THE CORRELATION OF ANTIRETROVIRAL CONSUMPTION ADHERENCE ON THE QUALITY OF LIFE OF HIV PATIENTS: A SYSTEMATIC REVIEW

Lailaturohmah Kurniawati, Nursalam Nursalam ⓘ, Boby Sinuraya, and Melya Nur Azizah

Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

ABSTRACT

Introduction: The use of antiretroviral therapy (ARV) occupies a major role in maintaining the immune system of patients with HIV / AIDS. Nowadays, there are still many cases of disobedient behavior in taking medication that affects the health condition and Quality of Life (QoL) of patients. This study aimed to conduct a systematic review of previous journals discussing the correlation of antiretroviral (ARV) consuming adherence to the Quality of Life (QoL) of HIV patients.

Method: The literature searching process was specified on the five years latest research (2016-2020), selected from several indexed electronic databases (EBSCO, Science Direct, PubMed, Scopus, Proquest, Sage. Wiley, and DOAJ). Risk of Bias assessment tool using Joanna Briggs Institute (JBI) critical appraisal checklist, The research design selected was cross-sectional.

Result: The search using a search engine resulted in a total of 723 articles and found 15 eligible journal manuscripts selected according to the criteria. The total number of respondents in this review were 5,416 respondents, with a total population involved between 83 and 1395 participants. There were 3 main discussions related to the adherence of antiretroviral (ARV) drugs consuming to the increased quality of life of HIV AIDS patients, factors that influenced adherence to Antiretroviral (ARV) therapy in HIV patients, and other supporting factors that affected the Quality of Life (QoL) other than ARV in HIV patients.

Conclusion: There is correlation antiretroviral (ARV) drugs consuming adherence for QoL, there can improve the Quality of Life (QoL) of HIV patients.

Keywords

adherence; antiretroviral; HIV AIDS; Quality of Life

INTRODUCTION

The existence of the human immunodeficiency virus (HIV) in the human body will disrupt the immune system, which makes the body is susceptible to various disorders existing around it (Oliveira et al., 2018). As a result, the body is susceptible to various diseases so that it contributes to the decrease in productivity. The use of antiretroviral therapy (ARV) plays a major role in maintaining the immune system of people with HIV / AIDS. The recommended combination of antiretroviral drugs is capable to aggressively suppress the development of the virus in the body. Therefore, it results in preventing HIV progression to AIDS to enhance the improvement of patient survival and quality of life (Desta et al., 2020). One of the formidable challenges faced by HIV patients is the impaired quality of life due to the negative impact on their physical and mental health (Xiao et al., 2019). Efforts to maintain the quality of life and productivity of HIV patients are not merely taking ARV drugs regularly but also how to maintain the adherencein running therapy for years.

According to UNAIDS data, at the end of 2019, there were about 38 million people in the world lived with HIV / AIDS, 25.4 million of whom were accessing antiretroviral therapy, where 88% of patients wereexperiencedviral suppression (Ajayi et al., 2020). The procurement of ARV drugs in health services that are easily available is a very supportive factor for the success of therapy. The availability of ARV drugs is not the only solution. Patients with HIV / AIDS need lifelong treatment so that commitment and persistence are needed in carrying out therapy.

Research conducted in Brazil by Primeira et al. (2020), showed that strict adherence inhibits virus progression, decreasing the likelihood of viral load, CD4, and higher lymphocytes compared to patients with lower adherence levels which resulted in to detain the decrease of the body's defense cells (Primeira et al., 2020). The quality of life globally was increased, this is supported by a research of Reis (2020) explaining someone who was adherent to ARV therapy would improve health and could easily continue their daily activities (Reis et al., 2019),(Xiao et al., 2019). The quality of life is influenced by many different factors such as physical condition, environment, and support from family and close relatives. The best way to achieve a quality of life associated with strict adherence suggested that the higher the quality of life for people with HIV, the higher their adherence to treatment (Primeira et al., 2020). This systematic review aims to discussing the correlation of antiretroviral (ARV) consuming adherence to the Quality of Life (QoL) of HIV patients.

