An evaluation of quality of life and its determinants among people living with HIV/AIDS from Southern Brazil

Uma avaliação da qualidade de vida e seus determinantes nas pessoas vivendo com HIV/AIDS no Sul do Brasil

Evaluación de la calidad de vida y sus determinantes en las personas que viven con VIH/SIDA en el sur de Brasil

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Abstract

This cross-sectional study evaluated the quality of life and its associated factors among people living with HIV/AIDS at a regional reference center for the treatment of HIV/AIDS in southern Brazil. WHOQOL-HIV Bref, ASSIST 2.0, HAD Scale, and a questionnaire were used to assess 625 participants on quality of life, clinical and sociodemographic characteristics, drug use, depression and anxiety. Multivariate analysis was performed through linear regression. The lowest results for quality of life were associated with being female, age (< 47 years), low education levels, low socioeconomic class, unemployment, not having a stable relationship, signs of anxiety and depression, abuse or addiction of psychoactive substances, lack of perceived social support, never taking antiretroviral medication, lipodystrophy, comorbidities, HIV related hospitalizations and a CD4+ cell count less than 350. Psychosocial factors should be included in the physical and clinical evaluation given their strong association with quality of life domains.

Quality of Life; HIV; Acquired Inmunodeficiency Syndrome

Resumo

Este estudo transversal avaliou a qualidade de vida e seus fatores associados em pessoas vivendo com HIV/AIDS em um centro de referência regional para o tratamento desta enfermidade no Sul do Brasil. WHOQOL-HIV Bref, a ASSIST 2.0, HAD Escala e um questionário foram utilizados para avaliar 625 participantes sobre a qualidade de vida, características clínicas e sociodemográficas, uso de drogas, depressão e ansiedade. A análise multivariada foi realizada por regressão linear. Pior qualidade de vida foi associada com sexo feminino, idade (< 47 anos), baixa escolaridade, baixa classe socioeconômica, desemprego, não ter um relacionamento estável, um indicativo de ansiedade e depressão, abuso ou dependência de substâncias psicoativas, falta de apoio social percebido, nunca tomar a medicação antirretroviral, lipodistrofia, comorbidades, internações relacionadas ao HIV e contagem de células CD4+ < 350. Fatores psicossociais devem ser incluídos na avaliação física e clínica, dada a sua forte associação com os domínios de qualidade de vida.

Qualidade de Vida; HIV; Síndrome de Imunodeficiência Adquirida

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Introduction

With medical progress, diseases once considered to be lethal have become treatable and the symptoms can be controlled, thereby increasing life expectancy [1]. HIV infection is no longer a threat of eminent death but is instead a chronic condition associated with a higher life expectancy [2]. However the social stigma and side effects of medication, such as lipodystrophy, interfere with the well-being of patients [3].Therefore, it has become particularly important to assess how people living with HIV/AIDS are living longer [1].

There is a growing concern about quality of life among people living with HIV/AIDS [4,5,6]. Quality of life refers to health status when taking into consideration multiple dimensions including social, psychological, physical and functional well-being. The World Health Organization (WHO) defines quality of life as "*individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns*" [7] (p. 1403).

The literature reported no consensus on the several associations that have been made between the illness and quality of life. For instance, women living with HIV/AIDS have a worse quality of life than men [8,9,10,11,12,13]. However, one study has reported no differences in quality of life with regard to gender [14] and another has shown better quality of life among women [15]. It is important to take into account the various cultural issues involving gender in the different regions where these studies were performed, a fact that may in some way have influenced the results. Studies that have used a representative sample and conducted multivariate statistical analysis of the subjects are important in efforts to solve these inconsistencies, but they are also scarce. Accordingly, the objective of the present study is to assess quality of life and to identify factors associated with quality of life among adult patients who attended an HIV/AIDS treatment referral center in the south of Brazil.

Methods

A cross-sectional study of the 690 people living with HIV/AIDS attending the Special Assistance Service for HIV/AIDS in Pelotas, Rio Grande do Sul State, Brazil (SAS-Pelotas), from December 2011 to June 2012 was carried out. It is important to point out that the SAS-Pelotas is the center that provides medical attention and antiretroviral medication to people living with HIV/AIDS in the city of Pelotas and the surrounding area. Ethical approval for the study was obtained from the Ethics Research Committees at the Catholic University of Pelotas (UCPel) and the Federal University of Pelotas (UFPel).

Inclusion criteria for participation in the study were: being 18 years old or older and having a record of HIV infection. Males and females responded to interview. Exclusion criteria were: presenting a clinical or cognitive condition that prevented a clear understanding of the research instruments, as in the case of a patient with a severe hearing impediment or under the effect of a psychoactive substance such as alcohol, or limitations in being able to respond to the questionnaire unaccompanied, as in the case of prisoners with a police escort. The interviews were conducted by five interviewers, who received prior training from the authors.

The *World Health Organization Quality of Life Instrument*, brief version, specific to people living with HIV/AIDS (WHOQOL-HIV Bref) was adapted and used to conduct an interview, given that other studies had reported difficulties faced by patients in understanding, thereby requiring frequent assistance when the questionnaire was self-administered [16]. In addition, no significant differences were found in the results when the two methods (structured interviews vs. self-administered) were compared [17].

A pilot study was conducted among 40 participants and the sample size was calculated using mean differences for each of the outcomes proposed by the quality of life instrument with each independent variable to ensure the reliability of the data. The largest sample size required was 572 participants for a confidence level of 95%. Considering a percentage of refusals and to control for confounding factors of 20%, the final required sample size was 688 participants.

Instruments

The survey instrument consisted of an interview that assessed socio-demographic and clinical issues.

- **Socio-demographic interview**

The interview inquired about gender, skin color (self-reported by the participant as white or non-white), age, education attainment, employment status, socioeconomic status (Associação Brasileira de Empresas de Pesquisa. Critério de classificação econômica Brasil. http://www.abep.org, accessed on 12/Aug/2012 – a scale that classifies individuals into socioeconomic groups by possession of comfort items and level of education of household head), marital status (partnership for a year or more), children and religiosity (prays, attends mass, church or some other place of worship at least once a month).

