

SUICIDAL RISK IN PEOPLE LIVING WITH HIV IN UKRAINE: THE ROLE OF DEPRESSION, ANXIETY, AND PSYCHOSOCIAL FACTORS

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ABSTRACT

Background. Suicidality remains a critical public health concern among People Living With Human immunodeficiency virus (PLWH). Psychological distress, including depression and anxiety, has been identified as a major predictor, but data from Eastern Europe remain limited.

Aim. To assess the relationship between depression, state anxiety, and suicidal risk among PLWH.

Materials and Methods. A cross-sectional study included 132 adult patients with confirmed human immunodeficiency virus infection who attended Sumy Regional Clinical Medical Center for Socially Dangerous Diseases. Exclusion criteria were pregnancy, active substance use disorder, current opioid substitution therapy, severe somatic condition, or inability to provide informed consent. Participants completed the Luban–Plozza Suicide Risk Scale, Beck Depression Inventory, State-Trait Anxiety Inventory – State Subscale, and Symptom Checklist-90-Revised. Demographic and clinical data, including CD4 count and clinical stage, were collected. The study was performed within the approved PhD dissertation topic "Anxiety-depressive disorders in PLWH: clinical-psychopathological features, psychosocial determinants, and therapeutic approaches". Statistical analysis was performed in R software 2025.05.1 (R Foundation for Statistical Computing, Austria). Normality was assessed using the Shapiro–Wilk test; Spearman correlation, non-parametric group comparisons, and multiple linear regression were used. Regression coefficients are reported as unstandardized coefficients (B).

Research Ethics. The study was approved by the Bioethics Committee of Sumy State University. All participants provided informed consent.

Results. The mean Luban–Plozza score was 3.02, standard deviation – 2.4 points, with a median of 2 points and an observed range of [0÷10] points out of 16 possible points. Elevated suicidal risk was defined by the 75th percentile threshold, ≥ 4 points. Depressive symptoms ($B=0.098$, $p<0.001$) and state anxiety ($B=0.054$, $p=0.002$) were the only statistically significant independent predictors. The model explained 42.4% of the variance. Age, sex, CD4 count, clinical stage, socioeconomic status, marital status, employment, number of children, and alcohol use were not significant predictors.

Conclusions. Depression and state anxiety are key determinants of suicidal risk in PLWH. Mental health screening should be integrated into HIV care regardless of demographic or clinical profile. Early identification and intervention may reduce suicidality and improve HIV-related outcomes.

Keywords: psychiatry, PLWH, suicidality, psychosocial determinants, Luban–Plozza scale, mental health.

Introduction

Human Immunodeficiency Virus (HIV) and Acquired ImmunoDeficiency Syndrome (AIDS)

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remain major global public health concerns, with a disease burden that cannot be overlooked. In 2024, the Joint United Nations Program on HIV/AIDS (UNAIDS) reported 1.3 million new HIV infections and an estimated 40.8 million People Living With HIV (PLWH) worldwide [1]. Beyond virological and immunological challenges, psychiatric illnesses represent a critical health issue for PLWH, with depression being the most prevalent neuropsychiatric complication. Estimates suggest that the prevalence of depression among PLWH ranges from 22% to 71% [2], and social discrimination and HIV-related stigma are frequently cited as key contributing factors.

The burden of suicidality among PLWH is profound. A systematic review suggested that suicide mortality in this group could be up to 100-fold higher than in the general population [3], although subsequent re-analyses have challenged this magnitude, estimating a more conservative fourfold increase [4]. Suicide risk also shows subgroup variation: in one meta-analysis, men exhibited higher suicide mortality than women, while sexual minorities, such as Men who have Sex with Men (MSM) and transgender women, were disproportionately affected [3; 5]. Sexual minority status itself is an independent risk factor for suicidal ideation and attempts [6].

Age plays an additional role in shaping suicidality. A nationwide Korean cohort study (2025) reported that PLWH over the age of 40 faced significantly higher suicide mortality [7], while in individuals under 50, suicide emerged as the leading cause of death, accounting for 17% of deaths among men and 25% among women [8]. Across studies, approximately 21% of PLWH report suicidal ideation [9], around 5% report a past-year suicide attempt, and [1÷2]% eventually die by suicide [10; 11]. This highlights suicide as both a psychiatric and a mortality outcome of central concern in HIV care.

While the introduction of AntiRetroviral Therapy (ART) has substantially reduced overall HIV-related mortality, ART does not eliminate the virus and may itself introduce psychiatric complications. Certain regimens, particularly efavirenz, have been associated with increased suicidality [12]. Moreover, psychiatric comorbidities such as depression, anxiety, and Post-Traumatic Stress Disorder (PTSD) are frequently underdiagnosed in HIV care settings, limiting opportunities for referral and intervention [11]. Effective diagnosis, documentation, and evidence-based psychiatric treatment could reduce suicide risk in PLWH.