METHOD

The types of study conducted were cross-sectional studies focused on the adherence of ARV drugs consumption to the quality of life of HIV AIDS patients. The literature searching process was specified on the five years latest research (2016-2020) in the English version and selected from several indexed electronic databases such as EBSCO, Science Direct, PubMed, Scopus, Proquest, Sage. Wiley, and DOAJ. The writing of article search results was made according to the principals of Preferred Reporting Items for Systematic Review (PRISMA) checklist and flow diagrams.

The feasibility of this study was assessed using the PECOT framework. Population: the study population was all categories of patients with HIV / AIDS. Exposure: the exposure was ARV drugs consumption adherence. Comparison: No comparison, effect of ARV drugs consuming adherence on the quality of life for HIV / AIDS patients. Output: was seen from the changing / improving quality of life of the patients. Time period: 2016-2020. Article was identified with the keywords ("Adherence AND Antiretroviral OR ARV OR highly active antiretroviral therapy") AND ("Quality of Life OR QoL") AND ("HIV AIDS OR AIDS Virus OR Acquired Immune Deficiency Syndrome Virus OR Acquired Immunodeficiency Syndrome Virus OR HTLV-III OR Human Immunodeficiency OR Human Immunodeficiency Viruses ").

Risk of bias could be diminished by using critical appraisal tools. Reviewers was used Joanna Briggs Institute (JBI) critical appraisal tools. JBI critical appraisal tools was checklist questionnaire with list of items requires, things had to be done, and points to be considered. Every study design has different question. Declared to have escaped the risk of bias if the value is more than 75%. Two reviewers (BS and MN) had scoring articles that had been chosen. Result of scoring were from low risk, mild risk, high risk or unclear risk.

Data extraction this study was using a structured form to extract articles from title, year/time study research (2016-2020), study design, sample size, variable, intervention, analysis, the outcome measures used to evaluate intervention and results.

RESULTS

Literature Search and Study Design

The first stage of literature search with the specified keywords on several databases obtained a total of 723 articles consisting of 176 Science Direct articles, 50 Pubmed articles, 214 Scopus articles, 62 Proquest articles, 43 Sage articles, 30 EBSCO articles, 115 Wiley articles, and 33 DOAJ articles. Those articles were identified based on author duplication, title, and by selecting "exclude". The second stage was selecting the manuscript by examining the journal abstract based on the agreed conditions. The third stage was reviewing the complete article and the eligibility criteria. The complete articles were reviewed with the PECOT framework to minimize the risk of bias in this study, the selection of data was carried out independently by 2 authors covering the same design, methods, interventions, and outcomes to be assessed. In this study, the data extraction tool was designed to guide information from notes following the research objectives. The extracted data in each of the included studies included: author, year, country, population and setting, study design, study objectives, methods and interventions, instruments used follow-up time, and the outcome of each study. The result selected 30 full-text articles and the quality were rated andeventually found 15 articles based on criteria and constituted a cross-sectional as the research design.

Risk of Bias

There were 15 articles assessed for risk of bias using the JBI critical appraisal checklist for analytical cross sectional studies, the results were: score 100% (n = 5 articles). Score of 92% (n = 4 articles). 85% (n = 4 articles). 77% (n = 2 articles).

