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Nobre, N., Pereira, M., Roine, R. P., Sintonen, H., & Sutinen, J. (2017). Factors associated with the quality of life of people living with HIV/AIDS in Finland. *AIDS Care*, 29(8), 1074-1078. doi:10.1080/09540121.2017.1281879

## **Abstract**

In recent years, the concept of quality of life (QoL) has received significant attention in the HIV/AIDS literature. In Finland, however, the factors associated with the QoL of people living with HIV/AIDS (PLWHA) still remain unknown. The aim of this study was to identify the sociodemographic and HIV-related factors associated with the different domains of QoL of PLWHA in Finland. The sample of this cross-sectional study consisted of 453 HIV-infected patients (Mean age = 46.5 years; 76.5% male) followed at the Infectious Disease Clinic of Helsinki University Hospital. Participants completed a self-reported questionnaire covering sociodemographic and HIV-related information, and the Finnish version of the WHOQOL-HIV-Bref questionnaire. Participants reported rather high scores in the six QoL domains, which ranged between 68.48 (Social relationships) and 78.05 (Environment) on a 0-100 scale. Multiple regression analyses revealed that male gender, being married or living in a partnered relationship, being employed, having fewer financial concerns, and not having depression and other medical comorbidities were the main factors positively and consistently associated with higher scores in the different domains of the QoL. HIV-related variables were not significantly associated with QoL ratings. Sociodemographic factors were independently associated with the QoL of PLWHA in Finland. Psychosocial support should reflect these factors in order to improve the health status and well-being of PLWHA.

**Keywords:** HIV/AIDS; Quality of life; WHOQOL-HIV-Bref

## **Introduction**

Assessment of quality of life (QoL) has become increasingly important in general health care, as well as among people living with HIV/AIDS (PLWHA; Drewes, Gusy, & Ruden, 2013). Although effective antiretroviral therapy has converted HIV infection into a chronic disease, several studies still indicate a reduced QoL in PLWHA, particularly when compared with the general population (Miners et al., 2014).

A wide range of sociodemographic, HIV-related, and psychosocial factors may be associated with QoL impairment. For example, depression (Nanni, Caruso, Mitchell, Meggiolaro, & Grassi, 2015), financial problems (Ballester-Arnal et al., 2016), and stigma and discrimination (Breet, Kagee, & Seedat, 2014) are common among PLWHA. Regarding sociodemographic and HIV-related factors, overall, studies have found inconsistent associations between these factors and the QoL of PLWHA (for a review see Degroote, Vogelaers, & Vandijck, 2014). These associations among populations with HIV are relevant for health policies, resource allocation and, ultimately, for improvement of patients' everyday functioning and QoL.

By the end of 2015, Finland had registered 3518 of cases of HIV infection (National Institute for Health and Welfare [THL], 2015). Of these, 40.3% of patients acquired HIV through heterosexual contact, 31.7% through homosexual/bisexual contact, and 11% through intravenous drug use. Finland represents a typical Nordic country with a low HIV prevalence (an estimated 0.1%). Medical care for HIV-infected patients is provided at Infectious Disease clinics of tertiary care hospitals, with clinic visits and HIV-related medication free of charge. Clinics can also assist with social-welfare issues. Third sector organizations provide peer-support and psychological help. In this setting, factors associated with QoL may differ from those identified in previous research. Because the factors associated with QoL of PLWHA in Finland, to our knowledge, remain unclear, in this study we examined the sociodemographic and HIV-related factors associated with QoL domains of PLWHA in Finland.

## **Methods**

### **Participants and procedures**

Participants were recruited during their appointments at the Infectious Disease Clinic of the Helsinki University Hospital, in HIV/AIDS support groups (HIV Finland and The Finnish AIDS Council) and at the Helsinki Deaconess Institute. The sample was consecutively recruited from June 2013 to October 2014. Of the 550 participants enrolled, 14 refused to participate, and 83 did not return the questionnaires (completion rate = 82.4%). Those who agreed to participate but failed to return completed questionnaires, were reminded once during their next appointment. Before recruitment, participants received a written explanation of the study. Prior to completing the set of questionnaires, all participants provided their written informed consent. All institutions involved provided their ethical approval.