- **Clinical interview**

We gathered information regarding the means of infection (through sexual intercourse, exposure to hazardous biological material, drug use, blood transfusion, vertical transmission or does not know), time since diagnosis (how long the subject has known that they are living with HIV), antiretroviral medication (never or at least once), lipodystrophy (self-perception of changes in face, nape of neck, arms, chest/breasts, abdomen, buttocks and/or legs after the beginning of antiretroviral therapy: none, thinner or more swollen), comorbidities (self-reported diagnosis of hypertension, diabetes, cardiopathy, dyslipidemia, tuberculosis, hepatitis, chronic kidney disease, chronic lung disease, cancer) and HIV related hospitalizations (which referred to whether the subject had ever been hospitalized as a result of complications related to HIV infection). A question was also included regarding the individual's feelings about any type of social support they received related to the HIV infection, irrespective of the source of support: family, friends, health care or other (yes or no).

Data on the clinical stage of infection, CD4+ cell count (CD4+) and viral load, based on the most recent result over the previous six months, was retrieved from the medical charts at SAS-Pelotas. Patients were categorized by clinical stage as asymptomatic, symptomatic and AIDS, according to the Centers for Disease Control and Prevention (CDC-2008) [18] and the Brazilian Ministry of Health [19] guidelines used at the time of the data collection. CD4+ and viral load cutoff points were also considered in accordance with the HIV/AIDS guidelines at the time of data collection [20,21]. Undetectable viral load was defined as less than 50 viral copies/mL RNA.

The participants' use of psychoactive substances was assessed with the *Alcohol Smoking and Substance Involvement Screening Test* (ASSIST 2.0) which was adapted and validated for the Brazilian population [22]. This is a structured questionnaire with eight questions about the use of psychoactive substance (alcohol, tobacco, marijuana, cocaine/crack, stimulants, sedatives/hypnotics, inhalants, hallucinogens, opiates and others). Each response corresponds to a score ranging from 0 to 4, and the total sum can vary from 0 to 20. A score ranging from 0 to 3 is indicative of occasional use, from 4 to 15 indicates abuse and 16 or more indicates addiction. The variables related to abuse and dependence on alcohol, tobacco and illicit drugs were dichotomous (yes or no): occasional use/never (score ranging 0-3) or abuse/addiction (score ≥ 4).

The *Hospital Anxiety and Depression Scale* (HAD) was used to assess anxiety and depression [23].The scale consists of 14 multiple-choice questions divided into two sub-scales: depression and anxiety. Each scale has seven items and the overall score ranges from 0 to 21. The cutoff point was 8/9. Two dichotomous variables were created, based on the cutoff point for signs of anxiety and depression, yes or no.

- **Instrument for assessing quality of life**

The quality of life assessment was performed using the WHOQOL-HIV Bref [24]. The instrument is based on the WHOQOL-Bref, the shorter form of the WHOQOL-100 [25] and is used on a large scale in several countries [10,13,14,26] including Brazil [10]. The WHOQOL-HIV Bref provides a profile of quality of life with scores ranging from 4 (poorest quality of life) to 20 (best quality of life) across six domains: physical, psychological, independence level, social relationships, environment and spirituality/religiousness/personal beliefs.

The physical domain assesses pain and discomfort, energy and fatigue, sleep and rest and symptoms of people living with HIV/AIDS (for example: to what extent do you think your pain (physical) prevents you from doing what you need?). The psychological domain assesses positive feelings; thinking; learning; memory and concentration; self-esteem; body image and (physical) appearance; and negative feelings (for example: how much you are bothered by having – or have had – any unpleasant physical problem related to your HIV infection?). The independence level domain assesses mobility; activities of daily living; dependence on medication or treatments; and work capacity (for example: how much do you need any kind of medical treatment to function in your daily life?). The social relationship domain assesses personal relationships; social support; sexual activity; and social inclusion (for example: to what extent do you feel accepted by people you know?). The environment domain assesses physical security and protection, home environment (housing); financial resources and access to quality health and social care; opportunities to acquire new information and skills; participation in and opportunities for recreation/leisure; physical environment (pollution/noise/traffic/climate); and transportation (for example: how safe do you feel in your daily life?). The spirituality/religiousness/personal beliefs domain assesses spirituality/religion/personal beliefs, forgiveness and guilt, worries about the future, death and dying (for example: how much do you worry about death?).

Statistical analysis

After the application and coding of the instruments, data entry was performed using Epi Info 6.04 software (Centers for Disease Control and Prevention, Atlanta, USA). Double data entry was performed to ensure greater accuracy and reduce the potential for human error. The statistical analysis of the data was performed using SPSS 13.0 software (SPSS Inc., Chicago, USA). An analysis of statistical significance was performed to verify the differences in mean quality of life in relation to the independent variables under study, using the t test for dichotomous variables and ANOVA for ordinal and nominal variables. A multivariate analysis was performed using linear regression, adjusting for socio-demographic and clinical variables in relation to the domains of the WHOQOL-HIV Bref. This was performed following a multilevel hierarchic model for each domain of quality of life. Those associations with a p-value ≤ 0.2 in t test or ANOVA test were included in each model.

Results

Of the 690 patients who were invited to participate in the study, 625 agreed to participate and completed the questionnaire in a private interview. There were 57 refusals, with a lack of time given as the main reason for refusal. We excluded data from eight participants due to the exclusion criteria. The sociodemographic and clinical characteristics of the sample are presented in Table 1 and Table 2. In regard to gender and ethnicity, 51.8% were female and 70.1% were white. The mean age of the participants was 42 years (± 11.46), ranging from 18 to 79 years old, and the mean years of school attendance was 6.96 years (± 4.06). Most patients had children (75.7%), belonged to socioeconomic class C (59.8%) and reported following a religion (76.6%). Only 37.4% of participants were employed. Just over half of the participants (52%) reported a partnership lasting at least one year. 34 different therapeutic approaches were identified; the most frequent was the combination of Efavirenz + Zidovudine + Lamivudine (31.8%). Among the reported bodily changes, the most commonly observed after the initiation of antiretroviral therapy were excess fat deposition in the abdomen (29.2%), leg atrophy (20.9%) and facial lipoatrophy (15.2%). Hypertension and dyslipidemia were the most frequent comorbidities reported (23.5% and 23.1%, respectively). Using bivariate analysis, we calculated the mean differences in QoL according to the independent variables for each domain of the WHOQOL-HIV Bref (Table 3).