Partisipant Characteristic

A total of 15 articles selected in the line review published between 2016 and 2020 are international journals originating from the country (Brazil = 2); (Betancur et al., 2017), (Sabino et al., 2021), (Africa = 3); (Nyongesa et al., 2018),(Bulali et al., 2018),(Kagee
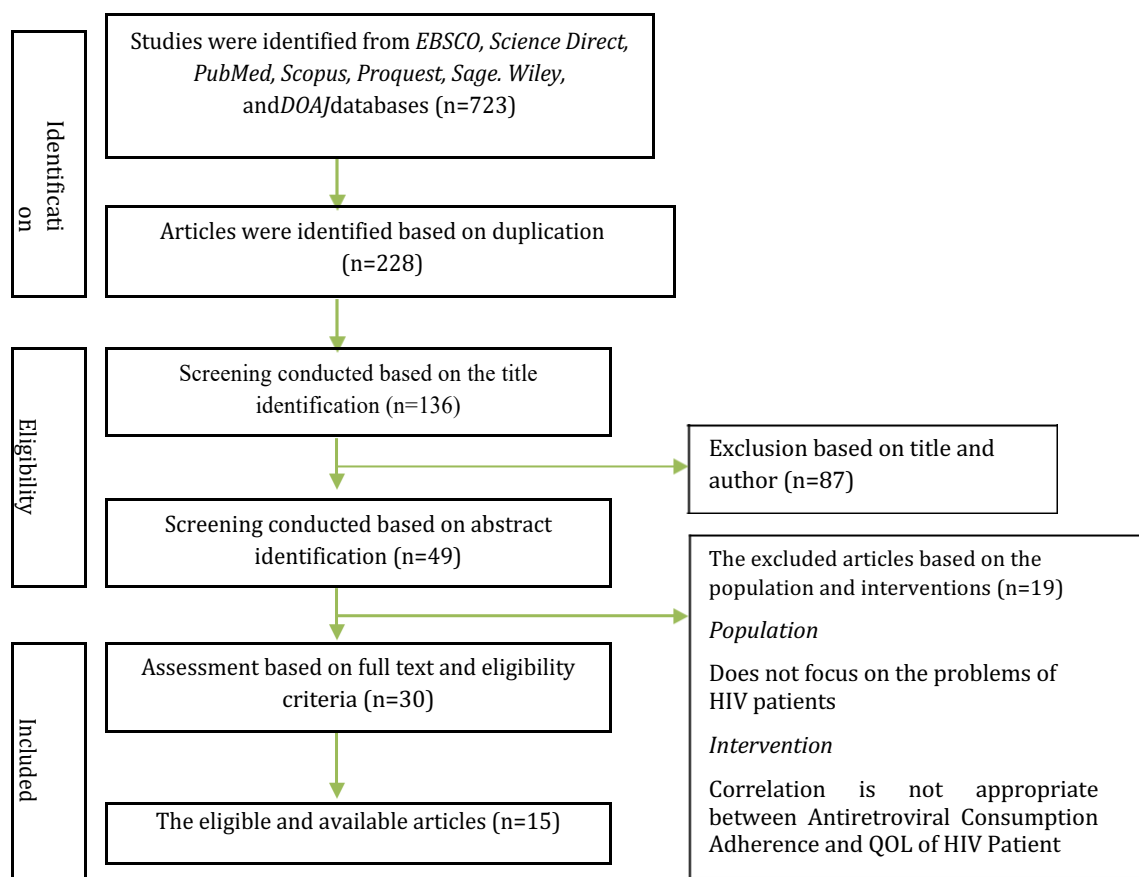
Figure 1. PRISMA diagram flow

et al., 2016), (China = 2);(Xiao et al., 2019),(Tran et al., 2018), (Indonesian = 2) (Suryana et al., 2019),(Khotimah et al., 2018), (Eutopia = 2) (Asrat et al., 2020), (Desta et al., 2020), (Indian = 1) (Sarkar et al., 2019), (USA = 3), (Lahai et al., 2020),(Reis et al., 2019), (Primeira et al., 2020). The total number of respondents in this review were 5,416 respondents, with a total population involved between 83 and 1395 participants. The highest number of population was 1,395 participants. Participants involved were limited by several criteria such as being HIV positive, adhering to the use of ARV drugs consumption, and having experience related to medical treatment. All studies were conducted on children to adults (10-60 years old).\

