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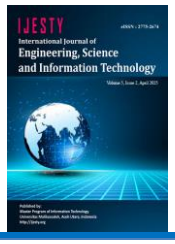

Analysis of Viral Load Values in PLHIV Receiving Peer Support During Six Months of Treatment

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Abstract

HIV/AIDS remains one of the significant global health challenges that require long-term management for viral suppression. Antiretroviral therapy is considered the cornerstone of treatment. However, while ART has proved effective, there is limited data regarding the effectiveness of peer support on viral load outcomes. The paper, therefore, seeks to describe changes in viral load among PLHIV who received peer support over six months. We used a descriptive quantitative approach in this study; the data source was obtained from secondary data by the Ministry of Health through its SITRUS system and monitoring ART treatment in PLHIV patients. A total of 58 participants with ART treatment in health facilities with PSS were used in this study. Data were collected from several healthcare facilities and then analyzed descriptively to review the distribution of changes in viral loading within six months of treatment. Results showed that the success of viral suppression varied depending on the kind of ART treatment. However, the viral load values were lower across the board due to peer support. Therefore, peer support influenced adherence to therapy by participants irrespective of individual personalities and personal traits. Despite various treatment response rates, the general trend of the findings in this study was that peer support contributed to PLHIV's adherence to their regimes. This can be interpreted into generally better health conditions, including less viral load as a critical attribute essential for low levels of HIV transmission and the procreation of slow-onset diseases. These findings emphasize how important peer support is to increase ART adherence and viral suppression, which is key in the control of HIV according to public health strategies.

Keywords: *Peer Support, Viral Load, Antiretroviral Therapy*.

1. Introduction

Due to the widespread availability of ART, there is renewed optimism and improvement in the quality of life among PLHIV in many parts of the world [1]. Antiretroviral therapy (ART) manages the virus and allows one to live a longer and better life. Despite the recent advances, HIV/AIDS is considered one of the major concerns of global health, as 42.3 million lives have been lost so far. This, therefore, calls for a continued effort in the fight against the epidemic through education, treatment, and prevention. Worldwide, ideal targets have been set for 2025 to address this challenge. Among these targets is achieving viral load suppression in 95% of those receiving treatment, diagnosis in 95% of PLHIV, and ensuring that 95% of those diagnosed are on life-saving antiretroviral medication [2]. To decrease the spread of HIV within communities and to improve the health and well-being of individuals, it is essential to reach these aims. Collaborative efforts from governments, healthcare organizations, and communities worldwide are necessary to realize these goals.

By 2023, the progress in the global effort to fight HIV is considerable: 86% of all PLHIV know their status, and 77% are on ART. 72% have suppressed the virus. Though these numbers reflect some progress in diagnosis, treatment, and care for people living with the virus, they form the basis for where we fall short of our global goals. These gaps have been addressed through various interventions aimed at enhancing retention in care, reducing stigma, facilitating uptake and adherence to ART, and offering mental health support for those living with HIV. Generally, such initiatives have been implemented to increase the proportion of patients who can achieve viral

suppression and improve treatment outcomes [3]. In the face of these challenges, peer support has been pointed out as one of the most promising interventions. Peer support programs, where individuals of similar experiences come together to provide one another with moral support, advice on the management of daily challenges, and positive role models, have greatly benefited people living with HIV. Community-based organizations composed of people living with HIV/AIDS began supporting one another in the 1980s through the sharing of stories, the creation of community networks, and activism to demand better healthcare. Grassroots movements underscore how personal narratives overpower healthcare barriers by allowing individuals and communities to emerge as resilient counterparts. Skilled and trained peer mentors can meet the many needs of people living with HIV, which makes peer assistance a component of HIV care itself [4]. The special contribution of peer support organizations and public health professionals has been felt particularly in underdeveloped nations. The same groups have helped many people navigate the healthcare system, adhere to ART, and maintain regular follow-ups in the face of structural barriers. Peer mentors in such settings often assume the role of trusted advisors and advocates who ensure patients receive medical, emotional, and social care. The community-driven approach has, thus, been highly instrumental in yielding better health outcomes for PLHIV, hence the need for continued investment in peer-led programs and integration of peer support into public health strategies [5].

