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Factors associated with quality of life in middle-aged and older patients living with HIV

Fabiana Monteiro, Maria Cristina Canavarro and Marco Pereira

Faculty of Psychology and Educational Sciences, University of Coimbra, Coimbra, Portugal

ABSTRACT

HIV infection has been historically considered a disease of young adults; however, adults aged 50 years and older represent now an increasing proportion of HIV cases worldwide, including in Portugal. In this context, given the considerable burden associated with living with HIV, the topic of quality-of-life (QoL) assessment has become increasingly relevant. The aims of this study were to examine the age-related differences in QoL and depressive symptoms of younger and middle-aged and older adults with HIV as well as the sociodemographic, HIV-related and depressive symptoms (cognitive-affective and somatic) associated with QoL domains. The sample consisted of 1194 HIV-infected patients, recruited from 10 Portuguese hospitals. QoL data were collected using the WHOQOL-HIV-Bref questionnaire. Patients also completed the Beck Depression Inventory. Of the 1194 patients, 185 (15.5%) were over 50 years old. Middle-aged and older patients reported significantly lower QoL in the physical, independence and social relationships domains. Regarding the specific facets of QoL, middle-aged and older patients reported significantly lower scores in seven of the 29 specific facets of the WHOQOL-HIV-Bref and higher scores in one facet (financial resources). Overall, among middle-aged and older patients, higher education, being employed, a shorter time since HIV diagnosis, use of combination anti-retroviral therapy and fewer depressive symptoms were significantly associated with higher QoL ratings. Our findings suggest that both cognitive-affective and somatic depressive symptoms account for significant variability in QoL scores in middle-aged and older patients. Because an important feature of healthy ageing is maintaining QoL, these data may provide useful information for tailoring age-appropriate and effective interventions to improve the mental health and QoL of middle-aged and older patients living with HIV.

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Depressive symptoms; HIV; middle-aged and older adults; quality of life

Introduction

In recent years, HIV infection among adults aged 50 years and older has grown steadily worldwide as well as in Portugal. The increasing of HIV cases in this age-group is largely due to the success of combination anti-retroviral therapy (cART), along with the evidence of a growing incidence of newly diagnosed infections in older individuals (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2014). This is particularly relevant as the ageing of the HIV population is leading to increasing costs in health care (Krentz & Gill, 2015). Despite the increasing numbers, the literature is scarce on the quality of life (QoL) of middle-aged and older (hereafter older for short) people living with HIV/AIDS (PLWHA), as most research focused largely on younger samples. There is evidence of age-related differences in the QoL of PLWHA, with studies indicating that QoL is decreased in higher age groups (McGowan et al., 2014), mostly in the domain of physical functioning (Nokes et al., 2000; WHOQOL-HIV Group, 2004). Other studies, however, found lower QoL among younger adults (Skevington, 2012) or did not report differences between younger and older PLWHA (Nokes et al., 2011; Tran, 2012). The use of different cut-offs for defining age groups may have contributed to these mixed findings. Additionally, only few studies have considered the age 50 as the cut-off between younger and older adults.

Although research has widely examined the association between sociodemographic, HIV-related, psychological factors and QoL of PLWHA, to our knowledge, this association has not been examined among older PLWHA. For sociodemographic and HIV-related factors, the existing research was not entirely consistent (for a review, Degroote, Vogelaers, & Vandijck, 2014). Regarding psychological factors, depressive symptoms are particularly relevant for older PLWHA (Emlet, 2014). There is evidence that older adults are less likely to endorse cognitive-affective depressive symptoms

CONTACT Marco Pereira marcopereira@fpce.uc.pt

than younger adults (Gallo, Anthony, & Muthén, 1994). Additionally, sleep disturbance, fatigue, subjective complaints of poor memory and concentration may be more prevalent in late life depression than in depression in younger adults (Christensen et al., 1999). However, there is a lack of studies examining if the association between depressive symptoms and QoL differs according to different subsets of depressive symptoms.

The aims of this study were to examine the age-related differences in QoL and depressive symptoms (cognitive-affective and somatic) by comparing patients aged 50 years and older with a younger group of PLWHA, and to examine the association between sociodemographic, HIV-related, and depressive symptoms and different QoL domains of older PLWHA.