Table 1

Sociodemographic characteristics of people living with HIV/AIDS attending the Special Assistance Services for HIV/AIDS in Pelotas, Rio Grande do Sul State, Brazil (SAS-Pelotas), from December 2011 to June 2012 (N = 625).

	n	%
Gender		
Male	301	48.2
Female	324	51.8
Skin color		
White	438	70.1
Non-white	187	29.9
Age (years)		
≤ 35	197	31.5
36-46	204	32.6
≥ 47	224	35.8
Education (years) *		
8 or less (primary school)	441	70.1
9-12 (secondary school)	122	19.6
13 and above (college)	61	9.8
Employment **		
No	391	62.6
Yes	234	37.4
Socioeconomic status *,***		
Class D and E	115	18.6
Class C	369	59.8
Class A and B	133	21.6
Partnership #		
No	300	48.0
Yes	325	52.0
Children		
No	152	24.3
Yes	473	75.7
Religion ##		
No	146	23.4
Yes	479	76.6
Total	625	100.0

* Variable with missing value;

** Has a current paid job;

*** Socioeconomic status according to the Associação Brasileira de Empresas de Pesquisa (Critério de classificação econômica Brasil. http://www.abep.org, accessed on 12/Aug/2012);

For a period of one year or more;

Prays, attends mass, church or some other place of worship at least once a month.

Table 2

Clinical characteristics of people living with HIV/AIDS attending the Special Assistance Services for HIV/AIDS in Pelotas, Rio Grande do Sul State, Brazil (SAS-Pelotas), from December 2011 to June 2012 (N = 625).

	n	%
Means of infection		
Sexual intercourse	478	76.5
Other *	62	9.9
Do not know	85	13.6
Time since diagnosis (months) **		
< 13	86	13.8
≥ 13	535	86.2
Antiretroviral medication **		
Never	91	18.1
At least once	413	81.9
Lipodystrophy **,***		
No	186	30.2
Yes	429	69.8
Comorbidities **,#		
No	271	43.9
Yes	347	56.1
HIV related hospitalizations **		
No	442	70.8
Yes	182	29.2
Clinical stage of infection **		
Asymptomatic	96	15.4
Symptomatic	17	2.7
AIDS	511	81.9
T-CD4+ cell count **		
≤ 350	158	36.1
> 350	280	63.9
Viral load **,##		
Undetectable ##	271	63.0
Detectable	159	37.0
Signs of anxiety **		
No	328	53.1
Yes	290	46.9
Signs of depression **		
No	405	65.6
Yes	212	34.4
Tobacco **		
Occasional use/Never	335	54.4
Abuse/Addiction	281	45.6
Alcohol **		
Occasional use/Never	408	67.3
Abuse/Addiction	198	32.7
Other substances **,##		
Occasional use/Never	503	84.3
Abuse/Addiction	94	15.7
Social support **,§		
No	111	17.8
Yes	513	82.2
Total	625	100.0

* Other means of infection: drug use, blood transfusion, exposure to blood or other biological material, vertical transmission;

** Variable with missing value;

*** Self-perception of changes in: face, nape of neck, arms, chest/breasts, abdomen, buttocks and/or legs after starting antiretroviral therapy;

[#] Self-reported diagnosis of hypertension, diabetes, cardiopathy, dyslipidemia, tuberculosis, hepatitis, chronic kidney disease, chronic lung disease, cancer;

[##] < 50 viral copies/mL RNA;

[###] Marijuana, cocaine/crack, stimulants, inhalants, hypnotic/sedatives, hallucinogenic drugs, opioids, other;

[§] The individual's feelings about any type of social support they received related to the HIV infection.

Table 3

Mean differences among quality of life domains of people living with HIV/AIDS attending the Special Assistance Service for HIV/AIDS in Pelotas, Rio Grande do Sul State, Brazil (SAS-Pelotas), from December 2011 to June 2012 (N = 625).

