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Original article

Associations between social support, resilience, HIV stigma, and depression among people living with HIV in Malang, Indonesia: A cross-sectional study

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Abstract: *Objective* — This study aimed at analyzing the associations between social support, resilience, HIV stigma and depression among people living with HIV (PLHIV) in Malang, Indonesia.
Material and Methods — We carried out a cross-sectional study using convenience sampling at four community health centers in Malang, Indonesia, from June to September 2018. All PLHIV 18 years of age and older coming to a healthcare center for medical services were offered a possibility to participate in this study. Consequently, 634 PLHIV enrolled in antiretroviral therapy (ART) programs were recruited. Measurement tests included sociodemographic questionnaire, Multidimensional Scale of Perceived Social Support (MSPSS), HIV Stigma Scale, Connor–Davidson Resilience Scale (10-item version), and Center for Epidemiological Studies Depression Scale Revised (CESD-R). While maintaining the confidentiality in the course of data collection, clinical staff assisted with recruiting and face-to-face interviews via standardized questionnaires. Multivariate logistic regression models were employed to assess the relationships between predictors and depression.
Results — A multivariate logistic regression analysis revealed that higher levels of social support and resilience, along with a lack of stigma, were associated with lower levels of depressive symptoms (Nagelkerke's R^2=0.2).
Conclusion — Calls to action to encourage and raise public awareness through health policies in Indonesia that focus on improving social support and resilience, as well as reducing social stigma, may have a positive impact on supporting the psychological health of PLHIV.

Keywords: social support, resilience, stigma, depression, HIV.

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Introduction

People living with HIV (PLHIV) suffer from major depressive illnesses 2-3 times more often than the general population [1]. Earlier studies established that medical and demographic factors such as gender, disease severity, education level and employment status are associated with depression among PLHIV [2-5], while more recent studies examined the effects of social and psychological factors [6-8]. However, the prevalence of depression was even more evident in countries where stigma was still associated with HIV [9,10]. In countries where social stigma against PLHIV was evident, resilience and social support may have had a significant impact on depression.

Social support is an important protective factor against psychological problems among PLHIV [11, 12]. Those who had higher social support were less likely to suffer from symptoms of anxiety, stress, and suicidal ideation and behavior [7, 13], and PLHIV who live in societies with little or no social stigma were more likely to receive more social support [19]; while resilience represents the personal qualities that enable an individual to thrive in the face of adversity [14] and can be viewed as a measure of the ability to cope with stress. Others refer to resilience as a person's ability to successfully adapt to acute stress, trauma, or chronic forms of adversity [15, 16]. Individuals with higher resilience have been found to cope with higher levels of external stress [17, 18]. Resilience is also a multidimensional construct that refers to a person's ability to recover from adversity and trauma [20]. According to Connor and Davidson (2003), resilience may be an important treatment target for anxiety, depression, and stress reactions [14]. Therefore, in societies where HIV stigma is common (such as Indonesia), psychological resilience and social support should be considered. In Indonesia, the number of new HIV cases increased from 7,000 per year in 2006 to 48,000 per year in 2017 [21]. Although significant success in achieving equality for PLHIV has been made, previous studies showed that PLHIV in Indonesia still encounter stigma from friends, family, and public opinion in general [22].

Several studies of psychological problems among PLHIV in Indonesia have focused primarily on how social support and resilience acted as an adaptive means to combat HIV-related stigma, while reducing depression, which is hypothesized to be a consequence of chronic stigma, did not receive due attention. Therefore, the goal of our study was to analyze the relationship between social support, resilience, HIV stigma, and depression

among PLHIV in Malang, Indonesia. This study could provide recommendations for HIV policy, especially in Indonesia, to improve public awareness of psychological support to PLHIV.

Material and Methods

Study design

This was a cross-sectional study of HIV patients recruited from four community health centers (Puskesmas Dinoyo, Puskesmas Kendalsari, Rumah Sakit Tentara Dr. Soepraoen and Rumah Sakit Islam Malang) in Malang, Indoensia. These centers provide voluntary counseling and testing (VCT) and antiretroviral therapy (ART) services. Malang (with a population size of 987,423) has the second-highest HIV+ prevalence rate in East Java Province with a total of 2,800 PLHIV [23].