Methods

Participants and procedure

The sample of this prospective study comprised 1194 patients attending the main departments of infectious diseases of 10 Portuguese hospitals across the country. One hundred and eighty-five patients (15.5%) were aged 50 years and older (range: 50–81). The sample was recruited by convenience between September 2007 and July 2008. The recruitment procedures are presented with more detail elsewhere (Canavarro & Pereira, 2012). All participants provided written informed consent. Ethical approval was obtained from the Ethics Committee of all the institutions involved.

Measures

Quality of life was assessed with the WHOQOL-HIV-Bref (O'Connell & Skevington, 2012). This is a self-reported questionnaire comprising 31 items yielding a multidimensional profile across 6 domains, which cover 29 specific facets of 1 question each. One additional facet (two items) concerns global QoL and general health. Depressive symptoms were assessed with the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI covers 21 symptoms, both cognitive-affective (e.g., sadness and pessimism) and somatic (e.g., changes in appetite), which are scored from 0 (absence of a symptom) to 3 (intense severity of the symptom), yielding a total score ranging from 0 to 63. Sociodemographic and HIV-related data were obtained by self-report.

Data analysis

Data were analysed using the Statistical Package for Social Sciences (IBM SPSS, version 20.0). The main analyses were χ^2 analysis, Student's t-test, multivariate analysis of covariance (MANCOVA) and hierarchical multiple regression. Effects sizes were presented for all analyses (Cohen, 1992). A p-value of .05 was set as the significance cut-off point.

Results

Participants' characteristics

The sample comprised 1194 participants with a mean age of 40.74 years (range: 18–81). Overall, older PLWHA were more likely to be married/cohabiting or retired, unemployed or not currently working, less educated, more recently diagnosed with HIV, and to report HIV transmission through sexual contact (Table 1).

QoL and depressive symptoms

Regarding QoL, there was a significant multivariate effect (Wilks' $\lambda = .99$, $F(7, 1148) = 2.20$, $p = .032$, $\eta_p^2 = .013$). Older PLWHA reported significantly lower scores in the physical, independence and social relationships domains than their younger counterparts (Table 2). Concerning the specific facets, younger PLWHA reported significantly better QoL in seven facets, and older PLWHA showed significantly higher scores in one facet (financial resources) (Table 3). Regarding depressive symptoms, the results indicated a significant effect (Wilks' $\lambda = .98$, $F(2, 1153) = 14.67$, $p < .001$, $\eta_p^2 = .025$). Older patients reported significantly more somatic symptoms than younger PLWHA (Table 2).

Factors associated with QoL domains

Having fewer cognitive-affective depressive symptoms was significantly associated with increased QoL in all domains. Higher scores on the physical and independence domains were significantly associated with having fewer somatic depressive symptoms. Additionally, having a higher level of education, being employed and being on cART were positively associated with QoL. The complete models are presented in Table 4.

Discussion

The main findings indicate that older adults report lower QoL than younger PLWHA. The differences are most marked in the physical, independence and social relationships domains. Additionally, older patients

Table 1. Sociodemographic and HIV-related characteristics of participants listed in percent.

	Total ($N = 1194$)	< 50 years ($n = 1009$)	≥50 years ($n = 185$)	<50 years vs. ≥50 years p[a]	Cramer's V
Gender				.442	.02
Male	67.5	68.0	64.9		
Female	32.5	32.0	35.1	0.226	
Marital status				<.001	.27
Single	44.5	49.9	15.1		
Married/co-habiting	33.5	30.3	50.8		
Separated/divorced	18.1	16.9	24.3		
Widowed	4.0	2.9	9.7		
Employment status				.008	.08
Employed	50.2	51.8	41.1		
Not currently working	49.8	48.2	58.9		
Mode of transmission				<.001	.25
Sexual intercourse with man	35.0	34.5	38.0		
Sexual intercourse with woman	27.2	24.2	43.5		
IV Drug use	32.4	36.9	8.2		
Blood products	3.0	2.2	7.1		
Unknown	2.4	2.2	3.3		
HIV stage				.088	.07
Asymptomatic	61.5	60.9	64.7		
Symptomatic	12.7	12.0	16.3		
AIDS	20.4	21.4	14.7		
Unknown	5.5	5.7	4.3		
CD4+ T cell count				.667	.03
<200 cells/mm^3	23.5	24.0	20.9		
201 and 499 cells/mm^3	41.9	41.5	44.2		
>500 cells/mm^3	34.6	34.5	35.0		
cART				.112	.05
Yes	75.5	76.4	70.6		
No	24.5	23.6	29.4		
Other co-infections				<.001	.15
Yes	28.1	31.0	11.9		
No	71.9	69.0	88.1		
	M (SD)	M (SD)	M (SD)	P[b]	Cohen's d
Age (years)	40.74 (9.69)	37.60 (6.26)	57.84 (6.79)	–	–
Education (years)	7.89 (4.11)	8.08 (3.99)	6.80 (4.58)	<.001	0.30
Time since HIV diagnosis (years)	8.06 (5.18)	8.37 (5.11)	6.34 (5.20)	<.001	0.39