	Physical domain		**Psychological domain**		**Independence level domain**		**Social relationships domain**		**Environmental domain**		**Spirituality/Religiousness/ Personal beliefs domain**	
	Mean (SD)	**p-value**	**Mean (SD)**	**p-value**	**Mean (SD)**	**p-value**	**Mean (SD)**	**p-value**	**Mean (SD)**	**p-value**	**Mean (SD)**	**p-value**
Gender *												
Male	14.44 (3.60)	0.028	14.85 (2.72)	0.000	13.27 (3.49)	0.584	15.16 (3.40)	0.634	14.05 (2.74)	0.053	15.62 (3.66)	0.000
Female	13.81 (3.56)		13.69 (3.24)		13.11 (3.31)		15.03 (3.22)		13.63 (2.66)		14.54 (3.77)	
Skin color *												
White	14.09 (3.62)	0.825	14.18 (3.08)	0.418	13.14 (3.49)	0.567	15.02 (3.34)	0.379	13.94 (2.68)	0.161	15.24 (3.76)	0.078
Non-white	14.16 (3.54)		14.40 (3.00)		13.30 (3.17)		15.27 (3.24)		13.60 (2.76)		14.66 (3.71)	
Age (years) **												
≤ 35	14.05 (3.61)	0.061	13.98 (3.21)	0.004	13.59 (3.44)	0.768	14.91 (3.48)	0.022	13.72 (2.96)	0.070	14.19 (3.98)	0.000
36-46	13.55 (3.62)		13.86 (2.91)		12.50 (3.44)		14.69 (3.43)		13.56 (2.44)		14.98 (3.63)	
≥ 47	14.67 (3.49)		14.82 (2.96)		13.45 (3.23)		15.62 (2.97)		14.18 (2.68)		15.91 (3.48)	
Education (years) **												
≤ 8	13.86 (3.58)	0.002	14.00 (3.13)	0.000	12.75 (3.33)	0.000	14.94 (3.33)	0.054	13.46 (2.69)	0.000	14.89 (3.89)	0.023
9-12	14.36 (3.73)		14.45 (2.67)		13.88 (3.48)		15.28 (3.27)		14.43 (2.58)		15.15 (3.53)	
≥ 13	15.38 (3.06)		15.53 (2.87)		14.98 (2.90)		15.77 (3.18)		15.36 (2.31)		16.11 (2.97)	
Employment **												
Unemployed	13.64 (3.53)	0.000	13.80 (3.07)	0.000	12.49 (3.36)	0.000	14.61 (3.40)	0.000	13.48 (2.63)	0.000	14.84 (3.79)	0.056
Employed	14.89 (3.57)		14.98 (2.89)		14.34 (3.13)		15.89 (2.99)		14.41 (2.74)		15.43 (3.67)	
Socioeconomic status **,***												
Classes A and B	15.18 (3.33)		15.44 (2.67)		14.50 (3.41)		16.12 (3.02)		15.51 (2.28)		16.02 (3.25)	
Class C	14.25 (3.53)	0.000	14.18 (3.05)	0.000	13.15 (3.25)	0.000	15.05 (3.32)	0.000	13.70 (2.59)	0.000	14.93 (3.90)	0.001
Classes D and E	12.50 (3.54)		13.14 (3.01)		11.94 (3.34)		14.21 (3.21)		12.44 (2.57)		14.45 (3.61)	
Partnership **												
No	13.92 (3.60)	0.198	13.95 (3.07)	0.021	12.85 (3.32)	0.017	14.67 (3.38)	0.002	13.49 (2.68)	0.002	14.97 (3.74)	0.561
Yes	14.29 (3.58)		14.52 (3.02)		13.50 (3.43)		15.48 (3.20)		14.15 (2.69)		15.15 (3.77)	

(continues)

Table 3 (continued)

	Physical domain		Psychological domain		Independence level domain		Social relationships domain		Environmental domain		Spirituality/Religiousness/ Personal beliefs domain	
	Mean (SD)	**p-value**	**Mean (SD)**	**p-value**	**Mean (SD)**	**p-value**	**Mean (SD)**	**p-value**	**Mean (SD)**	**p-value**	**Mean (SD)**	**p-value**
Children **												
No	14.51 (3.39)	0.101	14.53 (2.85)	0.173	13.62 (3.25)	0.063	15.12 (3.50)	0.892	14.10 (2.83)	0.176	15.14 (3.81)	0.783
Yes	13.98 (3.65)		14.15 (3.11)		13.05 (3.43)		15.08 (3.25)		13.75 (2.66)		15.04 (3.74)	
Religion **												
No	13.85 (3.53)	0.306	13.52 (3.24)	0.002	12.75 (3.41)	0.075	14.86 (3.40)	0.335	13.40 (2.81)	0.031	14.36 (3.67)	0.009
Yes	14.19 (3.61)		14.46 (2.96)		13.32 (3.38)		15.16 (3.28)		13.97 (2.66)		15.28 (3.76)	
Means of infection **												
Sexual intercourse	14.21 (3.51)		14.21 (3.02)		13.35 (3.29)		15.14 (3.29)		13.91 (2.70)		14.97 (3.77)	
Other	13.85 (3.93)	0.449	14.40 (2.87)	0.848	12.60 (3.42)	0.096	14.90 (3.44)	0.833	13.65 (2.63)	0.422	16.08 (3.67)	0.078
Do not know	13.74 (3.78)		14.35 (3.39)		12.70 (3.89)		14.99 (3.37)		13.54 (2.81)		14.87 (3.67)	
Time since diagnosis (months) *												
< 13	14.14 (3.03)	0.950	13.93 (2.82)	0.246	13.20 (3.23)	0.997	15.18 (3.16)	0.833	14.01 (2.47)	0.533	15.04 (3.53)	0.913
≥ 13	14.11 (3.67)		14.32 (3.07)		13.20 (3.42)		15.10 (3.32)		13.83 (2.73)		15.08 (3.79)	
Antiretroviral medication *												
Never	13.53 (3.81)	0.069	13.52 (3.12)	0.021	13.40 (3.81)	0.527	15.11 (3.29)	0.952	13.11 (2.68)	0.005	14.74 (3.58)	0.356
At least once	14.33 (3.53)		14.36 (3.01)		13.15 (3.29)		15.13 (3.29)		14.00 (2.71)		15.12 (3.77)	
Lipodystrophy **												
No	15.40 (3.06)	0.000	15.52 (2.45)	0.000	13.99 (3.14)	0.000	15.90 (2.97)	0.000	14.62 (2.44)	0.000	16.18 (3.32)	0.000
Yes	13.52 (3.68)		13.72 (3.11)		12.84 (3.45)		14.79 (3.39)		13.51 (2.76)		14.61 (3.83)	
Comorbidities **												
No	14.86 (3.33)	0.000	14.66 (2.83)	0.002	14.00 (3.34)	0.000	15.45 (3.26)	0.017	14.25 (2.56)	0.001	15.22 (3.70)	0.366
Yes	13.54 (3.64)		13.91 (3.17)		12.53 (3.31)		14.81 (3.33)		13.50 (2.77)		14.95 (3.79)	

(continues)

Table 3 (continued)

