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Negative Psychological States, Quality of Life and Medical Adherence among People living with HIV/AIDS

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HIV/AIDS is one of the deadliest diseases in the world which has a major psychological impact leading to higher chances of developing negative psychological states among PLHIV. The study sought to examine negative psychological states, quality of life and medical adherence among PLHIV. A quantitative, correlational research design was followed. A sample of one hundred PLHIV (69 males and 31 females) from ART center, IMS, BHU, Varanasi, Uttar Pradesh, India was recruited using a purposive sampling method. The WHOQOL HIV BREF, ADSS, death anxiety and medical adherence scale were administered. Statistical analyses included independent t-tests, Pearson correlations, and multiple regression. Moderate level of negative psychological states were observed with PLHIV experiencing average anxiety, depression, below average stress, low death anxiety, high quality of life and average medical adherence. Gender difference was found in depression, stress, death anxiety, quality of life and medical adherence except in anxiety. Moreover, anxiety, depression, stress, and death anxiety were significantly negatively associated with quality of life. Depression and death anxiety were identified as significant predictors of quality of life. Conclusion: Findings underscores the substantial benefits of ART and counselling provided at ART centre in diminishing negative psychological states and bolstering QOL among PLHIV. Ultimately, this combined intervention may serve as a beacon of progress, offering a supportive pathway for enhancing the lives of PLHIV.

Keywords: Death anxiety; medical adherence; negative psychological states; PLHIV; Quality of life

Human Immunodeficiency Virus (HIV) and acquired immunodeficiency syndrome (AIDS) are significant global public health challenges. The estimation regarding people living with HIV as per the global report of UNAIDS (2023), is around the 39.0 million (33.1 million–45.7 million). As per the reports of NACO India, the number of People living with HIV (PLHIV) was estimated at 24.01 lakh in 2021. Overall, the predicted prevalence of HIV in adults had been declining in India since the peak of pandemic (NACO, 2022).

Negative psychological states refer to the emotional and mental challenges experienced by individuals. These states include conditions like anxiety, depression, and stress that are exacerbated by the unique circumstances of living with a chronic illness, managing treatment regimens, facing stigma, and dealing with concerns about health outcomes and social interactions. People with HIV frequently face negative psychological states, despite the fact that HIV medication improves prognosis and there are attempts to lessen stigma among the general public. The findings of Remien *et al*. (2019) revealed that PLHIV and HIV-vulnerable individuals both have greater prevalence of negative psychological states than the overall population. PLHIV are more likely to experience cognitive, anxiety, and mood disorders. For example, depression is one of the most common negative psychological states faced by people with HIV. Depression, anxiety, and stress are very common in PLHIV (Opoku *et al*., 2019; Deshmukh *et al*., 2017; Bhatia & Munjal 2014).

Negative psychological states can also steadily influence a person's perception of their quality of life. Health is a fundamental aspect of overall quality of life (QOL), and it has been hypothesised that some illness processes, such as AIDS, may specifically impair QOL. Studies also show the influence of negative psychological states on quality of life of PLHIV (Deshmukh *et al*., 2017; Mutabazi-Mwesigire *et al*.,2015). Death anxiety (DA) is one of the most commonly stated psychosocial repercussions of HIV/AIDS. Death anxiety could result in increased compliance with treatment plans and enhanced contentment with the utilization of highly active antiretroviral therapy among PLHIV (Ifeagwazi *et al*.,2015). Maintaining a consistently high level of adherence to ART is crucial in order to effectively suppress viral replication, enhance immunological and clinical results, minimize the potential for developing resistance to antiretroviral drugs, and reduce the likelihood of HIV transmission. ART interruption and discontinuation would worsen physical functioning, and combined with depressive behaviours, this could lead to further impairments in social relationships and a consequent reduction in general quality of life. ART enhances both quality of life and longevity. Patients' lifelong commitment to strictly follow daily medication dose schedules and regular visits to the ART facility is one of the biggest problems associated with ART.

Rationale of the study

Negative psychological states like anxiety, stress, depression have the ability to throw a gauntlet to the effectiveness of HIV prevention interventions. The concern has called for more and more extensive research to occur on HIV and negative psychological states as there are various areas of intersection. Not only do physical ailments necessitate immediate attention, but so do mental inconsistencies, as these victims are constantly plagued by negative psychological states such as anxiety, high emotional and psychological distress, loneliness, frustration, hopelessness, depression, suicidality, and post-traumatic stress.

