HIV Health Literacy Education (HALTRA-EDU): Strategies to Promote Social Acceptance toward People Living with HIV

ABSTRACT

Background and Objectives: Low social acceptance, accompanied by high levels of social stigma, gives rise to rejection by community members towards people living with HIV. Health literacy education to increase community awareness of people living with HIV is essential. This study aimed to evaluate the effect of HIV health literacy education on the social acceptance of people with HIV in society.

Materials and Methods: Quasy experiment design with pre-test and post-test with a control group was applied in these studies. Sample recruitment used purposive sampling in which 70 community members who were not HIV-infected from Bandung, Indonesia, participated in this study. The intervention provided was HIV health literacy education, which had four phases during four weeks of meetings. The data analysis used a Wilcoxon Signed Rank test and an ANCOVA analysis.

Results: The HIV health literacy education strategy significantly influences the social acceptance of people with HIV. Significant differences were found in social acceptance of people with HIV between the intervention and control groups (F=22.300; p=0.001). The intervention group improved social acceptance, with the mean score rising by 5.88 points, from a pre-test score of 38.49 ± 6.71 to a post-test score of 44.37 ± 5.33.

Conclusion: The HIV health literacy education strategy contributes to the social acceptance of HIV in individuals. After attending HIV health literacy education, individuals have the potential to understand more about HIV disease comprehensively. Thus this strategy strengthens individuals to correct prejudices and grow behavior of acceptance, tolerance, and support for people with HIV.

Paper Type: Research Article

Keywords: Health Literacy, Health Education, Social Acceptance, Society, Stigma.

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Introduction

Low social acceptance due to high levels of social stigma creates rejection by community members towards people with HIV, hinders treatment of the disease, and hinders access to HIV treatment services (1–4). Social stigma that results in reluctance to seek treatment for people with HIV/AIDS will worsen their health condition. Social stigma also increases the prevalence of infection due to undetected spread, thus affecting efforts to reduce the rate of new infections in society (5, 6). Globally, there will be 39 million people living with HIV at the end of 2022, with 1.3 million new infections in 2022 (7). Likewise, in Indonesia, the cumulative number of people with HIV reported as of March 2022 is 329,581 people. In a period of three months, from January to March 2022, 10,525 new cases of people with HIV were found in Indonesia (8). This condition of HIV infection indicates that HIV cases are still a problem that has not been addressed since its first appearance both globally and in Indonesia.

In 2021, the city of Bandung is in second place, the city with the highest cumulative number of HIV cases at 2,397 people in West Java Province, the third province with the most HIV cases in Indonesia at 46,978 cases (9,10). Meanwhile, incidents of stigma against people with HIV/AIDS also occur in society. A survey of 400 Bandung City residents found that 58.7% of residents had a negative stigma towards people with HIV/AIDS (11). Likewise, another survey of 97 Bandung City residents found the same thing, where all residents involved in this survey had a negative stigma towards people with HIV/AIDS (12). Stigma and rejection in Bandung include negative labeling, prejudice, ostracism, and discomfort when close to people with HIV/AIDS (12, 13). When societal stigma against HIV is prevalent, social acceptance significantly suffers, resulting in increased exclusivity. It is essential to dismantle these harmful perceptions to foster a more inclusive and accepting community for all individuals living with HIV.

Social acceptance is the process of embracing and valuing individuals or groups, fostering a sense of belonging and community within society (14). The low social acceptance and public beliefs regarding HIV, which tend to be negative, are motivated by a lack of adequate knowledge, which cannot be separated from varying levels of health literacy. A health literacy survey related to HIV in Indonesia among 22,864 people (15-25 years) found that 14.1% had comprehensive HIV knowledge, but 85.9% of respondents showed a stigmatizing attitude towards PLHIV (15). Meanwhile, a survey in West Java Province found that the majority of people had low health literacy regarding HIV (56.7%) (16). Health literacy impacts a person's understanding and views of an illness (17). Low health literacy due to inaccurate disease perceptions, fear, and worry about HIV infection can result in stigma towards people with HIV/AIDS and reduce social acceptance in society (18–22).