	Physical domain		Psychological domain		Independence level domain		Social relationships domain		Environmental domain		Spirituality/Religiousness/ Personal beliefs domain	
	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value
Comorbidities **												
No	14.86 (3.33)	0.000	14.66 (2.83)	0.002	14.00 (3.34)	0.000	15.45 (3.26)	0.017	14.25 (2.56)	0.001	15.22 (3.70)	0.366
Yes	13.54 (3.64)		13.91 (3.17)		12.53 (3.31)		14.81 (3.33)		13.50 (2.77)		14.95 (3.79)	
HIV related hospitalization **												
No	14.64 (3.44)	0.000	14.47 (2.92)	0.006	13.62 (3.30)	0.000	15.23 (3.17)	0.081	14.11 (2.56)	0.000	15.13 (3.67)	0.566
Yes	12.82 (3.63)		13.69 (3.31)		12.12 (3.40)		14.72 (3.60)		13.16 (2.95)		14.93 (3.94)	
Clinical stage of infection **												
Asymptomatic	14.47 (3.68)		13.64 (2.95)		13.67 (3.35)		15.35 (3.27)		13.58 (2.42)		14.81 (3.61)	
Symptomatic	11.47 (3.92)	0.006	13.22 (3.53)	0.027	11.82 (4.11)	0.092	14.35 (2.47)	0.476	13.00 (2.38)	0.232	14.70 (3.29)	0.700
AIDS	14.14 (3.52)		14.41 (3.02)		13.14 (3.37)		15.06 (3.34)		13.92 (2.76)		15.12 (3.80)	
T-CD4+ cell count **												
≤ 350	12.98 (3.60)	0.000	13.86 (3.20)	0.037	12.20 (3.71)	0.000	14.50 (3.44)	0.006	13.46 (2.91)	0.013	14.88 (3.90)	0.295
> 350	14.76 (3.34)		14.52 (2.95)		13.69 (2.92)		15.44 (3.21)		14.16 (2.58)		15.28 (3.61)	
Viral load **												
Undetectable	14.49 (3.46)	0.008	14.48 (2.98)	0.158	13.25 (3.08)	0.532	15.24 (3.18)	0.310	14.22 (2.65)	0.004	15.35 (3.61)	0.151
Detectable	13.56 (3.51)		14.04 (3.04)		13.04 (3.58)		14.89 (3.47)		13.43 (2.77)		14.81 (3.78)	
Signs of anxiety **												
No	15.77 (2.86)	0.000	15.92 (2.02)	0.000	14.61 (2.86)	0.000	16.40 (2.57)	0.000	15.09 (2.13)	0.000	16.91 (2.77)	0.000
Yes	12.24 (3.39)		12.34 (2.92)		11.55 (3.22)		13.61 (3.44)		12.41 (2.59)		12.99 (3.65)	
Signs of depression **												
No	15.42 (3.00)	0.000	15.66 (2.11)	0.000	14.46 (2.80)	0.000	16.31 (2.57)	0.000	14.95 (2.18)	0.000	16.26 (3.25)	0.000
Yes	11.60 (3.26)		11.50 (2.72)		10.69 (3.04)		12.77 (3.34)		11.69 (2.30)		12.79 (3.64)	
Tobacco **												
Occasional use/ Never	14.63 (3.44)	0.000	14.65 (2.95)	0.000	13.71 (3.25)	0.000	15.41 (3.05)	0.007	14.30 (2.53)	0.000	15.69 (3.61)	0.000
Abuse/Addiction	13.55 (3.72)		13.75 (3.11)		12.55 (3.44)		14.68 (3.57)		13.26 (2.81)		14.29 (3.79)	

(continues)

Table 3 (continued)

	Physical domain		Psychological domain		Independence level domain		Social relationships domain		Environmental domain		Spirituality/Religiousness/ Personal beliefs domain	
	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value	Mean (SD)	p-value
Alcohol **												
Occasional use/ Never	14.36 (3.60)	0.028	14.34 (3.01)	0.316	13.25 (3.34)	0.485	15.13 (3.20)	0.925	13.91 (2.59)	0.357	15.35 (3.68)	0.005
Abuse/Addiction	13.69 (3.50)		14.07 (3.06)		13.05 (3.45)		15.10 (3.46)		13.68 (2.96)		14.42 (3.86)	
Other substances **												
Occasional use/ Never	14.51 (3.49)	0.000	14.45 (2.99)	0.006	13.46 (3.24)	0.000	15.39 (3.11)	0.000	14.08 (2.62)	0.000	15.29 (3.65)	0.001
Abuse/Addiction	12.58 (3.67)		13.49 (3.03)		11.60 (3.63)		13.75 (3.76)		12.62 (2.82)		13.96 (4.04)	
Social support **												
No	12.09 (3.65)	0.000	11.94 (3.42)	0.000	11.61 (3.31)	0.000	12.63 (3.98)	0.000	11.90 (2.69)	0.000	13.23 (4.00)	0.000
Yes	14.56 (3.43)		14.73 (2.73)		13.53 (3.32)		15.63 (2.88)		14.26 (2.52)		15.46 (3.58)	

SD: standard deviation.

* t test;

** ANOVA;

*** Socioeconomic status according to the Associação Brasileira de Empresas de Pesquisa (Critério de classificação econômica Brasil. http://www.abep.org, accessed on 12/Aug/2012);

After the adjusted analysis the following factors were independently associated with quality of life scores in the physical, psychological and independence level domains: gender, age, education, employment status, socioeconomic status, signs of anxiety, signs of depression, abuse or addiction to other psychoactive substances, social support, HIV related hospitalizations, comorbidities, lipodystrophy and CD4+ (Table 4).

Age, gender, employment, socioeconomic status, partnership, signs of anxiety, signs of depression, social support, abuse or addiction to other psychoactive substances, antiretroviral medication and HIV related hospitalizations were independently associated with quality of life scores in the social relationships, environment and spirituality/religiousness/personal beliefs domains (Table 5).

Discussion

This study demonstrated the importance of sociodemographic variables to quality of life for people living with HIV/AIDS. Female patients had lower scores in the psychological and spiritual domains, with almost a point of difference in both. Similar results were found by Pereira & Canavarro [13], using WHOQOL-HIV Bref. The lowest scores for quality of life in this group may be related to cultural, educational and socioeconomic differences between genders [10]. Many women still live in a situation of economic and emotional dependence on their partner and face difficulties in the relationship, such as negotiating condom use during sexual intercourse [10].

