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Data-Driven Insights into Understanding the Health-Related Quality of Life Among People Living with HIV/AIDS in Pakistan: Exploring Causes, Demography, and Efficacy of Antiretroviral Therapy

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Abstract

Health-related quality of life (HRQOL) is an utmost important pointer in measuring the health and well-being of people living with HIV/AIDS (PLHIVA). This study examines the health-related quality of life of PLHIVA in Lahore, Pakistan. Participants included men, women, and transgender PLHIVA, with a total sample size of N=100. After attaining permission the sample was accessed from the HIV/AIDS clinics of public sector hospitals in Lahore. An equal number of participants were divided into both groups: PLHIVA receiving antiretroviral therapy (ART) as the experimental group and those not receiving treatment, i.e. pre-ART, as the control group. Qusai's ex-post facto research design, using a non-probability purposive sampling strategy, was used in this study. Data was gathered using the WHOQOL-HIV BREF scale and analyzed using correlation, t-tests, and linear regression analysis. The WHOQOL-HIV BREF scale measured six dimensions: physical, psychological, level of independence, environment, social relationships, and spirituality/religion. Findings revealed higher health-related quality of life among PLHIVA on ART compared to those pre-ART. Furthermore, the primary modes of HIV/AIDS transmission were sexual contact (38%), blood transfusion (31%), and injecting drug use (33%). The analysis of results showed that HIV/AIDS is more prevalent in males as compared to females. The research indicates an association of age with health-related quality of life, with younger people having a better quality of life. These results proposed that physical and psychological health concerning spirituality, environment, and religious beliefs are much better in ART PLHIVA than pre-ART PLHIVA.The implications of these findings are substantial and warrant thorough discussion.

Keywords: Antiretroviral Therapy, Health-related quality of life, HIV/AIDS, PLHIVA, Data.

INTRODUCTION

As per the World Health Organization (WHO), quality of life refers to an individual's perception of their standing in life within the framework of culture and value systems,

upsetting its function. HIV is a virus having an intensely adverse influence on the quality of life of those infected by it (WHO, 2021). According to a United Nations estimate, there are 37.7 million individuals globally living with HIV and 200,000 HIV-positive individuals living in Pakistan (UNAIDS, 2020). The most severe epidemic of HIV continues in African regions where over two-thirds (25.4 million) people are infected. In 2020, 680,000 people died from HIV-related causes, and 1.5 million acquired HIV (WHO, 2021). The proportion of HIV in Pakistan is alarming. According to a report from the National AIDS Control Programme (NACP), 46,912 HIV cases and 26,093 are on ART in 50 ART centres till June 2021, and it is increasing more rapidly. To understand a bit about ART and Pre ART, we contemplate that Pre-art is when an individual gets infected by HIV and requires ART. This time is short for some PLHIVA, but for others, it can be long, that is, years. PLHIVA's health can be improved in this pre-ART period using some interventions. Pre-ART care involves ART assessment, clinical staging, biochemistry, CD4 count, and haematology. ART treatment starts when the fixed criteria are fulfilled (WHO, 2009; WHO, 2011).According to WHO (World Health Organization), quality of life is a person's awareness of his place in life in the framework of culture, value system and socio-demographic influence.

Optimizing virologic and immunologic outcomes necessitates consistent intake of antiretroviral drugs (Bangsberg et al., 2000). Quality of life has been investigated extensively before by other scholars among people with HIV/AIDS. Age, antiretroviral therapy, self-care strategies and social support have been recognized as major elements of Health-Related Quality of Life (HRQOL) amongst PLHIVA. This shows that it is important for healthcare providers and counsellors to encourage people their adhere to ARV therapy (Tangkawanich et al., 2008). The implementation of ART has significantly enhanced the life duration of PLHIVA(Ahmed et al., 2021). This study aims to evaluate the health-related quality of life (HRQOL) and its determinants among PLHIVA undergoing ART in Pakistan. Conducted at an ART center in a hospital in Islamabad, this descriptive study involved 602 participants. Multivariate linear regression analysis uncovered several factors that exhibit significant correlations with HRQOL. These factors include gender (female), age above 50 years, attainment of primary and secondary education, duration since HIV diagnosis surpassing one year, AIDS-conversion status, higher CD4 level, viral loads, and longer period on ART. The findings indicate that PLHIVA undergoing ART experience an enhanced health-related quality of life.