Handling responses to social problems resulting from negative public beliefs to increase the community acceptance index must be done by strengthening public health literacy (21, 23–25). Health literacy has functions to translate information and influence individual beliefs regarding disease, thereby ultimately preventing social stigma and increasing community acceptance of

people with HIV (26, 27). By referring to the Integrated Model of Health Literacy and HIV Health Literacy (HALTRA) Model (28, 29), increasing health literacy regarding HIV is developed through the HIV Health Literacy Education (HALTRA-EDU) strategy.

In this HIV health literacy education, the intervention is carried out by strengthening the ability to access, understand, assess, and apply HIV information to become truthful information related to HIV disease. HIV health literacy strategies have not been widely developed, and their impact on community acceptance of people with HIV has not been proven. The study aimed to evaluate the effect of HIV Health Literacy Education (HALTRA-EDU) on the social acceptance of people with HIV in the city of Bandung.

Materials and Methods

This study employed a quasi-experimental, pre-test/post-test design with a control group to assess the effectiveness of an HIV Health Literacy Education (HALTRA-EDU) program. Both the intervention and control groups underwent baseline assessments (pre-test). Participants in the intervention group received the targeted educational program designed to enhance HIV-related health literacy. In contrast, the control group received the standard intervention, which involved the routine care and education typically provided to individuals in similar community settings. This standard intervention generally includes basic health information and standard HIV education but lacks the focused approach aimed at improving comprehensive health literacy provided by the experimental program. The standard intervention served as a comparison, allowing the study to determine whether the specialized educational program led to significant improvements beyond what is typically achieved with routine care. By comparing outcomes between the two groups, the study was able to rigorously assess the additional impact of the specialized intervention. At the conclusion of the study, both groups completed final assessments (post-test) to measure changes in health literacy and other relevant outcomes.

This study's participants were community members of Bandung City, West Java, Indonesia. The inclusion criteria determined include 1) community members from the two sub-districts with the highest number of HIV cases in Bandung City who will then be grouped into intervention and control groups; 2) aged 19-59 years; 3) not a person with HIV; and 4) able to use electronic communication media or devices. The exclusion criteria were residents who moved their domicile during the research and experienced visual or hearing problems. This study also applied drop-out criteria if residents experienced illness or emergency conditions during the intervention and did not complete the intervention.

The sample size was determined using the hypothesis test formula for comparing different proportions between two groups, with a significance level of 5% ($Z_{1-}\alpha/2 = 1.96$) and a test power of 90% ($Z_{1-}\beta = 1.28$), with an additional 10% added to account for potential dropout (30). This resulted in a total of 70 participants, with 35 in the intervention group and 35 in the control group. The sample recruitment was carried out using a purposive sampling technique, selecting participants based on predefined eligibility

criteria relevant to the study's objective. The sampling frame consisted of individuals from the community setting who were at risk for HIV or could benefit from improved HIV health literacy, excluding those with extensive prior HIV education or those unable to participate due to logistical or health-related constraints. Once the sample was identified, participants were randomly assigned to either the intervention or control group using the "Picker Wheel" internet application, which randomly selected names from the list of recruited individuals. This method ensured an unbiased allocation of participants to the intervention group, which received the HIV Health Literacy Education (HALTRA-EDU) program, and the control group, which received the standard intervention. This recruitment process ensured that the sample was representative of the target population while maintaining fairness in group allocation.