[a]χ^2 analysis.
[b]Student's t-test.

show significantly lower scores in seven facets of the WHOQOL-HIV-Bref, particularly in pain and discomfort, energy and fatigue, activities of daily living, dependence on medication and treatments, and sexual activity. The lower scores in pain and discomfort and energy and fatigue in the older group are consistent with earlier findings (Nokes et al., 2000), and the increased prevalence of comorbid conditions associated with the ageing process may account for this greater decline in physical functioning, as also noted among older PLWHA (Oursler et al.,

Table 2. Descriptive statistics on QoL domains and depressive symptoms (adjusted for covariates).[a]

	<50 years ($n = 1009$) M (95% CI)	≥50 years ($n = 185$) M (95% CI)	F	η_p^2
Quality of life[b]				
Physical	63.90 (62.58–65.22)	58.85 (55.67–62.04)	8.04**	.007
Psychological	59.99 (58.82–61.16)	57.73 (54.90–60.55)	2.07	.002
Level of independence	65.19 (63.88–66.49)	60.66 (57.51–63.81)	6.63*	.006
Social relationships	61.27 (60.03–62.51)	57.55 (54.57–60.59)	4.84*	.004
Environment	56.49 (55.58–57.39)	56.21 (54.03–58.38)	0.05	.000
Spirituality	59.62 (58.22–61.02)	58.32 (54.95–61.69)	0.48	.000
Overall QoL	53.54 (52.30–54.77)	51.63 (48.64–54.62)	1.31	.001
Depressive symptoms				
Depression – cognitive	8.25 (7.78–8.72)	7.89 (6.75–9.03)	0.32	.000
Depression – somatic	5.77 (5.48–6.06)	7.05 (6.36–7.75)	10.90**	.009

[a]Multivariate analysis of variance (MANOVA) adjusted for education, marital status, employment status, mode of HIV transmission, time since HIV diagnosis and presence of other co-infections.
[b]A higher score corresponds to a better QoL.
*$p < .05$
**$p < .01$.

Table 3. Descriptive statistics on specific facets of the WHOQOL-HIV-Bref (adjusted for covariates).[a]

	<50 years (n = 1009) M (95% CI)	≥50 years (n = 185) M (95% CI)	F	η_p^2
Domain 1 – physical				
Pain and discomfort	3.97 (3.89–4.04)	3.69 (3.52–3.87)	7.69*	.007
Energy and fatigue	3.38 (3.32–3.44)	3.17 (3.02–3.32)	6.53*	.006
Sleep and rest	3.21 (3.13–3.28)	3.08 (2.90–3.26)	1.46	.001
Symptoms of PLWHAs[b,c]	3.67 (3.59–3.75)	3.47 (3.27–3.67)	3.28	.003
Domain 2 – psychological				
Positive feelings	3.80 (3.74–3.86)	3.67 (3.52–3.83)	2.30	.002
Cognitions	3.26 (3.20–3.32)	3.29 (3.15–3.44)	0.19	.000
Body image and appearance	3.56 (3.49–3.63)	3.34 (3.18–3.51)	5.84*	.005
Self-esteem	3.46 (3.39–3.52)	3.31 (3.14–3.47)	2.68	.002
Negative feelings	2.92 (2.86–2.99)	2.93 (2.77–3.09)	0.01	.000
Domain 3 – level of independence				
Mobility	3.83 (3.77–3.89)	3.58 (3.42–3.73)	8.90**	.008
Activities of daily living	3.51 (3.44–3.57)	3.33 (3.18–3.48)	4.47*	.004
Dependence on medication or treatment	3.75 (3.67–3.83)	3.53 (3.33–3.72)	4.47*	.004
Work capacity	3.35 (3.28–3.41)	3.29 (3.12–3.43)	0.61	.001
Domain 4 – social relationships				
Personal relationships	3.56 (3.50–3.62)	3.43 (3.28–3.58)	2.33	.002
Social support	3.50 (3.44–3.56)	3.43 (3.28–3.58)	0.71	.001
Sexual activity	3.11 (3.04–3.18)	2.74 (2.57–2.90)	16.18***	.014
Social inclusion[b]	3.63 (3.57–3.70)	3.62 (3.47–3.77)	0.03	.000
Domain 5 – environment				
Physical safety and security	3.24 (3.18–3.30)	3.24 (3.10–3.38)	0.00	.000
Home environment	3.55 (3.49–3.62)	3.54 (3.39–3.69)	0.02	.000
Health and social care	3.67 (3.61–3.73)	3.60 (3.46–3.75)	0.63	.000
Financial resources	2.44 (2.38–2.51)	2.67 (2.52–2.81)	7.32**	.006
New information or skills	3.33 (3.27–3.39)	3.22 (3.08–3.36)	2.04	.002
Recreation and leisure	2.89 (2.82–2.95)	2.85 (2.69–3.01)	0.14	.000
Physical environments	3.37 (3.32–3.43)	3.34 (3.21–3.47)	0.18	.000
Transport	3.58 (3.53–3.64)	3.53 (3.38–3.67)	0.52	.000
Domain 6 – spirituality				
Spirituality, Religion, Personal beliefs	3.55 (3.49–3.62)	3.43 (3.27–3.59)	1.67	.002
Forgiveness[b]	3.65 (3.57–3.74)	3.65 (3.44–3.85)	0.08	.000
Fear of the future[b]	2.97 (2.88–3.05)	2.95 (2.75–3.15)	0.16	.000
Death and dying[b]	3.36 (3.27–3.46)	3.31 (3.09–3.52)	0.40	.000

