


# Aging With HIV in the Era of Antiretroviral Treatment: Living Conditions and the Quality of Life of People Aged Above 50 Living With HIV/AIDS in Switzerland

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## Abstract

The aim of this cross-sectional study was to identify the living conditions and the quality of life of people aged more than 50 who were living with HIV in Switzerland. Participants were consecutively sampled through different HIV-specific sites. Seventy-two HIV-positive persons filled in an anonymous standardized questionnaire, either paper-pencil or online. Descriptive and inferential statistics were calculated. Quality of life was rated quite high ( $M = 14.9$ ,  $SD = 4.14$ ). The multivariate regression analyses showed that mental and physical health problems, long-term living with HIV, having a high degree of needed support, and financial problems decreased quality of life, and perceived available social support was an important predictor in maintaining quality of life. In addition to current offers to support mental health and social networks, efforts to integrate people of working age into the labor market and efforts to reduce stigma and the social marginalization of older HIV-positive people should be fostered.

## Keywords

aging, HIV, older, quality of life, living conditions

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Life expectancy for people living with HIV is increasing. An estimated 3.6 million out of 35.3 million people living with HIV are aged 50 years or older (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2013). Whereas in low- and middle-income countries, they comprise more than 10% of the adults living with HIV, in high-income countries, nearly one third of adults living with HIV are 50 years or older (UNAIDS, 2013). In Switzerland, about 500 to 600 HIV infections are newly diagnosed each year (Federal Office of Public Health, 2015). Approximately, 20,000 to 27,000 persons are living with HIV. The estimated HIV prevalence in adults is about 0.4 to 0.5, and thus, higher than its neighbor countries (e.g., Germany or Italy; UNAIDS, 2014). Moreover, the number of HIV-positive persons aged above 50 has grown in recent years; in 2014, this proportion was approximately 50% (The Swiss HIV Cohort Study, 2014). These changes in the HIV epidemic are attributed to three main factors: the success of antiretroviral therapy, decreasing HIV incidence among younger adults, and a more prevalent practice of sexual risk behavior among people aged 50 years and older than previously assumed (UNAIDS, 2013).

Although the life expectancy of people living with HIV is increasing, there is little knowledge about their

quality of life. Most of the studies about this issue focus on clinical aspects of the disease and the related comorbidities with growing age (Bhavan, Kampalath, & Overton, 2008; Hasse et al., 2011; Patel & Crane, 2011; Vance et al., 2014). Little research has been conducted about the service needs of older people living with HIV, their perceived quality of life, and their actual living conditions. Emlet, Fredriksen-Goldsen, and Kim (2013) showed in a study with gay and bisexual men aged 50 and older that comorbidity, limitations in activities, and lifetime victimization influenced the physical and mental health-related quality of life in a negative way. Concerning the use of services, Emlet and Farkas (2002) showed in a sample of 571 individuals aged 30 to 81 years who had been diagnosed with symptomatic HIV