Data collection used a digital questionnaire application. Participants were required to fill out the questionnaire via an internet-accessed link. The questionnaires were designed to measure personal characteristics and social acceptance toward people living with HIV. The community members' characteristics were studied using a demographic characteristics questionnaire. Meanwhile, the community social acceptance variable related to people with HIV was measured using the Societal Acceptance toward People with HIV/AIDS Scale developed by researchers. The societal acceptance scale consists of nine items evaluated on a 5-point Likert scale, from strongly agree (score=5) to strongly disagree (score=1). It measures acceptance levels objectively, with the final score calculated by summing the individual item scores (range score 9 to 45). A six-panel of experts has evaluated this scale. One expert was from a hospital in Cirebon, and two were from a university in Bandung, and three expert were from university in Surabaya. All experts has extensive experience with individuals living with HIV and a thorough understanding of the HIV. This questionnaire consists of two dimensions: 1) acceptance behavior with three items and 2) tolerance and support with six items. This questionnaire has psychometric properties: content validity (CVI) index of 1.00; content validity ratio (CVR) index of 0.67 to 1.00; Cronbach's alpha coefficient of 0.930; the correlation score of each item on the scale ranged from 0.546 to 0.826.

The intervention given is HIV health literacy education, which is named HIV Health Literacy Education (HALTRA-EDU), which refers to the Integrated Model of Health Literacy and HIV Health Literacy (HALTRA) Model (28, 29). Health literacy has four dimensions: the ability to access, understand, assess, and apply information. In this research, the formation of these four literacy skills is linked to the HIV context and carried out through four educational stages. The meetings were conducted face-to-face (offline).

1) The first phase of strengthening the ability to access HIV information is brainstorming and educating the first topic: knowing and understanding HIV (duration 60 minutes in the first week).

2) The second phase of increasing the ability to understand conditions in people with HIV is through educating the second

topic: situations related to HIV disease (duration 60 in the second week).

3) The third phase of increasing the ability to assess HIV information is through educating the third topic: misinformation and disinformation related to HIV disease (duration 80 minutes in the third week).

4) The fourth phase of empowering the ability to apply HIV information is through educating the fourth topic: preventing social stigma related to HIV (duration 80 minutes in the fourth week).

The four intervention stages are based on the HIV Health Literacy (HALTRA) Model, which highlights the essential phases of accessing, understanding, appraising, and applying HIV-related information (31). Furthermore, according to the SECI Model (socialization, externalization, combination, and internalization), education implementation occurs continuously through distinct stages (32). After carrying out the entire series of educational activities, one month later, a follow-up was conducted by reassessing all participants' social acceptance index.

Data analysis in this study used descriptive and inferential analysis. Descriptive analysis was conducted on demographic data such as age, gender, marital status, education, employment status, and community social acceptance. Meanwhile, inferential analysis was performed using the Wilcoxon Signed Rank test to analyze the difference between pre-test and post-test scores in the intervention and control groups. A one-way analysis of covariance (ANCOVA) was conducted in this study. The independent variable was the HALTRA-EDU strategy compared to the standard strategy, the dependent variable was the post-test scores, and the covariate was the pre-test scores. Before conducting ANCOVA, the homogeneity of variance assumption was checked to ensure that the groups were comparable in terms of their baseline scores. This is crucial in intervention studies, as unequal variances between groups can lead to biased results. Levene's test for equality of variance was used to confirm that the variances in the pre-test scores were similar across both the intervention and control groups.

This study received ethical approval from the Research Ethics Committee of [hidden for review] and adhered to the specified guidelines in the Declaration of Helsinki. Informed consent was obtained from all participants who decided to take part in this study. Participants were informed about the study's aim, advantages, risks, and procedures before the intervention. Participants were provided with a digital information sheet that contained written and verbal explanations of the study's contents. The researcher maintained the privacy of each participant's identity while safely storing the data for the necessary time.