## **Measures**

### *Sociodemographic and HIV-related variables*

Sociodemographic data (e.g., age, sex, education) were self-reported and clinical data (e.g., HIV stage, CD4+ T-cell count) were gathered from participants' medical records. Financial concerns were assessed with the question: "To what extent has HIV caused you financial difficulties?" rated on a 5-point scale from 1 (*not at all*) to 5 (*very much*).

### *Quality of life*

The WHOQOL-HIV-Bref is a 31-item self-report questionnaire yielding a multidimensional profile of QoL across six domains and 29 specific facets (O'Connell & Skevington, 2012). One additional facet (2 questions) pertains to global QoL and general health. Items are answered on a 5-point response scale, with 1 indicating low perception and 5 indicating high perception of QoL. In this sample, Cronbach's alpha of the QoL domains ranged from 0.64 (Spirituality) to 0.84 (Psychological).

## **Data analysis**

Data were analysed with the Statistical Package for Social Sciences (IBM SPSS, version 22.0). Multiple regression analyses were computed to identify factors associated with QoL domains and the general facet. All variables were checked for multicollinearity, assessed by tolerances, variance inflation factors (VIF), and the condition index (CI). A  $p$ -value  $< .05$  was set as the significance cut-off.

## **Results**

### **Participants' characteristics**

The study sample comprised 453 HIV-infected patients. Overall, most participants were male (76.3%), employed (63.6%), married or living in a partnered relationship (46.5%), asymptomatic (72.1%), had been diagnosed with HIV on average for 10.6 years, reported HIV acquisition through sexual contact (87.3%), and were on combination antiretroviral therapy (cART; 94.9%). Depression was reported by 14.1% of participants and other medical comorbidities were reported by 44.5% of participants. Most participants rated their QoL as good (56.3%) (Table 1).

INSERT\_TABLE\_1

Overall, scores in the QoL domains (range 0-100) were rather high, ranging from 68.48 (Social relationships) to 78.05 (Environment) (Table 2).

INSERT\_TABLE\_2

### **Multivariable regression analysis**

Multiple regression analyses identified factors associated with QoL domains and the general facet on QoL and health. Overall, being male, being married or living in a partnered relationship, being employed, reporting fewer financial concerns, and not having depression or other comorbidities were consistently associated with higher QoL. The explained variances ranged from 11% (Spirituality) to 34% (Psychological). The complete models are presented in Table 3.

INSERT\_TABLE\_3

### **Discussion**

Our main findings indicate that being male, being married or living in a partnered relationship, being employed, having fewer financial concerns, having no depression nor other (medical) comorbidities, were the main factors associated with higher scores in the different QoL domains. Overall, no HIV-related variables were significantly associated with QoL.

Participants rated their QoL as good or very good (75.8%) and mean QoL domain scores were all above 68 (on a 0-100 scale). These scores are similar to the normative values of the Finnish population recently reported with the generic questionnaire WHOQOL-Bref (Siljander, Luoma, & Porras, 2015). This relatively high level of QoL may be explained by this sample's characteristics, such as higher education, high employment rate and living with a partner. Moreover, the fact that

most patients were on cART (94.9%) and had favourable virological markers may also have contributed to these higher QoL ratings.

Financial concerns were consistently associated with lower QoL. Disease-related financial problems and their impact on the decreased QoL are of frequent concern related to chronic health conditions (Golics, Basra, Salek, & Finaly, 2013), including HIV (Degroote et al., 2014; Nideröst & Imhof, 2016). In our sample, 65% of participants were employed, therefore having a source of income. Our results confirm the significance of the patients' financial situation also in a setting where HIV-related medical care is unaltered by income. Similar findings have been reported in other European countries, such as Spain (Ballester-Arnal et al., 2016) and Belgium (Degroote et al., 2013). The finding that being employed was associated with better QoL is unsurprising. Studies across multiple countries have shown similar findings among PLWHA (da Silva et al., 2013; Degroote et al., 2013; Pereira & Canavarro, 2011; Rueda et al., 2011; Rüütel et al., 2009). This association is probably bi-directional (Worthington & Krentz, 2005), i.e., being employed may be a facilitating factor in promoting social integration and better socioeconomic status, supporting therefore better opportunities in terms of protection, promotion, and maintenance of health and social environments (Calixto & Anaya 2014).