Subjects

To protect the confidentiality of PLHIV, clinical staff assisted with participant recruitment and data collection. From June to September 2018, PLHIV who came to clinics to receive health care and ART services were asked if they would be willing to participate in this study. Only individuals >18 years of age were included in our study. Written informed consent was obtained and a face-to-face interview was conducted using a structured questionnaire. A total of 634 PLHIV who started receiving ART agreed to participate in this study, with a response rate of 22%. Our previous study was conducted on comparing the sociodemographic characteristics of those who declined an offer and those who participated in the study [24]. The recruited participants were then divided into two groups based on their depressive symptom status: Group I (n=194) exhibited no symptoms of depression (CESD-R<10 pts.), while Group II (n=440) exhibited pronounced depression (CESD-R≥10 pts.) (*Table* 1).

Table 1 presents the basic demographic characteristics (measures of social support, resilience and stigma; and depression scores) among the 634 subjects who participated in this study. Almost 40% of them were under 30 years of age and 77% of them were men. Social support was 47.64±5.32 (%), resilience was 27.09±4.81 (%), and stigma was 29.15±3.76 (%). Regarding symptoms of depression, approximately 69.4% of PLHIV exhibited major depression (CESD-R≥10 pts.), while the rest (30.6%) showed no depressive symptoms whatsoever (CESD-R<10).

Measurements

The variables used in this study included depression, resilience, social support, and social stigma, along with sociodemographic characteristics. Depression was measured using the Center for Epidemiological Studies Depression Revised (CESD-R) scale. A 10-items version of this scale was employed. The depression score was the sum of the scores of all 10 items, and the level of depression was higher at a higher score. A cut-off score of 10 or more implied the presence of depressive symptoms [25, 26]. A previous study reported that this Indonesian version of the CESD-R had a reliability of 0.69 [27].

Resilience was measured using the 10-item version of the Connor-Davidson Resilience Scale. This scale consists of 10 items; it is structured as a 5-point cumulative Likert-type scale (from 1 meaning '*never*' to 5 standing for '*almost always*') with higher scores implying higher levels of resilience. The reliability of this instrument was high (α=0.86).

Social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) [28]. This includes social support from friends, family and loved ones. The MSPSS consists of 12 items that ask respondents to rate their perceived level of support on a Likert scale from 1 (strongly disagree) to 7 (strongly agree) with a higher score indicative of a higher social support. A previous study reported that the Indonesian version of the MSPSS had a reliability of 0.81 [18].

To measure social stigma, we employed a modified version (Berger et al. [30]) of the HIV Stigma Scale developed by Reinius et al. [29]. It comprised 12 items on a Likert scale ranging from 1 ('*strongly agree*') to 4 ('*strongly disagree*'). A total score was calculated by adding the original item scores (with higher scores reflecting higher levels of HIV-related stigma). The reliability of the scale among PLHIV was 0.83 [31].

Sociodemographic characteristics included age, gender (male or female), marital status (single, married, and divorced/widower), education level (primary education, secondary education, or higher education), employment status (employed, unemployed), monthly household income in Indonesian rupiahs (<1,500,000; 1,500,000-2,500,000; 2,500,000-3,500,000; and >3,500,000), residential area (urban or rural) and access to healthcare services (difficult, easy, or very easy).