Objectives

1. To assess gender difference in negative psychological states (anxiety, depression, stress), quality of life, death anxiety and ART adherence among PLHIV.
2. To investigate the relationship between negative psychological states (anxiety, depression, stress) and death anxiety with quality of life and ART adherence.
3. To investigate how psychological states (anxiety, depression, stress) and death anxiety predict quality of life and ART adherence.

Hypotheses

1. There would be significant gender difference in the negative psychological states- anxiety, depression, stress, quality of life, and death anxiety among PLHIV
2. There would be negative significant correlation between negative psychological states anxiety, depression, stress, death anxiety and quality of life among PLHIV.
3. Psychological states (anxiety, depression, stress) and death anxiety would negatively predict quality of life and ART adherence.

Method

Sample

The study was conducted with PLHIV from Antiretroviral therapy (ART) centre, Institute of Medical Sciences, Banaras Hindu University, Varanasi. The following were the study's eligibility criteria: age 18 years or above, diagnosed with HIV infection, and currently receiving health care from ART centre. Through a purposive sampling method, a total of 100 individuals were enlisted for this study, including 61 men and 39 women. The average age of the participants was 40 years.

Tools

Anxiety, Depression and Stress scale (Bhatnagar et al., 2018). The scale consists of 48 items, divided into three subscales: anxiety (19 items), depression (15 items), and stress (14 items). The reliability of the entire scale ranges from 0.81 to 0.89, while the reliability for the anxiety, depression, and stress subscales is 0.76, 0.75, and 0.61, respectively.

Thakur Death Anxiety Scale (Thakur & Thakur 1984). The test consists of sixteen discriminating statements. There is a 5-point Likert scale for scoring of each item. The score ranges from 16 to 80, and a high score implies greater death anxiety. The scale's internal consistency and test-retest reliability are 0.78 and 0.86, respectively.

WHOQOL HIV BREF (WHO, 1998, 2002). This consists of six domain scores and have 31 items. Two of the 31 items specifically assess general quality of life. Five-point Likert scale is there for each item. This scale consists of six domains with 4 items each for physical health, social relationships, level of independence, and spiritual health, 5 items for psychological well-being, and 8 items for environmental factors. Higher scores represent a better quality of life.

Medical Adherence Scale (Researchers). This scale is based on adherence guidelines recommended by NACO. The scale consists of 2 items, the second item is a negative statement. Lower score indicates higher medical adherence.

Ethical considerations

This study was approved by the ethics committee of Institute of Science (I.Sc/ECM - XIV/2022-23), Banaras Hindu University, India. Written informed consent was secured from each participant, and were informed that their involvement in the study was entirely voluntary and could be withdrawn at any time. Participants were assured that all information collected would be kept confidential and accessible only to the research team.

Results

To achieve the study's objectives, independent t-tests, Pearson product-moment correlation, and multiple regression analyses were conducted.

Results presented in Table 1 reveal significant gender differences in the scores of death anxiety, $t(98) = -4.32$, $p < .001$, with females ($M = 39.95$, $SD = 12.15$) scoring higher than males ($M = 29.72$, $SD = 11.15$); depression, $t(98) = -2.74$, $p < .01$, with females ($M = 5.23$, $SD = 4.17$) scoring higher

than males (M = 2.98, SD = 3.89); stress, t(98) = -2.64, p < .01, with females (M = 5.26, SD = 3.14) scoring higher than males (M = 3.67, SD = 2.78); medical adherence, t(98) = 1.64, p < .05, with females (M = 2.00, SD = 0.00) scoring lower than males (M = 2.07, SD = .25); quality of life, t(98) = 4.06, p < .001, with females (M = 116.95, SD = 13.27) scoring lower than their male (M = 128.23, SD = 13.71) counterparts. No significant gender difference was observed in the anxiety level of participants.