Results

As listed in Table 1, the study results explain that the intervention and control groups have the same demographic characteristics. Homogeneity between the intervention and control groups was tested using Levene’s test for equality of variance on age, gender, education, marital status, and employment. The results showed no significant differences ($p > 0.05$), indicating that the groups were comparable in these demographic characteristics. This ensures that any

differences in outcomes can be attributed to the intervention rather than baseline group differences. Based on this table, 70 community members were involved in the study and divided into two groups: intervention and control. Most of the community members are adults, more than 70%, with the majority being women. Over 60% of the intervention and control group community members were married. Likewise, community members' highest level of education in the intervention and control groups was mainly at the tertiary level. However, in the control group, it was found that 2.9% of community members had primary school education. Most of the community members who participated in this study (>80%) had working status in the intervention and control groups.

Table 1. Characteristics of Community Members in Intervention and Control Group (n=70)

Parameter	Characteristics	Intervention Group (n=35)		Control Group (n=35)		Homogeneity (p)
		f	%	f	%	
Age	19-44 years	27	77.1	28	80.0	0.440
	45-59 years	8	22.9	4	11.4	
	More than 59 years	0	0	3	8.6	
Gender	Male	17	48.6	10	28.6	0.088
	Female	18	51.4	25	71.4	
Marital status	Not married	5	14.3	11	31.4	0.066
	Married	29	82.9	22	62.9	
	Widower/widow	1	2.9	2	5.7	
Education	Elementary school	0	0	1	2.9	0.323
	Junior secondary school	2	5.7	0	0	
	Senior secondary school	9	25.7	14	40.0	
	College/university	24	68.6	19	54.3	
Employment	Not working	5	14.3	6	17.1	0.944
	Working	30	85.7	28	80.0	
	Retired	0	0	1	2.9	

Based on Table 2, the Wilcoxon Signed Rank test results in the intervention group show a significant influence of HALTRA-EDU on the social acceptance of community members ($p<0.05$). Measurements in the intervention group showed a substantial increase in the mean score of the social acceptance variable of 5.88, where the mean score (Mean ± SD) pre-test was 38.49 ± 6.71 and increased to 44.37 ± 5.33 in the post-test. Meanwhile, different things happened in the control group, where the mean score of the social acceptance variable decreased by -0.69. The mean score for the acceptance variable in the pre-test was 39.06 ± 6.28 and decreased to 38.37 ± 7.09. After participating in the HALTRA-EDU program, the intervention group showed a significant improvement in their acceptance behavior as well as their tolerance and support for individuals living with HIV. In contrast, the control group exhibited minimal changes in their social acceptance of those living with HIV. Participants in the control group continued to display exclusive behavior due to the lack of exposure to health literacy interventions.

Table 2. Wilcoxon test results for comparison of pre-test and post-test scores in the intervention and control groups (n=70)

Variable and Indicators	Pre-test	Post-test	Δ Mean	Wilcoxon test(p)
	Mean ± SD	Mean ± SD		
Social Acceptance in Intervention Group	38.49 ± 6.71	44.37 ± 5.33	5.88	0.001
Acceptance behavior	14.63 ± 3.07	16.60 ± 2.06	1.97	0.001
Tolerance and support	23.86 ± 4.13	27.77 ± 3.49	3,91	0.001
Social Acceptance in Control Group	39.06 ± 6.28	38.37 ± 7.09	-0,69	0.404
Acceptance behavior	14.77 ± 3.01	14.40 ± 3.12	-0,37	0.564
Tolerance and support	24.29 ± 3.85	23.97 ± 4.50	-0.32	0.736

A covariance analysis assessed group differences, with results shown in Table 3. The study revealed a significant effect of HIV health literacy education on social acceptance in society (F=20.177; p=0.001). In addition, significant differences were also found in social acceptance of people with HIV between the intervention and control groups (F=22.300; p=0.001). The HALTRA-EDU strategy significantly improves the social acceptance of individuals living with HIV compared to the control group.