HRQOL stands as a paramount gauge for evaluating the well-being of PLHIVA. In a cross-sectional study, 134 PLHIVA were chosen through convenience sampling. The WHOQOL-BREF questionnaire served as the tool for assessment. The results unveiled a significant positive correlation between marital status, place of residence, years of education, duration of infection, mode of transmission, and antiretroviral therapy (ARV) with HRQOL. This study underscores the imperative to bolster the living circumstances, job status, healthcare, schooling, and psychological well-being of PLHIVA (Joulaei et al., 2021). HRQOL is strongly correlated with the stage of HIV infection. Clinical practitioners described that ART strongly influences health and life's quality. (Robberstad & Olsen, 2010). Rajeev et al. (2012) stated in a study that quality of life is meaningfully dissimilar in ART and non-ART PLHIVA in psychological health and spirituality. The insight of PLHIVA toward the disease is significant for their health and quality of life. It is very imperative to know how PLHIVA perceives their long-lasting disease. A qualitative study concerning the PLHIVA's perceptions of quality of life was led in Uganda. The participants were divided

into two groups: PLHIVA taking ART and non-ART. Comprehensive interview were conducted, and data were examined by use of content analysis. The participants were asked about four realms of quality of life: value of life, life ability, approval of energy, and liveability of environment. The participants gave views and hope for their awaiting life. Many PLHIVA experienced stigma and worries about the revelation of HIV serostatus, which negatively influenced their quality of life. It was also concluded that the PLHIVA who did not receive ART were uncertain about their quality of life (Mutabazi-Mwesigire et al., 2015). Korthuis et al. 2008, researched substance use and its effects on long-term diseases such as HIV/AIDS. They described that the adverse effects of substance use on the HIV/AIDS-positive individual's health worsen their QOL. ART gives PLHIVA long life. Ndubuka et al. (2017) examined the health-related quality of life (HRQOL) among individuals living with HIV/AIDS (PLHIVA) in Botswana. Data from 456 PLHIVA were gathered through medical histories, designed interviews, and WHOQOL-HIV-BREF scale. Univariate and multivariate regression analyses indicated that the highest scores among participants were observed in the "physical" domain whereas minimum were in the "environment" realm.

Therefore, the physical realm greatly impacted PLHIVAs' overall HRQOL. HRQOL evaluations can identify PLHIVA's requirements, and policies must be established to give better and quality care to ART PLHIVA in Botswana. Anxiety and depression among PLHIVA can contribute to non-complaince to ART, as well as increased morbidity and mortality rates. Therefore, it is crucial to assess factors such as stigma, societal support, and added determinants of anxiety and depression in this population. This study was conducted in Islamabad, involved 505 PLHIVA who were regularly attending the ART center and were selected through systematic sampling. The research revealed a higher occurrence of depression and anxiety among PLHIVA in Pakistan. Factors significantly associated with anxiety included having a noticeable viral load, younger age, lack of proper education, low levels of social support, substance abuse, and perceived high levels of HIV-related stigma. Further research is warranted to examine the influence of locally personalized interventions on the mental health outcomes of PLHIVA.

PLHIVA face stigmatization in society. They are devalued and are thought of as outcasts with few chances for education, treatment, and housing, and at the workplace, they get limited chances of being selected. The phenomenon is widely studied in developed countries but limited literature addresses the condition in developing countries, including Pakistan, that is also grappling with the HIV/AIDS epidemic (Bashir, 2021). The intricate landscape of HIV/AIDS in Pakistan unveils an intensely entrenched and interrelated array of problems, spanning biotic, socio-cultural, economic, and (geo-)political aspects. Recurring outbursts and their shocking costs underscore the urgent necessity for inclusive and multidisciplinary methods to tackle this catastrophe. The influence of this virus extends far away from the physical realm, exacerbating the myriad challenges faced by affected individuals. This has led to a cultural transformation that poses a threat, preying on the susceptible members of society. This cultural menace exploits the struggles and vulnerabilities of its sufferers, spreading a cycle of sorrow that is insidious as well as pervasive. It thrives in a landscape of inequality, serving as a stark cue that we must fight not only the illness itself but also the cultural frameworks that permit it to continue among sidelined populaces (Ali, 2023). Compared to other regions of Pakistan, Punjab province experiences a high prevalence of HIV due to various factors. One contributing factor is

Punjab's dense population and urbanization, which may increase the virus's ability to spread. Additionally, cultural and social norms in Punjab pose challenges in openly discussing and addressing HIV-related concerns, further fueling stigma and discrimination against PLHIVA (Abdullah et al., 2021). In some rural areas of Punjab, access to healthcare and preventive services is limited. The lack of access to preventive services such as condoms, clean syringes, HIV testing, and counseling may increase the risk of HIV transmission (Yasin, 2021).