Suicide is a global public health challenge. Each completed suicide is estimated to correspond to 20 attempts, and suicide accounts for more than one in every 100 deaths worldwide [13]. In the general population, men outnumber women in suicide mortality nearly 4:1, with the highest male suicide rates observed among those aged 75 years and older (37.97 per 100,000), and the highest female rates among those aged [40÷50] years (7.53 per 100,000) [13]. Although suicide rates historically increased linearly with age, recent data suggest a more complex age distribution [14].

Among PLWH, psychosocial determinants such as marital status and social support signifi-

cantly affect suicide risk. Married individuals and women with sufficient social support exhibit lower suicide rates [15]. Conversely, socioeconomic adversity – including poverty, unemployment, unstable housing, and exposure to violence – acts as a structural driver of suicidality [16]. HIV-related stigma and mental health comorbidities are consistently identified as major contributors to suicide risk in this population [16]. Encouragingly, more recent studies have reported relatively lower suicide rates, possibly reflecting reduced stigma and growing awareness of mental health [17; 18]. Access to ART and stigma reduction have been identified as protective factors [18].

Depression is the leading psychiatric comorbidity among PLWH and a key predictor of suicidality [19–21]. Multiple studies demonstrate higher prevalence of depression in PLWH compared to HIV-negative peers [22–25], with meta-analyses estimating an overall prevalence of around 30% [26]. For comparison, the World Health Organization (WHO) reports a global prevalence of depression of 3.8% in the general population, including 5% of adults and 5.7% of those aged over 60 years [27]. Among PLWH, women are more likely to experience severe depression, while men more often report moderate symptoms [28]. Younger adults newly diagnosed with HIV exhibit higher depression rates than those with chronic infection, while in older adults, depression is more common among those with long-standing HIV compared to HIV-negative peers [19; 29].

Anxiety disorders follow similar patterns, with younger PLWH experiencing higher rates shortly after diagnosis [19; 30].

Exposure to trauma is also elevated among PLWH, with reported rates of child abuse, sexual assault, or physical violence ranging from 40% to 90%. Correspondingly, PTSD prevalence in PLWH ranges from 30% to 74%, with two-thirds attributing their symptoms directly to HIV diagnosis [22]. Lifetime prevalence of PTSD among PLWH approaches 50%, compared with 7% in the general population [32]. PTSD frequently co-occurs with substance use and depression, further amplifying suicide risk and accelerating HIV progression [22; 31].

The mid-1990s marked a turning point in HIV care with the introduction of combination ART. Since then, thresholds for initiating therapy (200, 350, 500 CD4 cells/mm³) have evolved, although CD4 count remains a critical biomarker for monitoring disease progression and treatment response [25; 32]. Psychiatric factors, however, increasing-

ly emerge as equally important determinants of health outcomes in PLWH.

Globally, suicide ranks as the 17th leading cause of death and the fourth leading cause among individuals aged [15÷29] years [33]. Despite these figures, suicide remains underreported due to stigma, misclassification, and weak surveillance systems [34]. Among adolescents, recent meta-analyses estimate global suicide rates at 3.77 per 100,000 people, with substantially higher rates among older adolescents [35].

Evidence consistently shows elevated suicide risk among PLWH compared to the general population [3; 36; 37]. Notably, a systematic review found that women living with HIV were more likely to report suicidal ideation and attempts, even though suicide mortality rates were equivalent between sexes – an unusual deviation from general population trends [5; 18]. However, critical reappraisals have demonstrated that earlier estimates of a 100-fold increased risk were inflated due to methodological flaws, including inappropriate statistical comparisons and reliance on global rather than region-specific suicide baselines [4].

The heightened risk of suicide in PLWH is also shaped by intersecting demographic and behavioral vulnerabilities. In high-income regions, HIV disproportionately affects MSM and people who inject drugs, groups already at increased baseline risk of suicide independent of HIV status [38; 39]. In these populations, prevalence estimates indicate that [30÷70]% of PLWH identify as MSM [40; 41]. Within this subgroup, gay and bisexual men living with HIV report elevated suicidal ideation and attempts, with HIV-related stigma playing a central role in suicidality [18].

Taken together, the evidence highlights suicide as a major yet underrecognized component of HIV disease burden. Discrepancies in reported risk magnitudes underscore the need for methodological rigor in epidemiological studies, while subgroup analyses reveal that suicide risk is disproportionately concentrated among older PLWH, sexual minorities, and individuals with intersecting vulnerabilities such as trauma and substance use. Addressing suicidality in PLWH therefore requires accurate surveillance, culturally tailored prevention strategies, and integration of mental health services into HIV care.

The **aim** of study was to assess the association between depression, anxiety, and suicidal risk among people living with HIV in Ukraine, and to identify key psychological predictors of suicida-

lity independent of demographic and clinical characteristics.