Table 3. ANCOVA for assessment score and HIV health literacy education in intervention and control group (n=70)

Groups	Sum of squares	df	Mean Square	F value	P value
Pre-test	620.363	1	620.363	20.177	0.001
Intervention & Control Groups	685.636	1	685.636	22.300	0.001
Error	2059.980	67	30.746	-	-
Total	123122.000	70	-	-	-

Discussion

We have successfully implemented an HIV health literacy education (HALTRA-EDU) program with an emphasis on community social acceptance of people with HIV. The results show that the HALTRA-EDU program is efficacious in improving social acceptance regarding HIV in a sample of adults in the community. They appreciated and found this intervention beneficial. The HIV health literacy education initiative is based on the HIV Health Literacy Model, which has been rigorously tested using a structural equation model. The results demonstrate its significant potential to reduce social stigma within the community (31). So, to our knowledge, this is the first evaluation study in the Bandung area, Indonesia, aimed at increasing community response to HIV-related social acceptance.

The statistical analysis confirms the effectiveness of the HIV health literacy intervention, as seen in the significant difference in social acceptance between the intervention and control groups (F=20.177; p=0.001). The HALTRA-EDU strategy, in particular, was shown to significantly enhance societal attitudes toward people living with HIV compared to the control group (F=22.300; p=0.001). These findings highlight the crucial role of education in combating HIV-related stigma and promoting social inclusion. As a result, integrating HIV health literacy into public health programs is

essential for reducing discrimination and improving the quality of life for individuals living with HIV.

This study demonstrates that HIV health literacy education significantly improves social acceptance of people living with HIV. Consistent with findings from Obeagu & Obeagu (33), the integration of comprehensive HIV education plays a pivotal role in reducing stigma and fostering a more inclusive community. By enhancing public understanding of how HIV is transmitted and prevented, these educational interventions dispel common myths and reduce fear, leading to greater empathy and acceptance. When communities are well-informed about HIV, they are better equipped to support individuals living with the virus, thus creating a more supportive and inclusive social environment (34). When people have good health literacy about HIV, they will likely better understand how HIV is transmitted and how to prevent it. The condition of a well-literate community can reduce the fear and stigma that is often associated with HIV and ultimately accept the existence of people with HIV in their midst.

The HALTRA-EDU strategy is provided on an ongoing basis to increase community participation to increase acceptance behavior, tolerance, and support for people with HIV in the community. Health literacy education allows community members to access comprehensive HIV-related information. This comprehensive HIV information increases understanding of HIV and HIV-related health literacy. In line with the opinion of Sano et al. (35), low knowledge about HIV is associated with higher misconceptions about HIV. Misconceptions about HIV can also be influenced by education level, employment status (36), and health literacy (29, 37). Thus, health literacy education through the HALTRA-EDU program encourages the correct misconceptions and myths so that prejudice related to HIV will be reduced. As misconceptions and prejudices regarding individuals with HIV are addressed, there will be an increase in social acceptance (38). This program aims to provide individuals with accurate, evidence-based information about HIV transmission, prevention, and treatment, which is crucial for promoting empathy and social acceptance of people living with HIV.

The acceptance and tolerance behavior increased after gaining HIV-related health literacy. Misunderstanding or lack of health literacy about HIV/AIDS often contributes to fear of the disease and rejection of people with HIV/AIDS (39). Lack of knowledge about HIV is also considered to be a trigger for stigma against people with HIV/AIDS (40). As per the National Population and Family Planning Board (BKKBN) survey (41), eight out of 10 married women and men in Indonesia discriminate against people with HIV. This attitude of rejection towards people with HIV in society is most likely related to ignorance of the mechanisms of HIV transmission. This study also displays health literacy related to information about various stigmatized conditions that people with HIV may experience and efforts to prevent them. Health literacy education like this is a strategy to develop empathy among community members and trigger social acceptance of people with HIV. High social acceptance through a health literacy education approach helps individuals living with HIV feel

supported and accepted by society, which in turn can improve their quality of life and assist in the management of their condition.

