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Relationship between social support and psychological symptoms in people living with HIV/AIDS, at risk of developing HIV – associated dementia

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ABSTRACT

People living with HIV/AIDS often present neuropsychiatric symptoms, including cognitive and mood-related manifestations. Social support helps to cope with adverse events related to mental health. We aimed to analyze the relationship between satisfaction with social support and psychological symptoms in people living with HIV/AIDS at risk of developing HIV-associated dementia. An observational, cross-sectional, and correlational study was conducted. Assessment instruments included: sociodemographic questionnaire; Social Support Scale for People Living with HIV [Seidl & Tróccoli, 2006. Development of a scale for the social support evaluation in HIV/AIDS. *Psicologia: Teoria e Pesquisa*, 22(3), 317–326.], Brief Symptom Inventory (BSI) [Canavarro, 1999. Psychopathological Symptom Inventory – BSI. In M. G. M. R. Simões, & L. S. Almeida (Eds.), *Psychological tests and tests in Portugal* (Vol. II, pp. 87–109). SHO/APPORT.]; and International HIV Dementia Scale (IHDS). The sample consisted of 255 participants with a mean age of 48.16 years, 80.8% male, 68.6% living mostly with someone else. The strongest correlation was between the perception of availability of emotional support and availability of instrumental support, $r(255) = 0.992$; $p < 0.001$. Individuals with higher satisfaction with perceived emotional support had fewer psychological symptoms. Those with a higher Global Severity Index score on the BSI had a higher risk of dementia. An association was found between symptoms of psychological distress and a higher likelihood of developing HIV-related dementia. To reduce the risk of HIV-associated dementia, it is imperative to improve social support networks, which can serve as a vital clinical strategy.

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Introduction

Human Immunodeficiency Virus (HIV) is a lentivirus that attacks the immune system, particularly the CD4 cells (T cells), which help the immune system fight off infections (Masenga et al., 2023). If left untreated, HIV can lead to the disease known as Acquired Immunodeficiency Syndrome (AIDS). The virus is primarily transmitted through unprotected sexual intercourse. Still, it can also be transmitted through the sharing of needles and syringes, from mother to child during childbirth or breastfeeding, and through contaminated blood products or organ transplants.

An estimated 38.4 million people are living with HIV infection worldwide; about 84.2 million have been infected, and 40.1 million have died since the beginning

of the epidemic, constituting an estimated 0.7% of the population aged between 15 and 49 years (Gupta et al., 2022; WHO, 2023). AIDS-related diseases have caused the death of 40.4 million people (UNAIDS, 2023) since the beginning of this epidemic. The epidemiological landscape of HIV exhibits substantial variability across countries and regions worldwide. The African Region stands out with the highest prevalence, where an estimated 3.4% of adults, roughly 1 in every 25 individuals, are HIV-positive. This region holds particular significance as it is home to over two-thirds of the total global population living with HIV (PLWH). Consequently, the implications are profound, as millions of individuals either already with cognitive impairment or face a heightened risk of its development.

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Psychological manifestations are prevalent among individuals with HIV and can further complicate the overall health and well-being of affected individuals (Remien et al., 2019). Depression and anxiety are commonly reported, and they can both be reactive to the diagnosis of HIV or secondary to the direct effects of the virus on the Central Nervous System (CNS). Data from across the globe also indicates elevated rates of mental health disorders among PLWH compared with the general population. Individuals with human immunodeficiency virus (HIV) frequently experience psychological distress and a spectrum of neuropsychiatric symptoms, encompassing both cognitive and mood-related manifestations (Remien et al., 2019). These symptoms profoundly affect the quality of life for those affected. Various forms of psychological distress, including Somatization, Obsession-Compulsion, Interpersonal Sensitivity, Depression, Anxiety, Phobic Anxiety, and Psychoticism, can occur. Cognitive impairment constitutes another category of neuropsychiatric symptoms, impacting memory, attention, executive function, and information processing speed (Remien et al., 2019).

