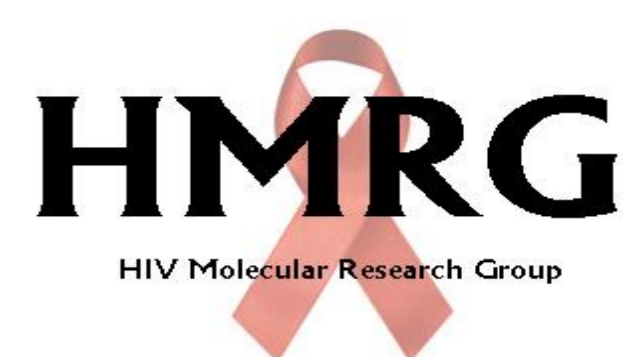




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Health-Related Quality of Life (HRQOL) assessment in a cohort of HIV-positive and HIV-negative subjects enrolled in the HIV UPBEAT Study



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Introduction

Health-Related Quality of Life (HRQOL) has previously been found to be impaired in people living with HIV (PLWH) and increasingly contributes to evolving policy around the management of PLWH.

We aimed to explore differences and predictors of HRQOL in HIV-positive and HIV-negative subjects.

Methods

HRQOL was prospectively assessed in the HIV UPBEAT Study (Understanding the Pathology of Bone Disease in HIV Infected Subjects), a prospective cohort of HIV-positive and HIV-negative subjects from similar demographic backgrounds, at study entry and weeks 48 and 96 using the Medical Outcomes Study HIV Health Survey (MOS-HIV).

Responses were summarized into overall HRQOL plus component summary scores for physical (PCS) and mental health (MCS) along with common sub-domains of the measures including physical functioning (PF), role physical (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role emotional (RE) and mental health (MH). MOS scores were scaled from 0 to 100 with higher scores indicating better health.

Socio-demographic, medical/clinical history, laboratory data and bone mineral density (BMD) assessments were obtained from the clinical database.

Statistical analysis:

- Descriptive MOS data are presented as mean±standard deviation
- Comparisons between groups were assessed using Mann-Whitney/Student's t test and Chi-square test (Fisher's exact test)
- Multivariable linear regression models were used to explore factors associated with HRQOL.

Results

Of 490 subjects, 449 (190 HIV-positive and 259 HIV-negative) who completed HRQOL assessments were included in the analysis. Baseline characteristics are shown in Table 1.

HIV-positive subjects had poorer socioeconomic status than HIV-negative subjects (48.1% lower than 3rd level education vs 31.6%, $p=0.001$, 70% with household income below a national average (€575/ week) vs 34 %, $p<0.0001$), were more likely to be current smokers (38% vs 16%, $p<0.0001$), IVDU (17% vs 0.4%, $p<0.0001$) and more likely to have had a previous fracture (52% vs 23%, $p<0.0001$) (Table 1.).

Table 1. Baseline characteristics

Variables N(%)	Total (n=449)	HIV-positive N=190	HIV-negative (N=259)	P
Age, median (IQR)*	40.4 (33.7, 47.5)	38.5 (33.4, 45.7)	41.9 (34.9, 48.8)	0.020
Gender				
Male, n(%)	225 (50.1)	112 (58.9)	113 (43.6)	0.002
Female, n(%)	224 (49.9)	78 (41.1)	146 (56.4)	
Ethnicity				
Caucasian, n(%)	294 (65.5)	106 (55.8)	188 (72.6)	<0.0001
African, n(%)	140 (31.2)	75 (39.5)	65 (25.1)	
Other, n(%)	15 (3.3)	9 (4.7)	6 (2.3)	
Education Level				
< 3 rd level, n(%)	168 (38.5)	88 (48.1)	80 (31.6)	0.001
> 3 rd level, n(%)	268 (61.5)	95 (51.9)	173 (68.4)	
Not stated, n(%)	13 (2.9)	7 (3.7)	6 (2.3)	
Income				
<€575 euros, n(%)	221 (49.2)	133 (70.0)	88 (33.9)	<0.0001
>€575 euros, n(%)	137 (31.2)	31 (16.3)	106 (41.4)	
Not stated, n(%)	91 (20.3)	26 (13.7)	65 (25.1)	
Current smoker, n(%)	113 (25.3)	72 (38.1)	41 (15.9)	<0.0001
Alcohol intake	303 (67.9)	106 (56.1)	197 (76.7)	0.001
IVDU, n (%)	33 (7.4)	32 (17)	1 (0.4)	<0.0001
BMI (kg/m ²)*	26 (24.0, 30.0)	26 (23.0, 30.0)	27 (24.6, 30.0)	0.019
25(OH)D (nmol/L)*	49.5 (33.0, 71.5)	49.0 (31.0, 72.5)	50 (36.0, 71.0)	0.571
PTH (pmol/L)*	5.5 (4.3, 7.3)	5.9 (4.3, 8.0)	5.4 (4.2, 6.9)	0.043
BMD_LS (g/cm ²)*	1.21 (1.10, 1.32)	1.17 (1.07, 1.3)	1.24 (1.13, 1.34)	0.001
BMD_FN (g/cm ²)*	1.04 (0.95, 1.14)	1.02 (0.92, 1.13)	1.06 (0.97, 1.16)	0.005
BMD_TH (g/cm ²)*	1.07 (0.98, 1.17)	1.04 (0.93, 1.14)	1.11 (1.00, 1.19)	<0.0001
Fractures, n(%)*	122 (27.5)	62 (51.9)	60 (23.5)	<0.0001