Intervention Characteristic

A systematic review of this review was all studies that had been synthesized and then grouped into 3 groups, based on: The correlation adherence of antiretroviral (ARVs) drugs consumption to the enhancement of the quality of life of HIV AIDS patients (Desta et al., 2020),(Xiao et al., 2019),(Reis et al., 2019),(Nyongesa et al., 2018),(Lahai et al., 2020),(Sabino et al., 2021),(Primeira et al., 2020), (Kagee et al., 2016),(Tran et al., 2018). Factors affecting the adherence to antiretroviral (ARV) therapy in HIV patients (Asrat et al., 2020),(Reis et al., 2019),(Nyongesa et al., 2018),(Betancur et al., 2017),(Lahai et al., 2020), (Suryana et al.,

2019),(Desta et al., 2020),(Bulali et al., 2018),(Sabino et al., 2021),(Mohebi et al., 2018),(Kagee et al., 2016),(Khotimah et al., 2018),(Tran et al., 2018) and other factors that influenced Quality of Life (QoL) besides ARV in HIV patients (Asrat et al., 2020),(Nyongesa et al., 2018),(Xiao et al., 2019),(Betancur et al., 2017),(Lahai et al., 2020),(Desta et al., 2020),(Sabino et al., 2021),(Primeira et al., 2020),(Mohebi et al., 2018),(Kagee et al., 2016).

Outcomes Measures

The Systematic Review results from the 15 articles were attached to the Matrix table in Appendix 1, found 10 journals with good quality, and 5 journals with moderate quality. Most of the studies used the Cross-Sectional Study design. Measuring instruments used in all studies were observation sheets, interviews, questionnaires using WHOQOL-BREF arranged in four domains: physical, psychological, social relations, environmental and consisted of 26 questions, two of which referred to the quality of life. Questionnaire on ART adherence using CEAT-HIV consisted of 20 items, the standard Morisky Drug Adherence Predictor Scale (MMAPS-8), and another similar questionnaire. The results of a review of 15 articles, therefore showed the effect of antiretroviral (ARV) consumption adherence on the quality of life (QoL) of HIV patients.

Table 1. The Correlation adherence of antiretroviral drugs (ARV) consumption to the increasing quality of life of HIV AIDS patients

The increasing quality of life	Article author
Physical health	(Lahai et al., 2020),(Primeira et al., 2020),(Xiao et al., 2019),(Nyongesa et al., 2018),(Reis et al., 2020),(Sabino et al., 2020).
Quality of life globally	(Reis et al., 2020),(Xiao et al., 2019),(Desta et al., 2020),(Bulali et al., 2018)
Sexual function / sex	(Sabino et al., 2020),(Primeira et al., 2020)
Virus suppression	(Kagee et al., 2016),(Tran et al., 2018)
Viral load was decreased, CD 4, lymphocytewere increased, disease progression was decreased, the opportunistic infection was decreased, body immune was increased.	(Kagee et al., 2016),(Primeira et al., 2020),(Xiao et al., 2019),(Reis et al., 2020).

Table 2. Factors affecting adherence to antiretroviral (ARV) therapy in HIV patients

Factors influencing ARV adherence	Article author
Depression / major depressive disorder	(Asrat et al., 2020),(Nyongesa et al., 2018),(Betancur et al., 2017),(Tran et al., 2018),(Sabino et al., 2020)
Marital status, employment status, type of ARV, family support, environment, emotional, less supportive place for ARV services, gender, age	(Lahai et al., 2020),(Suryana et al., 2019),(Mohebi et al., 2018),(Tran et al., 2018),(Efficacy & To, 2018),(Nyongesa et al., 2018),(Betancur et al., 2017),(Reis et al., 2020),(Asrat et al., 2020),(Bulali et al., 2018),(Desta et al., 2020),(Sabino et al., 2020)
Self Efficacy /concentration / forgetfulness	(Kagee et al., 2016),(Efficacy & To, 2018),(Betancur et al., 2017)
Fear or shame, uncomfortable, stigma is known as HIV patients	(Kagee et al., 2016),(Tran et al., 2018)
Toxic ARV	(Betancur et al., 2017)

Table 3. Other factors that influence Quality of Life (QoL) besides ARV in HIV patients.