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or AIDS that age was not associated with greater use of services and that functional dependency was a stronger predictor of ability to access services than was age. In another study, the use of services was associated with living arrangements; people who lived with others were less likely to use aging services than were those who lived alone (Emlet, 2004). A qualitative study of a sample of 18 women above 40 years old showed that women had concerns about the professional support they received. For instance, health care providers could not tell them what they could expect as they aged with HIV and could not address their emotional health needs. Among the women's emotional concerns, social isolation was a great issue; the majority of the women felt isolated, and many had been rejected by a family member or friend in the past (Enriquez, Lackey, & Witt, 2008). Older people often have less social support and practical assistance than do younger persons, but older persons who live with HIV also do not receive adequate support and are isolated from informal networks because of perceived stigma, ageism, nondisclosure of their HIV status, and the lack of available family and friends (Chesney, Chambers, Taylor, & Johnson, 2003; Shippy & Karpiak, 2005). Other barriers to obtaining social support are the desire to be self-reliant and independent and not wanting to be a burden (Schrimshaw & Siegel, 2003). Concerning the quality of life, Grov, Golub, Parsons, Brennan, and Karpiak (2010) showed that older people living with HIV had an increased risk of depression associated with increased HIV-associated stigma and increased loneliness. Issues that can negatively affect successful aging with HIV have been identified and include social isolation, suicidal ideation, HIV-related stigma, cognitive decline, fatigue, and HIV medication toxicity (Kalichman, Heckman, Kochman, Sikkema, & Bergholte, 2000; Vance, Moneyham, Fordham, & Struzick, 2008). Other studies have shown that despite the greater comorbidity that comes with the aging process (Oursler et al., 2011), older people living with HIV may be psychologically more resilient and better equipped to cope with HIV than their younger counterparts. The quality and perceived supportiveness of one's social network may play a role in this (Mavandadi, Zanjani, Ten Have, & Oslin, 2009). In addition, one of the first studies in the United Kingdom about the clinical and behavioral aspects of aging with HIV in a sample of 778 HIV-positive persons showed that the older age group, compared with the younger group, had significantly less psychological and global distress. The older age group also reported fewer symptoms, for example, depression/anxiety or sleep disturbance, and was more likely to adhere to treatment than were their younger counterparts (Sherr et al., 2009).

Most of the studies referred to above were conducted in the United States, and a few were in the United Kingdom. To date, there is no study about the quality of life of older people living with HIV in Switzerland. The

discourse on well-being of people living with HIV in Switzerland is closely linked to the Swiss HIV Cohort Study, which has been established in 1988 as a systematic longitudinal study of HIV-infected people in Switzerland (The Swiss HIV Cohort Study, 2016). It focuses on epidemiological and medical aspects of HIV. As a fact, social science research on HIV/AIDS has been more and more neglected in Switzerland over the last years (Gredig & Nideröst, 2012). Currently, one of the general assertions is that people with HIV are leading a good life due to antiretroviral therapy (cf. Aids-Hilfe Schweiz, n.d.). To critically examine this assumption and to make a contribution toward objectifying the discussion, this cross-sectional quantitative study attempted to understand the quality of life of people aged above 50 who were living with HIV in the Swiss-German-speaking part of Switzerland by determining their actual living conditions and their impact on quality of life.

## Method

### *Procedures and Participants*

People aged 50 years and older who were living with HIV were consecutively sampled between June 2013 and February 2014 through multifaceted recruitment strategies. We contacted non-governmental organizations (NGOs), patient organizations, medical practitioners with a focus on HIV/AIDS, HIV centers, church-associated groups that care for people with HIV, self-help groups, a gay nursing service, retirement homes, and affiliated institutions and provided them with flyers and questionnaires. If possible, we asked to promote the study on their websites. Furthermore, we created a website, had a blog entry to present the study, and entered an Internet chat room for gay men. As an additional step in the recruitment process, we covered the German-speaking part of Switzerland with newspaper advertisements. The questionnaire was self-administered and was available as paper-pencil or online via the survey tool Enterprise Feedback Suite (EFS) 10.2 (Questback GmbH, 2014). Interested participants contacted us by email, telephone, blog, or the study website. Depending on their preference, we sent them the paper-pencil questionnaire or the link to enter the online questionnaire.

Informed consent was obtained. Participation in the study was voluntary. Participants were informed about the purpose and the procedures of the study, the benefits of the research to society and to the participant, and the length of time to fill in the questionnaire. Also, a person to contact by phone or email for questions concerning the questionnaire or the study was mentioned. All data were treated confidentially; only the research team had access to the data. Participants' names and addresses were not matched with the questionnaires or the results, so respondents remained anonymous throughout and after finishing the study.

