

Nurse's role as a counselor and adherence to antiretroviral therapy among HIV/AIDS patients: a cross-sectional study in a public health center setting in Indonesia

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Abstract

Introduction: The role of a counselor is one of the factors affecting human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) patients adherence to antiretroviral (ARV) therapy. The purpose of this study was to analyze the relationship between nurses' role as counselors and adherence of HIV/AIDS patients to antiretroviral therapy.

Material and methods: This correlational study with a cross-sectional approach included eighty-eight HIV/AIDS patients from nine public health centers (PHC) in Banyuwangi, Indonesia. Patients were selected using purposive sampling technique, and data were obtained using a counselor role assessment questionnaire to assess nurses' role. Moreover, Morisky medication adherence scale (MMAS-8) questionnaire was applied to assess the level of medication adherence. Data were analyzed with Spearman's rank correlation.

Results: This study showed that 62.5% of participants perceived nurses' role as counselors as not good, and more than half of patients had a high level of adherence (68.2%). There was a positive correlation between the nurses' role as counselors and level of adherence ($p < 0.001$, $r = 0.365$).

Conclusions: The better the nurses' role as counselors, the higher the adherence of HIV/AIDS patients to antiretroviral therapy. It is essential to improve the quality of counseling services, so that patients' adherence remains good and continues to increase.

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Key words: nurses, counselors, HIV/AIDS, adherence, antiretroviral.

Introduction

The increasing number of human immunodeficiency virus (HIV) cases is a worrying phenomenon. Although some people living with HIV/acquired immunodeficiency syndrome (AIDS) who receive antiretroviral (ARV) therapy im-

prove their quality of life, HIV cases do not decrease yearly [1]. To control HIV infection, Indonesian Government in line with WHO global responses [2], has three targets on Getting to Zero in 2030, such as reducing to eliminating new infections and AIDS-related deaths, and reducing stigma and discrimination against people living with HIV/AIDS

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(PLWHA) [3]. The targets will be achieved with a 90-90-90 strategy, namely 90% of people who are living with HIV know their status, 90% of people diagnosed with HIV receive ARV, and 90% of people who take ARV are virally suppressed [4]. In addition, ARV is important due to viral suppression, and can reduce mortality, morbidity, and HIV transmission among PLWHA [2].

One of the characteristics of HIV is its ability to develop resistance, hence HIV-positive patients are required to take their medication for lifetime; therefore, high level of adherence is needed to ensure the success of therapy. Compliance with ARV can stop viral activity, improve immune system, reduce the risk of opportunistic infections, and decrease the occurrence of disability. Antiretrovirals cannot cure PLWHA, but can improve quality of life and prolong life expectancy [5]. Additionally, compliance is an essential key in preventing resistance since 90-95% of adherence to antiretroviral drugs can reduce the extent of HIV by 85%, and reduce virus transmission to others [6]. Resistant viruses can develop faster and have a worse impact on the course of the disease [5].

Patient adherence to antiretrovirals is influenced by psychological, boredom, and stigma factors [7]. Several issues cause non-compliance of PLWHA to antiretroviral drugs, including age, gender, education level, economy, fear of drug side effects, lack of information about the disease, access to services, support from family, and medical personnel [8]. A previous study reported that knowledge and perception influence compliance, and social support has no significant effect [9]. PLWHA need to enhance their adherence not only by improving their knowledge through nurses as counselors, but also changing perception and obtaining support.