Most patients with HIV worldwide have poor outcomes on formal neurocognitive tests (Clifford & Ances, 2013). HIV-associated neurocognitive disorders (HAND), ranging from mild impairment to severe cognitive decline, include HIV-associated dementia (HAD), a severe form often associated with untreated HIV infection. In the earlier HIV epidemic stages, untreated infectious diseases linked to acquired immunodeficiency syndrome (AIDS), like toxoplasmosis and encephalitis, significantly contributed to cognitive disorders, imposing substantial, unaddressed cognitive impairment on HIV-infected individuals (Clifford & Ances, 2013).

The availability of new antiretroviral therapies and the development of medical science have led to a change in the course of HIV infection from terminal to chronic (Carrico et al., 2022). Antiretroviral therapy is the only treatment available, saving thousands of lives annually. However, it does not cure the infection, although it limits virus replication, viral load and, consequently, progression to AIDS. This turns the previously fatal HIV infection into a chronic disease (Heuvel et al., 2022; McDonald et al., 2016).

Antiretroviral therapy's success has improved survival for HIV patients, but aging, chronic infection, and its associated complications have caused changes in morbidity and mortality patterns. Improvements in primary care and new models of care for people living with HIV are a priority (Chu & Selwyn, 2011). People with AIDS are currently dying less from

opportunistic diseases, but more from chronic conditions such as kidney disease, liver disease, central nervous system infections, and neoplasms (Chu & Selwyn, 2011; Neto et al., 2021). Living with a chronic disease interferes with managing activities of daily living, the performance of social roles and dependence (Mantovani & Mendes, 2014).

The complexity of living with a chronic disease such as HIV, and its unpredictability, have relevant impacts not only in the individual domain (physical, emotional and psychological), but also in the family and social domains, affecting several times education, profession and work environment. The occurrence of psychological distress, stigma and poor social support has been proven to be in the origin of cognitive decline (Amani et al., 2019; Asiedu et al., 2020). The involvement of health professionals and healthcare systems in promoting multiple social reactions and self-care among HIV patients includes creating environments, support structures, and access to equipment that enhances quality of life, functionality, and integration into society (Aidsfonds, 2021), can constitute an important help to delay this cognitive decline and even the occurrence of dementia.

There is some doubt about the exact etiology of dementia, but evidences from research show that genetic and lifestyle factors are thought to be drivers of the disease (Licher et al., 2019). Moreover, there is also growing evidence that some potentially modifiable risk factor for dementia (and cognitive decline more generally) is cognitive activity during the life course (Fisher et al., 2014). Clinically, particularly when developing prevention strategies whenever possible, it is important to address the risk of developing dementia. The risk of developing dementia (and cognitive decline) refers to the likelihood that an individual will develop dementia or cognitive decline over time. This risk is influenced by a combination of modifiable and non-modifiable factors that contribute to the cognitive function, which can lead to dementia, and cognitive decline.

Patients with human immunodeficiency virus (HIV) infection often exhibit a range of neuropsychiatric symptoms, encompassing both cognitive and mood-related manifestations. Neuropsychiatric illnesses associated with HIV can significantly impact the quality of life of affected individuals. Nevertheless, recent advances in the integrated therapeutic regimen posing challenges for healthcare professionals and systems to devise new strategies. These strategies aim to support HIV patients across their lifespan, ensuring disease management and maintaining their quality of life (Heuvel et al., 2022; McDonald et al., 2016).

Developing self-management skills for the disease and fostering social support are key predictors of effective chronic disease management. These factors also contribute to better adherence to treatment regimens, positively influencing the perception of quality of life, stress levels, and psychological well-being (Pedrosa et al., 2016). Social support gained significant attention in psychological and related literature in the mid-1970s. The groundbreaking research of Cassel (1976) played a crucial role in highlighting the impact of social interactions on individuals' well-being and health. They found that social support networks are formed throughout life through relationships with family members, colleagues, and community members and, when necessary, through professional assistance. These studies sought to understand how the lack or instability of social support could increase vulnerability to the disease and how social support would protect individuals from damage to physical and mental health from stressful situations (Seidl & Tróccoli, 2006).

