

The self-management model can increase the immunity of people with HIV and AIDS during the COVID-19 pandemic

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Abstract

Cases of people living with HIV and AIDS continue to increase from year to year, necessitating a focus on maintaining their health. To ensure their well-being, individuals with HIV/AIDS must be vigilant in preserving their immunity, especially during COVID-19 pandemic. This research aimed to enhance the immunity of people with HIV and AIDS during the COVID-19 pandemic utilizing a self-management model approach. The research employed a quasi-experimental design

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with pretest and posttest measurements, involving a sample of 30 HIV and AIDS patients in Sorong City, selected through purposive sampling technique. Independent variable in this research was the self-management model, which measured using Self-Management Model Guidebook and dependent variable was increasing the immunity of people with HIV and AIDS, which was measured using Self Reporting Questionnaire (SRQ) and CD4 cell observation. Data were analyzed using Wilcoxon test with significance level for these tests was set at 95%, with $\alpha \leq 0.05$. Analyzing the SRQ results of HIV/AIDS patients before and after the intervention, indicated a significant difference with a Sig. (2-tailed) of $0.044 < 0.05$. This suggests a notable change in the SRQ results of HIV/AIDS patients. Additionally, the analysis of CD4 cell values before and after the intervention, yielded a Sig. (2-tailed) of $0.000 < 0.05$, signifying a difference in the CD4 cell results of HIV/AIDS patients. In conclusion, implementing the self-management model with the four management functions from Planning, Organizing, Actuating, and Controlling (POAC) over a period of 30 days for HIV and AIDS patients during the COVID-19 pandemic can enhance both mental and psychosocial immunity, as well as physical immunity. The findings of this research provide valuable information to health workers, recommending the adoption of the Self-Management Model Guide intervention to enhance the immunity of individuals with HIV and AIDS.

Introduction

At the beginning of 2020, humanity was shocked by the emergence of the Coronavirus Disease (COVID-19) disease outbreak.¹ The COVID-19 began to spread in Wuhan, China that caused by SARS-CoV-2.² Since the discovery of the COVID-19 virus, whose transmissive capacity is overpowering, has led to a deterioration in the situation.³ Unexpectedly, 213 countries in the world have been affected by this virus, including Indonesia. This situation has had a significant impact, causing fear, anxiety, and a constant effort to avoid exposure to the COVID-19 Virus during the pandemic because it spreads very quickly.^{4,5} The threat of the virus transmitting to family members and the subsequent death or illness of a relative or friend as a result of the pandemic has had psychological effects.⁶

Based on WHO data in 2021, it was found that the COVID-19 disease has infected almost 2 million people, with deaths reaching more than 100 thousand cases.⁷ Meanwhile, in Indonesia, based on data reported by the Ministry of Health through the COVID-19 Handling Task Force, which was collected in the last 24 hours on April 22, 2021, the number of coronavirus infections was 1,626,812 people, and 44,172 of them died. Based on this data, it is known that deaths due to this virus occur more often in patients with comorbid diseases and vulnerable groups. One of the vulnerable groups to the coronavirus 19 is people with HIV and AIDS.⁸

HIV/AIDS is a disease that attacks the human immune sys-

tem, rendering the body unable to recover from opportunistic diseases and leading to death,⁹ as there is no drug capable of eliminating the virus. Individuals affected must bear the consequences of this disease.¹⁰ which targets specific cells and destroys CD4 T cells.¹¹ People living with HIV/AIDS often experience stigma and discrimination, especially within their communities.¹² This triggers psychological problems, including anxiety, depression, and the risk of suicide.¹³ The incidence of HIV/AIDS continues to increase, both globally and nationally. In Indonesia, based on data obtained from the Ministry of Health in 2021, there were 7,650 people with HIV and AIDS. The highest number of cases of people with HIV and AIDS was in the 25-49 year age group (71.3%), followed by the 20-24 year age group (16.3%), and the ≥ 50 year age group (7.9%)¹⁴. Meanwhile, HIV and AIDS cases in Sorong City, West Papua Province, resemble an iceberg phenomenon. Currently, Sorong City is in a widespread epidemic area, with the number of cases of people with HIV and AIDS amounting to 306 people in 2021. In Sorong City, West Papua, the handling of COVID-19 is overshadowing the issue of HIV/AIDS. Many annual programs for cases of people living with HIV and AIDS that had been established were not implemented because the local government's focus was more on the COVID-19 pandemic.¹⁵ Inadequate knowledge about the risk of HIV infection will influence HIV prevention and therapy.¹⁶