Table 1. Patient characteristics (n=634)

Sociodemographic traits	*N*	*%*
Age, years		
<25	122	19.2
26-35	238	37.5
36-45	152	24
46-65	122	19.2
Gender		
Male	488	77.0
Female	146	23.0
Education level		
Primary education	182	28.7
Secondary education	238	37.5
Tertiary education	214	33.8
Marital status		
Single	282	44.5
Married	230	36.3
Divorced/widower	122	19.2
Monthly household income (in Indonesian rupiahs)		
1,500,000 or less	144	22.7
1,500,000-2,500,000	258	40.7
2,500,000-3,500,000	142	22.4
more than 3,500,000	90	14.2
Employment status		
Unemployed	83	13.1
Employed	551	86.9
Residential area		
Urban	291	45.9
Rural	343	54.1
Access to healthcare services		
Difficult	160	25.2
Easy	314	49.5
Very easy	160	25.2
Depression, pts. sensu CESD-R		
Group I (<10)	194	30.6
Group II (≥10)	440	69.4
	Range	Mean (SD)
Social support	28-60	47.64 (5.32)
Resilience	6-40	27.09 (4.81)
Social stigma	12-48	29.15 (3.76)

Table 2. Bivariate association of pronounced depression among PLHIV in Malang

Sociodemographic Characteristics	*Depression* Group I (CESD-R<10 pts.), N (%)	Group II (CESD-R≥10 pts.), N (%)	*χ2*	*p*
Age				
<25	37 (30.3)	85 (69.7)	6.04	0.100
26-35	82 (34.5)	156 (65.5)		
36-45	35 (23)	117 (77)		
46-65	40 (32.8)	82 (67.2)		
Sex				
Male	151 (30.9)	337 (69.1)	0.11	0.731
Female	43 (29.5)	103 (70.5)		
Educational level				
Primary education	72 (39.6)	110 (60.4)	12.86	0.021*
Secondary education	73 (30.7)	165 (69.3)		
Tertiary education	49 (22.9)	165 (77.1)		
Marital status				
Unmarried	81 (28.7)	201 (71.3)	1.11	0.570
Married	76 (33)	154 (67)		
Divorced/widower	37 (30.3)	85 (69.7)		
Household income (in Indonesian rupiahs)				
1,500,000 or less	41 (28.5)	103 (71.5)	2.86	0.412
1,500,000-2,500,000	78 (30.2)	180 (69.8)		
2,500,000-3,500,000	51 (35.9)	91 (64.1)		
more than 3,500,000	24 (26.7)	66 (73.3)		
Employment status				
Unemployed	25 (30.1)	58 (69.9)	0.01	0.912
Employed	169 (30.7)	382 (69.3)		
Residential area				
Urban	84 (28.9)	207 (71.1)	0.76	0.383
Rural	110 (32.1)	233 (67.9)		
Access to healthcare services				
Difficult	53 (33.1)	107 (66.9)	1.50	0.473
Easy	89 (28.3)	225 (71.7)		
Very easy	52 (32.5)	108 (67.5)		
	Group I, CESD-R <10 pts. M(SD)	Group II, CESD-R≥10 pts. M(SD)	t	p
Social support	49.31 (4.93)	46.91 (5.33)	5.35	<0.001**
Resilience	28.80 (4.87)	26.33 (4.59)	6.12	<0.001**
Stigma	28.95 (3.39)	29.58 (4.48)	1.92	0.041*

PLHIV, people living with HIV; *p<0.05, **p<0.001.

Statistical data processing

Univariate descriptive statistics included frequency and percentage for categorical variables, and mean and standard deviation (SD) for continuous variables. Continuous data, normality of which was confirmed by the Kolmogorov–Smirnov test, were subjected to two-sample t-test for independent-samples to compare for differences between the two groups. For categorical data, chi-squared test was administered to examine statistical significance of differences. Multivariate logistic regression models were used to assess the association between predictors and depression. Statistical significance was assumed at p<0.05. All analyses were performed using SPSS v.20 (SPSS, Chicago, IL, USA).

Ethical considerations

Ethical clearance for this study was obtained and approved by the Ethics Committee at the University of Muhammadiyah, Malang, Indonesia, No. E.5.a/066/KEPK-UMM/II/2018. Because all participants were adults, the risks of participating in this study were explained to them prior to completing the written consent form. Additionally, given that the study population was highly vulnerable in terms of social issues, the authors ensured that privacy of respondents and confidentiality were strictly protected and that they were not forced to fulfill any actions within the framework of the study.

Results

Table 2 shows that education level, social support, social stigma, and resilience were significantly associated with depression (p<0.05). Participants with depressive symptoms tended to have lower social support and resilience, and experiencев social stigma.