Social support is a multidimensional construction that integrates material, psychological, emotional and informative resources. It also refers to the spiritual or material support system of all aspects of society, including parents, relatives and friends (Li et al., 2021; Ribeiro et al., 2012). Emotional support refers to the perception of being valued, cared for and supported by someone available to help. The material support is related to assistance in daily activities and resolving problems. Informative support is related to the acquisition of helpful information to deal with the problems that may arise, and psychological support is a posture of encouraging, listening and strengthening positively. People access these resources through their social networks, which cover quantitative aspects (social network size and frequency of support behavior) and qualitative (satisfaction with social relationships and perception that will receive support if necessary). Thus, social support is related to positive exchanges between elements of the social network, which contribute to the maintenance of a healthy life and help to deal with adverse events related to mental health (Amani et al., 2019; Berhe et al., 2022; Li et al., 2021; Ribeiro et al., 2012; Rodriguez et al., 2019).

Perceived social support is considered a very significant element in the mental health of HIV/AIDS patients. Social support satisfaction is crucial to understanding the key concepts of support networks and social support, which influence health behaviors, adherence to the therapeutic regimen, self-care, risk and protection factors, mortality, quality of life and

psychosocial impact of HIV/AIDS (Cortes et al., 2014; Pedrosa et al., 2016; Santos et al., 2018).

In short, the nature of the instituted therapeutic regime, the occurrence of side effects, social interactions and social support are relevant variables for preserving cognitive capacity, which in turn interferes with functionality and adherence to the therapeutic regime. Despite four decades of advancements in the prevention, diagnosis, and treatment of HIV/AIDS, there is still limited knowledge about the relationship between satisfaction with social support, the presence of psychopathological symptoms, and the risk of developing HIV-associated dementia.

Method

Observational, cross-sectional and correlational study.

Aim: Analyze the relationship between satisfaction with social support and psychological symptoms in people living with HIV/AIDS at risk of developing HIV-associated dementia.

Sample

A non-probabilistic convenience sample of people living in the North of Portugal who cumulatively met the following criteria was used: (1) be older than 18 years; (2) have the diagnosis of HIV/AIDS infection; (3) be on treatment with antiretroviral drugs; (4) be in psychological conditions to participate in the study, after evaluation by the doctor accompanying the person.

Data collection

Participants were recruited from healthcare institutions and nationwide networks of drug users, sex workers, organizations, teams/projects, and experts in the field of risk reduction and damage minimization. All participants in this study underwent a prior clinical evaluation by attending physicians to ensure that they were clinically fit to participate and that their involvement would not interfere with or compromise their established drug regimen.

Assessment instruments

In data collection, we used the following assessment instruments: (1) a sociodemographic questionnaire; (2) a Social Support Scale for People Living with HIV (Seidl & Tróccoli, 2006) and the Brief Symptom Inventory (BSI) (Canavarro, 1999); and (3) the International HIV Dementia Scale (IHDS) in Portuguese versions.

The Sociodemographic and Clinical Questionnaire allowed us to collect sociodemographic and clinical data on the study population. This questionnaire was organized in two parts. The first part allows for socio-demographic and housing characterization, which includes information about gender, age, naturalness, ethnicity, marital status, academic qualifications, household composition, and work status. The second part assessed the clinical characteristics related to HIV infection – history of HIV infection, namely route of transmission, type of infection, hospitalization due to infection, presence of comorbidities, opportunistic infections and adherence to drug regimen.

The Social Support Scale for People Living with HIV/AIDS was originally built by Renwick et al. (1999) named Description and Validation of a Measure of Received Support Specific to HIV (Renwick et al., 1999) to evaluate the social support of people with HIV/AIDS, and validated in Brazil by Seidl and Tróccoli (2006). It consists of 22 items, with five-point Likert responses. It is divided into two dimensions: emotional and instrumental support: (1) Emotional support – composed of 12 items assessing perception and satisfaction regarding the availability of listening, attention, information, esteem, companionship and emotional support about the disease; (2) Instrumental support – composed of 10 items that assess the perception and satisfaction regarding the availability of support in solving more operational issues of treatment and health care, activities of daily living and financial aid.