Materials and Methods

This study employed a cross-sectional design, which is appropriate for obtaining a single-time-point assessment of psychological status and suicidal risk in PLWH. Such a design allows for the identification of associations between variables, such as depression, anxiety, and suicidality, without implying causality, and is efficient for assessing clinically relevant mental health factors in a defined population. Participants were recruited from an outpatient HIV clinic. Inclusion criteria were a confirmed HIV diagnosis verified via medical records, age ≥ 18 years, a stable somatic condition sufficient to participate in research procedures, and not receiving opioid substitution therapy. Exclusion criteria included pregnancy, severe or decompensated somatic illness, and current active substance use disorder. Although the presence of psychological complaints was not a formal inclusion criterion, patients reporting such complaints demonstrated greater willingness to participate, reflecting a common recruitment dynamic in clinical research and a potential source of selection bias.

Suicidal risk was assessed using the Luban–Plozza Suicide Risk Scale, a structured screening tool for suicidal ideation and behavior previously applied in European clinical and psychiatric studies. The scale provides a theoretical total score ranging from 0 to 16, with higher scores indicating greater suicidal risk. In the present sample, observed scores ranged from 0 to 10. Since no validated clinical cut-off for the Luban–Plozza scale has been established for PLWH, suicidal risk was categorized using a distribution-based approach. The 75th percentile of the Luban–Plozza score distribution was used as the threshold for elevated suicidal risk; in this cohort, it corresponded to 4 points. Therefore, scores of [0÷3] were classified as low risk, while scores ≥ 4 were classified as elevated suicidal risk. For descriptive visualization, elevated risk was further subdivided into moderate elevated risk ([4÷6] points) and high elevated risk within the observed sample range ([7÷10] points).

Compared with internationally established instruments such as the Columbia-Suicide Severity Rating Scale (C-SSRS) [42] and the suicide-related item of the Patient Health Questionnaire-9 (PHQ-9) [43], the Luban–Plozza scale has a more limited international validation base and has been used mainly in Eastern European and German-

speaking clinical contexts. To our knowledge, no direct head-to-head studies have established the sensitivity or specificity of the Luban–Plozza scale against C-SSRS or PHQ-9 in people living with HIV. Therefore, in the present study, the Luban–Plozza scale was used as a regional screening instrument for suicidal risk rather than as a diagnostic standard, and categorical thresholds were defined using a distribution-based approach. Depressive symptoms were evaluated using the Beck Depression Inventory (BDI), one of the most widely used and psychometrically validated self-report questionnaires in psychiatry and clinical psychology, with robust reliability data in Eastern European populations. The BDI allowed for dimensional assessment of symptom severity and categorical differentiation of clinical depression thresholds. Anxiety was measured using the State-Trait Anxiety Inventory – State Subscale (STAI-S), which captures current situational anxiety rather than stable trait anxiety. This subscale was selected because the study focused on the patients’ current psychological distress and its association with suicidal risk at the time of assessment. Broader psychological symptomatology was captured using the Symptom Checklist-90-Revised (SCL-90-R), which evaluates nine primary dimensions of psychopathology – somatization, obsessive-compulsive traits, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism – alongside indices of global distress. Collectively, these instruments provided both specificity and breadth: the Luban–Plozza scale directly assessed suicidal risk, the BDI and STAI-S measured prevalent psychiatric syndromes associated with suicidality, and the SCL-90-R offered a multidimensional view of overall psychological burden.

All statistical analyses were conducted using R software 2025.05.1 (R Foundation for Statistical Computing, Austria). Descriptive statistics included means, standard deviations, medians, and interquartile ranges for continuous variables, and frequencies and percentages for categorical variables. Normality of continuous variables was assessed using the Shapiro–Wilk test and visual inspection of histograms and Q-Q plots. As the Luban–Plozza total score was not normally distributed, non-parametric tests were used where appropriate. In the analyses, B denotes an unstandardized regression coefficient, ρ denotes Spearman’s rank correlation coefficient, χ^2 denotes the chi-square statistic, R^2 denotes explained variance, adjusted R^2 denotes variance explained after correc-

tion for the number of predictors, F denotes the regression model statistic, and p denotes the probability value. Bivariate analyses were performed using χ^2 tests for associations between categorical variables (e.g., sex, marital status) and suicidal risk categories, independent samples t -tests or one-way ANOVA for normally distributed continuous variables, and Mann–Whitney U or Kruskal–Wallis tests for non-normally distributed variables. Pearson or Spearman correlations were used to examine relationships between continuous variables, such as BDI scores and Luban–Plozza scores. Multivariate analyses included multiple linear regression to identify independent predictors of suicidal risk, with the total Luban–Plozza score as the dependent variable. Independent variables included age, sex, HIV clinical stage, absolute CD4 count, depressive symptoms (BDI), state anxiety (STAI-S), socioeconomic status, marital status, employment status, and number of children. Regression coefficients are reported as unstandardized coefficients (B) with corresponding p -values. Regression models were checked for multicollinearity, heteroscedasticity, and normality of residuals. A p -value <0.05 was considered statistically significant, while values between 0.05 and 0.10 were reported as trends or marginally significant. All tests were two-tailed. This statistical approach was justified given the cross-sectional design: methods focused on assessing associations rather than causation, regression analysis controlled for potential confounders, and non-parametric tests were applied when parametric assumptions were not met. Missing data were explicitly coded as NA, and no imputation was performed due to the pilot nature of the study; participants with missing values were excluded from analyses as appropriate.