Table 3 presents the results of the logistic regression analysis. The study was conducted using two models to analyze the independent contributions of variables significantly associated with depression in bivariate analyses. Model I included social stigma, resilience, and social support, while Model II encompassed social stigma, resilience, social support, and sociodemographic characteristics. This approach allowed us evaluating the fit of the model to the effect of the additional variable, as well as the unique contribution of the other variable to the model. In Model I, resilience and social support were significantly associated with lower odds of depression, while stigma was significantly associated with more pronounced depressive symptoms (Nagelkerke R^2=0.12). In Model II, better resilience, social support, and absence of social stigma remained significant predictors of reduced depressive symptoms even after controlling for sociodemographic factors (Nagelkerke's R^2=0.20).

Discussion

The prevalence of depressive symptoms among PLHIV in this study was higher than in other studies conducted in countries where PLHIV experienced lower levels of social stigma. Efforts to reduce depression can improve the quality of life in PLHIV and increase their adherence to taking medications as prescribed. Although this study was exploratory in nature, it has identified some factors that should be examined in the future. We discovered that PLHIV with higher education level had a greater risk of developing major depressive symptoms than those with lower levels of education, which was consistent with the findings of previous studies [32-34]. This trend may be caused by the patients with low levels of education, which may be associated with lower health literacy, especially concerning mental health [33, 35]. Moreover, according to a study by Grzywacz JG et al. [36], which included 1,031 adults, individuals with less education than a high school degree reported experiencing stressors 30% of the time, while study participants with a college degree and/or higher education reported stress on 38% of the days. People with higher education reported felt stressed on 44% of days, meaning that highly educated people tend to have more worries and stressors in their daily lives, especially if diagnosed with HIV/AIDS.

Participants with better social support were more likely to suffer less from depression than those who lacked social support in their environment. Consistent with previous studies [37, 38], our results indicated that PLHIV who experienced greater social support were more likely to disclose their HIV status, since social support may mitigate emotional distress and depression. Despite stigmatization by the society in general [39] and low health literacy [35], PLHIV with a stronger social support were less likely to conceal their HIV status. Despite stigmatization by their

community at large [40], transgender women living with HIV (*warias*) were strongly supported by health care providers through free access to services, information sessions on HIV infection and prevention, and positive attitudes in the course of delivering health services, thereby ensuring convenience and comfort for HIV patients accessing services and reducing the burden on their health. However, such stigmatizing attitudes are still present among healthcare professionals in general and vary depending on religious preferences [41]. On the other hand, according to a qualitative study [42], warias in Yogyakarta received social support from their peers and the community to facilitate their access to health services and minimize symptoms of depression, including via providing caring attention and encouraging words, help with ART medications from hospitals or community health centers, calling ambulances in emergency circumstances, accompanying each other to healthcare facilities, and helping those without health insurance obtaining health services free of charge.

Table 3. Results of multivariate logistic regression predicting major depressive symptomatology among PLHIV

	Model I	*Model II*
Nagelkerke's R^2	0.12	0.20
	OR (95%CI)	OR (95%CI)
Resilience	0.91 (0.87-0.94)**	0.88 (0.84-0.92)**
Social support	0.92 (0.88-0.95)**	0.93 (0.90-0.97)**
Stigma	1.04 (0.92-1.16)*	1.04 (0.88-1.48)*
Sociodemographic traits		
Age, years		
<25		Reference
26-35		1.25 (0.64-2.44)
36-45		0.87 (0.51-1.46)
46-65		1.60 (0.87-2.92)
Gender		
Male		Reference
Female		0.88 (0.56-1.41)
Education level		
Primary education		Reference
Secondary education		0.39 (0.19-0.84)**
Tertiary education		0.66 (0.41-1.04)
Marital status		
Single		Reference
Married		0.94 (0.54-1.63)
Divorced/widower		0.77 (0.45-1.31)
Household income (in Indonesian rupiahs)		
1,500,000 or less		Reference
1,500,000 - 2,500,000		0.89 (0.45-1.77)
2,500,000 - 3,500,000		0.73 (0.40-1.34)
more than 3,500,000		0.58 (0.30-1.10)
Employment status		
Unemployed		Reference
Employed		0.71 (0.39-1.30)
Residential area		
Urban		Reference
Rural		1.71 (0.80-1.71)
Access to healthcare services		
Difficult		Reference
Easy		0.73 (0.43-1.25)
Very easy		0.98 (0.62-1.56)