The social support scale consists of four subscales: 1. availability of instrumental support; 2. availability of emotional support; 3. satisfaction with instrumental support; 4. satisfaction with emotional support.

The five-point Likert scale, vary as to the frequency of support (1 = never; 2 = rarely; 3 = sometimes; 4 = frequently; 5 = always) and as to satisfaction (1 = very dissatisfied, 2 = dissatisfied, 3 = neither satisfied nor dissatisfied, 4 = satisfied, 5 = very satisfied). The total score of the scale can vary from 22 to 110 points. The higher, the greater the perceived availability and satisfaction with social support.

BSI (Brief Symptom Inventory) allows the quantitative evaluation of psychiatric symptoms of the sample subjects. This instrument was translated and validated for the Portuguese population (Canavarro, 1999), being a questionnaire of self-report, consisting of 53 items, which assess the presence and intensity of psychopathological symptoms, through 9 basic dimensions of psycho-symptomatology (somatization; obsession-compulsion; interpersonal sensitivity; depression; anxiety; hostility; phobic anxiety; paranoid

ideation; psychoticism). Thus, by summing the values of the items, three Global Indexes are calculated, which serve as summary assessments of emotional disturbance: the General Symptom Index (GSI), the Positive Symptom Index (PSI), and the Total Positive Symptoms (TPS). While this instrument does not allow for the formulation of clinical diagnoses, it is evident that the items comprising the nine dimensions collectively represent important elements of psychopathology. This confirms that individuals experiencing emotional distress tend to exhibit higher scores on the Global Index scales, indicating a greater likelihood of psychopathology. In our study, we utilized the GSI to measure the average current distress experienced by the subjects, along with the indexes of the nine dimensions, as Derogatis and Melisaratos (1983) recommended.

The International HIV Dementia Scale (IHDS), developed by Sacktor et al. (2005), is a widely recognized screening tool for assessing cognitive function in individuals with the human immunodeficiency virus, one of the main dimensions of this study. Its main objective is to identify symptoms compatible with dementia associated with HIV. The IHDS is composed of two main components: a neuropsychological evaluation that evaluates memory, processing speed and fine motor coordination, and a functional evaluation that investigates the independence of the person in daily activities. The score ranges from 0 to 12, with lower scores indicating greater cognitive impairment. IHDS has a maximum score of 12 points and 10 was considered the cutoff value, assuming there is a high risk for neurocognitive HIV disorder if the score is below or equal to 10 and, if scores above 10 correspond to a non-significant risk for neurocognitive HIV disorders.

Ethical considerations

The study received ethical clearance from the Institutional Committee of Ethics of the Porto School of Nursing (A_20/2018). Participants were verbally informed of the study's purpose and related matters, and their verbal consent was obtained. Confidentiality was ensured through anonymous questionnaires and secure data storage. Participation was voluntary, and participants had the right to decline the interview at any time.

Data analysis

In an initial phase, frequencies and descriptive statistics were analyzed. The Shapiro–Wilk test was used to assess the normality of the variable distribution.

Two-tailed, independent samples *t*-tests were used to compare satisfaction with social support (instrumental and emotional) and Global Severity Index of the Brief Symptom Inventory regarding the groups non-significant and high risk of dementia. Pearson correlations were used to examine the relationship between Satisfaction with emotional support and satisfaction with social support. X^2 test was used to study the relationship between nominal variables.

Two multiple logistic regression models were conducted to elucidate the dichotomized Global Score Index (GSI), where 0 represents low and 1 represents high scores. In the initial model (Model 1), sex (male), age, and education were included in the first block, with the education category “up to 4th year or equivalent” serving as the reference. In the subsequent model (Model 2), SSS Emocional (Satisfaction with Emotional Social Support) was added.