Correlational analysis

Table 2 represents the correlational analysis between predictor and criterion variables. Examining the table reveals that quality of life demonstrates an adverse correlation with death anxiety (r = -0.54, p < 0.01), anxiety (r = -0.54, p < 0.01), depression (r = -0.64, p < 0.01), and stress (r = -0.51, p < 0.01). Similarly, all dimensions of quality of life display negative connections with death anxiety, anxiety, depression, and stress. These associations exhibit a range of strength, falling within the realm of low to moderate levels. Non-significant correlation was observed between these variables and medical adherence.

Table 1. Gender differences among PLHIV

Variables	Male Mean (SD) (*N*=100)	Female Mean (SD) (*N*=100)	t - ratio	Sig (two-tailed)
Death Anxiety	29.72 (11.15)	39.95 (12.15)	-4.32	.000***
Anxiety	3.79 (3.11)	4.31 (2.65)	-0.86	.391
Depression	2.98 (3.89)	5.23 (4.17)	-2.74	.007**
Stress	3.67 (2.78)	5.26 (3.14)	-2.64	.010*
Quality of Life	128.23 (13.71)	116.95 (13.27)	4.06	.000***

**p < .05; **p < .01; ***p < .001*

Table 2. Summary of correlation analysis between predictor and criterion variables

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. Death Anxiety	—	.54**	.59**	.53**	-.54**	-.39**	-.51**	-.33**	-.24*	-.24*	-.76**	.00
2. Anxiety		—	.68**	.63**	-.54**	-.59**	-.50**	-.39**	-.22*	-.23*	-.45**	.02
3. Depression			—	.73**	-.64**	-.52**	-.75**	-.25*	-.34**	-.38**	-.55**	.01
4. Stress				—	-.51**	-.49**	-.56**	-.20*	-.23*	-.24*	-.46**	.05
5. Quality of Life					—	.79**	.89**	.68**	.71**	.76**	.70**	.02
6. Physical						—	.68**	.63**	.42**	.42**	.43**	-.02
7.Psychological							—	.48**	.53**	.66**	.61**	-.06
8. Level of independence								—	.39**	.34**	.41**	.02
9. Social Relationships									—	.53**	.46**	.00
10. Environmental										—	.37**	.14
11. Spirituality											—	.038
12. Medical adherence												—

**p<.05; **p < .01; ***p < .001*

Regression analysis

Preliminary investigations were carried out to verify that the assumptions of homoscedasticity, linearity, and normalcy were not violated. Additionally, the relationships between the study's predictor variables were looked at. The level of each association is moderate. All predictor variables had statistically significant correlations with quality of life, indicating that the data and dependent variable were appropriately associated for reliable multiple linear regression analysis. A direct method of multiple linear regression analysis was conducted because no a priori assumptions were developed to determine the order in which the predictor variables would enter into the model. The results of the multiple linear regression are summarized in Table 3. The model significantly predicted 46% of the variance in quality of life (F (4, 95) = 20.074, p < .001). In the model, out of four predictor variables only death anxiety and depression were identified to be statistically significant predictors of quality of life. The significant beta value of death anxiety and depression were - 0.22 and - 0.42 respectively.

Table 3. Summary table of multiple regression analysis for death anxiety, anxiety, depression and stress predicting quality of life (N = 100).

	R^2	ß	B	SE	CI
Model	0.46***				
Death Anxiety		- 0.22*	- 0.26	0.11	- 0.48 / 0.04
Anxiety		- 0.13	- 0.65	0.54	- 1.72 / 0.42
Depression		- 0.42*	- 1.49	0.44	- 2.37 / - 061
Stress		0.004	0.017	0.56	- 1.10 / 1.14

*p < .05; **p < .01

Discussion

The primary objective of the present study was to evaluate negative psychological states, quality of life and medical adherence among PLHIV. Participants reported an average level of anxiety. This is contradictory to the findings of the studies (Wani, & Sankar, 2017; Khan & Sehgal, 2010) which reported high levels of anxiety. The variation in anxiety levels among PLHIV could be influenced by several factors including differences in the study population, sample size, cultural and socioeconomic factors, access to healthcare and support services and stigma. Participants reported an average level of depression. This is contradictory to the findings of Opoku Agyemang *et al*. (2022), who found a high level of depression among PLHIV. The possible reason could be the treatment advances, increased family and social support and effective coping strategies. Participants reported below average level of stress. Similar finding was reported by Khan & Sehgal (2010), who found a moderate level of stress among PLHIV. The reason behind this could be the availability of antiretroviral therapy (ART), the counselling offered at ART centers, affordable treatment options, and increased awareness about HIV infection and its management. Additionally, a significant number of patients began ART treatment early on, potentially aiding in their adjustment to the disease and subsequently minimizing adverse psychological effects. However, contrary results are found in the other studies who found high levels of stress (Opoku Agyemang *et al*., 2022; Busi *et al.,* 2021).