Before starting treatment, PLWHA must receive counseling from a healthcare provider or counselor [2]. Public health centers (PHC) can provide care, support, and treatment (CST) services for HIV/AIDS patients in Indonesia; however, not all PHC are prepared for providing services. Intervention for HIV/AIDS care in PHC include various activities of counselors supporting patients during ART using CST program [10]. In Indonesia, many HIV counselors have a nursing background, and other healthcare members can be counselors through training and delegated from public health office. Doheny in 1982 identified the role of a counselor as a nurse, such as care provider, advocator, educator, coordinator, change agent, and patients' problem solver (consultant) [11]. According to previous statement, counselors' role is important in improving PLWHA adherence to ARV therapy. In contrast, a study showed that barriers to implementing effective counselling behavior included nurses' negative perceptions about counselling of HIV/AIDS patients [12]. The role of a counselor is needed in the treatment process not only to increase patient knowledge, but also to provide psychological support, so that patients can adjust to their current health conditions. Psychotherapy by a counselor is an important entry point for patients to gain access to services; there is a communication process to help solving problems and undertake a right decision according

to a problem. Counseling by trained personnel, including nurses, is carried out before and after testing and during treatment, to provide clear information to patients [13]. In addition, a counselor also conducts continuous clinical monitoring, plans basic laboratory tests, and supervises the effectiveness of antiretroviral drugs [5].

In many PHC in Indonesia, only one counselor is available to many patients. This may lead to problems with counseling activities. A counselor's role in the control or follow-up session is to provide advice on medication adherence, check the correct method of drug consumption, ensure that the drug has been consumed, evaluate side effects, check for opportunistic infections, and provide psychological assistance if needed. Nurses, as the members of HIV counselors in many PHCs in Banyuwangi, are expected to be able to help patients to make wise and realistic decisions. Therefore, according to Sistem Informasi HIV/AIDS (SIHA) or HIV/AIDS information system in 2019, one of the regions that influence HIV/AIDS cases in East Java Province, Indonesia, is Banyuwangi Regency (ranked as fifth). From the 2020 data of Health Department of Banyuwangi on new HIV-positive cases in 2019 in Banyuwangi, there were only 57.6% patients (of the supposed target of 90%) who received antiretroviral drugs. The current study aimed to analyze the correlation between the nurses' role as counselors and adherence to antiretroviral drugs among HIV/AIDS patients in a public health center setting in Banyuwangi, Indonesia.

Material and methods

This research used a correlational analysis with a cross-sectional approach. Eighty-eight PLWHA who received ARV therapy from nine PHCs with care, support, and treatment (CST) services by nurses as HIV counselors, were included in the study. Inclusion criteria were PLWHA who were taking ARVs at least for one month, were involved in counseling process, and were more than 17 years old. Sample size of this study was determined with statistical power analysis test using G-Power application (statistical power of 0.90, significance level of 0.05, and effect size of 0.4), and obtained by purposive sampling technique. The study was conducted between February and June, 2021 in nine PHCs in Banyuwangi, Indonesia.

The independent variable was nurses' role as counselors and the dependent variable was adherence to taking antiretroviral drugs among HIV/AIDS patients. Data on independent variable were obtained directly from respondents who assessed the role of nurses as counselors by filling out a validated (score, 0.54-0.84) and reliable (score, 0.896) questionnaire from a previous study [13], which consisted of 12 questions (Guttman scale 0-1, 'Yes/No' option). Respondents perceived the nurse's role as a counselor as good if the score was more than 11, and not good if the score was less than 11. Respondents' adherence as the dependent variable was assessed by validated (score, 0.69-0.89) and reliable (score, 0.876) Morisky medication adherence scale (MMAS - 8, Indonesian version) from a previous study [14], which consisted of eight questions (Guttman scale 0-1, 'Yes/ No' op-

tion). Adherence was perceived as a high level if the score was 8, moderate level if the score was 6-7, and low level with the score < 6. Respondents were filling out the questionnaire in PHC during their visits for ARV treatment, where the time for taking the drug has been previously scheduled by counselor in every PHC. Correlation analysis were performed using Spearman's rank test, with a significance level of 0.05. This research has been declared ethically feasible based on the 2016 CIOMS guidelines.

Results

From the 88 respondents, 9 were aged between 17 and 24 years (10.2%), 66 were aged 25-49 years (75%), and 13 were aged > 50 years (14.8%). There were 42 men (47.7%) and 46 women (52.3%) included.