Difficulty in accessing treatment and care for people with HIV and AIDS has become more pronounced during the COVID-19 pandemic.¹⁷ Efforts are needed to continue enhancing the body's immunity of people with HIV and AIDS during this pandemic. The importance of body immunity is highlighted as a component capable of combating both HIV/AIDS and COVID-19. Amid the ongoing pandemic, the most suitable approach to boost immunity and reduce the spread of COVID-19 infection in people with HIV and AIDS is to implement self-management. The goal of self-management for people with HIV and AIDS is to assist clients in managing their own health and increasing adherence to their treatment plans through coaching, counseling, and accessible content.¹⁸ Evidence has shown that self-management interventions conducted for people living with HIV and AIDS could improve their quality of life.¹⁹ reduce pain and/or physical symptoms,²⁰ and enhance adherence to Highly Active Antiretroviral Therapy (HAART).²¹

Previous studies did not focus on the self-management of people with HIV and AIDS to enhance their body's immunity based on the sequence of management functions, namely POAC (Planning, Organizing, Actuating, Controlling). Instead, they concentrated solely on self-management intervention research with interventions consisting of a combination of skills training, and telephone counseling to maintain medication adherence and quality of life, followed by symptom management, self-efficacy, coping, and social support.²² Educating and caring for people with HIV and AIDS about self-management constitutes a crucial function of nurses. To provide information to nurses and policymakers regarding self-management programs during the pandemic, it is necessary to design appropriate self-management model interventions for people with HIV and AIDS to boost their body's immunity amid the COVID-19 pandemic. Researchers designed a Self-management model for people with HIV and AIDS based on the four management functions starting from Planning, Organizing, Actuating, and Controlling (POAC). Therefore, this study aims to examine the effect of implementing self-management model intervention from the four management functions (Planning, Organizing, Actuating, and Controlling) to increasing the body's immunity of people with HIV and AIDS during the COVID-19 pandemic in Sorong City.

Materials and Methods

Research design

This research was conducted using a quasy-experimental design with a pretest and posttest to evaluate the effect of implementing self-management interventions on increasing the body's immunity in people with HIV and AIDS during the COVID-19 pandemic.

Setting and samples

The study was conducted in Sorong City, West Papua, Indonesia. The study's population consisted of HIV/AIDS patients in Sorong City in 2022. The sample size was calculated using analytical formula paired numerical comparatives. Based on the calculation results, the sample size for this study was determined to be 30 respondents with HIV and AIDS in Sorong City who were selected through purposive sampling technique, according to inclusion and exclusion criteria. The inclusion criteria for this study: people with HIV and AIDS with restriction age 17 to 55 years old who live in Sorong City, willing to participate in the research by signing an informed consent form, and not in an emergency condition or a comatose level of consciousness. Exclusion criteria for this study included: individuals with HIV and AIDS experiencing decreased consciousness or deceased, infants, children, and pregnant women with HIV and AIDS not willing to participate in the research or those who withdrew from the study. Data collection took place from May to June 2022.