Factors that influence the Quality of Life (QoL)	Article Author
Physical health	(Kagee et al., 2016),(Mohebi et al., 2018),(Xiao et al., 2019),(Desta et al., 2020).
Emotional conditions (sadness, shame, loss of hope)	(Kagee et al., 2016),(Nyongesa et al., 2018)
Family support, environment, gender, age, economic condition, education, socio-culture	(Kagee et al., 2016),(Reis et al., 2020),(Primeira et al., 2020),(Betancur et al., 2017),(Asrat et al., 2020),(Sabino et al., 2020),(Desta et al., 2020),(Lahai et al., 2020).

Table 1. Results of the review, the correlation of antiretroviral (ARV) adherence to the quality of life of HIV AIDS patients; physical health was increased, global quality of life was increased, sexual function was increased, viral suppression was decreased, viral load was decreased, CD 4 and lymphocytes were increased, disease progression was decreased, opportunistic infections were decreased, body immunity was increased.

Table 2, Results of review, factors influencing adherence to antiretroviral (ARV) drugs consumption in HIV patients; depression / major depressive disorder, marital status, work status, type of ARV, family support, environment, emotional, less supportive ARV service places, gender, age, self-efficacy, concentration, forgetfulness, fear or shame, discomfort, the stigma known as HIV patient, and toxic ARV.

Table 3, Results of the review, other factors affecting Quality of Life (QoL) besides ARV in HIV patients; physical health, emotional condition (sadness, shame, loss of hope), family support, environment, gender, age, economic condition, education, socio-culture.

DISCUSSION

The correlation of antiretroviral (ARV) adherence to quality of life for HIV AIDS patients; physical health has improved, supported by the study of Lahai (2020) found empirical evidence on the level of adherence and quality of life as well as the determinant correlation among children living with HIV / AIDS in Sierra Leone so that physical health had improved (Lahai et al., 2020). Besides, the quality of life globally was increased, this is supported by a research of Reis (2020) explaining someone who was adherent to ARV therapy would improve health and could easily continue their daily activities (Reis et al., 2019),(Xiao et al., 2019). Besides, sexual function was good, viral suppression was good, viral load was decreased, CD 4, lymphocytes were increased, disease progression was decreased, body immunity was increased and opportunistic infections was decreased (Kagee et al., 2016). Findings that affecting equilibrium were predictors of all Quality of Life (QOL) domains. Treatment adherence was a predictor of all QOL domains with the exclusion of social relationships. A study from Desta (2020) revealed that more than half of participants adhering to ARVs were related to having better global scoresfrom life quality (Desta et

al., 2020). Current normality of health and family support was associated with better global quality of life scores, low adherence to ART was associated with lower global scores of quality.

Besides, the increasing effects of antiretroviral (ARV) drugs consumption adherence to the quality of life of HIV AIDS patients,there are several factors influencing ARV consumption adherence itself. ARV consumption adherence greatly affects the health status of HIV AIDS patients (Chukwuorji et al., 2020). One of the factors affecting adherence to antiretroviral (ARV) therapy in HIV patients isdepression / major depressive disorder. In the study of Sabino (2020), suggested that younger HIV patients with depression should receive special attention in clinical settings for the lower potential treatment adherence and quality of life (Sabino et al., 2021). Supported by Asrat's (2020) study, found that Major depressive disorder (MDD) affected adherence in taking medication for HIV patients so that it affected the quality of life of the patients (Asrat et al., 2020). Besides, the factors affecting the regularity of taking medication were also supported by marital status, employment status, type of ARV, family support, environment, emotional, unsupportive places for ARV services, gender, age, self-efficacy, concentration/forgetfulness, fear or embarrassment, discomfort, the stigma of being identified as HIV patients, and toxic antiretroviral (Chukwuorji et al., 2020).