The efficacy of ART is evidenced by its ability to suppress the virus, improve immune function, reduce viral transmission, and lower the risk of drug resistance. These results significantly improve the quality of life for PLHIV and contribute to global efforts to fight the disease. For these gains to be realized, patients must adhere rigorously and continuously to their prescribed pharmaceuticals [6,7]. Adherence to ART maintains the efficacy of the treatment, which reduces the viral load to undetectable levels and reduces the transmission of resistant viruses. The fact that it is highly instrumental in containing the HIV and AIDS spread further underpins its importance in the personal and social spheres of health. It is incredibly challenging to maintain ART adherence despite its necessity. Non-adherence commonly results in treatment failure, failure of viral suppression, impaired immunologic function, and disease progression. It also raises the stakes for public health because medication resistance is more likely to emerge, thus cutting down on potential treatments in the future 8. These challenges call for interventions such as digital adherence tools, peer support programs, patient education, and psychosocial support. For the full effect of ART and the long-term success of HIV management, patients must remain in care and continue to adhere to their medication regimens.

This six-month study collected the viral load values among PLHIV patients supported by their peers. We hope that through this result, we might understand the implications of peer support on treatment adherence and suppression of the virus. The findings will form the foundation for developing focused nursing treatment to enhance ART adherence and will offer essential contributions to the effectiveness of peer-led interventions. The ultimate goal of this effort is to enhance the larger goals of HIV treatment and care, at the same time improving health outcomes for PLHIV.

2. Research Method

A quantitative descriptive design was employed in this study using the secondary data of the SITRUST HIV system satellite of Labbiri Clinic in Makassar, which the Indonesian Ministry of Health administers. The participants of PLHIV included only patients who are newly diagnosed with HIV and have registered for at least six months of treatment at the HIV service unit. They also must be on ART, have a peer supporter, and never have had any mental disorders. A purposive sampling technique was used to obtain 58 PLHIV samples. Data were then arranged by proper criteria, including age (13–19, 20–39, and 40–59 years old), gender, education level (elementary school, junior high, senior high, or vocational school), and employment status (unemployed or employed). Descriptive analyses of essential characteristics and viral load values after six months of support were done by univariate descriptive analysis. All analyses were performed using IBM SPSS for Mac, Versi 29.0 (IBM Corp., Armonk, NY, AS).

Table 1. Characteristic of Participant

Characteristic	Frequency	
	N	%
Gender		
Male	56	96.6
Female	2	3.4
Age		
13-19	3	3.4
20-39	45	77.6
40-59	11	19.0
Education		
Low	1	1.7
Moderate	36	62.1
High	21	36.2
Occupation		
No Job	12	20.7
Have a Job	46	79.3

Table 2. Viral Load Results Categories

Viral Load	Frequency	
	N	%
Undetectable	53	91.4
Detectable	5	8.6

3. Result and Discussions

3.1. Demographic Characteristics

In Table 1, 96.6% of men were in this study population, while only a minority of the respondents were women. Therefore, there was a considerable variation within this gender distribution; it may then reveal some general underlying demography associated with people's access to care about HIV or willingness to participate in such studies. The age groups were between 20-39 years, which accounts for 77.6% of all participants. Because the participants in this program tend to be younger adults, it is pretty apparent that targeted treatments would be necessary for the specific challenges typical of this age group. Regarding the educational attainment of these participants, the medium level of education takes 62.1% of the sample. It hence may indicate a relatively good opportunity to enhance knowledge and awareness of HIV care and treatment adherence through educational interventions. Additionally, 79.3% of participants reported that they were currently working; thus, most were balancing work and treatment. This calls for the need to have flexible and accessible care programs, considering the demands of their daily life, for better facilitation of adherence to antiretroviral therapy.

3.2. Viral Load Characteristics of Participants

Figure 1 provides an overview of the viral load values of participants.

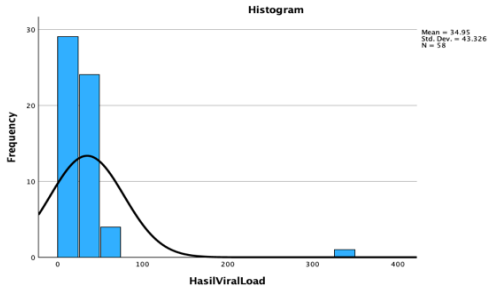

Fig 1. Distribution of Viral Load Values with frequency N: 58; Mean ± SD = 34.95±43.36

Of all participants, 91.4% have undetectable viral loads, showing successful virus management. The mean and SD of the viral load values is Mean ± SD = 34.95±43.36. However, one participant has a highly extreme viral load value of 342 copies/ml, while the standard viral load value is ≤40 copies/ml. This condition generally reflects the measurements taken and gives a high level of variation between the variables. However, due to the uneven data distribution, the average might not fully represent the overall trend in data with high extreme values.