Participants younger than 47 years old had worse quality of life in all domains with the exception of the independence level domain. Significant differences remained after adjustment for other socio-demographic factors. Other studies found higher scores for quality of life in younger patients [13,14]. Age groups with different cutoffs and populations with different cultural aspects could explain this fact. Zimpel & Fleck [8] found similar results to ours in their study also conducted in southern Brazil, using the WHOQOL-HIV instrument, which originated the WHOQOL-HIV Bref instrument used in our study. Although the effect of HIV infection may be added to the

Table 4

Adjusted analysis of quality of life for people living with HIV/AIDS attending the Special Assistance Service for HIV/AIDS in Pelotas, Rio Grande do Sul State, Brazil (SAS-Pelotas), from December 2011 to June 2012 (N = 625), according to physical, psychological and independence level domains.

	Physical			Psychological			Independence level		
	r	95%CI	p-value	r	95%CI	p-value	r	95%CI	p-value
Gender	-0.20	-0.78; 0.39	0.512	-0.90	-1.37; -0.43	0.000	-	-	-
Skin color	-	-	-	-	-	-	-	-	-
Age	0.50	0.16; 0.83	0.004	0.54	0.26; 0.82	0.000	-	-	-
Education	0.08	-0.41; 0.56	0.760	0.23	-0.16; 0.63	0.240	0.58	0.15; 1.02	0.009
Employment	0.97	0.40; 1.55	0.001	0.86	0.37; 1.34	0.001	1.44	0.90; 1.99	0.000
Socioeconomic status	1.18	0.74; 1.63	0.000	0.92	0.54; 1.30	0.000	0.72	0.26; 1.18	0.002
Partnership	0.19	-0.39; 0.76	0.522	0.45	-0.03; 0.92	0.064	0.40	-0.13; 0.92	0.137
Children	-0.54	-1.20; 0.11	0.103	-0.14	-0.74; 0.46	0.652	-0.35	-0.97; 0.28	0.276
Religion	-	-	-	0.22	-0.19; 0.63	0.288	-0.10	-0.62; 0.41	0.699
Route of infection	-	-	-	-	-	-	-0.07	-0.38; 0.24	0.671
Indicative of anxiety	-2.01	-2.58; -1.44	0.000	-1.82	-2.23; -1.42	0.000	-1.47	-1.98; -0.95	0.000
Indicative of depression	-2.15	-2.76; -1.53	0.000	-2.61	-3.05; -2.17	0.000	-2.45	-3.02; -1.89	0.000
Tobacco	0.04	-0.49; 0.57	0.878	0.06	-0.29; 0.42	0.722	-0.22	-0.68; 0.24	0.356
Alcohol	-0.32	-0.84; 0.20	0.224	-	-	-	-	-	-
Other substances	-0.88	-1.56; -0.20	0.011	0.05	-0.46; 0.57	0.842	-0.95	-1.56; -0.34	0.002
Social support	0.96	0.30; 1.62	0.005	1.24	0.77; 1.71	0.000	0.46	-0.15; 1.07	0.138
Time since diagnosis	-	-	-	-	-	-	-	-	-
Antiretroviral medication	0.91	-0.08; 1.90	0.071	0.41	-0.09; 0.92	0.110	-	-	-
Lipodystrophy	-0.79	-1.48; -0.10	0.026	-0.57	-0.99; -0.15	0.009	-0.55	-1.33; -0.32	0.046
Comorbidities	-0.79	-1.43; -0.15	0.016	-0.15	-0.63; 0.33	0.542	-0.82	-1.33; -0.32	0.002
HIV related hospitalizations	-1.40	-2.11; -0.69	0.000	-0.34	-0.75; 0.07	0.106	-0.58	-1.14; -0.01	0.047
Clinical stage of infection	-0.50	-1.00; 0.01	0.056	0.05	-0.31; 0.41	0.778	-0.16	-0.53; 0.21	0.399
T-CD4+ cell count	0.76	0.05; 1.48	0.037	0.07	-0.50; 0.64	0.818	0.56	0.02; 1.09	0.041
Viral load	-0.06	-0.83; 0.72	0.880	0.32	-0.23; 0.86	0.257	-	-	-

95%CI: 95% confidence interval.

immunosenescence process [27], contributing to a poorer quality of life in older people, this effect may not be valid for all domains of quality of life and be influenced by socio-cultural aspects. In particular, the spirituality domain points to a gradual increase in quality of life scores with advancing age. The results of the present study may be partly explained by Silva et al. [28] who reported that older people are less anxious about future events, including death and dying and suffer less of an impact of AIDS in their intimacy.

Not having a stable relationship was associated with poorer quality of life in the social relationships and environment domains, which is consistent with other results reported in the literature [9,14]. Long-term partnership provides better social support [29], and, in addition, the need to disclose HIV status to a single person, the partner, reduces one of the biggest anxieties of seropositive individuals [14].

Subjects were also asked about their perception of social support in relation to their HIV condition. A significant association was found between not feeling supported socially and having lower quality of life scores in five out of the six domains. People living with HIV/AIDS often suffer from social isolation, discrimination and marginalization, suggesting a strong impact from HIV on the social aspects of quality of life [14] and reinforcing the importance of forming a social network to support HIV patients. The level of independence domain evaluates issues related to mobility, activities of daily living, dependence on medication or treatments and ability to work. There was no significant association between social support and this domain. Probably the question most social support refers to feelings and perceptions of the individual related to their status as HIV positive than the practical issues of everyday life.

Table 5

Adjusted analysis of quality of life for people living with HIV/AIDS attending the Special Assistance Service for HIV/AIDS in Pelotas, Rio Grande do Sul State, Brazil (SAS-Pelotas), from December 2011 to June 2012 (N = 625), according to social relationships, environmental and spirituality/religiousness/personal beliefs domains.