Apart from ARV adherence, it turns out that other factors were affecting the Quality of Life (QoL) in HIV patients, namely; physical health, emotional condition (sadness, shame, loss of hope), family support, environment, gender, age, economic condition, education, socio-culture. A person with hopelessness and depression had no interest in self-care, especially when they aresupposed to be adherent in taking antiretroviral drugs (ARVs) which can improve the quality of life of a patient with HIV AIDS (Asrat et al., 2020). In additionto supporting from the environment, family and friends, as health workers, nurses also play an active role in motivating patients who experience hopelessness and health problems, especially negative stigmatization related to HIV conditions. Therefore, the quality of life or health status could improve by the support of strong will within the patients themselves and supported by a good environment. The main factor contributing to the recovery was the regularity in consuming antiretroviral drugs (ARV) in HIV patients.

CONCLUSION

The study result showed that there was an correlation of adherence to taking antiretroviral drugs (ARV) on the Quality of Life (QoL) of HIV patients, including; increased physical health, increased quality of life globally, improved sexual function, viral suppression, decreased viral load, CD 4, increased lymphocytes, decreased disease progression, decreased opportunistic infections, and increased body immunity.

REFERENCES

Ajayi, A. I., Awopegba, O. E., Adeagbo, O. A., & Ushie, B. A. (2020). Low coverage of HIV testing among adolescents and young adults in Nigeria: Implication for achieving the UNAIDS first 95. *PloS One*, *15*(5), e0233368.

Asrat, B., Lund, C., Ambaw, F., Garman, E. C., & Schneider, M. (2020). Major depressive disorder and its association with adherence to antiretroviral therapy and quality of life: cross-sectional survey of people living with HIV/AIDS in Northwest Ethiopia. *BMC Psychiatry*, *20*(1), 462. https://doi.org/10.1186/s12888-020-02865-w

Betancur, M. N., Lins, L., Oliveira, I. R. de, & Brites, C. (2017). Quality of life, anxiety and depression in patients with HIV/AIDS who present poor adherence to antiretroviral therapy: a cross-sectional study in Salvador, Brazil. *Brazilian Journal of Infectious Diseases*, *21*(5), 507–514. https://doi.org/10.1016/j.bjid.2017.04.004

Bulali, R. E., Kibusi, S. M., & Mpondo, B. C. T. (2018). Factors Associated with HIV Status Disclosure and Its Effect on Treatment Adherence and Quality of Life among Children 6–17 Years on Antiretroviral Therapy in Southern Highlands Zone, Tanzania: Unmatched Case Control Study. *International Journal of Pediatrics*, *2018*, 1–10. https://doi.org/10.1155/2018/8058291

Chukwuorji, J. C., Uzuegbu, C. N., Chukwu, C. V., Ifeagwazi, C. M., & Ugwu, C. (2020). Social support serves emotion regulation function in death anxiety among people living with HIV/AIDS. *South African Journal of Psychology*, *50*(3), 395–410.

Desta, A., Biru, T. T., & Kefale, A. T. (2020). Health related quality of life of people receiving highly active antiretroviral therapy in Southwest Ethiopia. *PLoS ONE*, *15*(8 August), 1–14. https://doi.org/10.1371/journal.pone.0237013

Efficacy, S., & To, A. (2018). *SELF EFFICACY AND ADHERENCE TO*. *5*(5), 81–87.

Kagee, A., Coetzee, B. J. S., & Steele, H. (2016). Quality of life among South African patients receiving antiretroviral therapy in the Western Cape Province. *South African Journal of Psychology*, *46*(3), 376–389. https://doi.org/10.1177/0081246315623237

Khotimah, S., Hargono, R., & Fatah, M. Z. (2018). Self efficacy and adherence to antiretroviral (ARV) drug therapy among people living with HIV-AIDS (PLWHA). *International Journal of Public Health and Clinical Sciences*, *5*(5), 81–87.