Statistical analysis was performed using IBM SPSS Statistics v. 29 software. The results are reported following the APA standards, presenting the measures of magnitude of the effect appropriate to each test, and considered significant the values of $p < .05$.

Results

The study sample consisted of 255 participants with a mean age of 48.16 years (SD 10.1; Max. = 86; Min. = 21), 80.8% ($n = 206$) of whom were male and 94.9% ($n = 242$) of portuguese nationality, living mostly accompanied 68.6% ($n = 175$), and 47.1% ($n = 120$) report having an active work activity.

In this study, people living with HIV have a higher average score in the perception of the availability of emotional support than people living alone $U(255) = 8490$; $p = .006$; Cohen's $d = 1.18$; ($M_{\text{accompanied by}} = 136.51$; $M_{\text{alone}} = 109.38$) and the perception of the availability of the instrumental support $U(255) = 8428.5$; $p = .009$; Cohen's $d = 1.23$; ($M_{\text{accompanied by}} = 136.16$; $M_{\text{alone}} = 110.14$).

People living with HIV have a higher mean score of satisfaction with emotional support than people living alone $U(255) = 8058$; $p = .05$; Cohen's $d = 1.02$; ($M_{\text{accompanied by}} = 136.38$; $M_{\text{alone}} = 109.66$) and satisfaction with the instrumental support $U(255) = 8467$; $p = .007$; Cohen's $d = 1.04$; ($M_{\text{accompanied by}} = 134.05$; $M_{\text{alone}} = 114.77$).

Analyzing the typology of the HIV/AIDS virus, it was found that 98.4% ($n = 251$) of the participants present the HIV – 1 virus, and only 4 participants present the HIV – 2 virus (1.6%).

Regarding associated diseases, about 9.8% ($n = 25$) had Hepatitis B, and 18.8% ($n = 48$) have Hepatitis

C. In this sample we found that 65.9% ($n = 168$) of the participants have other comorbidities associated with the most frequent being depression (3.5%), heart disease (2.4%), and respiratory disease and hypertension (5%).

In this sample, 74.5% ($n = 190$) of the participants had already been hospitalized, with pneumonia being the most frequent reason (7.8%). Of the participants, 76.5% ($n = 195$) reported having or having had opportunistic diseases, the most frequent being tuberculosis (17.3%). All participants report taking antiretroviral medication.

Emotional and instrumental social support

The social support perceived by the participants in this study is represented in Table 1.

The results highlight a strong correlation among ASS Emotional, ASS Instrumental, SSS Instrumental, and SSS Emotional, suggesting significant overlap in concepts (Table 2). The strongest correlation was found between the perception of emotional support availability and instrumental support availability, $r(255) = .992$; $p < .001$. Conversely, there was a negative and weak relationship between the global index of symptoms and the perception of emotional support, $r(255) = -.343$; $p < .001$, and instrumental support, $r(255) = -.318$; $p < .001$. The highest correlation was observed between the global index of symptoms and SSS Emotional, $r(255) = -.578$; $p < .001$. The results are organized in Table 2.

Symptomatology of psychological distress

Regarding the presence of psychological disorders in people with HIV/AIDS, this analysis was performed using the BSI (Brief Symptom Inventory) scale in the Portuguese version. The results are organized in Table 3.

Comparing the sample average with the general population average, as shown in Table 3, the values obtained in all subscales are higher than the reference values. Concerning the general symptom index (GSI), which, in general, allows the weighing of the intensity

Table 1. Emotional and instrumental perceived social support.

Items	Min.	Máx.	M	SD
ASS Emotional	1	5	3.40	1.20
ASS Instrumental	1	5	3.34	1.25
SSS Instrumental	1	5	3.67	1.06
SSS Emotional	1	5	3.85	1.03

Note: $N = 255$; Legend: ASS Emotional – Availability Social Support Emotional; ASS Instrumental – Availability Social Support Instrumental; SSS Instrumental – Satisfaction with Social Support Instrumental; SSS Emotional – Satisfaction with Social Support Emotional.

Table 2. Pearson correlations.

