Comparative Study of Indonesia and Timor Leste on the Psychological Conditions, Social Support, and Immunity of People Living with HIV/AIDS (PLWHA)

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ABSTRACT
Background: The World Bank reports that Timor Leste and Indonesia had the same HIV incidence rate of 0.2 per 1,000 persons in this age range who are not infected for adults aged 15 to 49. Depression is a mental condition that is marked by a chronic absence of interest and unhappiness. If left untreated, depression may have grave consequences and seriously interfere with daily life. Aim: This research compares the psychological states, social assistance, and resistance of Timor Leste and Indonesian individuals living with HIV. Method: Reaching a sample size of one hundred individuals was accomplished by the use of a cross-sectional methodology, a descriptive-comparative design, and a purposeful sampling strategy. Bivariate analysis was performed using ANOVA with a significance threshold of $p < 0.05$. The range of frequency was used to do univariate analysis. Result: In Indonesia and Timor-Leste, when it comes to the psychological state of people living with HIV/AIDS (PLWHA), there is no apparent variation wherever to be found. According to statistical studies, there are variations in the amount of social support for PLWHA between the two nations. The significance level of 0.05 is not met by the p-value of 0.0 for these variations. Some PLWHA had an undetectable viral load, likely due to their adherence to antiretroviral therapy (ARV) as recommended by healthcare providers. Conclusion: Even though the psychological status of people living with HIV/AIDS is comparable in Indonesia and Timor-Leste, the level of social support differs between the two countries.

1. Introduction

Immune system cells get infected and destroyed by the Human Immunodeficiency Virus (HIV). The immune system is weakened as a result, leading to "Acquired Immune Deficiency Syndrome (AIDS)". With a compromised immune system, the body loses its ability to combat infections, making individuals susceptible to numerous opportunistic infections. According to WHO data, in 2021, 38.4 million people throughout the world were classified as HIV-positive and living with the virus, and there were 1.5 million newly reported cases of infection during that year. It was estimated that there were 519,158 persons living with HIV (PLHIV) in Indonesia as of June 2022, and this figure was compiled throughout all provinces. According to information provided by the Ministry of Health, an overwhelming majority of HIV transmission in Indonesia is caused by heterosexual contact, which accounts for 28.1% of all cases. As of the end of 2015, the NTT Health Office reported 3,700 cases of HIV/AIDS, consisting of 1,957 cases of AIDS and 1,743 cases of HIV. The number of fatalities reached 1,062 individuals. A total of 604 cases of HIV and AIDS were documented in Timor-Leste, 604 of which resulted in deaths. According to statistics from the World Bank, Timor Leste and Indonesia have the same HIV prevalence rate for those in the 15–49 age range (0.2 per 1,000 uninfected persons). Issues faced by PLWHA extend beyond health and encompass various social challenges. These include adapting to a healthy lifestyle after being diagnosed with the virus and dealing with psychological issues, particularly the shock, sadness, and stress that often follow a positive HIV test result (Sasaki et al., 2012). Another issue faced by PLWHA is the denial of their HIV-positive status, despite appearing healthy. This mindset can lead to feelings of worthlessness, a sense of a bleak future, and the belief that they are incapable of supporting themselves or their families. Additionally, they often face difficulties in accessing employment and limitations in social interactions (Rahakbauw, 2018). Depression is a mental condition marked by persistent melancholy and disinterest that, if left untreated, may seriously interfere with day-to-day activities and can be deadly (Asare et al., 2022). Due to internal and external pressures, HIV/AIDS is still a chronic illness that is widely prevalent, and those who are infected may have psychological problems (Danti & Gayatri, 2021). The World Health Organization's

global health sector strategy for 2022–2030 predicts that the number of deaths caused by HIV will decrease from 680,000 in the year 2020 to around 240,000 by the year 2030. New infections should decrease from 1.5 million in 2020 to 335,000 by the same year. HIV/AIDS patients need social assistance in addition to medical care to manage their physical suffering, lessen psychological distress, and stop unrest (Hulloli & Venkatesh, 2021). The physical and emotional well-being of individuals living with HIV/AIDS is greatly dependent on social support networks (Li et al., 2021).

2. Methodology

Materials

This study uses a cross-sectional methodology and an analytical-comparative research design. The HIV/AIDS Information System was the source of HIV/AIDS cases. The following were the requirements for inclusion: (1) ages 17 to 55 years; (2) ability to communicate effectively; (3) willingness to participate in the study; and (4) truthful and complete responses to all questions. Using a purposive sampling technique, researchers selected 100 samples from a population of 112. The study was carried out in Timor Leste's Dili District and Indonesia's Porong Health Center region.