Munawar and Muazzam (2023) conducted a study in Lahore, a densely populated city in Pakistan, examining the demographics and risk factors of PLHIVA. The findings revealed a higher prevalence of HIV among Pakistani men compared to women. Married individuals had a greater likelihood of HIV/AIDS. Lack of education was linked with a higher risk of contracting HIV/AIDS, and employed individuals were also at increased risk. The most significant risk factors identified were extramarital sexual relationships and drug use. Urban residency was common among PLHIVA, and the most prevalent co-morbidity was HCV. While many PLHIVA disclosed their status to their families, some refrained from doing so due to the stigma and discrimination associated with HIV/AIDS in both familial and workplace settings.

- To assess HRQOL in PLHIVA.
- To find differences in psychological,physical. independence level, social relations, environment and spirituality among PLHIVA with and without ART.
- To identify differences related to HRQOL among PLHIVA with and without ART.
- To identify the predictors of HRQOL among PLHIVA.

In Pakistan, there is a need for more research on the health-related Quality of life of PLHIVA. The disrupting factors that trigger poor health-related quality of life still need to be documented. The present study will contribute to filling this gap in the literature. However, this research provides an agenda for the understanding of the relationships between HIV and Health-related quality of life among PLHIVA. This study might help in understanding the quality of life in PLHIVA. It could improve PLHIVA's awareness about their illness and therapy and teach administrators of ART therapy how influential the treatment is. It can also help to know the position of Quality of Life in PLHIVA for those not on ART.

According to a study in Pakistan, there is a link between compliance with medication and HRQOL (Saleem et al., 2012). The advancement in ART has significantly altered the understanding and insight of PLHIVA from a perilous to a manageable illness. The quality of life is a vital component in evaluating the well-being of PLHIVA. Researchers found that enhanced scores in the psychological, environmental, and physical realms may reflect the effectiveness of the treatments (Folasire et al., 2012).

Participants

The sample consisted of N=100 PLHIVA. Following Cattell's (1978) recommendation of three subjects per scale item, given our scale's 31 items, a minimum sample size of 93 was selected for achieving significant results in our study. The sample was divided into two groups: those receiving Antiretroviral Therapy (ART=50) and those not yet on ART (pre-ART=50). The non-probability purposive sampling technique was chosen to gather the participants. This technique was chosen for two main reasons: firstly, random selection

from PLHIVA was not feasible, and secondly, not every PLHIVA could allocate sufficient time for data collection and were reluctant to participate. Data was gathered regarding the availability and agreement of the sample. The age ranged from 18 to 65 years (M=32.01, SD=8.74). The selection of the participants was conducted by accessing special clinics for HIV/AIDS in various government hospitals in Lahore.

Sample Inclusion and Exclusion Criteria

- Registered PLHIVA who visited the clinics for follow-up were taken.
- PLHIVA included both with and without antiretroviral therapy.
- The current study included both educated and uneducated PLHIVA.
- Participants were included that were falling within the age range of 18–65 years.
- Both married and unmarried PLHIVA were included.
- The PLHIVA not meeting the above criteria will be excluded from the sample.

METHODOLOGY

Assessment Measures

The instruments used in this study for data collection are given below:

Structured interviews schedule

A self-constructed structured consultation comprised variables of the present study. Questions that were included in the discussion were associated with demographic information (age, gender, education, marital status, spouse status, occupation, referral source, HIV/AIDS diagnosis, presenting complaints, no. of family members, monthly income of the family, HIV/AIDS, exposure, substance use, area of residence, ART status).

WHOQOL-HIV BREF Scale

The study used the World Health Organization Quality of Life - HIV brief instrument (WHOQOL-HIV BREF), which consists of 31 items consisting six domains: psychological, physical, level of independence, social relations, environment and spirituality, as well as two additional overarching aspects (Overall HRQOL and General Health). The scale demonstrated high reliability, with a coefficient of 0.97, indicating strong internal consistency. Additionally, the validity of the scale was satisfactory, with a coefficient of 0.80, suggesting that it effectively measures the intended constructs.