Research Ethics. The study was approved by the Bioethics Committee of Sumy State University. All participants provided informed consent.

Results

This cross-sectional study included 132 people living with HIV (PLWH) recruited from the Clinical Medical Center for socially dangerous diseases, Sumy between 2021–2025 (Table). Among the participants, 55 (41.7%) were women and 77 (58.3%) were men. The age of patients ranged from 22 to 75 years, with a median of 41 years and a mean of $[42.6 \pm 11.3]$ years. All participants were receiving antiretroviral therapy. HIV clinical stages were distributed as follows: stage 1 – 48 patients (36.4%), stage 2 – 18 (13.6%), stage 3 – 30 (22.7%), and stage 4 – 36 (27.3%). Socioeconomic status, assessed subjectively, was rated as

Table. Descriptive and psychometric characteristics of the study sample

Variable	n	Mean $\pm$ SD	Median (Range)	Notes	Clinical interpretation
Suicidal risk (Luban-total)	132	3.02 $\pm$ 2.4	2 (0–10)	Low / moderate elevated / high elevated: 89 / 30 / 13*	Higher scores indicate greater suicidal risk; elevated risk is defined as ≥ 4 points
BDI (Depression)	132	18.6 $\pm$ 9.7	17 (2–42)	Mild/absence of depressive symptoms: 52, Moderate: 55, Severe: 25 (Fig. 4)	Higher scores indicate more severe depressive symptoms
STAI-S (State Anxiety)	132	42.8 $\pm$ 10.5	43 (20–65)	–	Reflects current situational anxiety
Correlation (Suicide risk vs BDI)	–	$\rho=0.56$	$p<0.001$	Significant	Moderate positive association
Correlation (Suicide risk vs STAI-S)	–	$\rho=0.59$	$p<0.001$	Significant	Moderate positive association
Correlation (Suicide risk vs Age)	–	$\rho=-0.06$	$p=0.48$	Not significant	No meaningful association
Correlation (Suicide risk vs CD4)	–	$\rho=-0.003$	$p=0.97$	Not significant	No meaningful association

Notes: distribution-based categories: low risk = [0÷3] points (n=89), moderate elevated risk = [4÷6] points (n=30), and high elevated risk within the observed range = [7÷10] points (n=13). Elevated suicidal risk was defined as ≥ 4 points, corresponding to the 75th percentile.

satisfactory by 75 participants (56.8%), good by 48 participants (36.4%), and unsatisfactory by 9 participants (6.8%). Other sociodemographic characteristics included marital status, employment, and number of children, with distributions reflecting a diverse clinical population.

In the present sample, observed scores ranged from 0 to 10, with a mean total score of [3.02 $\pm$ 2.4] and a median of 2 (Fig. 1). The 75th percentile corresponded to 4 points; therefore, participants scoring [0÷3] points were classified as having low suicidal risk, whereas those scoring ≥ 4 points were classified as having elevated suicidal risk.

For descriptive purposes, the elevated-risk group was further subdivided into moderate elevated risk ([4÷6] points) and high elevated risk within the observed sample range ([7÷10] points) (Fig. 2). According to this classification, 89 participants were classified as low risk (35 women, 54 men), 30 as moderate elevated risk (14 women, 16 men), and 13 as high elevated risk (6 women, 7 men).

The distribution of suicidal risk scores by sex is shown in Fig. 3. No statistically significant difference in Luban–Plozza scores was observed between women and men (Wilcoxon rank-sum test, $p=0.114$).

The Symptom Checklist-90-Revised (SCL-90-R) was used to assess a broad spectrum of psychological symptoms across nine domains, including somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. In addition, the Beck Depression Inventory (BDI) and State-Trait Anxiety Inventory – State Subscale (STAI-S) were administered to evaluate depressive and state anxiety symptoms, respectively. Both instruments served as covariates in analyses and allowed triangulation of findings with SCL-90-R results. Significant positive correlations were observed between Luban–Plozza total scores and BDI ($\rho=0.56$, $p<0.001$) and STAI-S scores ($\rho=0.59$, $p<0.001$).