PLHIV reported a low level of death anxiety. The possible reason for this could be the effective ART medication. Proper counseling, testing and medication had built a positive outlook towards life, and helped in personal growth and a re-evaluation of priorities, resulting in reduced anxiety about death. Moreover, intrinsic religiosity may have also contributed to low death anxiety. Participants reported a high level of QOL. This finding is consistent with the finding of other studies who reported good QOL (Busi

et al., 2021). The possible reason could be the fewer or less HIV symptoms, maintaining antiretroviral regimen, psychosocial factors, spirituality and social support may potentially lead to good QOL in PLHIV. Participants reported average medical adherence. This aligns with the finding of Achappa *et al.* (2013). The reason behind this may be the fear of medication side effects, complex treatment regimens, lack of symptoms, perceived stigma, shame, disgrace and disclosure about their HIV status can be challenging for the patients, hence, thus, affecting their medical adherence.

Non-significant gender differences were found in anxiety. This aligns with the finding of Othman *et al.* (2015). Mean value depicts that HIV infected women reported slightly higher on anxiety than men with HIV but these results were not statistically significant. The reason attributed to this could be that the stressors related to living with HIV, such as managing health, disclosure, and stigma, could result in similar anxiety levels for both genders and effective coping mechanisms might be equally employed by both genders, leading to similar anxiety responses. Although, contradictory findings have been reported by the other studies Asante, 2012).

Significant gender differences were found in depression. This finding is consistent with the study done in Kolkata, India (Swendeman *et al.,* 2018). Mean value depicts that depression of women with HIV/AIDS was higher than HIV/AIDS men. The possible reason for this could be a combination of factors including societal expectations and gender roles and stigma. Unequal access to support, healthcare, and cultural influences can contribute to the gender-based discrepancy in depression levels. This is also consistent with the finding of Aljassem *et al*. (2016); Asante (2012). Further, significant gender differences were also found in PLHIV on stress. The finding is in accordance with the study of Gordillo *et al*. (2009). Mean value depicts that stress of women with HIV/AIDS was higher than HIV/AIDS men. This might be because women face and report greater internalising issues, and fear of HIV disclosure than males, and as in India, stigma surrounding STDs and gender inequity are major issues. However, contradictory findings were reported by Othman *et al*. (2015).

Significant gender differences were also found in Quality of life. This finding is in line with the findings of previous studies (Gebremichael *et al*., 2018; Arjun *et al*., 2017; Amanuel *et al.,* 2015). Mean value depicts that the QOL of men was higher than women. The reason attributed to this could be the potential differences of gender in access to resources and support systems. Women with HIV receive less financial and social support, and have greater responsibilities towards their families. Although this is contradictory to the findings of Stangl *et al*. (2018). Significant gender differences were found in death anxiety. This corresponds with the finding of Rao, Asad, and Latif (2022). Mean value depicts that death anxiety of women with HIV/AIDS was higher than HIV/AIDS men. This could be due to women's heightened preoccupation with death-related thoughts and concerns about its impact on family. Additionally, cultural norms as in India, might lead men to be less expressive about their fear of dying, potentially influencing the observed gender difference in death anxiety.

Further, significant gender differences were found in medical adherence. This is in line with the finding of de Fatima Bonolo *et al. (2013)*. Mean value depicts that medical adherence of men with HIV/AIDS was very slightly higher than HIV/AIDS women. This could be attributed to various factors such as differences in healthcare access, limited support, more family responsibilities and individual perceptions of health management. However, contrary results were seen in the study of Rao, Asad, and Latif

(2022). The study also attempted to evaluate the relationship among anxiety, depression and stress, death anxiety and quality of life among PLHIV. The result showed that quality of life exhibits substantial association with all the predictors.