Data collection procedures

The HIV/AIDS program coordinator facilitated communication between the researchers and participants, who were then chosen using a purposive sample approach [16]. Completing training in HIV/AIDS Voluntary Counseling and Testing (VCT) was mandatory for data collectors (Ramana & Ravisankar, 2024). The Depression Anxiety Stress Scale-21 (DASS-21) questionnaire and the Social Support Rating Scale (SSRS) were the tools used in this investigation. Additionally, to assess patient immunity, laboratory tests were conducted to measure Viral Load, and a questionnaire was used to gather information on HIV-related comorbidities. The DASS-21, the SSRS, and a survey covering basic demographic information were used in the data interviews. A history of HIV transmission, gender, age, nationality, marital status, and monthly income are all factors to consider, and current treatment status were obtained in the overall survey. Viral load testing produced immunity data.

Data analysis

SPSS 25.0 was used to examine the data once it was imported into Microsoft Excel. ANOVA or t-tests were used in bivariate analysis, with a significant threshold of $p < 0.05$, while frequency distributions were used in univariate analysis. Following the multivariate evaluation, the components that were found to be important were later included in a multivariate linear regression analysis, with the accuracy criterion of $p < 0.05$ being maintained throughout the processes.

3. Results and discussion

Features of Indonesian and Timor Leste responses

On the official website of the Ministry of Health of the Republic of Indonesia (2009), depkes.go.id, the following age groups are classified according to which age group they are at babies (0–5), kids (6–11), early teens (12–16), late teens (17–25), early adults (26–35), late adults (36–45), early seniors (46–55), late seniors (56–65), and seniors (65 and above). The groups of late teens, early adults, late adults, and early elderly were the researchers' main emphasis for this study.

Table 1. Respondent frequency distribution in Indonesia and Timor Leste by age

Age	**Indonesia**		**Timor Leste**	
	N	%	N	%
Late teens (17-25 years)	4	8	8	16
Early Adult (26-35 years)	20	40	25	50
Late adulthood (36-45 years)	10	20	15	30
Early elderly (46-55 years)	16	32	2	4
Total	50	100	50	100

A majority of the responses from both Indonesia and the United States are included in the table and Timor Leste fall within the early adulthood range (26-35 years). Late adolescence and early adulthood

are key reproductive age periods. During these years, individuals are actively engaged in sexual activity, which increases their risk of contracting HIV/AIDS. According to WHO data for 2022, there are 37.5 million individuals aged 15 and older living with HIV/AIDS, with 1.2 million deaths reported. Individuals who are infected with HIV may transmit the virus via a variety of bodily fluids, including blood, breast milk, sperm, and vaginal secretions. HIV is also capable of being passed from mother to child during pregnancy and delivery for certain women. HIV cannot be transmitted via common handshakes, kisses, hugs, or sharing of food, drink, or personal objects. Contaminated injections; sexually transmitted infections (STIs) such as gonorrhea, herpes, chlamydia, or syphilis; exchange of injection supplies, such as syringes and needles, or medication solutions; unsafe blood transfusions; tissue transplants; and medical procedures are among the risk factors associated with HIV. Most of those impacted are between the ages of 20 and 30 when they are most productive. Since 2016, the situation has become increasingly concerning due to a rise in cases with "Unknown" causes, highlighting issues such as moral degradation, infidelity in marital relationships, and the growing prevalence of prostitution. Additionally, there is significant concern about children engaging in risky sexual activities, whether with heterosexual or homosexual partners, this increases the chance of HIV infection by three to five times.

Table 2. Gender-specific respondent frequency distribution in Timor Leste and Indonesia

Gender	**Indonesia**		**Timor Leste**	
	N	%	N	%
Male	38	76	38	76
Female	12	24	12	24
Total	50	100	50	100