Although findings have been mixed, ours are consistent with those among PLWHA from various cultures, all indicating that men report better QoL than do women (Chandra et al., 2009; Pereira & Canavarro, 2011). These findings are noteworthy as they extend the importance of gender differences in QoL, also in a distinctively egalitarian society such as Finland (Miettinen, Lainiala, & Rotkirch, 2015). Our findings also indicate that living with a partner is associated with better QoL, as previously reported (Briongos Figuero et al., 2011; Degroote et al., 2013), particularly in the domain of social relationships (Pereira & Canavarro, 2011). This finding reinforces the importance of intimate relationships, which serve as a key source of social and emotional support, and therefore affect positively individuals' QoL (Han, Park, Kim, Kim, & Park, 2014).

Having depression and other medical comorbidities was consistently related to poorer QoL. The association between depression and poorer QoL is well-known (Bengtson et al., 2015; Pereira & Fialho, 2016; Zimpel & Fleck, 2014). Similarly, the burden posed by other medical comorbidities also

negatively impacts QoL (Rodriguez-Penney et al., 2013) and their social relationships (Hasse et al., 2011; Slater et al., 2013). These results are particularly relevant as the deleterious impact of comorbidities on QoL is likely to further increase in the ageing HIV population (Monteiro, Canavarro, & Pereira 2016). Accordingly, it would be fundamental to take these factors into consideration, particularly in decisions on treatment options and medication regimens (Rodriguez-Penney et al., 2013).

HIV-related clinical variables were not associated with QoL, contradicting previous evidence of a significant association between good clinical parameters and increased QoL (Degroote et al., 2014). Almost 95% of our participants were receiving cART and 63% had a CD4+ T-cell count > 500 cells/mm<sup>3</sup>. Hence, it is possible that in a stable patient population treated with modern cART, the significance of these HIV-related clinical variables may disappear.

This study is not without limitations. Because of its cross-sectional design, no causal relationships between variables are possible. Although approximately 60% of all PLWHA in Finland are followed at the Infectious Disease Clinic of Helsinki University Hospital, our findings may not be fully representative of HIV-positive people living outside the Helsinki metropolitan area. Additionally, because this study was conducted in low prevalence setting with free modern cART available, results are not necessarily generalizable to other settings. Finally, other variables such as type and duration of cART, concurrent medications, body mass index, HIV-stigma, clinical symptoms such as pain and cognitive function would be valuable to examine in future studies, as they may have an impact on QoL.

Despite these limitations, this study contributes to the literature on QoL among PLWHA living in a low-prevalence country with good treatment coverage and response. This study may also have implications for clinical practice. Knowledge of the diversity of factors associated with diminished QoL may allow the identification of patients at “higher-risk” of impaired QoL and provide a significant opportunity to improve their well-being. In situations involving these factors, their identification (particularly those amenable to change) may improve health professionals’ decision-making regarding treatment, and particularly to identify patients at risk for future frailty and disability in a timely manner, as well as those who may benefit from psychosocial interventions.

**Disclosure statement**

No potential conflict of interest was reported by the authors.

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Table 1. Sociodemographic and HIV-related characteristics of the sample ( $N = 453$ )

	Mean	SD	Range
Age, years	46.5	11.3	18-76
Nadir CD4+ T-cell count	262	155	2-1050
Last CD4+ T-cell count	606	262	34-1579
Time since diagnosis, years	10.6	7.1	0-31
	<i>n</i>		%
<b>Gender</b>			
Male	342		76.3
Female	106		23.7
<b>Nationality</b>			
Non-Finnish	67		14.9
Finnish	384		85.1
<b>Employment status</b>			
Employed	285		63.6
Student	19		4.2
Retired	85		19.0
Not currently working	59		13.2
<b>Education</b>			
≤ 9 years	73		16.3
> 9 years	375		83.7
<b>Marital status</b>			
Single	163		36.3
Married/co-habiting	209		46.5
Separated/divorced	69		15.4
Widowed	8		1.8
<b>Mode of transmission</b>			
Men having sex with men	244		54.6
Heterosexual sex	146		32.7
Intravenous drug use	29		6.5
Blood products	6		1.3
Others / unknown	22		4.9
<b>HIV stage</b>			
Asymptomatic	323		72.1
Symptomatic	54		12.1
AIDS	71		15.8