Interventions

Thirty respondents will receive an intervention with the Self-Management Model to enhance immunity (physical, mental, and psychosocial immunity). The first step in this study is a pretest involving the completion of a questionnaire form and CD4 examination. Following the pretest, respondents will undergo a one-month intervention with the self-management model aimed at increasing immunity. The Self-management in this research was carried out in 4 stages, starting from Planning, Organizing, Actuating, and Controlling (POAC). The planning stage: planning starts from physical and mental examination of each participant. The Organizing stage: Create a strategy to maintain body immunity within 30 days. In 30 days, the HIV/AIDS patients should increase physical immunity and increasing mental health immunity. The Actuating stages: Implement the strategy that has been prepared within 30 days, with 30 meetings/sessions, and each session is held for 1 hour. Interventions given to increase physical immunity include consuming nutritious food, meeting fluid and mineral needs, exercising, sunbathing in the morning, and ensuring adequate rest and sleep. Interventions given to increase the mental health immunity include physical relaxation, positive emotions, positive thoughts, positive behavior, positive relationships, and spirituality positive. During the 30 days of implementation, monitoring was carried out by researchers and families every day using Whatsapp Group media as well as supervision by researchers with the help of enumerators. The last stages are Controlling Stages: Evaluation of the implementation is carried out every 3 – 7 days to see the progress. After that, the posttest measurements will be conducted to evaluate the immunity of people with HIV and AIDS using the Self Reporting Questionnaire (SRQ) and the CD4 examination.

Measurement and data collection

The dependent variable in this study is the increased immunity in people with HIV and AIDS, which comprises two indicators: physical immunity and psychosocial mental immunity. These variables were assessed using a Self-Reporting Questionnaire (SRQ) to collect psychosocial mental immunity data,²³ and physical immunity data were collected by examining CD4 cells in HIV/AIDS patients.²⁴ All respondents provided written informed consent, and the study was approved by the Ethics Committee of Poltekkes Kemenkes Sorong under ethical approval Number: DM.03.05/6/008/2022.

Data analysis

The data analysis included descriptive statistics such as frequency, percentage, mean, standard deviation (SD), and the minimum and maximum values for each variable. Inferential analysis was carried out using the Wilcoxon statistical test to assess differences in pre- and post-scores. The desired significance level for these tests was set at 95%, with $\alpha \leq 0.05$.

Results

Based on the results presented in Table 1, it shows that most respondents' characteristics based on gender are 18 (60%) males. The highest characteristics of respondents based on age are 11 (36.7%) in the Early Adults age group (26-35 Years). The highest characteristic of respondents based on the time of diagnosis is 17 (56.7%) diagnosed within < 5 years.

Based on the results presented in Table 2, it is shown that the statistical analysis using the Wilcoxon test indicates that all variables yielded significance values lower than $\alpha < 0.05$. The SRQ results show that the p-value of Sig. (2-tailed) is $0.044 < 0.05$, leading to the conclusion that there is a difference between the SRQ of HIV/AIDS patients before and after the intervention. Meanwhile, the CD4 examination results show a p-value of Sig. (2-tailed) $0.000 < 0.05$, implying that there is a difference between the CD4 Cells of HIV/AIDS patients before and after the intervention. This suggests that providing interventions using self-management to patients with HIV and AIDS can increase the patient's immunity during the COVID-19 pandemic in Sorong City.

Discussion

People with HIV/AIDS are one of the community groups affected during the COVID-19 pandemic.²⁵ They experience a sick condition that compels them to take medication every day and undergo routine therapy and laboratory examinations as scheduled. During the COVID-19 pandemic, all matters related to people living with HIV and AIDS require full attention.²⁶ Additionally, if infected with COVID-19, people with HIV/AIDS have a higher chance of dying.²⁷ People with HIV and AIDS are susceptible to various infectious diseases, especially opportunistic infections. Opportunistic infections are infections caused by microorganisms that take advantage of specific conditions to arise. HIV patients in Indonesia tend to easily progress to the AIDS stage because they experience opportunistic infections.²⁸

Clinically, the CD4 lymphocyte count is used as a sign of the emergence of opportunistic infections in AIDS patients.²⁹ The target cell of the HIV virus is CD4. CD4 levels are the best parameter to measure immunodeficiency and can be an early indicator of disease progression. CD4 counts can fluctuate differently in each patient. Factors influencing CD4 levels in HIV/AIDS patients include age, gender, initial CD4 levels, and nutritional status.³⁰ People with HIV and AIDS really need to maintain their body's immunity, which has an effect on increasing CD4 cells.³¹ It is nec-

Table 1. Distribution of respondent characteristics according to demographic data.