According to the table, males make up most of the HIV/AIDS patients in Indonesia, comprising 76% of the cases. This aligns with data from the National Narcotics Agency (BNN), 62,856 HIV and AIDS cases in Indonesia were recorded by it for the year 2022. Men are the predominant group affected, with 31,218 HIV cases, accounting for 58.95% of all reported HIV cases in the country. Conversely, there were 21,737 cases of HIV among women, with no cases where the gender was unknown. In 2022, within the male population, 74.48% of the total number of AIDS cases in Indonesia are accounted for by the 7,375 instances of the disease that have been reported. 2,521 cases of AIDS were found in females, with five instances in which the gender of the patient could not be determined. Indonesia had 17,983 HIV and AIDS cases in 2022, most of which were spread via homosexuality, according to the BNN. Intercourse with heterosexuals was the second highest risk factor for transfer, representing 12,072 occurrences. Data on persons living with HIV/AIDS (PLWHA) in Timor Leste likewise indicates a male preponderance. As per the 2013 report from the Ministry of Health in Timor Leste, which covered HIV cases from June 2003 to 2013, the classification by age and gender was as follows: for ages 15-24, 49% were male and 56% female; for ages 25-44, 74% were male and 68% female; and for those over 44 years, 12% were male and 7% female. Additionally, the prevalence of HIV was 1.4% among men who have sex with men (MSM) and transgender persons in Timor-Leste for the 2018-2019 year, according to serological surveys and Global AIDS Monitoring Reports. On the other hand, the incidence was 1.2% among female sexual workers.

Table 3. Respondent frequency distribution in Indonesia and Timor Leste by level of education

Education	Indonesia		Timor Leste	
	N	%	N	%
basic education	14	28	2	4
Middle education	34	68	36	72
Upper Education	2	4	12	24
Total	50	100	50	100

The chart shows that 68% of cases in the Porong Health Center region of Indonesia are among the PLWHA with a moderate level of education. Similarly, in Timor Leste, 72% of PLWHA also have a middle education level. Amelia's research (2016) supports this, demonstrating that high school graduation (48.2%) is the most prevalent degree of education among those living with HIV/AIDS in

Timor Leste. The percentages of people who have finished, completed, and incomplete elementary, junior high, and university education are as follows: 1.8%, 3.6%, and 30.4%, respectively.

Conditions Psychologically of PLWHA in Timor Leste and Indonesia

Table 4. Timor Leste and Indonesia respondents' frequency distribution according to their degrees of stress, anxiety, and depression

Psycological Condition	Indonesia			Timor Leste		
	D	A	S	D	A	S
Normal	45	48	50	45	48	50
Mild	5	2	0	5	2	0
Moderate	0	0	0	0	0	0
Severe	0	0	0	0	0	0
Very Severe	0	0	0	0	0	0
Total	50	50	50	50	50	50

The data shown in the table below demonstrates that there is no distinction in the psychological condition of Timor Leste and Indonesia among persons living with HIV/AIDS (PLWHA). The DASS 21 survey, which rates Depression (D), Anxiety (A), and Stress (S), may be used to evaluate the patient's psychological state. The following are the scoring criteria: Normal ranges are 0–7, 8–9, 10–12, 13–16, and 17 and above. Extremely Serious. According to Chinese research, PLWHA most often feel anxiety and sadness as psychological repercussions. Those suffering from severe depression may exhibit thoughts of or even attempts at suicide. The research found that one in three PLWHA have either considered or attempted suicide (Sun et al., 2014).

According to the study's results, PLWHA in Timor Leste and Indonesia typically have normal psychological health. This can be attributed to various factors, such as strong family support, supportive friends, and access to adequate healthcare facilities. Each one of the responders (90 % in Indonesia and 92 percent in Timor-Leste) to the Depression questionnaire said they continued to have an optimistic perspective, feeling enthusiastic and happy, engaging actively in activities, and feeling valued. Consequently, the proportion that responded with moderate depression was quite low, at 4% in Indonesia and 2% in Timor Leste. Similarly, anxiety and stress levels in both countries were mostly within normal ranges, with respondents not experiencing symptoms like shortness of breath, trembling, excessive worry, panic, or fear without a clear cause. Many PLWHA reported rarely feeling angry or anxious and generally being able to relax.

Indonesian and Timor Lestean social support for PLWHA

Based to Sari and Wardani (2017), social support is defined as any consolation, consideration, deference, or aid that makes someone really receive or just the impression that they can get these things from other people. The following table illustrates the frequency distribution of social support for PLHIV in Indonesia and Timor-Leste.

Table 5. Respondent frequency distribution in Indonesia and Timor Leste depending on social support

Sosial support	Indonesia		Timor Leste	
	N	%	N	%
Low	23	46	49	98
High	27	54	1	2
Total	50	100	50	100
p= 0,000				

According to the table, the amount of social assistance for PLWHA in Timor-Leste and Indonesia is distinct. In Timor Leste, nearly all respondents (98%) reported receiving low levels of social support. Most PLWHA only have one or two close friends, most live with their families, and they often get support from their spouse, parents, children, or siblings, according to the SSRS questionnaire

administered in Indonesia. Additionally, many participate in PLWHA community activities. In contrast, some PLWHA in Timor Leste lack friends for support, separate themselves from their family and live alone, and only a few are actively involved in the PLWHA community. PLWHA are required to navigate complex challenges in their daily lives. They not only face physiological issues due to HIV infection but also endure stigma and discrimination, which can exacerbate their psychological burden. This complexity can negatively affect their quality of life. As Nasronudin (2006) pointed out, the quality of life for those living with HIV is significantly impacted by the presence of social support. Such support helps individuals feel valued, loved, and included in the community, reducing feelings of discrimination and positively impacting their health (Diatmi & Fridari, 2014).