[a]Multivariate analysis of variance (MANOVA) adjusted for education, marital status, employment status, mode of HIV transmission, time since HIV diagnosis and presence of other co-infections.
[b]Items from the HIV module.
[c]PLWHA: People living with HIV/AIDS.
*$p < .05$.
**$p < .01$.
***$p < .001$.

2006). The poorer independence QoL may also reflect the presence of these potentially disabling symptoms. The lower scores for dependence on medication and treatments are also consistent with the reported association between older age and more medical comorbidities, as well as greater prescription of HIV and non-HIV-

Table 4. Hierarchical multiple regression analysis of the variables associated with QoL domains among middle-aged and older patients.

	Physical β (p)	Psychological β (p)	Independence β (p)	Social relationships β (p)	Environment β (p)	Spirituality β (p)
Gender	.06 (.456)	.07 (.387)	−.06 (.431)	−.01 (.927)	.10 (.211)	.10 (.222)
Marital status	.00 (.986)	.11 (.171)	.04 (.607)	.14 (.091)	.14 (.080)	.17 (.041)
Education (years)	.10 (.285)	.21 (.015)	.17 (.045)	.06 (.469)	.16 (.057)	.12 (.163)
Employment	.07 (.441)	.09 (.280)	.12 (.172)	.17 (.049)	.18 (.033)	.06 (.518)
Mode of transmission	−.09 (.316)	−.08 (.335)	−.05 (.542)	−.01 (.878)	−.05 (.530)	−.07 (.419)
Time since HIV diagnosis (years)	−.15 (.095)	−.15 (.074)	−.13 (.124)	−.13 (.137)	−.09 (.302)	−.12 (.169)
HIV stage	−.09 (.341)	−.02 (.795)	−.15 (.078)	.06 (.459)	.05 (.542)	.01 (.876)
CD4+ T cell count (cells/mm^3)	.09 (.318)	.05 (.562)	.09 (.294)	.11 (.203)	.03 (.707)	−.01 (.879)
cART	.12 (.202)	.20 (.025)	.25 (.005)	.17 (.054)	.16 (.061)	.10 (.285)
Other co-infections	.07 (.438)	.16 (.051)	.11 (.174)	.17 (.041)	−.04 (.668)	.14 (.095)
	R^2 = .075	R^2 = .145	R^2 = .155	R^2 = .127	R^2 = .150	R^2 = .093
Cognitive-affective depressive symptoms	−.28 (.006)	−.60 (<.001)	−.40 (<.001)	−.48 (<.001)	−.43 (<.001)	−.37 (<.001)
Somatic depressive symptoms	−.33 (.002)	−.05 (.601)	−.20 (.041)	−.16 (.097)	−.15 (.117)	−.14 (.211)
	ΔR^2 = .283	ΔR^2 = .377	ΔR^2 = .289	ΔR^2 = .340	ΔR^2 = .276	ΔR^2 = .211