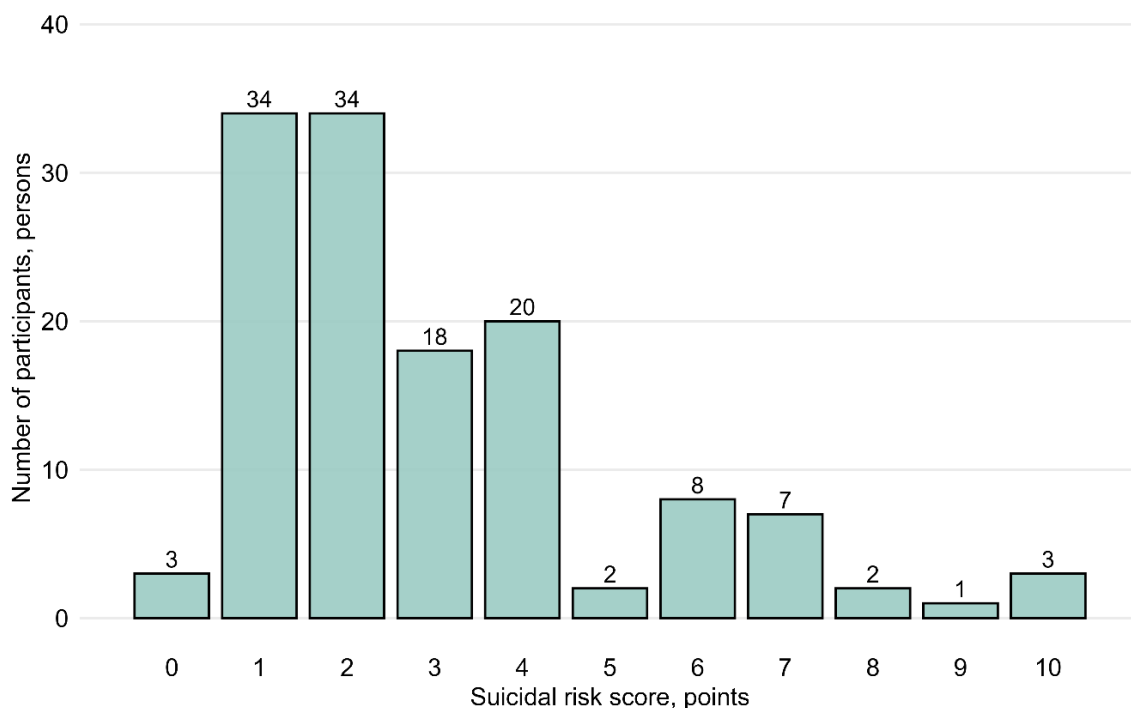


Fig. 1. Distribution of suicidal risk scores according to the Luban–Plozza scale.

Notes: the theoretical score range is $[0÷16]$ points; observed scores in this sample ranged from 0 to 10 points.

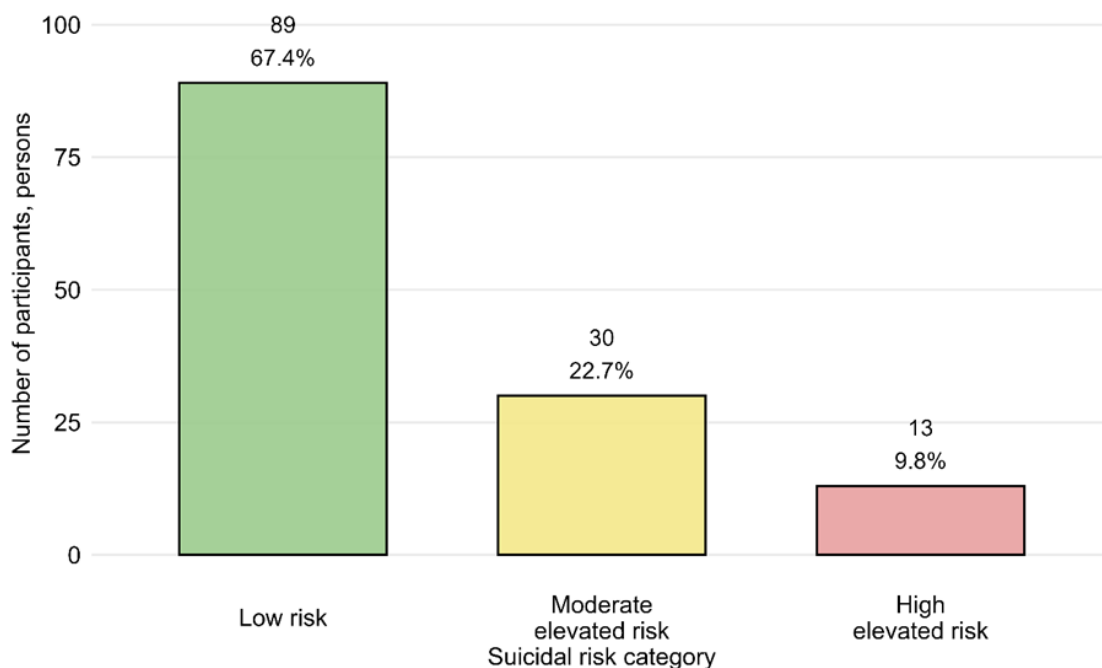


Fig. 2. Distribution-based categories of suicidal risk according to the Luban–Plozza scale.