Procedure

The study procedure was initiated with a letter allotted by the university describing the study topic and purpose. It stated the Punjab AIDS Control program for the permission of data collection from their special clinics of HIV/AIDS in different government hospitals of Lahore. Data was collected from Special Clinics after institutional approval from the Punjab AIDS Control Program (PACP). Permission was given to the respective authors to use the assessment measures. WHOQOL-HIV BREF scale was translated into Urdu using a back-to-back translation process. The purpose of scale translation is that the sample was

not well educated, so it was difficult for them to understand the English version. The 100 registered PLHIVA who met the criteria of the study's sample and were in the age range of 18 – 65 years were approached. A short-structured interview was done before data collection, and the research plan was explained to the participants. Participants were guaranteed confidentiality of their personal information, and data was used entirely for academic purposes. Each participant was provided with a consent form and a demographic sheet to complete. Following a briefing on how to fill out the questionnaire, the WHOQOL-HIV BREF scale was individually administered to educated participants. For those who were uneducated, the researcher personally assisted in completing the questionnaire by asking participants questions and recording their responses. Any queries regarding the questionnaire were addressed, and participants were encouraged to provide accurate and honest answers. On average, each participant required 10-15 minutes to complete the scale along with any necessary assistance.

Ethical considerations

- Permission to use the WHOQOL-HIV BRIEF assessment tool was obtained from the relevant authors via email.
- An official authorization letter from the Department of Applied Psychology, Lahore College for Women University, was secured.
- Data collection was conducted with the permission of the Punjab AIDS Control Program, which granted access to PLHIVA from their Special Clinics for HIV/AIDS.
- Informed consent was taken from PLHIVA and were given surity that their data would be kept confidential and used solely for research purposes.

RESULTS

The sample consisted of 100 PLHIVA. 50 % of PLHIVA belonged to Antiretroviral Therapy, and 50 % of PLHIVA belonged to pre-ART (not taking treatment). Demographic data indicated that most of PLHIVA were men, comprising 84%, while women accounted for 14%, and a small percentage (2%) of men were included. The mean age of participants was (M=32.01, SD=8.74), with ages ranging from 18 to 65. The data was randomly selected from all registered PLHIVA. Among them, 45% were married, 44% were unmarried, 3% were widowed, and 8% were divorced. The marital status of spouses in relation to HIV status was also analyzed. It showed that 16 % of spouses were HIV positive,15 % were negative, and 14 % of people did not know about their spouse's status due to unchecked HIV infection. Statistics indicate that referral in clinics by self was 57 %, from NGO 36 %, and doctors referred 5 % to PLHIVA. The most prevalent means of HIV/AIDS transmission were sexual contact (38 %), blood transfusion (31 %), and (33%) by substance use.

Reliability of the scale used in this research

The Cronbach's alpha of the scale was .76, indicating satisfactory internal consistency.
Mean comparisons between ART and pre-ART PLHIVA concerning the physical, psychological, level of independence, social relationship, environment, and spirituality /religion/ personal beliefs. An independent sample t-test was utilized to examine the disparities between pre-ART and ART PLHIVA across various domains, including physical and psychological well-being, level of independence, social relationships, environment,

and spirituality/religion/personal beliefs (Table 1). Notably, a significant distinction emerged in the scores of physical health between pre-ART (M=10.48, SD=2.44) and ART (M=13.90, SD=1.85) conditions, with t(98)=7.32, p<.01. The effect size, as indicated by Cohen's d, was notably large (d=1.57), signifying that ART patients exhibit superior physical health compared to pre-ART patients.

Table 1.

Variable	Pre ART		ART		*t* (98)	*p*	*Cohen's d*
	M	*SD*	*M*	*SD*			
Physical	10.48	2.44	13.90	1.85	7.88	.000*	1.57
Psychological	13.76	30.39	23.66	7.55	8.46	.000*	0.44
Independent	13.28	2.96	13.22	1.91	-1.20	.905	0.02
Social	9.50	2.62	8.54	1.37	-2.29	.024*	0.45
Environment	24.30	4.89	23.56	3.90	-.83	.406	0.16
SRPB	12.34	3.46	30.72	17.87	7.13	.000*	1.42

*p<.05

Similarly, the evaluation of psychological health differences via t-test revealed a significant contrast between pre-ART (M=13.76, SD=30.39) and ART (M=23.66, SD=7.55) conditions, with t(98)=8.46, p<.05. Although the effect size was moderate (d=0.44), the results suggest that ART patients experience better psychological health.

Furthermore, a significant discrepancy emerged in the scores of spirituality/religion/personal beliefs between pre-ART (M=12.34, SD=3.46) and ART (M=30.72, SD=17.87) conditions, with t(98)=7.13, p<.00. The effect size was notably large (d=1.42), indicating that ART PLHIVA exhibit superior health outcomes concerning spirituality/religion/personal beliefs compared to pre-ART individuals.

Table 2.