Significant negative correlation between anxiety and QOL among PLHIV was found. This corresponds with the study of Stanley, *et al.* (2014). Anxiety disorders are a serious concern for PLHIV who don't have good coping strategies and it may lead to heightened stress levels, which can in turn affect overall quality of life by impacting mental well-being, physical health, and social interactions. Significant negative correlation was found between depression and QOL. This is consistent with the results of Cai *et al*. (2020) & Pompili *et al*. (2013). This could be due to the emotional toll of managing a chronic illness, stigma, medication effects, and the potential impact on treatment adherence. Significant negative correlation was found between stress and QOL among PLHIV. This is consistent with the study of Feng *et al*. (2015). The reason behind this may be that stress exerts detrimental impacts on both physical health and psychosocial functioning, consequently disrupting overall quality of life. Notably, stigma related to HIV and discrimination emerged as significant stressors. Among the challenges faced, disclosing one's HIV status stood out as one of the most stress-inducing factors for the participants. Significant negative correlation was found between death anxiety and QOL. This is consistent with the study of Onu, Ifeagwazi, & Chukwuorji (2021). The reason for this could be the heightened awareness of mortality that comes with managing a chronic illness like HIV. Fear of the unknown future and impaired perceptions about recovery might impact various aspects of their quality of life.

Non-significant correlations were seen between medical adherence and any other predictor variables. This could imply that factors affecting medical adherence in PLHIV might operate independently from those impacting other aspects of their well-being. Nevertheless, conflicting results were documented by Wykowski *et al*. (2019) & Silva *et al*. (2014). Multiple regressions were performed, with negative psychological states (anxiety, depression and stress), death anxiety as predictors and the QOL and medical adherence as criterion. Depression was significantly predicting the quality of life of PLHIV. This result corroborate earlier studies (Deshmukh *et al*., 2017 & Cai *et al*., 2020). This could be due to the profound impact that depression has on various aspects of well-being. Depression often leads to negative thoughts, feelings of hopelessness, and reduced motivation. For PLHIV, managing a chronic illness while dealing with depression could amplify these effects, affecting their quality of life. Furthermore, death anxiety was also significantly predicting the quality of life of PLHIV. Similar finding was reported by Ifeagwazi, Chukwuorzi & Onu (2018). Death anxiety is a commonly cited psychological consequence of HIV/AIDS due to its chronic and life-threatening condition. It could contribute to emotional distress and lower quality of life, affecting negative psychological states and life satisfaction as well. The regression analysis shows that stress and anxiety were not substantial contributors to quality of life of PLHIV. However, a contrasting finding was seen in the study of Feng *et al* (2015).

Limitations

This study comes with certain limitations. Firstly, there exists a likelihood of social desirability bias, as respondents may have underreported socially undesirable behaviours while inflating more favourable attributes. Furthermore, owing to its cross-sectional design, the study lacks the capacity to definitively establish a causal association

between the outcome variable and the predictor variables. Lastly, the small sample size and recruitment of participants exclusively from a single centre might restrict the broader applicability and generalizability of the findings. Therefore, the current study serves as a stepping stone for future investigations in order to yield more substantial and generalizable conclusions.

Conclusion

The study affirmed that participants in the study (PLHIV) reported average anxiety, depression, below average stress, low death anxiety, high quality of life and average medical adherence. Women experienced low levels of stress, depression, death anxiety and low quality of life and medical adherence in comparison to their counterparts. Non-significant difference was observed in the anxiety level of male and female. Anxiety, depression, stress, and death anxiety were significantly negatively related with quality of life. Death anxiety and depression were identified as significant predictors of quality of life among PLHIV. These results allow it to be determined that the combined use of ART and counselling within ART holds great promise in addressing the challenges faced by PLHIV. This integrated approach holds the potential to address not only the physical aspects of managing HIV but also the psychological and emotional dimensions that significantly impact the well-being of individuals. As accessibility to this approach improves, it offers a ray of hope for broader impact. However, it's crucial to acknowledge that successful implementation hinges on tailoring strategies to different contexts and populations, as well as on continued research to refine and optimize its effectiveness.

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