Notes: low risk was defined as $[0÷3]$ points. Elevated suicidal risk began at ≥ 4 points, corresponding to the 75th percentile of the score distribution. For descriptive purposes, elevated risk was further divided into moderate elevated risk ($[4÷6]$ points) and high elevated risk within the observed sample range ($[7÷10]$ points).

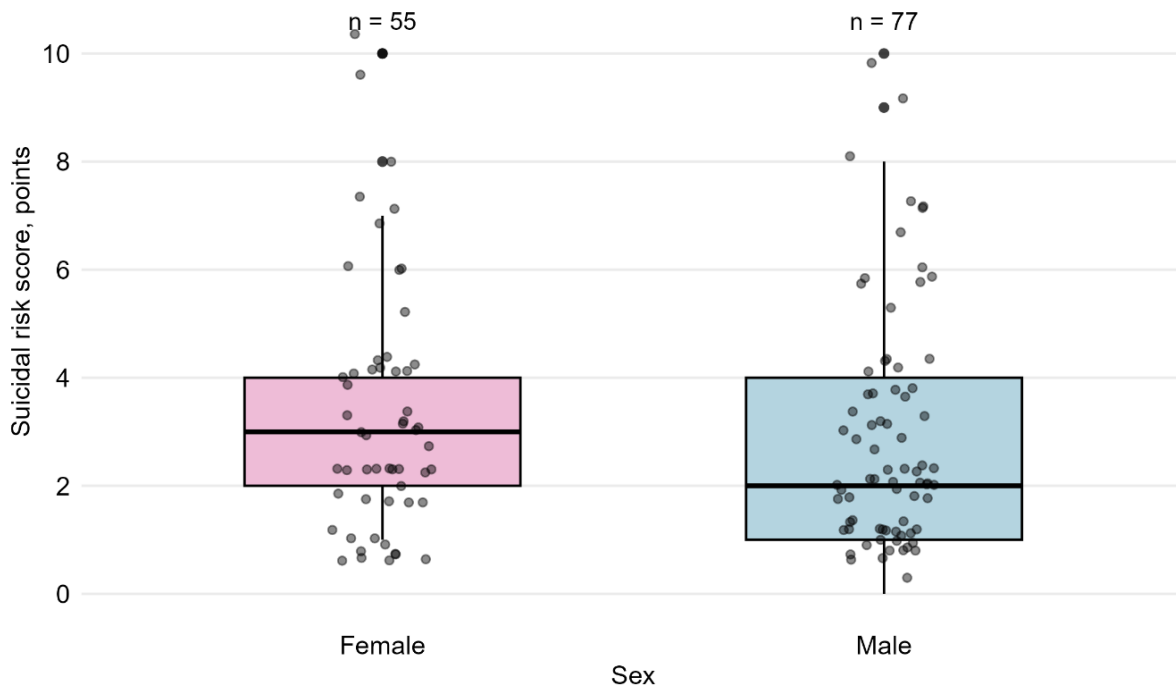


Fig. 3. Distribution of suicidal risk scores by sex.

Notes: boxplots show the median, interquartile range, and individual Luban–Plozza scores. No statistically significant difference in suicidal risk scores was observed between female and male participants.

Among SCL-90-R domains, somatization ($\rho=0.38$), depression ($\rho=0.47$), and anxiety ($\rho=0.54$) were significantly associated with suicidal risk, indicating that higher psychological distress corresponded to greater Luban–Plozza scores. The distribution of suicidal risk scores across BDI depression severity categories is shown in Fig. 4.

Immunological status was evaluated using absolute CD4+ T-cell counts (cells/ μ L), which ranged from 17 to 1477 in the sample (median = 398.5; mean = [430.8 $\pm$ 268.3]). CD4 counts were categorized into three clinically relevant groups: <200 cells/ μ L (advanced HIV disease), [200–349] cells/ μ L (moderate immunodeficiency), and $\geq$ 350 cells/ μ L (satisfactory immune status). No significant associations were observed between CD4 categories and Luban–Plozza scores, suggesting that suicidal risk was independent of immune status in this cohort.

Multiple linear regression was conducted to identify independent predictors of suicidal risk, with the total Luban–Plozza score as the dependent variable. Independent variables included age, sex, HIV clinical stage, absolute CD4 count, de-

pressive symptoms (BDI), state anxiety (STAI-S), socioeconomic status, marital status, employment status, and number of children. Regression coefficients are reported as unstandardized coefficients (B). The model was statistically significant ($F(19, 112) = 4.34$, $p < 0.001$) and explained 42.4% of the variance in Luban–Plozza scores ($R^2=0.424$; adjusted $R^2=0.326$). Depressive symptoms ($B=0.098$, $p < 0.001$) and state anxiety ($B=0.054$, $p=0.002$) were the only statistically significant independent predictors of suicidal risk. Age, sex, HIV clinical stage, CD4 count, socioeconomic status, marital status, employment status, and number of children were not statistically significant predictors.