Mean comparisons of Health-Related Quality of Life among PLHIVA with and without ART

Variables	Pre ART		ART		*t*(98)	*P*	Cohen's d
	M	*SD*	*M*	*SD*			
HRQOL	83.66	9.41	113.62	27.36	7.32	.000**	1.46

*p<.01

An independent-sample t-test was conducted to compare the health-related quality of life between ART and pre-ART PLHIVA (see Table 2). Significantly different scores were observed between the pre-ART (M=83.66, SD=9.41) and ART (M=113.62, SD=27.36) conditions; t(98)=7.32, p<.01. The effect size, measured by Cohen's d, was notably large (d=1.46), indicating a substantial difference in scores between ART and pre-ART individuals. These findings suggest that individuals on ART exhibit better health-related quality of life compared to those who are not yet on ART.

Table 3.

Correlations for study variables

Variables	1	2
HRQOL	-	
Age	-.24*	-

*p<.01

Table 3 revealed an inverse correlation between the HRQOL and age (r = -.24, p< .01).

Table 4.
Regression Coefficients of Health-Related Quality of Life

Variable	*B*	B	*SE*
Constant			
Family members of PLHIVA	-3.57	-.13	2.78
Gender	-.52	-.09	6.25
Age	-.79	-.27**	0.30
Marital status	-.51	-.14	4.07
Monthly income	.00	.06	.00

β = beta coefficient; SE= Standard Error. **p<.01; *p< .05

Table 4 shows the influence of family members of PLHIVA, gender, age, marital status, and monthly income on HRQOL. The R-squared value of .13 indicates that the predictor variables collectively accounted for a 13% variance in the outcome variable ($F(1,98) = 2.36$, $p < 0.01$). The results demonstrate that age significantly and negatively predicted HRQOL ($\beta = -.27^{**}$, $p < 0.01$).

DISCUSSION

The results of the current study highlighted HIV/AIDS prevalence in Pakistan. A Plethora of research was conducted in the Western world on the prevalence rate and adverse influence of HIV/AIDS on their health and quality of their life. In contrast, in Pakistan, there is not enough research concerning the present issue that is HIV/AIDS, and its impact on health and quality of life. The accessible research literature indicated that a diagnosis of HIV/AIDS is a severe trauma for a normal person in a Muslim state like Pakistan because of the huge stigmatization attached to it. Although HIV is a terminal disease that is not treatable completely, it is manageable. People living with HIV/AIDS (PLHIVA) often endure stigmatization, leading to heightened stress in their lives. The prevailing negative attitudes towards PLHIVA prompt them to conceal their condition from both society and close relations, hindering their willingness to seek necessary treatment. The assessment of Quality of Life (QOL) emerges as a crucial factor in gauging the well-being of PLHIVA. According to Folasire et al. (2012), the notably low scores in the social domain suggest that PLHIVA experience inadequate social support, primarily due to the pervasive stigma they face. Doris et al. (2014) further affirm that a significant number of PLHIVA encounter stigma and harbour reservations about disclosing their HIV-positive status, thereby exerting a detrimental impact on their overall quality of life.

The results of the current study presented that HIV/AIDS is more prevalent in males than females. Findings specified that the sample comprised 84 % males, 14 % females, and 2 % females. 36% of the PLHIVA were in the age range of 27 to 30 years. By the analysis of spouse status of HIV/AIDS, it was concluded that their spouse infected 16 % of people because of unsafe sexual activities, which is further stressful for the health of their family because the transmission of HIV/AIDS to their offspring is at high risk if both parents are HIV/AIDS positive. The result of the existing study was supported by this preceding research, which evaluated that most Pakistani women get infections from their life partners (Raees et al., 2013). The current study has discovered that NGOs are vital in identifying PLHIVA in Pakistan. It showed that NGOs referred 36 % of PLHIVA. The present study's results helped to distinguish that the most prevalent HIV sources are sexual contact (38%) and blood transfusion (31%). The transmission by sexual contact was also found in single people, but the percentage was very low. The level of substance use estimated in current research results showed that 33% of PLHIVA belong to injection drug users. Korthuis

et al. (2008) concluded that substance use's unpleasant effects on the Health of PLHIVA worsen their quality of life. A significant result shown in this study was that physical health is better in PLHIVA who take ART than in pre-ART PLHIVA. The fact of better Health in PLHIVA with ART is because the progress of antiretroviral drugs has meaningfully altered the awareness regarding HIV/AIDS as of a terminal to a long-lasting and possibly a disease that can be managed, and the accessibility and management of ART has meaningfully lowered the mortality and morbidity linked with HIV/AIDS. There is an association between ART and the quality of life of PLHIVA, and numerous studies have stated a strong positive relationship between ART and better quality of life in diverse domains amongst PLHIVA both in developed and developing countries (Oguntibeju, 2012)