PLWHA immunity in Timor Leste and Indonesia

Measuring the viral load may be used to evaluate the immunity of individuals living with HIV/AIDS (PLWHA), in addition to tracking it via CD4 counts. If the number of copies of the virus in the blood is more than 100,000, it shows a high concentration of the virus, and when it is less than 10,000, it shows a low concentration. The virus is regarded as undetectable if the copy number is less than 20 copies/milliliter. A decreased viral load lessens the chance of HIV transmission to other people.

Table 6. Respondent frequency distribution based on Timor Leste and Indonesia's viral loads

Viral Load	**Indonesia**	
	N	%
High	5	10
Low	18	36
Not detected	27	54
Total	50	100

Based on the chart, several PLWHAs had undetectable virus loads. This undetectable viral load is attributed to patients consistently taking antiretroviral (ARV) medications as advised by healthcare professionals. The effectiveness of HIV/AIDS management through ARV therapy relies heavily on adherence to the prescribed medication regimen. For ARV therapy to be considered optimal, adherence must exceed 95%. Patients must consistently take ARVs for life, adhering strictly to the prescribed schedule (Ministry of Health RI, 2015). Nearly all responders in Timor Leste reported insignificant virus loads. The adherence of persons living with HIV/AIDS to ARV medication is influenced by several variables, including their knowledge about the disease, family support, support from healthcare professionals, and the side effects of the medication. Patients who are well-informed about their condition tend to adhere more closely to their ARV therapy. Families can assist by reminding patients to take their medication consistently, ensuring that no doses are missed and that the treatment proceeds effectively. Healthcare professionals contribute by offering information that is factual and that places an emphasis on the positive ARVs (Dewantoro et al., 2021). PLWHA often achieve undetectable virus loads when they follow ARV therapy instructions. The immune system is strengthening and healing when the virus load is undetected. In addition, it reduces the chance of spreading syphilis, HPV, and chlamydia, among other sexually transmitted diseases. A low viral load indicates that the therapy is successfully eradicating HIV from the patient's body.

In Indonesia and Timor Leste, the impact of psychosocial factors on the immunity of PLWHA

The psychological well-being of PLHIV may be assessed by examining their levels of stress, anxiety, and depression. On the other hand, immunity is gauged by the viral load; a lower or undetectable viral load indicates better immune function. Anxiety, stress, and depression cross-distributions for viral load are shown below.

Tabel 7. Respondents' cross-sectional levels of immunity and depression

Depresi	**Viral Load**						**Total**	
	Indonesia			**Timor Leste**				
	High	**Low**	**Not Detected**	**High**	**Low**	**Not Detected**	**N**	**%**
Normal	4	17	24	0	0	48	93	93
Light	0	1	2	0	1	1	5	5

Currently	1	0	1	0	0	0	2	2
Heavy	0	0	0	0	0	0	0	0
Very heavy	0	0	0	0	0	0	0	0
Total	5	18	27	0	1	49	100	100
	P=0,531			P=0,317				

There is no significant correlation between the amount of stress and the viral load in Indonesia, as shown by the table's p-value of 0.531. The fact that the p-value is more than 0.05 lends credence to this issue. Similarly, in Timor Leste, the results also show no correlation between depression and viral load, with a p-value of 0.317 ($p > 0.05$).

Tabel 8. Respondents' cross-sectional levels of immunity and anxiety

Anxiety	**Viral Load**						**Total**	
	Indonesia			**Timor Leste**				
	High	**Low**	**Not Detected**	**High**	**Low**	**Not Detected**	**N**	**%**
Normal	5	16	25	0	1	49	96	96
Light	0	2	2	0	0	0	0	4
Currently	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0
Very heavy	0	0	0	0	0	0	0	0
Total	5	18	27	0	1	49	100	100
	P=0,431			P=0,191				

The table shows that, with p-values of 0.191 and 0.431 (both $p > 0.05$), there is no statistically substantial association between the degrees of stress and the amount of viral load in either Indonesia or Timor-Leste.