Patients reporting psychological complaints were more likely to engage in the study, suggesting potential selection bias. This recruitment pattern should be considered when interpreting the generalizability of findings to the broader population of PLWH.

Discussion

Our findings indicate that psychological factors, particularly depressive symptoms and state anxiety, were the only statistically significant independent predictors of suicidal risk among peop-

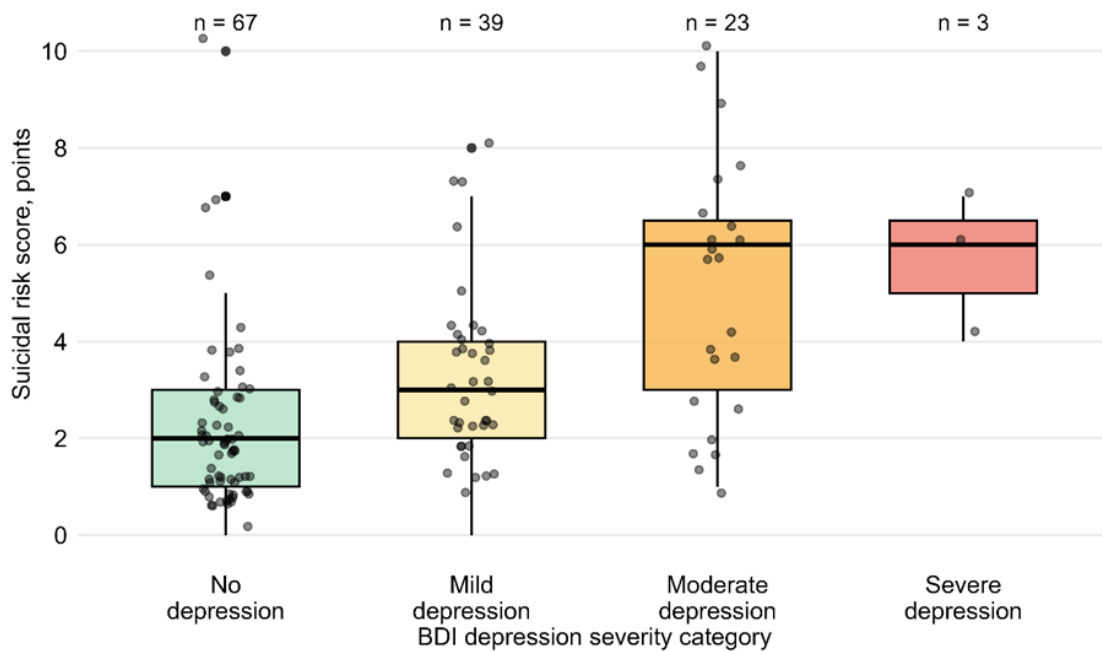


Fig. 4. Distribution of suicidal risk scores across depression severity categories according to the Beck Depression Inventory.

Notes: boxplots show the median, interquartile range, and individual Luban–Plozza scores. The numbers above the plots indicate the number of participants in each depression severity category.

le living with HIV (PLWH). The multivariable regression model explained 42.4% of the variance in Luban–Plozza scores, underscoring the clinical relevance of mental health assessment in this population. These results align with prior literature demonstrating that affective distress is central to suicidality in PLWH [1–3].

Spearman correlation analyses revealed significant positive associations between Luban–total scores and BDI ($\rho=0.56$, $p<0.001$) and STAI-S ($\rho=0.59$, $p<0.001$), indicating that higher depressive symptoms and state anxiety symptoms correspond to increased suicidal risk. These findings are consistent with global studies reporting elevated suicidality in PLWH with comorbid depression or anxiety [4–6]. Notably, SCL-90-R domain analysis identified somatization ($\rho=0.38$), depression ($\rho=0.47$), and anxiety ($\rho=0.54$) as key contributors to suicidal risk, highlighting the complex interplay between psychological and somatic symptoms.

Contrary to some previous research suggesting age, sex, and HIV clinical stage as risk modifiers [7–9], our analyses indicated negligible correla-

tions of Luban–total scores with age ($\rho=-0.062$, $p=0.48$) and CD4 counts ($\rho=-0.003$, $p=0.97$). Additionally, categorical variables including sex, marital status, presence of children, socioeconomic status, and employment did not demonstrate statistically significant effects. These findings suggest that in the Ukrainian PLWH population, psychological distress outweighs demographic and immunological determinants as a driver of suicidal risk.