According to Table 3, most respondents perceived the nurse's role as not good (62.5%). Moreover, most nurse counselors presented not satisfactory counseling at the time of service. Table 1 shows that the lowest parameter in assess-

ing the nurse's role as a counselor was the 9th question about providing information on the importance of CD4 examination. Table 3 also shows that adherence to antiretroviral drugs in PHC with CST services in Banyuwangi was mostly at high level of adherence (68.2%). Table 2 shows that the lowest parameter in assessing adherence to taking antiretroviral drugs was the first question, saying that most respondents forgot to take their antiretroviral medicine as per their schedule.

Spearman's rank correlation analysis in Table 3 demonstrates that $p < 0.001$ means a significant correlation between the nurse's role as counselor and adherence to taking antiretroviral drugs, with weak strength and positive direction ($r = 0.365$). These results indicated that the higher the value of the nurse's role as counselor, the higher the PLWHA adherence to taking ARV drugs.

Discussion

This study indicates a significant correlation between the nurse's role as counselor and adherence to antiretroviral

Table 1. Respondents' answers on the role of nurses as counselors ($n = 88$)

No.	Counselor nurse's activities	Answer "Yes" from respondents, n (%)
1	Providing information about HIV/AIDS	88 (100.0)
2	Explanation of the right time to take ARV	85 (96.0)
3	Providing information on the use of ARV	88 (100.0)
4	Description of the dosage of ARV	73 (82.9)
5	Providing information about the benefits of ARV	88 (100.0)
6	Providing information about the side effects of ARV	86 (97.7)
7	Providing information about the consequences if patients do not comply with taking ARV	88 (100.0)
8	Providing information on ARV interactions with other drugs	72 (81.8)
9	Providing information about the importance of CD4 tests	68 (77.0)
10	Providing information about the dosage of ARV	81 (92.5)
11	Checking the frequency of taking ARV	77 (87.5)
12	Verification of knowledge of patients about correct time of taking ARV	83 (94.3)

Table 2. Respondents' responses on the adherence based on MMAS-8 question items ($n = 88$)

No.	MMAS-8 question items	Answer "No" from respondents, n (%)
1	Sometimes I forget to take my medicine	72 (81.8)
2	Intentionally, I do not take medicines in the last two weeks	87 (98.7)
3	I reduced or stopped taking medication because I felt the pain was getting worse	86 (97.7)
4	I forgot to carry the medicine while traveling	84 (95.5)
5	Yesterday, I did not take the medicine	88 (100.0)
6	I stop taking the medicine when I feel well	87 (98.7)
7	I am feeling disturbed by the schedule of taking medication	73 (82.9)
8	I have difficulty taking medication	81 (92.0)

Table 3. Correlation analysis about the role of nurses as counselors and adherence to taking antiretroviral treatment ($n = 88$)

Variables	Patients' adherence			Total, n (%)	Correlation analysis*	
	High, n (%)	Moderate, n (%)	Low, n (%)		p -value	r -value
The role of nurses as counselors					< 0.001	0.365
Good	30 (34.1)	2 (2.3)	1 (1.1)	33 (37.5)		
Not good	30 (34.1)	23 (26.1)	2 (2.3)	55 (62.5)		
Total	60 (68.2)	25 (28.4)	3 (3.4)	88 (100.0)		

*Spearman's rank correlation, with $\alpha = 0.05$

intake among PLWHA in nine PHCs of Banyuwangi, Indonesia. Banyuwangi is the gateway to the eastern part of Java Island, and has become one of Indonesia tourists' destinations. The more the entertainment places, the higher the mobility of residents and tourists. Domestic tourist visits have increased significantly, from 1 million people in 2013 to 5 million in 2019. With this phenomenon, the Banyuwangi Government is aware of the increasing number of HIV/AIDS cases. Therefore, Banyuwangi Health Office carried out several strategies, including adding infrastructure that supports VCT services in 45 PHCs, and 33 of them provide care support treatment (CST). By expanding CST services, it is hoped that HIV-positive patients can be immediately treated through counseling process, so they do not progress to AIDS.