Last CD4+ T-cell count <sup>a</sup>		
< 200 cells/mm <sup>3</sup>	19	4.3
201-499 cells/mm <sup>3</sup>	147	32.9
> 500 cells/mm <sup>3</sup>	281	62.9
On cART		
Yes	424	94.9
No	23	5.1
Depression		
Yes	64	14.3
No	383	85.7
Other comorbidities <sup>b</sup>		
Yes	199	44.5
No	248	55.5
Self-reported quality of life		
Very poor	2	0.4
Poor	18	4.0
Neither good nor poor	89	19.7
Good	254	56.3
Very good	88	19.5

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Number of background variables does not total 453 due to missing values

<sup>a</sup> CD4 T-cell count was stratified into three groups based on clinically meaningful cut-off points: < 200 cells/mm<sup>3</sup>, 201-499 cells/mm<sup>3</sup>; and > 500 cells/mm<sup>3</sup> (Centres for Disease Control and Prevention [CDC], 1992).

<sup>b</sup> The most common comorbidities were hypertension (21.1%), hyperlipidemia (20.1%), insomnia (17.4%), hepatitis C (10.1%), asthma (6.5%) and diabetes (6.3%).

Table 2. Mean scores and percentiles for the six domains and general facet on global QoL and general health of the WHOQOL-HIV-Bref

Domains <sup>a</sup>			Percentile		
	Mean	SD	25th	50th	75th
Physical	75.90	17.18	62.5	81.25	87.50
Psychological	71.21	17.59	60.00	75.00	85.00
Level of independence	75.84	19.09	62.50	81.25	87.50
Social relationships	68.55	18.04	56.25	68.75	81.25
Environment	77.96	15.12	68.75	81.25	90.63
Spirituality	73.85	17.48	62.50	75.00	87.50
Overall QoL	70.79	19.00	62.50	75.00	87.50

<sup>a</sup> All domain scores reflect a 0 to 100 scale (higher scores correspond to better QoL).

Table 3. Hierarchical multiple regression analysis of the variables associated with QoL domains and general facet

	Physical	Psychological	Independence	Social relationships	Environment	Spirituality	Overall QoL
	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$	$\beta$
Age	.01	.07	.05	-.002	.06	.02	-.07
Gender	.11*	.09*	.11*	-.003	.12*	.13**	.07
Nationality	-.01	.05	-.03	-.03	.01	-.05	.04
Marital status	.11*	.17***	.06	.32***	.13**	.18***	.12**
Education	.01	-.01	.03	.03	.10*	-.05	-.04
Employment	.13**	.11*	.21***	.08	.15**	.05	.17**
Financial concerns	-.28***	-.24***	-.25***	-.12*	-.27***	-.14**	-.19***
Time since HIV diagnosis (years)	.03	-.04	-.01	-.05	.03	.03	.10*
Mode of transmission	-.05	-.05	-.06	.001	-.11*	-.03	.000
HIV stage	.06	.06	-.002	.02	-.02	.06	-.04
Nadir CD4+ T-cell count	.08	.04	.08	-.03	.02	.05	.03
Last CD4+ T-cell count	-.06	-.03	-.08	-.04	-.06	-.03	-.10*
cART	-.01	-.01	.004	-.002	-.03	.02	.10*
Depression	-.26***	-.31***	-.32***	-.11*	-.12*	-.20***	-.30***
Other comorbidities	-.11*	-.10*	-.16**	-.11*	-.05	-.11	-.14**
	Adj. $R^2 = .27$	Adj. $R^2 = .28$	Adj. $R^2 = .34$	Adj. $R^2 = .17$	Adj. $R^2 = .25$	Adj. $R^2 = .11$	Adj. $R^2 = .22$

*Note:* Gender [0 = Female; 1 = Male]; Ethnicity [0 = Finnish; 1 = Non-Finnish]; Marital status [0 = Living alone; 1 = Living with partner]; Education [0 =  $\leq 9$  years; 1 =  $> 9$  years]; Employment status [0 = Unemployed or not currently working; 1 = Employed]; Financial concerns [0 = having less financial (scores 1-2); 1 = having financial concerns (scores 3-5)]; Mode of transmission [0 = Sexual; 1 = Other]; HIV stage [0 = Asymptomatic; 1 = Symptomatic/AIDS]; cART [0 = No; 1 = Yes]; Depression [0 = No; 1 = Yes]; Other comorbidities [0 = No; 1 = Yes].