	Global_Severity_Index_GSI	ASS Emocional	ASS Instrumental	SSS Instrumental
ASS Emotional	-.343*			
ASS Instrumental	-.318*	.992*		
SSS Instrumental	-.444*	.863*	.854*	
SSS Emotional	-.578*	.672*	.649*	.793*

* $p < .001$.Note: $N = 255$; Legend: ASS Emotional – Availability Social Support Emotional; ASS Instrumental – Availability Social Support Instrumental; SSS Instrumental – Satisfaction with Social Support Instrumental; SSS Emotional – Satisfaction with Social Support Emotional.**Table 3.** Sample results of the brief inventory of symptoms.

Items BSI	Min.	Max.	M	SD	PT*
Somatization	1	3.86	1.83	.70	.77
Obsession-compulsion	.83	4.33	2.12	.73	1.25
Interpersonal sensitivity	1	4.75	1.90	.85	.82
Depression	1	4.83	2.09	.91	.94
Anxiety	1	4.50	2.01	.78	.65
Hostility	1	4.80	1.97	.89	1
Phobic Anxiety	1	3.80	1.70	.76	.55
Paranoid ideation	1	4.60	2.07	.83	.96
Psychoticism	1	4.20	2.00	.77	.62
General Symptoms Index	1.02	4.04	1.97	.68	.83

 $N = 255$; * Values for the Portuguese population (Canavarro, 2007).

of psychological distress (being the average of all items), it is also confirmed that the value calculated in the sample ($M = 1.97$) is higher than the reference value, which indicates the existence of emotional disturbance in all dimensions of the BSI and allows us to conclude that, in average terms, there is evidence of the presence of psychological symptoms in the participants of this study. We found that people with greater satisfaction with perceived emotional support have less psychological symptoms $t(253) = 38.66$; $p < .05$; Cohen's $d = .92$; ($M_{GSI} < 1.97 = 4.36$; $M_{GSI} > 1.97 = 3.44$).

Logistic regression model 1 did not achieve statistical significance ($G^2(4) = 5.57$, $p = .233$; Nagelkerke Pseudo $R^2 = .029$). However, with the inclusion of SSSEmotional, a significant model emerged ($G^2(5) = 61.4$, $p < .001$). The final model demonstrated a specificity of 61.9%, a sensitivity of 71.1%, and an accuracy of 67.1%. In this sample of HIV/AIDS patients, for each additional unit of satisfaction with emotional support, the odds of being in the high GSI group decreased by 67% ($OR = 0.33$, 95% CI [0.234, 0.464]), with no other social support variables significantly affecting GSI (Table 4).

Table 4. Logistic regression models.

	Model 1			Model 2		
	OR	p	CI 95% OR	OR	p	CI 95% OR
Male	0.903	0.756	0.476–1.714	0.889	0.748	0.433–1.825
Age	0.991	0.492	0.965–1.017	0.991	0.526	0.962–1.02
9th grade or equivalent*	0.825	0.520	0.460–1.480	0.930	0.828	0.486–1.783
12th grade or equivalent and higher education*	0.436	0.021	0.215–0.882	0.467	0.063	0.209–1.043
SSS Emocional	–	–	–	0.330	<0.001	0.234–0.464

* Reference category: Up to 4th year or equivalent.

Risk for neurocognitive deficits

Regarding the assessment of neurocognitive deficits, the results were analyzed according to the dimensions outlined in the Portuguese version of the IHDS. These findings have been structured and presented in Table 5.

In Table 6, the result of the risk of HIV dementia for people with HIV/AIDS virus in this study sample is presented.

This study reveals that over half of the sample (58.4%) are at a high risk for neurocognitive disorders caused by HIV (with a score < 10) and should be deemed at a high risk for dementia. It is important to mention that in the clinical history of users there is no evidence of other factors that may be the source of cognitive decline. Within this sample, we observed an association between the risk of dementia in HIV patients and the Global Severity Index of the BSI, indicating that HIV patients with a higher GSI exhibited a greater risk of dementia ($\chi^2(1, N = 255) = 11.104$, $p < .001$).