These results suggest that the higher the value of the nurse's role as counselor, the higher the respondent's adherence to taking antiretroviral drugs. In line with a previous research, there is a significant effect between the support of health workers and adherence to treatment of HIV/AIDS patients undergoing ARV therapy in the Manahan Health Center, Surakarta [8]. The availability of counselors and good cooperation with patients affect treatment success [15]. There is no study investigating the effectiveness of counseling by nurses and other health workers. In addition, the WHO's target about Getting to Zero [2] and Sustainable Development Goals about ensuring healthy lives and well-being [16] are crucial to implement.

According to the current research, it was found that 62.5% of respondents perceive the nurse's role as not good, and 37.5% perceive the nurse's role as good. Doheny in 1982 identified the role of a nurse as a counselor in the counseling process since the counselor in HIV services combines all other functions. The nurses provide not only physical, but also psychological support. To become a counselor, a nurse must receive standardized and certified training. Counseling by trained personnel is carried out before and after testing and during treatment to provide correct information to patients [13]. In addition, a counselor is required to provide continuous clinical monitoring, planning basic laboratory tests, and supervising the effectiveness of ARV drugs [5].

One of the absolute role of counseling is ensuring the adherence to taking ARV drugs before a patient gets a treatment plan and will start drug therapy for lifetime. This counseling aims at preventing drug resistance, where patients must be accurate in getting ARV drugs, regimens, how to take medi-

cines, and adequate doses. Counseling on medication adherence is carried out at every visit. The counselor instructs how to take medication and ensures that the medication is appropriately taken, evaluates side effects and checks for opportunistic infections, and provides psychological assistance if needed. In the process, the counselor must determine possible barriers that affect compliance and evaluate each visit. Among them are checking the condition of physical, mental, environmental, social aspects and assessing the presence of drug side effects, type of regimen, and drugs' interactions.

Similar with previous study, most respondents evaluated the nurse's role as not good (58.7%) compared with the nurse's role rated as good (41.3%) [17]. Another study also stated that 83.3% of respondents rated the nurse's role as not good, and only 16.7% evaluated as good [4]. In contrast with another research, 67.8% of respondents estimated the counselor's role as good [13]. In yet another study, 54% of respondents received good support from a counselor, and only 5% obtained poor support [8]. In line with a previous research, it is known that 74% of respondents stated that the nurse's role was good, and 13 respondents (26%) stated that the nurse's role was not good [18]. It can be shown that the nurse's role as counselor need to enhance healthcare services among PLWHA in PHC.

As a counselor, the nurse's role consists of 4 indicators, such as providing information about HIV/AIDS, explaining the right time to take ARV treatment, providing information about ARV drugs, and the importance of CD4 test. Based on the results of this research, the indicators of providing information about HIV/AIDS are shown as good. However, based on several other items, 62.5% of respondents concluded that the role of nurses as counselors is still not good. Respondents' responses on nurses' role as counselors are due to external factors that affect their role as a counselor. One of them is the role of nurses in monitoring and providing information to patients about CD4 tests every six months. More than 20% of respondents said that nurses had never advised them to check CD4 count level. CD4 examination is essential in monitoring a person's immune system [7] to determine the level of effectiveness of ARV therapy. High-cost of the test may influence the lack of information or limited access to facilities in government-owned HIV/AIDS referral health services [19], especially PHCs. It is known that not all health services are covered by health insurance, so nurses may hesitate to suggest patients taking CD4 tests. Nurses as

counselors are influenced by factors that support their role as a counselor, such as availability of service facilities that support the monitoring and evaluation of medication adherence in PLWHA.