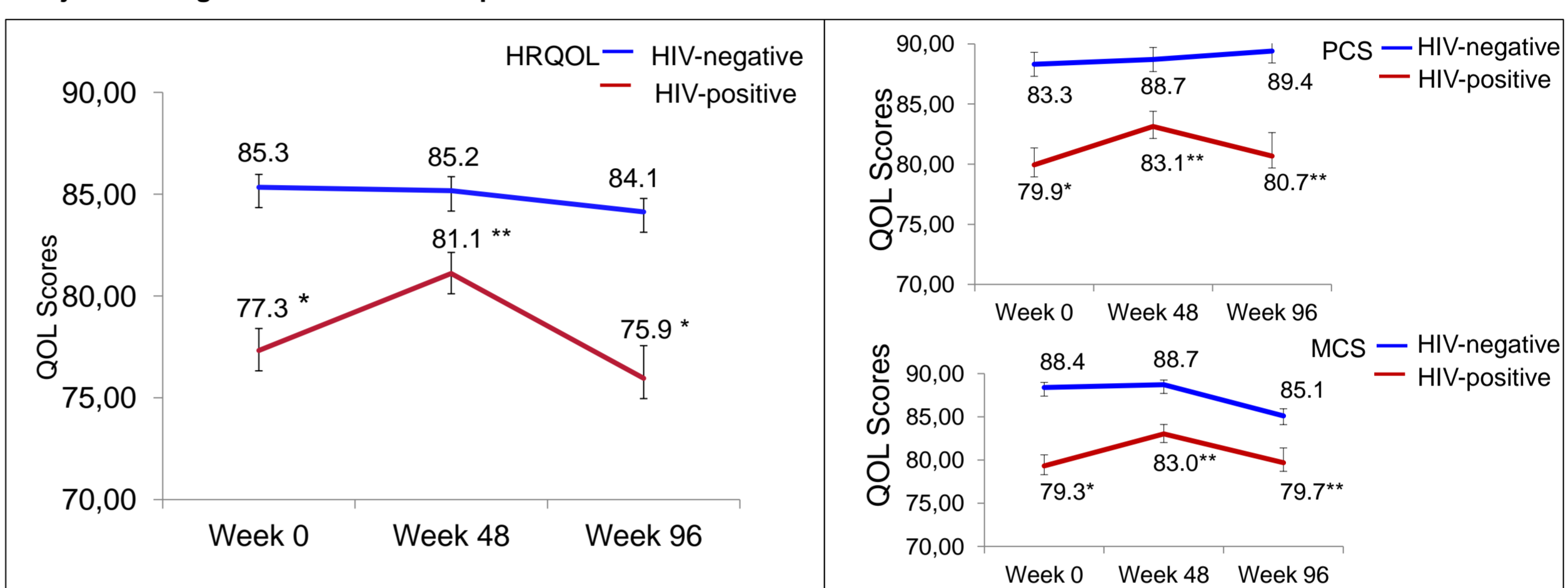
Median (IQR). BMD_FN: bone mineral density at femoral neck; BMD_LS: bone mineral density at lumbar spine; BMD_TH: bone mineral density at total hip; BMI: body mass index; IQR: interquartile range; IVDU: intravenous drug use; PTH: parathyroid hormone; 25(OH)D: 25-hydroxy-vitamin D.

Results

HIV-positive subjects reported lower HRQOL compared to HIV-negative controls at all three time points. Overall HRQOL and summary components of physical and mental health are shown in Figure 1.

Although there was a small increase in HRQOL scores in the HIV-positive group at week 48 this did not persist to week 96. In contrast, the HRQOL in the HIV-negative group remained unchanged overtime.