	Social relationships			Environmental			Spirituality/Religiousness/Personal Beliefs		
	r	95%CI	p-value	r	95%CI	p-value	r	95%CI	p-value
Gender	-	-	-	-0.11	-0.53; 0.31	0.615	-0.89	-1.47; -0.31	0.003
Skin color	-	-	-	0.05	-0.39; 0.50	0.811	-0.20	-0.85; 0.45	0.544
Age	0.52	0.21; 0.83	0.001	0.45	0.20; 0.70	0.000	0.91	0.56; 1.26	0.000
Education	0.04	-0.39; 0.48	0.855	0.34	-0.01; 0.69	0.055	0.27	-0.22; 0.76	0.286
Employment	1.06	0.53; 1.59	0.000	0.48	0.06; 0.90	0.026	0.40	-0.20; 1.01	0.194
Socioeconomic status	0.72	0.31; 1.14	0.001	1.27	0.91; 1.63	0.000	0.74	0.27; 1.20	0.002
Partnership	0.75	0.23; 1.27	0.005	0.45	0.03; 0.87	0.034	-	-	-
Children	-	-	-	-0.33	-0.82; 0.17	0.196	-	-	-
Religion	-	-	-	0.02	-0.38; 0.42	0.929	-0.11	-0.73; 0.52	0.740
Route of infection	-	-	-	-	-	-	0.15	-0.21; 0.51	0.414
Indicative of anxiety	-1.27	-1.79; -0.75	0.000	-1.25	-1.65; -0.86	0.000	-2.66	-3.28; -2.04	0.000
Indicative of depression	-2.11	-2.67; -1.55	0.000	-1.94	-2.37; -1.51	0.000	-1.42	-2.08; -0.76	0.000
Tobacco	0.22	-0.25; 0.68	0.358	-0.11	-0.47; 0.25	0.543	-0.37	-0.92; 0.17	0.177
Alcohol	-	-	-	-	-	-	-0.46	-1.02; 0.11	0.113
Other substances	-0.60	-1.21; 0.02	0.057	-0.57	-1.05; -0.10	0.018	-0.18	-0.96; 0.60	0.643
Social support	1.65	1.05; 2.25	0.000	0.94	0.48; 1.40	0.000	1.12	0.42; 1.83	0.002
Time since diagnosis	-	-	-	-	-	-	-	-	-
Antiretroviral medication	-	-	-	0.62	0.11; 1.12	0.018	-	-	-
Lipodystrophy	-0.09	-0.66; 0.48	0.748	-0.19	-0.62; 0.24	0.387	-0.53	-1.10; 0.05	0.071
Comorbidities	-0.14	-0.69; 0.41	0.618	-0.11	-0.51; 0.29	0.583	-	-	-
HIV related hospitalizations	0.22	-0.36; 0.80	0.450	-0.44	-0.87; -0.02	0.041	-	-	-
Clinical stage of infection	-	-	-	-	-	-	-	-	-
T-CD4+ cell count	0.26	-0.28; 0.80	0.338	-0.15	-0.68; 0.37	0.571	-	-	-
Viral load	-	-	-	-0.09	-0.64; 0.46	0.741	0.004	-0.60; 0.69	0.893

95%CI: 95% confidence interval.

The literature shows a trend of considering the existence of a stable relationship as a likely source of social support for people living with HIV/AIDS [30]. Due to the inclusion of questions about social support and marital status in our instrument our results showed differences between partnership and social support in the impact of quality of life, with a potential positive effect for social support regardless of maintaining a stable relationship.

Participants with low education levels with up to eight years of schooling, had lower quality of life scores in all domains, with the lowest score at the independence level domain, which assesses ability to work and daily activities, among other issues. Belak et al. [14] and Gaspar et al. [10] also found that higher education promotes better quality of life. Higher educational level often provides financial benefits and is directly related to employment and monthly income [10]. People who have higher education possibly are more integrated in society and may have a better social network of family and friends [31].

Unemployment was associated with poorer quality of life in most domains, with the exception of spirituality. Similar results were found by Pereira & Canavarro [13] and Razera et al. [9]. The worst results were found among unemployed participants in the independence level domain; the best results were found among employed participants in the social relationship domain, which assesses social inclusion. According to Gaspar et al. [10], being employed is a source of social structure, bringing positive feelings of usefulness for the individual. These results suggest that being employed can mean more than just financial benefits for these people [13].

Low socioeconomic status was directly related to lower scores in all domains, which persisted after the adjustment for other sociodemographic factors. A similar result was found by Zimpel & Fleck [8], using the WHOQOL-HIV instrument and the same socioeconomic classification as our study, and Gaspar et al. [10], using WHOQOL-HIV Bref. Both studies evaluated quality of life in Brazilian populations. Personal income is partly determined by prior educational qualification and professional status, and these factors are associated with better quality of life [32]. Moreover, income is a factor directly related to the conditions of health and functional capacity of the individual, and there is a relationship between low income and impaired health status [33].

Tostes et al. [34] had already written that the presence of mental symptoms is one of the factors that limit quality of life in people living with HIV/AIDS. Souza Junior et al. [35] found that depression and anxiety were more frequent in seropositive patients than in the general population. In the present study, signs of depression and anxiety were related to lower scores in all domains, even after controlling for other variables. Among all variables, the lowest scores were attributed to participants with signs of depression in the independence level domain. Other authors [13,36] found negative correlations between the presence of depressive symptoms and anxiety with quality of life. Reis et al. [37] highlighted that psychopathological symptoms negatively affect quality of life and adherence to antiretroviral treatment. Moreover, the literature reports that increased levels of stress and depression accelerate the deterioration of the immune system and disease progression [38].

When we evaluated the data on drug use, we did not find associations with tobacco or alcohol abuse or dependence, however addiction to other psychoactive substances was independently associated with lower scores in the physical, the independence level and the environment domains. The literature presents contradictory results [31,36,39,40] most likely due to the different classifications of the types of substances and different assessment instruments [41,42], thereby limiting comparisons between results. People who are addicted to any type of drug, legal or illegal, live with many health risks such as imprisonment, and this may interfere with health care [32].