Better psychological health has been found in PLHIVA taking ART than in pre-ART PLHIVA. Better outreach to ART in developing countries in the past is thought to have added to a decrease in HIV/AIDS spread and enhancements in life expectancy. Although several researches describe the impact of ART on physical health, relatively lesser consideration has been specified for the impact of ART on psychological health. This study showed the effect of ART on depression in PLHIVA in Uganda. It was discovered that twelve months after the start of ART, depression levels in treatment cluster fell by around 15 and 27 points, correspondingly comparative to the cluster of PLHIVA not on ART treatment (Okeke & Wagner, 2013). There were differences in the social aspects of health scores in ART and pre-ART PLHIVA. The previous literature demonstrates that doctors and health practitioners should support the community and family to adhere to antiretroviral treatment (Tangkawanich et al., 2008).

The results showed no significant differences in ART and pre-ART PLHIVA's environment and independent domain of HRQOL. Similar findings were found in other research by Subramanian et al. (2009), demonstrating that the PLHIVA who pursue support and care from their family, friends, and relatives achieve a better HRQOL. This study supports the current research that social and family care can improve the life quality of PLHIVA. This factor affects PLHIVA with and without ART. Also, it was shown that there is a weak correlation between HRQOL and age. Young age was associated with high HRQOL, and as age increases, HRQOL is reduced. Linear regression was done to determine the HRQOL predictor between ART and pre-Art PLHIVA. The results presented that age is a significant predictor of the HRQOL among PLHIVA, which specified that young PLHIVA had better HRQOL than over-age PLHIVA.

Finally, it was noteworthy after this study that HIV/AIDS affects the HRQOL of PLHIVA. The demographics, status of treatment, and HIV/AIDS-linked factors were not the only explanations; illiteracy, poverty, absence of awareness, and lack of healthcare facilities are other causative factors that worsen the health and quality of life of PLHIVA. It was a positive point for the researcher to select registered patients from HIV/AIDS clinics because many PLHIVA were out of Lahore. We can generalize the results for PLHIVA from diverse parts of Pakistan.

CONCLUSION

The present research was conducted to determine the HRQOL in PLHIVA with and without ART. The aim was to obtain demographics age, gender, marital status, spouse status,

family members of PLHIVA, referral source, HIV/AIDS source, and use of the substance to understand how the said factors affect the HRQOL among PLHIVA who were on ART and those who were not on ART. This research revealed that HIV/AIDS affected the HRQOL of PLHIVA. The outcomes indicated an improved HRQOL in ART PLHIVA than pre-ART PLHIVA. Furthermore, HIV/AIDS is more prevalent in males than females; numerous people get infected by their spouses through sexual contact. Sexual contact and blood transfusion were found to be the leading source of HIV/AIDS transmission. The present research results showed that a significant percentage of the sample belonged to substance use. The results suggest that physical and psychological health was better in PLHIVA on ART than in pre-ART PLHIVA. The outcomes also showed that ART PLHIVA had better psychological health regarding spirituality, environment, and religious beliefs. The study showed that a reduction in age was associated with increased HRQOL. The results showed that age significantly predicts HRQOL among ART and pre-Art PLHIVA, indicating that young PLHIVA had better HRQOL than over-age PLHIVA. This research contributes to the existing knowledge about HRQOL in PLHIVA. The present research results would offer an improved understanding of the factors associated with HRQOL in PLHIVA. The present study inspires more research on how HRQOL is affected by HIV/AIDS infection and the difference in HRQOL among ART and pre-ART PLHIVA.

LIMITATIONS

Firstly, it took a lot of work and study within a limited period, which was too tough. Time restraint was an imperious issue that affected numerous aspects of the study. Secondly, collecting data took much work because PLHIVA was reluctant to participate in research and fill out the questionnaire. Despite the details provided to PLHIVA, their identity will be maintained, and data will only be used for research purposes. The reason was that HIV/AIDS is stigmatized in society, so PLHIVA does not want to disclose themselves as HIV patients. Additionally, the study consisted of a cross-sectional design, that inherently possesses limitations. This design allows for the examination of population data at a single point in time. To address this limitation and gain a deeper understanding of HRQOL of PLHIVA over time, future research could consider utilizing a longitudinal study design. This approach would enable researchers to track changes in HRQOL among PLHIVA over an extended period, providing valuable insights into the long-term effects of various factors and interventions. Finally, the study sample was selected by purposive sampling, that makes it problematic to generalize the outcomes to the total HIV-positive populace. Additionally, another obstacle in collecting data was uncooperative medical authorities. They were cautious about allowing a researcher to enter HIV/AIDS clinics and reach the relevant healthcare staff and counselors.