Most respondents are within the productive age bracket of 20-39 years; 62.1% have medium education, and 79.3% are employed. The demographic composition is essential in HIV-related studies since people in this age group are usually at the centre of the HIV epidemic, especially in high-risk regions or populations. This demographic, 20 to 39 years old, is especially susceptible to the spread of the virus because a high prevalence of risky behaviours can be noted among this demographic at the height of their sexually active years. There is an excellent need for precautionary measures and educational programs tailored to this particular age bracket. Besides the risks imposed by their age, members of this group are usually highly mobile and socially interactive, which enhances the possibility of spreading the virus. The dual demands of social and occupational life may also hinder regular compliance with antiretroviral therapy. For working clients, the demands of work may conflict with the needs of treatment; hence, accessing flexible HIV care services is very important. Each of these factors, in its own right, represents a compelling reason for the design of comprehensive programs that would not only focus on prevention but also offer support to treatment adherence and reduce barriers to care in this age group.

The low to medium level of education among respondents might be a factor in their perception of health issues, including HIV awareness and access to health services. At times, less education serves to restrict understanding about the comprehensiveness of HIV care and the importance of adherence to antiretroviral treatment, which translates into long-term benefits associated with sustaining viral suppression. This difference in realization may present difficulties in seeking treatment or could even impinge on how health perception and interaction come into play when making or rejecting treatment choices that might impact overall treatment outcomes. Such educational gaps may call for targeted interventions and health literacy programs, which could, in turn, enhance engagement in HIV care and overall health outcomes. On the other hand, most participants reported their employment status, which may indicate better financial access to health services, positively affecting their ability to afford treatment and care. Employment provides a means of paying for treating antiretroviral drugs and hospital visits.

On the other hand, employment is problematic for patients because time must be spent visiting treatment centres and doctors regularly. Conflicts might arise from juggling between working, seeing doctors and attending health check-ups on time; these are vital activities for the person's well-being. Hence, flexible treatment options and work-friendly healthcare programs are necessary for overcoming this barrier and continuing care.

Various studies have documented that PLHIV reduces their viral load significantly when peers support them. Reducing the viral load is the first step in managing the virus and halting its transmission. Lower viral loads are associated with better health outcomes, such as fewer complications and improved immune function. HIV becomes more of a chronic condition to manage rather than an acute, life-threatening disease when one's viral load is suppressed, and fewer health negatives occur from the virus. Thus, it can be appreciated how critical peer support can be in adherence to treatment in improving viral load and general health in PLHIV [9]. While viral suppression is the ultimate in HIV care, supportive interventions are not to be belittled. Supportive measures, such as peer-led programs, could help initiate treatment for HIV but are also crucial in maintaining treatment adherence necessary for sustained viral suppression. Achieving and maintaining a low viral load contributes to improving health and the quality of life while also lowering the risk of HIV transmission. Such results improve the quality of life of people living with HIV, extend their lifespan, and eventually help bring the HIV epidemic to

an end [10]. Therefore, integrating peer support within HIV care programs proves to be a successful method for achieving such significant objectives.

The results of this review suggest that peer support effectively helps people prepare for and start antiretroviral therapy. Emotional support, practical advice, and experience sharing represent how peer support navigates individuals through the much-challenging start of treatment, reinforcing a sense of community and understanding. This has had impressive short-term benefits, with the most significant improvement in enhancing the uptake of initial care and improving the start of treatment. These findings represent some of the most substantial quantitative evidence on the positive effects of peer support, particularly around retention in care issues fundamental to the success of ART programs over the longer term. Since ART is a lifelong treatment, sustained care and treatment adherence are integral to its effectiveness. In addition, it would appear from the evidence that the positive effects of peer support extend beyond the initial phases of therapy and remain promising even one year after intervention. While the influence of peer support may be confined mainly to the short-term process, it is pretty effective in improving adherence to ART. There is a direct correlation between improving ART adherence and obtaining viral suppression, reducing disease development and transmission risks. Improved health outcomes and reduced treatment failure risk have been associated with peer mentors' continued engagement and support. This further supports the inclusion of peer support in HIV care programs to increase adherence improve viral load suppression, and overall health for those living with HIV [3].

