefs about illness. Other studies have also shown that health literacy is independently associated with health beliefs, which are important determinants of behavior change (59). In other words, an individual's HIV-related beliefs mediate health literacy in accessing, understanding, evaluating, and applying HIV information to correct HIV-related misconceptions in the community.

Based on this model, HIV health literacy can influence behavioral outcomes in the form of changes in social stigma through the formation of individual beliefs about HIV disease. This model is also supported by previous research using the Health Belief Model theory as a model for predicting infectious disease prevention behavior.

Previous research explains that health literacy plays a role in transforming health information into a belief that impacts health behavior (60, 61). Health literacy interactively enables individuals to extract health information and derive meaning from the beliefs formed. People with good health literacy will be able to alter beliefs to be more open, making it easier to accept the presence of people with HIV in society.

Eighth, health literacy does not directly influence social stigma. Health literacy has an optimal impact on changing social stigma when mediated by individual beliefs regarding HIV (58, 59). Health literacy as a form of knowledge and competence plays a role in stimulating cognitive and affective change (28). Meanwhile, social stigma is a negative and demeaning view, evaluation, attitude, and behavior of other people or groups perceived to be different (8). Based on these theories, social stigma includes manifestations of cognitive, affective, and behavioral domains. Thus, the lack of a direct effect of health literacy on social stigma is reasonable, as health literacy does not include affective elements. Affective are attitudes, values, emotions, and feelings that can complement behavior (62). This affective domain manifests itself as a form of self-belief. Social stigma towards PLHIV can be influenced by HIV health literacy, but it requires the presence of individual beliefs about HIV disease.

Ninth, the study findings prove that HIV-related beliefs have a direct influence on HIV social stigma. The Health Beliefs Model (HBM) theory suggests that an individual's behavior is shaped by their beliefs regarding the illness (41). Individual beliefs about illness affect how a person views or treats people who are seen as different, especially people with HIV. Two studies confirmed that societal beliefs that HIV is highly contagious and a disease with severe symptoms contribute to HIV stigma (1). In this study, the model argues that beliefs about HIV disease determine stigmatizing or stigma-preventing behavior. An individual's beliefs about the disease are formed because of the perceived threat, the perceived benefits or barriers to interaction, and the self-efficacy to interact with people with the disease. Thus, if individuals have an excellent tendency to assess self-beliefs related to threats, benefits, barriers, and self-efficacy in interacting with people with HIV, the potential for social stigma in the community will be prevented.

Study Limitations and Strengths: First, the unique social and cultural characteristics of our study's location will influence the generalizability of our findings. Indonesian society is socially prominent, but in this study, participants are dominated by a single ethnic group, the Sundanese of West Java Province. The second limitation is that self-reporting questionnaires are less effective than direct observation. Individuals may feel stigmatized if they respond to questionnaire questions. The third limitation of the study is that data was collected from only one city. Future research should consider involving all cities in Indonesia to generalize the model developed.

Conclusions

The HALTRA model is based on strengthening information and motivation to change beliefs about disease threats, benefits, barriers, and confidence in interacting with people with HIV. Adequate health literacy works to translate disease awareness and influence

individual beliefs related to HIV disease, thus ultimately reducing the social stigma in the community. In addition, a systematic HIV health literacy model will increase health literacy and enhance disease beliefs, which will reduce stigma and discriminatory behavior towards people with HIV. This HALTRA model can be implemented as a framework for nursing intervention in HIV/AIDS care and community nursing. This HIV health literacy model can guide the development of intervention strategies in modules, standard operating procedures, and digital-based implementation strategies such as artificial intelligence approaches. Future research can articulate this health literacy model in the form of module-based education to prevent the phenomenon of social stigma related to HIV in society.

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Consent for publication: Not applicable.

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