Tabel 9. Respondents' cross-sectional levels of immunity and stress

Stress	**Viral Load**						**Total**	
	Indonesia			**Timor Leste**				
	High	**Low**	**Not Detected**	**High**	**Low**	**Not Detected**	**N**	**%**
Normal	5	18	27	0	0	49	94	99
Light	0	0	0	0	1	0	1	1
Currently	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0
Very heavy	0	0	0	0	0	0	0	0
Total	5	18	27	0	1	49	100	100
	P=0,796			P=0,380				

In Indonesia, the data reveals that there is no substantial relationship between stress levels and viral burden. The p-value in Timor Leste is 0.380, while the p-value in India is 0.796. Both of these values are more than 0.05. Depression serves as an indicator of the psychological state of PLWHA. It is a multifaceted disorder characterized by a range of signs and symptoms affecting emotional, behavioral, cognitive, and physical domains (Lopresti et al., 2013). There is some evidence that chronic inflammation may have a role in the development of stress in those living with HIV. Elevated cytokine levels can lead to sickness behavior, including symptoms like fatigue, lethargy, anxiety, and depression. Vulnerability to brain disease is expected to increase with systemic pro-inflammatory reactions. People who suffer from depression have greater amounts of inflammatory cytokines in their plasma and brains, including TNF-α, IL-1β, and IL-6. Perivascular macrophages and microglia in the brain are activated by HIV-1 proteins, which set off a chain reaction that produces pro-inflammatory cytokines. These results highlight the role that systemic inflammation plays when it comes to the progress of patients with HIV who are suffering from stress. Although antiretroviral therapy (ART) partially mitigates the viral-induced neurotoxicity in the brain, inflammation continues to adversely impact disease progression in advanced stages of HIV. Therefore, regulating immune responses is crucial in understanding comorbidities associated with HIV-related depression (Rivera-Rivera et al., 2016). Many HIV/AIDS patients in Timor Leste have undetectable viral loads and no stress. Indonesia, which found no correlation between depression and viral load, several factors can influence viral load

and, consequently, HIV sufferers' quality of life. These variables include employment, gender, symptoms, depression, family support, CD4 count, antiretroviral treatment, social support, and infection. In addition, PLWHA's depression is influenced by several circumstances, including traumatic experiences, long-term diseases, certain personality features, and hereditary disorders. Age, gender, education, employment, marital status, personality, way of life, mentality, self-esteem, and extended periods of severe stress are additional risk factors for depression. People living with HIV/AIDS (PLWHA) often face anxiety as a common issue. Anxiety and stress are closely linked to immune function, which can be monitored through viral load. Persistent and widespread concern, along with emotions of powerlessness and uncertainty, are characteristics of anxiety. Stress results from stressors events or situations that disrupt a person's life and necessitate adaptation or coping. HIV/AIDS itself acts as a stressor for those diagnosed with the virus. However, it can also be seen as a response, with PLWHA exhibiting varying reactions, both positive and negative, to their diagnosis (Hidayanti, 2013). The majority of PLWHA in Indonesia and Timor Leste have undetectable virus loads because they deal with low levels of stress and concern.

Social support's impact on PLHIV immunity in Indonesia and Timor Leste

Social support is a term that refers to the aid that is provided to individuals, both emotionally and practically. The association between the viral load and societal support for PLWHA in Timor-Leste and Indonesia is shown in the accompanying chart.

Table 10. Respondents' cross-section between immunity and social support

Social Support	Viral Load						Total	
	Indonesia			Timor Leste				
	High	Low	Not Detected	High	Low	Not Detected	N	%
Low	2	6	15	0	1	48	95	95
High	3	12	12	0	0	1	5	5
Total	5	18	27	0	1	49	100	100
	P= 0,207			P= 0,439				

Considering p-values of 0.207 in Indonesia and 0.439 in Timor Leste ($p > 0.05$), the table demonstrates no discernible social support and viral load are related to one another. Adherence to ARV medication is one of the many variables that affect immunity. Regular ARV usage improves life quality. Social support can come from significant individuals such as parents, spouses, friends, colleagues, doctors, or community organizations. People living with HIV/AIDS (PLWHA) can still thrive and integrate into their communities, but they require strong support from family, community, and their surroundings, as their needs differ from those of healthy individuals.

4. Conclusion and future scope

The psychological circumstances that PLWHA faces in Timor-Leste and Indonesia are the same; nevertheless, there are variances in the social assistance that these individuals. In some cases, the viral load in PLWHA was undetectable, which is attributed to patients consistently taking antiretroviral (ARV) medications as prescribed by healthcare professionals.

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Conflict of interest

The work reported in this article is not influenced by any personal ties or financial interests.

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