SUGGESTIONS AND IMPLICATIONS

A comprehensive research agenda is crucial to delve into the HRQOL among PLHIVA. There is an urgent need to intensify public awareness initiatives and disseminate vital information about HIV/AIDS and its modes of transmission. Consistent counselling for PLHIVA is paramount to enhance treatment adherence, with a specific focus on providing targeted counselling to spouses to instill precautionary measures within sexual relationships, ensuring the protection of both partners. A fundamental shift in societal attitudes towards PLHIVA is imperative for fostering an improved health-related quality of life. Moreover, proactive government involvement is essential to collaborate with the

healthcare sector and address the issue of unqualified practitioners falsely claiming expertise in handling HIV/AIDS. Shockingly, 90 per cent of individuals in Pakistan forgo treatment due to a lack of awareness until physical symptoms manifest. Consequently, a robust private-public partnership becomes indispensable to launch an expansive awareness campaign. This campaign should not only cover screening, treatment, and preventive measures but also ensure their penetration at the grassroots level, addressing the issue comprehensively and promoting a holistic approach to tackling HIV/AIDS. The "Together" campaign, available in both English and Spanish, is an evidence-based initiative designed to empower communities, partners, and healthcare providers. Its primary goal is to combat HIV stigma and encourage HIV testing, prevention, and treatment. Implementing campaigns similar to "Together" in Pakistan could significantly enhance the HRQOL of PLHIVA and effectively diminish the stigma linked with HIV/AIDS.

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REFERENCES

Abdullah, M. A., Shaikh, B. T., & Ghazanfar, H. (2021). Curing or causing? HIV/AIDS in health care system of Punjab, Pakistan. *Plos one*, *16*(7), e0254476.

Ahmed, A., Saqlain, M., Bashir, N., Dujaili, J., Hashmi, F., Mazhar, F., Khan, A., Jabeen, M., Blebil, A., & Awaisu, A. (2021). Health-related quality of life and its predictors among adults living with HIV/AIDS and receiving antiretroviral therapy in Pakistan. Quality of Life Research, 30(6), 1653–1664. https://doi.org/10.1007/s11136-021-02771-y

Ahmed, A., Saqlain, M., Umair, M. M., Hashmi, F. K., Saeed, H., Amer, M., ... & Dujaili, J. A. (2021). Stigma, social support, illicit drug use, and other predictors of anxiety and depression among HIV/AIDS patients in Pakistan: a cross-sectional study. *Frontiers in public health*, 9, 745545.

Ali, I. (2023). Culture vultures: HIV/AIDS, structured disparities and stigma in Sindh province of Pakistan. *Asian Journal of Medical Humanities*, 2(1), 20230005.

Bangsberg, D. R., Hecht, F. M., Charlebois, E. D., Zolopa, A. R., Holodniy, M., Sheiner, L., Bamberger, J. D., Chesney, M. A., & Moss, A. (2000). Adherence to protease inhibitors, HIV-1 viral load, and development of drug resistance in an indigent population. AIDS, 14(4), 357–366. https://doi.org/10.1097/00002030-200003100-00008

Bashir, S. (2011). HIV/AIDS stigma at the workplace: exploratory findings from Pakistan. *SAHARA-J: Journal of Social Aspects of HIV/AIDS*, *8*(3), 156-161.

Cattell, R. B., & Cattell, R. B. (1978). Fixing the number of factors: The most practicable psychometric procedures. *The scientific use of factor analysis in behavioral and life sciences*, 72-91.

Doris, M. M., Janet, S., Martin, F., & Katama. (2014). A. Perception of quality of life among Ugandan patients living with HIV. BMC Public Health, 14. https://. https://doi.org/10.1186/1471-2458-14-34

Folasire, O. F., Irabor, A. E., & Folasire, A. M. (2012). Quality of life of People living with HIV and AIDS attending the Antiretroviral Clinic, University College Hospital, Nigeria. African Journal of Primary Health Care and Family Medicine, 4(1), 1–8. https://doi.org/10.4102/phcfm.v4i1.294

Joulaei, H., Mousavi, S. G., Foroozanfar, Z., & Rakhshani, T. (2021). Health-related quality of life in people living with HIV in Southwest Iran in 2018: A cross-sectional study. BioMed Research International, 2021, 9935175. https://doi.org/10.1155/2021/9935175

Korthuis, P. T., Zephyrin, L. C., Fleishman, J. A., Saha, S., Josephs, J. S., McGrath, M. M., Hellinger, J., Gebo, K. A., & HIV Research Network. (2008). Health-related quality of life in HIV-infected patients: The role of substance use. AIDS Patient Care and STDs, 22(11), 859–867. https://doi.org/10.1089/apc.2008.0005

Munawar, M., & Muazzam, A. (2023). Statistics and Risk Factors of HIV/AIDS: An Unceasing Epidemic in Lahore – Pakistan. South Asian Journal of Public Health.