PLHIV, people living with HIV; *p<0.05, **p<0.001; Model I: resilience, social support and stigma; Model II: resilience, social support, HIV stigma, and sociodemographic variables.

Participants who had higher levels of resilience were negatively associated with depressive symptoms and anxiety, meaning that severe psychological problems prevailed when resilience was low and were less pronounced when resilience was high [43-45]. Resilience as a personality trait refers to participants' ability to return to psychological and social norms after facing adversity caused by a positive HIV/AIDS diagnosis. Therefore, resilience may act as a protective factor against the development of clinical depression [16,43]. McGowan et al. (2018) reported that older age and shorter time with an HIV diagnosis were associated with higher levels of resilience, as this may be associated with a lower prevalence of psychological symptoms.

According to the results of this study, social support and resilience acted as adaptive coping and were associated with fewer depressive symptoms. Also, social support had high multicollinearity with resilience (being a significant predictor of resilience), and greater perceived social support predicted higher resilience [8, 43, 46, 47]. The interaction effect between these variables was also direct and significant [48]. These findings suggest that among people with HIV or AIDS, those individuals who are more satisfied with their relationships, interact securely with others, engage more directly with their illness, and are more likely to experience positive adjustment and improved psychological wellbeing [48, 49]. Moreover, a study by Earnshaw VA [50] demonstrated that social support can act as a resilience resource protecting people from the negative impact of HIV stigma, thereby resulting in minimum stress and depression. Thus, strategies to increase social support and health policy resilience may be an important treatment target aimed at reducing the negative effects of depressive symptoms among PLHIV.

Although our study contributed to understanding the factors associated with depressive symptoms among PLHIV, several limitations of its design should be considered. First, the cross-sectional nature of the analysis did not allow us making causal inferences between explanatory factors and depressive symptoms. Second, Malang is a city that is home to several universities and is considered less conservative than other areas. Convenience sampling may not be able to include the most disadvantaged patients because they are not likely to attend clinics to receive services. Hence, our findings may overestimate the wellbeing of PLHIV. Generalization of the results to other areas of Indonesia must be done with careful consideration of these issues.

Despite these limitations, the results of our study are noteworthy in several important ways. Data examining psychosocial risk factors, including depression, among PLHIV initiating ART are sparse, and the present study examined these constructs in this important population. As more people living with HIV initiate ART, understanding the psychosocial risk factors faced by these patients becomes increasingly important, given their potential effect on adherence to treatment and retention in care. Our analysis is notable in that it explored these constructs and highlighted an importance of simultaneous consideration of the associations between multiple psychosocial risk factors and depression in order to gain a more nuanced understanding of the relationships among these constructs. In particular, the analysis revealed the moderating role of HIV stigma in the relationship between social support, resilience, and depression in this population. The results of our study can also provide important recommendations to the Government, especially regarding the psychosocial health management of PLHIV in Indonesia.

Conclusion

Our study established that PLHIV who had better social support and resilience, along with a lack of stigma, were directly associated with less pronounced symptoms of depression. Hence, calls to action to encourage and raise public awareness through health policies in Indonesia that focus on improving social support and resilience, as well as reducing social stigma, may have a positive impact on supporting the psychological health of PLHIV

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Ethical approval

All procedures performed in studies involving human participants complied with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments, or comparable ethical standards. This study was approved by the Institutional Review Board (IRB) of the University of Muhammadiyah Malang Ethics Committee, Indonesia, No. E.5.a/066/KEPK-UMM/II/2018.

Conflict of interest

All contributing authors declare no conflicts of interest in this study.

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