Characteristics	N	%
Gender		
Man	18	60
Woman	12	40
Total	30	100
Age		
17-25	6	20
26-35	11	36.7
36-45	9	30
46-55	4	13.3
Total	30	100
Diagnosis		
< 5 year	17	56.7
> 5 year	13	43.3
Total	30	100

Table 2. Results of testing the self-management model to increase the immunity of people with HIV and AIDS during the COVID-19 pandemic in Sorong City.

Variable	Pretest		Test		Mean	p
	N	%	N	%		
SRQ						
Normal	2	6.7	16	53.3	18.57	0.044
Problems of psychology	20	66.6	12	40.0		
Use of Psychoactive Substances/ Drugs	2	6.7	2	6.7		
Trauma-induced stress disorder	6	20.0	0	0		
Total	30	100	30	100		
CD4						
< 200 sel/mm ³	4	13.3	0	0	30.50	0.000
200 - 499 sel/mm ³	17	56.7	3	10.0		
> 500 sel/mm ³	9	30.0	27	90.0		
Total	30	100	30	100		

essary to strengthen the understanding of people living with HIV and AIDS about how to behave healthily and maintain health, especially during the pandemic.³²

The results of this study, as determined through statistical analysis tests with the Wilcoxon test, reveal significant differences in the immunity of HIV/AIDS patients before and after applying the self-management model during the COVID-19 pandemic. Self-management is highly recommended for people with HIV and AIDS. This research demonstrates that applying self-management to people with HIV and AIDS has proven to increase their immunity, encompassing both physical immunity (increased CD4 cells) and mental health immunity.

Self-management in this research was carried out sequentially using the four management functions from Planning, Organizing, Actuating, and Controlling (POAC). Self-management to increase physical immunity involves consuming nutritious food, meeting fluid and mineral needs, exercising, sunbathing in the morning, and ensuring adequate rest and sleep. Apart from enhancing the physical immunity of people with HIV and AIDS, mental health resilience is also improved by physical relaxation, positive emotions, positive thoughts, positive behavior, positive relationships and spirituality positive.

This is in line with several research results that highlight various efforts to enhance the immunity of people living with HIV/AIDS (PLWHA). These efforts include maintaining optimal nutritional status,³³ engaging in regular exercise, receiving family support,³⁴ ensuring adequate sleep and rest (30), and preserving mental health,³⁵ and preserving mental health.³⁶ Through these initiatives, it has been proven that immunity in people with HIV and AIDS can be increased, helping them withstand infections and diseases and allowing them to continue living productive lives.³⁷

Self-management is a behavior modification technique that focuses on self-regulation. Numerous studies have demonstrated the benefits of implementing self-management. In Puspasari's research (2021), it was found that self-management had a positive effect on improving the quality of life of people with HIV and AIDS.³⁸ In research by Nur *et al.* (2022), the application of individual counseling using self-management techniques conducted over six meetings showed the expected changes in behavior, specifically increased compliance in taking medication.³⁹

Self-management interventions have also been employed in several treatments for chronic disease patients to enhance symptom management. These interventions may be designed specifically to improve the quality of life and promote self-management aspects of healthcare, such as medication adherence.⁴⁰

Conclusions

The implementation of self-management interventions for people with HIV and AIDS in Sorong City shows a significant influence on the immunity of individuals, resulting in increased body immunity (CD4) and enhanced mental health immunity. This was achieved through the implementation of self-management from Planning, Organizing, Actuating, and Controlling (POAC) over a period of 30 days. It is recommended that the results of this research provide additional information to health workers regarding the Self-Management Model Guide intervention to increase the body's immunity for people with HIV and AIDS.

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