Subjects with comorbidities and those who had a history of HIV related hospitalizations have lower quality of life scores in the environmental (hospitalizations), physical and independence level domains (hospitalizations and comorbidities). The presence of other symptoms and the use of a larger number of medication, with greater potential for side effects, may contribute to this result [30,43], creating a sense of dependency, affecting daily lives and limiting personal physical capacities.

The antiretroviral therapy that is currently available is able to significantly change the morbidity and mortality associated with HIV/AIDS [44]. In our sample, we found an independent relationship only with the environment domain, with the worst scores among participants who have never used the medication. It seems that patients feel more comfortable and secure while taking it, regaining a sense of well-being and hope for the future [36]. Nevertheless, several side effects have been strongly linked with antiretroviral therapy. Among them, lipodystrophy is one that is particularly worrying, because it is responsible for changes in body shape. Patients perceive these changes as visible marks that identify them as having HIV, which can impact their psychosocial well-being and self-esteem, affect daily activities, and adherence to treatment [45]. In this study, participants who reported body changes after the initiation of antiretroviral therapy had significantly worse scores in the physical, psychological and independence level domains in the adjusted analysis.

Concerning the CD4+ count, we found an independent relationship with the physical and independence level domains, with the worst scores among participants with CD4+ cells ≤ 350. The quality of life studies with people living with HIV/AIDS used different cutoff points for CD4+, most likely in accordance with the current guidelines at the time the study was conducted. Nevertheless all studies show that the lower the CD4+ count, the poorer the quality of life [30,40]. It is within reason to think that patients with low CD4+ counts experience a negative effect on their quality of life because they are more prone to disease symptoms, opportunistic infections and are likely to use more medication [26,30].

It is important to highlight that only the most recent test result of CD4+ within the last six months preceding the interview was used for our analysis. Therefore, it is possible that the association between the CD4+ count and the quality of life refer to different time periods, as the assessment tool used (WHOQOL-HIV Bref) focuses on the past two weeks.

One limitation of this study is that the cross-sectional design does not allow conclusions about the causality between quality of life and socio-demographic and clinical variables. In addition, there could have been an under-representation of people with a history of addiction, as this population is less likely to be receiving medical care due to the stigma associated with drug use. ASSIST, a screening tool that has been validated and adapted for the Brazilian population, was used to measure this variable. In relation to the clinical stage of infection, the HIV/AIDS guidelines in force at the time of data collection were followed. However, the categorization used was notified at some time during the infection, which cannot take into account the current clinical stage of the participant. The sample selection must be considered when interpreting our findings. Samples selected from the university reference services, as in our study, tend to recruit people in better living conditions and health, and may consequently overestimate quality of life scores. One can expect lower scores for excluded populations and services with fewer resources [11]. As the SAS-Pelotas is the only treatment and medication dispensation center for people living with HIV/AIDS in the city, it is unlikely that this factor has significantly influenced our results.

It was observed that some clinical and socio-demographic characteristics were independently associated with poorer quality of life in different domains. It is important to emphasize that the co-occurrence of these factors may accentuate the poorer results found for quality of life.

Conclusions

Quality of life in this sample of people living with HIV/AIDS was influenced by factors beyond the physical and biological domains and was related directly to economic and social issues. Thus, an interdisciplinary assessment of this population is needed. Socio-demographic and lifestyle data should be considered in physical and clinical assessments given its strong association with the domains of quality of life in people living with HIV/AIDS.

Based on these results, we suggest that health care policies for this population should include programs that promote: (a) access to education; (b) reintegration into the labor market; and (c) other actions that aid financial independence. Employment, beyond its purpose as a source of funding, helps to minimize the stress related to HIV infection, provides opportunities for socialization and serves to improve quality of life.

In addition, the present study emphasizes the importance of social and emotional support in the context of HIV infection. Regardless of the source of this support, it is possible that these patients face the disease with less psychological distress and greater adherence to follow-up programs. The identification and effective management of psychopathological symptoms and abuse of or dependence on illicit drugs are essential in people living with HIV/AIDS due to their significant impact on quality of life. It is strongly recommended that instruments that are easy to apply for this purpose should be included in the clinical interview.

Physicians and health professionals assisting this population should be aware of the factors that affect the quality of life of people living with HIV/AIDS, and the assessment of quality of life must be added to the physical and clinical evaluation of these patients. Living better it is not merely living longer.

Resumen

Este estudio transversal evaluó la calidad de vida y sus factores asociados en personas que viven con el VIH/SIDA, en un centro de referencia regional para el tratamiento del VIH/SIDA en el sur de Brasil. Se utilizó WHOQOL-BREF VIH, ASSIST 2.0, HAD Scale, y se aplicó un cuestionario para evaluar a 625 participantes sobre calidad de vida, características clínicas y sociodemográficas, uso de drogas, depresión y ansiedad. El análisis multivariado se realizó mediante regresión lineal. Una peor calidad de vida se asoció con el sexo femenino, una edad (< 47 años), bajo nivel de educación, nivel socioeconómico bajo, desempleo, no tener una relación estable, indicativo de ansiedad y depresión, abuso o dependencia de sustancias psicoactivas, falta de apoyo social percibido, nunca tomar medicación antirretroviral, lipodistrofia, comorbilidades, hospitalizaciones relacionadas con el VIH y un recuento de CD4+ < 350 células. Los factores psicosociales deben ser incluidos en la evaluación física y clínica, debido a su fuerte asociación con los dominios de calidad de vida.

Calidad de Vida; VIH; Síndrome de Inmunodeficiencia Adquirida

Contributors

S. M. K. Passos and L. D. M. Souza contributed to the conception and design of the study, the acquisition, analysis, and interpretation of data; they participated in the drafting of the article and revised it critically for important intellectual content and approved the version to be published. Both authors agreed to be accountable for all aspects of the study in ensuring that questions related to the accuracy or integrity of any part of the study are appropriately investigated and resolved.

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