The relationship between the characteristics of community members and the effectiveness of health literacy education in promoting empathy and social acceptance of people living with HIV is influenced by several key factors. Most participants in this study were adults, with over 70% being women. This demographic composition may lead to a greater understanding of caregiving and emotional needs, enhancing their ability to connect with messages aimed at reducing the stigma associated with HIV. Additionally, their roles within families and communities enable them to shape social norms and influence attitudes, creating a more supportive environment for individuals with HIV.

Moreover, the high level of educational attainment among participants indicates that they are well-equipped to understand and retain the information presented in health literacy programs (42). This is particularly important when addressing complex and stigmatized conditions like HIV. However, the 2.9% of participants in the control group, who only had primary school education, may struggle to grasp the material thoroughly, highlighting the necessity for tailored educational approaches. With over 80% of community members employed, many have access to resources and networks that can further enhance the impact of health literacy education. Their social interactions at work and in other settings provide valuable opportunities to share accurate information, thereby reducing stigma and fostering a more inclusive environment for people living with HIV.

Study Limitations and Strengths: This study has strength because the intervention has been validated based on the HIV health literacy model (29). In addition, this study also used a well-validated measure to investigate HIV-related social acceptance in an adult sample; however, we developed a less complex instrument for the evaluation of the phenomenon of HIV-related social acceptance. However, this study has two limitations. First, our sample size was relatively small to assess the effectiveness of the intervention by comparing the two groups. Thus, the generalizability of our results and the power of our analyses are limited. It would benefit future research to assess the implementation of educational programs with larger sample sizes. Second, due to the quasi-experimental design, there is a risk of selection bias and differences between groups. The participants were not randomly assigned to the intervention and comparison groups. Future research may prioritize the use of randomized controlled trials.

Conclusion

In conclusion, the implementation of the HIV health literacy education (HALTRA-EDU) program has proven to be an effective strategy in improving social acceptance of people living with HIV in the Bandung area, Indonesia. The statistical analysis confirms that the program significantly enhances societal attitudes toward people with HIV, demonstrating its potential to reduce HIV-related stigma and foster inclusion. The results align with existing research, highlighting the crucial role of comprehensive

HIV education in dispelling myths and misconceptions, thereby increasing empathy and support for individuals living with HIV.

By providing accurate, evidence-based information on HIV transmission, prevention, and treatment, the HALTRA-EDU program has successfully addressed common fears and misunderstandings that contribute to the stigma surrounding HIV. This increased health literacy has been shown to promote tolerance, acceptance, and emotional support for people with HIV, ultimately improving their quality of life. Additionally, the study suggests that demographic factors, such as education level and community roles, play a significant role in the effectiveness of health literacy interventions in shaping positive attitudes. The study highlights the importance of HIV health literacy programs in reducing stigma and promoting acceptance. Healthcare providers should focus on tailored, ongoing education, while policies should support and fund these initiatives. Collaboration across sectors and monitoring effectiveness are key to creating a more inclusive environment for people living with HIV.

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Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Conflict of interest: The authors declare that they have no competing interests.

Consent for publication: Not applicable

Ethics approval and consent to participate: This study received ethical approval from the Research Ethics Committee of Universitas 'Aisyiyah Bandung, Indonesia (number 739/KEP. 01/UNISA-BANDUNG/III/2024) and adhered to the specified guidelines in the Declaration of Helsinki. Informed consent was obtained from all participants who decided to take part in this study. Participants were informed about the study's aim, advantages, risks, and procedures before the intervention. Participants were provided with a digital information sheet that contained written and verbal explanations of the study's contents. The researcher maintained the privacy of each participant's identity while safely storing the data for the necessary time.

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Authors' contribution: AW was responsible for the study design. AW and SS were supervising the study. AW and NSD were responsible for data, statistical analysis, and providing the data. AW wrote the initial draft of the manuscript. All authors reviewed and agreed upon the final version of the manuscript

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