Notes: Gender [0 = Female; 1 = Male]; Marital status [0 = Living alone; 1 = Living with partner]; Employment status [0 = Unemployed or not currently working; 1 = Employed]; HIV stage [0 = Asymptomatic; 1 = Symptomatic/AIDS]; Mode of transmission [0 = Sexual; 1 = Other]; cART [0 = No; 1 = Yes]; Other co-infections [0 = No; 1 = Yes].

related medications, which results in frequent polypharmacy among these individuals (Edelman et al., 2013; Rodriguez-Penney et al., 2013). The lower scores in social relationships seem mostly associated with the lower scores of the facet sexual activity. It has been shown that the prevalence of sexual activity/functioning decreases with ageing (Lindau et al., 2007), which also seems to be the case for patients with HIV (Önen, Shacham, Stamm, & Overton, 2010; Taylor et al., 2015).

This study shows that somatic depressive symptoms are significantly higher among older PLWHA, and significantly associated with reduced physical and independence QoL. Studies have shown that higher rates of somatic symptoms such as fatigue, sleep disturbance or memory complaints are prevalent in older adults (Christensen et al., 1999; Goulia et al., 2012), which underline the importance of considering a differentiated screening process for depressive symptoms in younger and older PLWHA. The cognitive-affective depressive symptoms were the strongest and most consistent factor associated with reduced QoL. A possible explanation may be the well-known psychosocial burden of living with HIV and the associated stigma, which play an important role in the development of depressive symptomatology (Rueda, Law, & Rourke, 2014). These findings reinforce the widely documented link between depressive symptoms and reduced QoL among PLHWA (Hasanah, Zaliha, & Mahiran, 2011; Zimpel & Fleck, 2014) and emphasise the importance of an effective and timely detection of depressive symptoms. This is of major relevance, mostly because depressive symptoms may result in negative consequences, such as reduced compliance with cART (Gonzalez, Batchelder, Psaros, & Safren, 2011). Additionally, higher education was associated with higher psychological and independence QoL, whereas being employed was related to higher scores in the social relationships and environment domains. The association between socio-economic variables and QoL is well documented (Degroote et al., 2013; Rueda et al., 2011; da Silva, Bunn, Bertoni, Neves, & Traebert, 2013) and suggests that socio-economic variables are also relevant for higher age groups. Being on cART was associated with higher psychological and independence QoL. Despite the presence of more comorbidities and a higher likelihood of polypharmacy, there is evidence that older adults have a reduced risk of non-adherence to cART when compared to younger adults (Ghidei et al., 2013). These findings may indicate that older PLWHA are more motivated to receive treatment and adhere more consistently to cART, which ultimately is reflected in better QoL outcomes.

Some limitations should be noted. The cross-sectional design and the non-probability sampling require caution in interpreting and generalising these findings to the HIV population. This study consisted of a re-analysis of data from a wider project. Specific variables related to older PLWHA (e.g., number and type of medical comorbidities), which were not collected, may have explained additional variance in QoL. Finally, the sample comprised a relevant proportion of middle-aged PLWHA rather than the elderly (65 years and older, as conventionally defined by the WHO; in this study, 15.1% of patients were above 65 years). Future studies with larger subgroups of the older HIV population, including stratification by gender, are warranted. Additionally, because this analysis was beyond the scope of this study, it would be valuable to examine which factors are consistently associated with QoL in different age groups.

Despite these limitations, this study contributes to substantiating the literature on QoL among PLWHA, particularly in higher age groups, and highlights the importance of considering age-appropriate interventions that meet the unique characteristics and needs of older PLWHA. This study also reinforces the importance of increasing the awareness of the different forms in which depression may present. Because many of the somatic symptoms can overlap with HIV (Kalichman, Rompa, & Cage, 2000), it will be fundamental to clarify whether these are somatic symptoms of depression or symptoms caused by HIV or its treatments. Accordingly, it will be possible to ensure that timely and appropriate mental health interventions can be provided. To maximise the well-being of PLWHA, individual differences should be accounted for and age stereotypes should be precluded (e.g., stereotypes of older adults as sexually inactive). Future research that specifically focuses on the older population is also crucial to understand how policies and interventions should specifically address older PLWHA.

Disclosure statement

No potential conflict of interest was reported by the authors.

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ORCID

Marco Pereira http://orcid.org/0000-0002-6086-2329

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