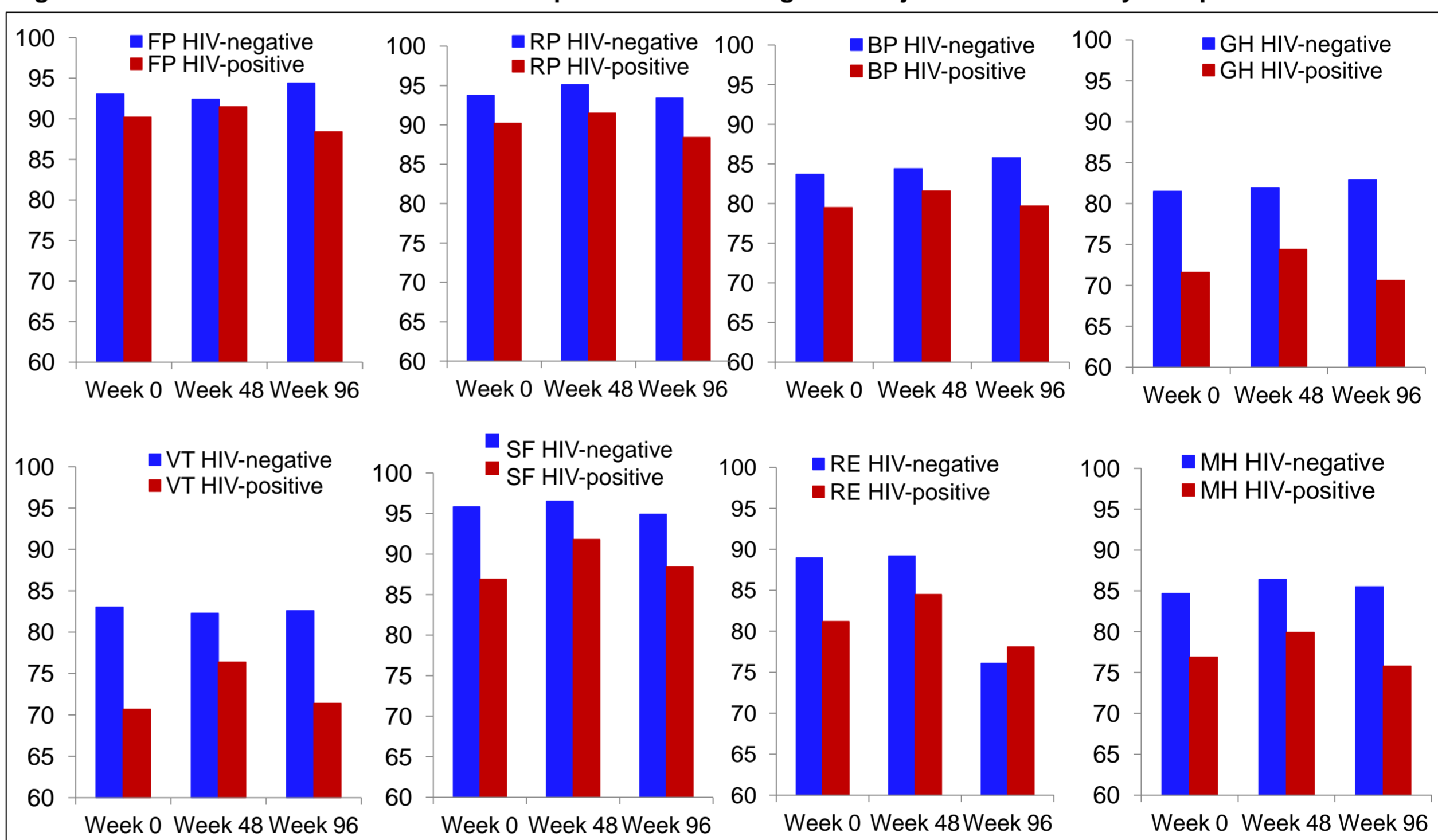
Figure 1. Comparison of Overall HRQOL and component summary scores between HIV-positive and HIV-negative subjects during 96 weeks of follow-up.



Note: p value for comparison between HIV-positive and HIV-negative subjects: * $p<0.0001$; ** $p<0.05$.

HIV-positive subjects reported lower scores for all individual sub-domains compared to HIV-negative controls, with the lowest scores for general health, vitality, role emotional and mental health, all $p<0.0001$ (Figure 2.)

Figure 2. MOS-HIV sub-domains scores in HIV-positive and HIV-negative subjects at the 3 study time points.



In the HIV-positive group, after adjusting for age, gender, ethnicity and BMI, current smoking status and lower vitamin D (per 5 nmol/L decrease in 25(OH)D) were independently associated with a mean reduction of 6.3 ($p=0.02$) and 0.3 ($p=0.05$) in overall HRQOL score.

Current smoking status, lower CD4+ count and lower 25(OH)D were independently associated with a mean reduction of 11.6 ($p<0.0001$), 1.6 (0.004) and 0.5 ($p=0.01$) respectively in PCS whereas higher education level (>3rd level) was associated with a mean increase of 6.2 ($p=0.03$) in PCS. In addition, current smoking status and lower household income (<€575/week) were associated with a mean reduction of 6.9 ($p=0.02$) and 0.2 ($p=0.05$) respectively in MCS. History of previous fractures showed also a borderline association with a mean reduction of 2.7 ($p=0.08$) in overall HRQOL and a mean reduction of 3.2 ($p=0.07$) respectively in MCS.

Discussion

- Lower HRQOL was reported in those with HIV in both physical and mental domains.
- Smoking status was related to poorer HRQOL across all components.
- While clinical variables mainly affected the physical component score, social variables were associated with lower mental scores.
- The extent to which these relationships reflect causality cannot be determined. However, this study does identify indicators of those who might be at greater risk for poorer HRQOL.

References and Acknowledgements

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