In this study, adherence to ARV drugs was described through self-reports from PLWHA evaluating behaviors in taking ARV drugs. More than half of respondents showed high adherence based on the research results, less than 30% had moderate adherence, and only 3.4% had low adherence. Treatment adherence is a condition where patients are willing to comply with the treatment [20]. Adherence can be seen from patient's behavior, such as correctly taking medication, and right dosage, frequency, and time [5]. Several factors that influence medication adherence include the level of knowledge, peer group support, and drug side effects [21]. In addition, patient adherence to ARV is influenced by patient psychology, boredom, and stigma factors, but not by social support, perception, and drug side effects [7]. The effect of non-adherence is that ARV do not reach optimal concentration in the blood. Resistance can occur and the development of viral load cannot be suppressed by antiretroviral treatment; patients can still transmit the virus to others because many PLWHA are having sexual activities [22]. In result, the virus develops faster, worsen the course of the disease, and increase the mortality rate due to opportunistic infections. If the mortality rate increases, the WHO's target of Getting to Zero cannot be achieved and HIV/AIDS pandemic will never end.

From the current study, the majority of respondents' adherence to ARV medication was at high level. Several factors was shown to influence the role of nurse during counseling, such as the consumption of a simple fixed-dose combination (FDC) of ARV and making it easier for patients to take medication. In line with previous research, almost all respondents who received the preparation once a day made the schedule for taking medication more manageable to accept and remember [4]. All respondents said that while taking FDC of ARV, no severe side effects were experienced. Supported by other, the combination of ARV drugs had smaller doses, so that the side effects of drugs were lighter [21]. Cost affordability is also one of the factors that can increase the access and continuity of treatment, considering that HIV/AIDS patients must take ARV therapies for a lifetime. CST services at PHC are free of charge because the Government provides all medicines. In question is the patient's cost to obtain treatment at a PHC, where the patient does not needs to pay for ARV [19]. Other factor that affect adherence is CST service approach at a PHC, which can be reachable. Factors, such as the support from family and peer group, where families and peer groups can represent PLWHA to take medication if unable to attend the clinic as well as supervising taking medication by the patient, need to be considered.

This research indicates that the higher the value of nurse's role as counselor, the higher the PLWHA's adherence to ARV drugs. The results of the analysis of this study showed that there is a positive relationship between two variables: the better the role of nurses as counselors, the higher the compliance

of HIV/ AIDS patients to taking ARV drugs. Most respondents perceived the nurse's role as not good, but the level of adherence to taking medication was high. The finding implies that nurses' role as counselors influences adherence, but many other factors support adherence to ARV drugs, including internal and external factors. Internal factors are self-motivation and religious belief. One of health workers' support is from nurses who act as HIV counselors; they are required to arrange meetings with patients who require counseling. This counseling service is provided from before HIV testing to after testing, including monthly drug-taking and monitoring of ARV drug adherence. Health worker's support is an external factor in combination with the existence of social support, including family and peer group support.

The limitation of this study is that it only evaluated the adherence to ARV consumption subjectively and did not observe PLWHA ARV consumption behaviors. However, to anticipate the subjectivity of the response, we not only asked their drug companions or "pengawas minum obat", but also cross-matched the information with a patient's consumption schedule from the previous month by a nurse as counselor. In addition, the advantage of this study is its multi-center nature, highlighting the problems that occur in various PHCs.

Conclusions

In the current study, there was a positive correlation between the nurse's role as a counselor and the level of adherence. The better the nurses' role as counselors, the higher the adherence of HIV/AIDS patients to antiretroviral drugs' intake. It can be reflected that the counselor role is related with healthy behaviors of PLWHA. Therefore, it is essential to make various innovations in counseling to increase patient understanding and awareness of the importance of adherence to taking ART.

Disclosures

1. Institutional review board statement: The study was approved by the Ethical Review Committee of the Faculty of Nursing, Universitas Jember, with approval number: 82/UN25.1.14/KEPK/2021.
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