Lahai, M., James, P. B., Wannang, N. N. M., Wurie, H. R., Conteh, S., Bah, A. J., & Samai, M. (2020). A cross-sectional study on caregivers' perspective of the quality of life and adherence of paediatric HIV patients to highly active antiretroviral therapy. *BMC Pediatrics*, *20*(1), 1–10. https://doi.org/10.1186/s12887-020-02194-7

Mohebi, S., Parham, M., Sharifirad, G., & Gharlipour, Z. (2018). *Social Support and Self - Care Behavior Study*. 1–6. https://doi.org/10.4103/jehp.jehp

Nyongesa, M. K., Mwangala, P. N., Mwangi, P., Kombe, M., Newton, C. R. J. C., & Abubakar, A. A. (2018). Neurocognitive and mental health outcomes and association with quality of life among adults living with HIV: a cross-sectional focus on a low-literacy population from coastal Kenya. *BMJ Open*, *8*(9), e023914. https://doi.org/10.1136/bmjopen-2018-023914

Oliveira, L. da S., Caixeta, L. M., Martins, J. L. R., Segati, K. D., Moura, R. S., Daher, M. C., & Pinto, E. M. H. (2018). Adherence to antiretroviral therapy and correlation with adverse effects and coinfections in people living with HIV/AIDS in the municipality of Goiás State. *Revista Da Sociedade Brasileira de Medicina Tropical*, *51*(4), 436–444.

Primeira, M. R., Dos Santos, W. M., De Paula, C. C., & De Mello Padoin, S. M. (2020). Quality of life, adherence and clinical indicators among people living with HIV. *ACTA Paulista de Enfermagem*, *33*, 1–8. https://doi.org/10.37689/ACTA-APE/2020AO0141

Reis, A., Lencastre, L., Jonsson, C., & Guerra, M. P. (2019) . Treatment Adherence, Meaning in Life and Affects in Quality of Life of HIV/AIDS Patients. *Journal of Happiness Studies*, 1–13.

Reis, A., Lencastre, L., Jonsson, C., & Guerra, M. P. (2020). Treatment Adherence, Meaning in Life and Affects in Quality of Life of HIV/AIDS Patients. *Journal of Happiness Studies*, *21*(7), 2405–2417. https://doi.org/10.1007/s10902-019-00182-y

Sabino, T. E., Avelino-Silva, V. I., Cavalcantte, C., Goulart, S. P., Luiz, O. C., Fonseca, L. A. M., & Casseb, J. S. (2020). Adherence to antiretroviral treatment and quality of life among transgender women living with HIV/AIDS in São Paulo, Brazil. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*, *0*(0), 1–8. https://doi.org/10.1080/09540121.2019.1710449

Sabino, T. E., Avelino- Silva, V. I., Cavalcantte, C., Goulart, S. P., Luiz, O. C., Fonseca, L. A. M., & Casseb, J. S. (2021). Adherence to antiretroviral treatment and quality of life among transgender women living with HIV/AIDS in Sao Paulo, Brazil. *AIDS Care*, *33*(1), 31–38.

Sarkar, T., Karmakar, N., Dasgupta, A., & Saha, B. (2019). Quality of life of people living with HIV/AIDS attending antiretroviral clinic in the center of excellence in HIV care in India. *Journal of Education and Health Promotion*, *8*.

Suryana, K., Suharsono, H., & Antara, I. G. P. J. (2019). Factors associated with adherence to anti-retroviral therapy among people living with hiv/aids at wangaya hospital in denpasar, bali, indonesia: A cross-sectional study. *HIV/AIDS - Research and Palliative Care*, *11*, 307–312. https://doi.org/10.2147/HIV.S219695

Tran, B. X., Fleming, M., Do, H. P., Nguyen, L. H., & Latkin, C. A. (2018). Quality of life improvement, social stigma and antiretroviral treatment adherence: implications for long-term HIV/AIDS care. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*, *30*(12), 1524–1531. https://doi.org/10.1080/09540121.2018.1510094

Xiao, Y., Lin, C., Li, L., & Ji, G. (2019). Individual and family level factors associated with physical and mental health-related quality of life among people living with HIV in rural China. *BMC Public Health*, *19*(1), 1–7. https://doi.org/10.1186/s12889-018-6352-2