Mutabazi-Mwesigire, D., Katamba, A., Martin, F., Seeley, J., & Wu, A. W. (2015). Factors that affect the quality of life among people living with HIV attending an urban clinic in Uganda: A cohort study. PLOS ONE, 10(6), e0126810. https://doi.org/10.1371/journal.pone.0126810

National Aids Control Programme. (2021). Prevalence of Aids. https://www.nacp.gov.pk/

Ndubuka, N. O., Lim, H. J., Ehlers, V. J., & Van Der Wal, D. M. (2017). Health-related quality of life of patients on antiretroviral treatment in Botswana: A cross-sectional study. Palliative and Supportive Care, 15(2), 214–222. https://doi.org/10.1017/S1478951516000638

Oguntibeju, O. O. (2012). Quality of life of people living with HIV and AIDS and antiretroviral therapy. HIV/AIDS – Research and Palliative Care,4.117-124. https://doi.org/10.2147/HIV.S32321

Okeke, E. N., & Wagner, G. J. (2013). AIDS treatment and mental health: Evidence from Uganda. Social Science and Medicine, 92, 27–34. https://doi.org/10.1016/j.socscimed.2013.05.018

Raees, M. A., Abidi, S. H., Ali, W., Khanani, M. R., & Ali, S. (2013). HIV among women and children in Pakistan. Trends in Microbiology, 21(5), 213–214. https://doi.org/10.1016/j.tim.2012.12.005

Rajeev, K. H., Yuvaraj, B. Y., Nagendra Gowda, M. R., & Ravikumar, S. M. (2012). Impact of HIV/AIDS on quality of life of people living with HIV/AIDS in Chitradurga district, Karnataka. Indian Journal of Public Health, 56(2), 116–121. https://doi.org/10.4103/0019-557X.99901

Robberstad, B., & Olsen, J. A. (2010). The health-related quality of life of people living with HIV/AIDS in sub-Saharan Africa-a literature review and focus group study. Cost Effectiveness and Resource Allocation: C/E, 8, 5. https://doi.org/10.1186/1478-7547-8-5

Saleem, F., Hassali, M. A., Shafie, A. A., Awad, G. A., Atif, M., ul Haq, N., Aljadhey, H., & Farooqui, M. (2012). Does treatment adherence correlate with health-related quality of life? Findings from a cross-sectional study. BMC Public Health, 12(1), 1471–2458. https://doi.org/10.1186/1471-2458-12-318

Subramanian, T., Gupte, M. D., Dorairaj, V. S., Periannan, V., & Mathai, A. K. (2009). Psycho-social impact and quality of life of people living with HIV/AIDS in South India. *Aids Care*, *21*(4), 473-481.

Tangkawanich, T., Yunibhand, J., Thanasilp, S., & Magilvy, K. (2008). Causal model of Health: Health-related quality of life in people living with HIV/AIDS in the northern region of Thailand. Nursing and Health Sciences, 10(3), 216–221. https://doi: 10.1111/j.1442-2018.2008.00400.x. https://doi.org/10.1111/j.1442-2018.2008.00400.x

UNAIDS country profile. (2020). http://www.unaids.org/Unaids/EN/Geographical +area/By+Country/Pakistan

World Health Organization HIV/AIDS Department. (2009). Priority intervention for HIV/AIDS prevention, treatment, and care in the health sector. World Health Organization.

World Health Organization. (2011). HIV/AIDS Department. Essential prevention and care interventions for adults and adolescents living with HIV in resource-limited settings. http://www.who.int/hiv/pub/plhiv/interventions/en/index.html Retrieved May 4, 2011

World Health Organization. (2021). HIV/AIDS. Retrieved April 18, 2021. https://www.who.int/news-room/fact-sheets/detail/hiv-aids.

Yasin, Z. (2021). Role of interpersonal communication and mass media in awareness, prevention and control of HIV/AIDS in Punjab, Pakistan. *Journal of Media Studies*, 36(1).