Though some results reflect measurable viral loads, peer support's general contributions and benefits to PLHIV are still significant. Respondents in peer support groups consistently demonstrated optimal results: ART adherence, care engagement, and psychosocial well-being. This model highlights how effective increased treatment adherence is, not only at the level of treatment itself but also at the emotional and social support needed for long-term health. The peer support system builds a sense of community and shared responsibility that helps the individual overcome various challenges associated with managing HIV. It contributes to better health outcomes and strengthens the overall continuum of HIV care [11]. Antiretroviral treatment adherence is key to saving lives and achieving broader health outcomes among PLHIV [12]. It is critical in maintaining viral suppression and bringing about behavioural changes for better long-term health. Increasing awareness among people regarding the importance of testing viral load is, therefore, important in the management of HIV. Such testing is indispensable for measuring treatment efficacy at the individual patient level, but it also helps to contribute to key public health goals, such as reducing transmission rates. This will involve regular viral load testing to help improve the quality of life for the patients and contribute to the broader effort toward the reduction of the HIV epidemic [13].

It is not possible to analyze all PLHIV using these data. Some demographic variables such as age, education level, and job status may greatly vary across areas and demographic subsets in this study. These variations may affect the results of peer support programs and the success of antiretroviral therapy adherence. Besides, findings are most likely not representative of what happens in the general population since the base was taken from studies or surveys, which are usually minute and do not represent samples. That is to say, the above results encourage prudence about their extrapolation for other groups and contexts.

Additionally, this study did not consider all psychosocial variables that could influence the viral load outcomes for the respondents. The stigma associated with HIV infection, mental health, and the environmental setting may affect a person's ability to engage in HIV care and maintain treatment adherence. Unless these factors are accounted for, the analysis might not represent all the dynamics at play that determine the success of the treatment. Without capturing these essential aspects, the possibility of undermining the findings' validity or generalization to broader HIV care strategies may occur. Future studies will be required to take a more holistic approach to the factors affecting viral load suppression for a clearer view of how PLHIV can be improved in various populations.

This descriptive study has outlined some health implications that may be helpful in the formulation of strategies for future HIV care. First and foremost, peer support is vital in reducing viral load among PLHIV patients. Peer support is essential for improving treatment adherence, enhancing engagement with care, and for psychosocial benefits that enable better health outcomes. Recognizing the role of peer support in HIV management may lead to broader implementation of peer-led interventions that can make a significant contribution to achieving viral suppression and improvement in the quality of life of PLHIV. This is because targeting the productive age group, which falls between 20-39 years, is essential in that people within this age bracket are more likely to be sexually active, one of the significant risk factors for acquiring HIV infection. In addition, targeting them with educational programs that promote HIV prevention and the importance of treatment adherence can help in improving health outcomes and reducing transmission risks.

Furthermore, the association between education and health awareness identifies the pressing need to improve health education. Increased knowledge about HIV itself, its treatment, and the need for regular medical care can encourage people to use appropriate services and adhere to their antiretroviral therapy. Education can improve understanding, reduce misconceptions, and increase preventive behaviours that might affect the rate of HIV infection. Lastly, access to health services is challenging, as there is not enough time to visit the hospital for treatment and follow-ups. Such care options place greater demands for flexibility. Offering more flexible scheduling options to PLHIV, for example, evening hours or telemedicine, can reduce some barriers to care and potentially improve adherence to complex treatment regimens.

4. Conclusion

Effective management of HIV, particularly regarding viral load, should consider combining demographic details with peer support and health awareness. Demographics include age, education, and employment status; all these factors affect how individuals engage with healthcare. These combined factors, regarding the effects of peer support, can significantly increase the chances of positive treatment success. Peer support is an advantage that allows for emotional encouragement, pragmatic counselling, and a sense of community, ultimately increasing ART adherence. This model not only contributes to maintaining the patient in care but also contributes to the public health objective of decreasing the transmission of HIV. Integrating peer support with other health education and awareness will provide a more facilitating environment, leading to better adherence and long-term health outcomes. Further, efforts toward viral control and improving the overall quality of life for PLHIV should prioritize intervention measures that integrate education and social support. Patients can be empowered to take responsibility for their health and to remove the stigma associated with HIV through the knowledge of medication adherence, the role of viral load testing, and preventive measures. Social support from various sources, such as family, friends, and community organizations, improves emotional well-being and maintains care participation. There is a need for holistic and collaborative strategy approaches in HIV/AIDS support programs that would address the many facets of the disease in effective and flexible ways, meeting the changing needs of the patients. The nature of support programs, in terms of their objectives on long-term viral suppression and quality-of-life increase for PLHIV, requires constant evaluation and adaptation.

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