Discussion

The sample of this study consisted of 255 participants with HIV/AIDS, and it was found that the majority (80.8%) are male, which is in line with the results presented in Portugal in the biennium 2020–2021 (DGS/INSA, 2023). The subtype of HIV-1 virus was identified in this sample as the most frequent, corroborating with national statistics (DGS/INSA, 2022, 2023).

Regarding the results of emotional and instrumental social support, we found that, for the most part, the sample participants reported having and being

Table 5. Description of the International HIV Dementia Scale (IHDS) items.

Domains	<i>n</i>	%
IHDS Scale 1 – Attention		
0	27	10.6
1	14	5.5
2	21	8.2
3	35	13.7
4	158	62
IHDS Scale 2 – Psychomotor speed		
0	84	32.9
1	19	7.5
2	16	6.3
3	40	15.7
4	25	9.8
5	28	11
6	43	16.9
IHDS Scale 3 – Recovery of memory		
0	11	4.3
1	25	9.8
2	55	21.6
3	77	30.2
4	87	34.1
IHDS Scale 4 – Construction		
0	61	23.9
1	64	25.1
2	130	51

satisfied both at the level of availability and at the level of satisfaction, which according to other studies (Babalola et al., 2023; Freitas et al., 2020; Lenzi et al., 2018; Oliveira et al., 2020; Pedrosa et al., 2016).

In this study, for each additional unit of satisfaction of HIV patients with emotional support, the odds of being in the high GSI group decreased by 67%. Concurrently, HIV patients with higher GSI scores faced an elevated risk of dementia. These findings align with existing evidence (Asiedu et al., 2020; Humayun et al., 2023; Namagga et al., 2021; Rubin & Maki, 2019; Thai et al., 2017; Troncoso & Conterno, 2015).

Consistently with the findings of our study is the study of Lenzi et al. (2018), where they reported that people been married or living with a partner, had higher values of availability and satisfaction in the instrumental and emotional supports, than those who lived alone. Also, the study by Padoin et al. (2018) where 179 participants with HIV were evaluated, of which 50.8% were male and 48.6% were married or living in union, verifying that the marital status interferes with the support received. The separated, divorced or widowed participants had a worse perception of general, emotional and instrumental social support, concluding that living with their partner

strengthens relationships between the couple and increases mutual support with their health care.

The study of Santos et al. (2018), revealed that the main sources of support for instrumental social support were family members outside the domestic environment (66.7%), spouses/partners (46.5%) and family members living in the same household (40.6%). Regarding the main sources of emotional support, family members who do not live in the same household (56.1%), friends (55.3%) and spouse/partner (50.0%) were observed. In the study by Li et al. (2021), using another instrument, the Social Support Assessment Scale that was developed by Xiao Shui Yuan in 1986, the support score for people with HIV, married or cohabiting was higher than for single, divorced or widowed women.

Our sample showed that emotional disorders are present in all dimensions of BSI – Brief Symptom Inventory, showing higher values when compared to the expected averages for the Portuguese population, stressing – whether obsessive-compulsive, depression, anxiety and hostility as the most obvious symptoms.

The evidence reveals that among the psychiatric disorders most commonly observed in people living with HIV, anxiety and depression are the most prevalent. Among them, depression is the most frequent disorder about two to three times more than in the general population (Alves et al., 2013; Azevedo et al., 2014; Cai et al., 2020; Desrosiers et al., 2017; El Alama et al., 2020; Goodkin et al., 2023; Hernández-Salazar et al., 2023; Manavalan et al., 2023; Ndenkeh et al., 2022; Olagunju et al., 2012; Reis et al., 2010; Rezaei et al., 2019; Singh et al., 2022; Tran et al., 2019).

HIV infection can be an etiological factor for the development of psychiatric disorders or the exacerbation of pre-existing conditions, such as depression. Due to adverse social consequences arising from beliefs and stigmas, HIV is among the diseases that not only affect the physical aspects, but also psychological and mental conditions of people diagnosed (Silva et al., 2022). In this study, people living with HIV have a higher average score both in the perception of availability and in the satisfaction of emotional and instrumental support than people living alone.