While alcohol consumption is traditionally considered a risk factor for suicidal behavior, our data did not demonstrate significant differences in Luban–Plozza scores across alcohol consumption groups (Kruskal–Wallis $\chi^2=4.36$, $p=0.225$). Similarly, the Spearman correlation between alcohol consumption frequency and Luban–Plozza scores was weak and not statistically significant ($\rho=0.13$, $p=0.139$). The low prevalence of daily alcohol consumption (2.3%) may have limited statistical power, or alternatively, the effect of alcohol may operate indirectly by exacerbating depressive and anxiety symptoms rather than acting independently.

These findings emphasize the importance of integrating routine mental health screening into HIV care, with a focus on depressive and anxiety symptoms. Given that elevated suicidal risk was observed even in patients with early-stage HIV and satisfactory CD4 counts, screening should not be restricted to those with advanced disease. Early identification and management of affective symptoms could substantially reduce suicide risk and improve overall HIV care outcomes.

The prevalence and predictors of suicidality in our sample are consistent with international studies reporting higher suicidal ideation and attempts among PLWH compared to HIV-negative peers [10–12]. Importantly, our study adds novel data from Ukraine, where population-specific risk profiles and healthcare contexts may differ from high-income settings. By integrating psychometric measures (BDI, STAI-S, SCL-90-R) with clinical and demographic data, we provide a comprehensive assessment of risk determinants, demonstrating the primacy of psychological over traditional socio-demographic factors in predicting suicidal risk.

Strengths of this study include the detailed, multidimensional assessment of suicidal risk, inclusion of both psychometric and clinical variables, and the focus on a Ukrainian PLWH cohort, filling a gap in regional research. However, several limitations should be acknowledged. First, the cross-sectional design precludes causal inference and allows only the identification of associations between psychological factors and suicidal risk. Second, potential selection bias should be considered, as patients with existing mental health complaints appeared more willing to participate in the study. Third, self-report measures may be affected by response bias, particularly for sensitive topics such as suicidality and alcohol use.

An additional limitation concerns the assessment of suicidal risk. Although the Luban–Plozza scale is clinically familiar in Eastern European practice and is brief enough for use in medically burdened patients, it has a more limited international psychometric evidence base than instruments such as the Columbia-Suicide Severity Rating Scale (C-SSRS) or the suicide-related item of the Patient Health Questionnaire-9 (PHQ-9). Direct sensitivity and specificity comparisons between the Luban–Plozza scale and C-SSRS or PHQ-9 in people living with HIV are not currently available. Therefore, the present findings should be interpreted as screening-based estimates of sui-

cidal risk rather than clinically confirmed suicidal behavior. Future studies should validate the Luban–Plozza scale against internationally established instruments, particularly the C-SSRS, in populations of people living with HIV.

Conclusions

1. Depressive symptoms and state anxiety were the only statistically significant independent predictors of suicidal risk among PLWH in Ukraine. These findings underscore the necessity of routine mental health assessment as an integral component of HIV care.

2. Age, sex, CD4 counts, clinical stage of HIV, socioeconomic status, marital status, and employment status were not significantly associated with suicidal risk in this cohort. This suggests that psychological distress may play a more important role than demographic, social, or immunological factors in determining suicidal risk among PLWH.

3. Early identification and management of depressive symptoms and anxiety symptoms are essential components of suicide prevention strategies in PLWH. Screening should be implemented regardless of HIV stage or demographic profile, with targeted interventions for those exhibiting moderate to severe psychological symptoms.

4. This study provides novel insights into suicidality among PLWH in Ukraine, integrating psychometric, clinical, and demographic data to delineate risk profiles. The findings contribute to evidence-based recommendations for mental health integration into HIV care and the development of culturally tailored prevention strategies.

Prospects for Further Research

Future studies should consider longitudinal designs to assess temporal relationships between psychological symptoms and suicidal behavior in PLWH. Investigations into the role of social support, stigma reduction interventions, and culturally adapted psychotherapeutic approaches may further inform suicide prevention strategies. Moreover, larger samples would allow exploration of subgroup differences, including sex, age, and HIV transmission risk groups.

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Authors' Contributions

Contribution	A	B	C	D	E	F
Authors						
Cherevko O.	+	+	+	+	+	+
Kozhyna H.	+	+			+	+

Notes: A – concept; B – design; C – data collection; D – statistical processing and interpretation of data;

E – writing or critical editing of the article;

F – approval of the final version for publication and agreement to be responsible for all aspects of the work.

Declarations

The authors declare that they have no conflict of interest.

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The authors state that generative AI tools were not used to perform scientific tasks related to the development of the research concept, data collection, statistical analysis, interpretation of results, or formulation of conclusions. Generative AI was used only for auxiliary editorial purposes, including language polishing, translation support, and formatting assistance. All substantive scientific work and final editing decisions were carried out by the authors, who take full responsibility for the manuscript.

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