We found that people with a greater perception of the availability of emotional support are those with a greater perception of the availability of instrumental support. There is a negative and weak relationship between the global index of symptoms and the perception of the availability of emotional support and instrumental support. Corroborating with the results of this study, another, where 300 people with HIV/AIDS participated, concluded that 3 out of 10

Table 6. Risk of HIV dementia.

Item	<i>N</i>	High risk * (%/n)	Non-significant risk **(%/n)
Risk of dementia from HIV	255	58.4% (n = 149)	41.6% (n = 106)

*Score ≤10; **Score > 10.

participants presented psychopathological symptoms of psychological distress, highlighting the symptoms of anxiety and depression. In this same study, the authors stated that the main factors that potentiated this distress were the lack of family support, unemployment, family history of mental illness and comorbidities. On the other hand, factors such as being married, the absence of other medical conditions and a lasting adherence to antiretroviral therapy appeared to be protective factors for psychological distress (Olagunju et al., 2012).

Among people living with HIV, the lower levels of informal social support that provide help in instrumental activities of daily living are related to negative emotional outcomes such as depression and anger (Yeji et al., 2014). Findings from other studies show that greater perceived social support was associated with lower depressive symptoms (Kalomo, 2018; Kalomo et al., 2021).

There was also a similarity between the results with the study conducted by Seffren et al. (2018) with 288 women living with HIV, which concluded that greater family support was associated with fewer symptoms of anxiety and depression symptoms. They also that the findings suggest that high family support may be protective against symptoms of depression and anxiety among women living with HIV.

A systematic review conducted by Wang et al. (2018) revealed that people with depression who perceive their social support as poorer have worse results in terms of symptoms, recovery and social functioning.

Another systemic review with a meta-analysis conducted by Wellesen et al. (2020) revealed that the odds of depression among adults living with HIV and who had weak social support were 31% higher than among those with strong social support. They also stressed that the prevention of HIV-related stigma for people with this condition is also necessary to reduce the impact of poor social support. Perceived stigma is often found among people living with HIV and at risk of depression, anxiety and many other psychosocial problems. Stigma has been related to risky sexual practices, delayed health-seeking behavior, low treatment follow-up, and, consequently, the presence of anxiety and depression (Chaudhury et al., 2016).

The main purpose of this study was to analyze the relationship between satisfaction with social support and psychological symptoms in people living with HIV/AIDS at risk of development HIV-Associated Dementia, which in this study was evidenced by participants. The relationships among these domains

should be clearly considered in structured programs to delay cognitive decline and dementia.

Limitations

This study's main limitation is using a non-probabilistic convenience sample, which does not allow the generalization of the results to the population. A longitudinal study, involving the follow-up of participants over an extended period, would allow for the identification of additional clinical variables that may contribute to an increased risk of HIV-associated dementia.

Conclusion

The findings from our study suggest that HIV patients lacking emotional support have a higher risk of experiencing more severe symptoms of psychological distress. Additionally, we observed a link between symptoms of psychological distress and an increased likelihood of developing HIV-related dementia. To mitigate the risk of psychological distress and dementia among HIV patients, it is imperative to enhance their social support networks, which can serve as a vital clinical strategy.

Social support is a key element in the health-disease transition, in mitigating the negative consequences related to living with an HIV infection, contributing positively to a better human response to diagnosis and a better adaptation to the disease, reducing psychopathological symptoms and contributing to a better quality of life.

Given the complexity of HIV infection and the associated biopsychosocial needs, it is crucial that, in addition to treating HIV infection through the pharmacological regimen, new health integrated interventions are made available to promote the ability to adjust to the transitions that the course and management of the infection require.

Author contributions

GS, WJCA. and JMSCP contributed to the design of the project, analysis and interpretation of data and writing of the manuscript. PC collaborated in the statistical analysis. All authors read and approved the final manuscript.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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