**Table 1.** Sociodemographic Characteristics of the Participants.

Variable	% (N = 72)
Gender: male	75.0
Sexual orientation: gay/bisexual	61.1
Migration background	26.4
Age (years)	56.9 ± 7.31 <sup>a</sup>
Duration of HIV infection (years)	18.6 ± 8.42 <sup>a</sup>
Being on antiretroviral treatment (ART)	93.1
Viral load: undetectable	80.6
HIV serostatus	
Asymptomatic	61.1
Symptomatic	30.6
AIDS converted	6.9
Unknown	1.4
Education	
Compulsory school	12.5
Vocational training	37.5
College, maturity/training, vocational maturity	11.1
Vocational high school	19.4
University, high school, specialized high school	12.5
Unknown	7.0
Employment	
Full time or part time	40.3
In retirement	33.3
Unemployed	18.1
Other	8.3
Relationship status	
Single	55.6
In a steady relationship	44.4
Living situation (multiple answers)	
Living alone	54.2
With steady partner	34.7
With my children	5.5
Other	8.3
Unknown	6.9

<sup>a</sup>M ± SD for age and duration of HIV infection.

One hundred eighteen persons logged in on the online questionnaire, of whom 46 (40%) began answering the questions. Thirty-seven persons filled in the paper-pencil questionnaire. In total, we reached 83 participants. Eleven participants were excluded; 10 of them only clicked through the online questionnaire without answering the questions, and one was excluded because he was not eligible for the study (aged 23 years). In total, 72 persons were included in the final analysis. For sample description, see Table 1.

## Measures

To measure quality of life, we used the World Health Organization Quality of Life-HIV BREF Questionnaire (WHOQOL-HIV BREF), which is a short form of the

WHOQOL-HIV-120 (World Health Organization, 2002). The WHOQOL-HIV BREF contains 31 items rated on a 5-point scale. Quality of life encompasses the following six domains: physical (four items), psychological (five items), level of independence (four items), social relationships (four items), environment (eight items), and spirituality/religion/personal beliefs (four items). The WHOQOL-HIV BREF had good internal consistency (Cronbach's  $\alpha$ s = .69-.82) and good construct validity (O'Connell & Skevington, 2012). Cronbach's alphas for this study were .82 for the physical domain, .84 for the psychological domain, .76 for level of independence, .83 for social relationships, .88 for environment, and .64 for spirituality/religion/personal beliefs. The six domain scores were calculated by multiplying the means of all items within the domain by four. This resulted in scores ranging from 4 to 20 for each of the six domains.

Medical parameters included viral load (detectable or undetectable), HIV-related health status (no physical impairments, physical impairments stemming from the HIV infection, having AIDS-specific illnesses), and the HIV transmission route (e.g., heterosexual contact, homosexual contact, intravenous drug use, etc.). Being on ART was measured with one yes/no question: "Are you currently on antiretroviral treatment (HIV medication)?" To measure adherence with ART, we integrated questions from the Adherence Baseline Questionnaire (Chesney et al., 2000). Participants were asked how often they had missed taking their medications for different reasons (e.g., away from home, busy with other things, changes in daily routine, etc.) in the past month on a 4-point scale ranging from *never* to *often*. Furthermore, we asked participants about the last time they had missed taking any of their medications. The response options were *within the past week*, *1 to 2 weeks ago*, *2 to 4 weeks ago*, *1 to 3 months ago*, *more than 3 months ago*, and *never skip medications or not applicable*. This variable was dichotomized into *never skip = adherent to ART* and *missed within the past week to more than 3 months ago = not adherent to ART*. Satisfaction with health was assessed with a 5-point scale (i.e., *very unsatisfied* to *very satisfied*). To assess mental health, participants were asked five questions concerning negative emotions or feelings in the past month (e.g., felt depressed, felt restless, had feelings of nervousness, etc.) rated on a 5-point scale ranging from *never* to *always* (Swiss Federal Statistical Office, 2010). The score for mental health problems was obtained by summing the responses, resulting in a range of 5 to 25.

Perceived available social support was assessed using the question "How intensely can you count on friends if required?" Answers ranged on a 5-point scale from *not at all* to *always*. Received social support was measured with the question "Did you receive support from your partner or your friends, relatives or neighbors during the past month? (yes/no)" (Swiss Federal Statistical Office,

2010). The need for support was assessed with a multiple-response question on the participants' current needs for any help or support in different areas (e.g., household tasks, coping with HIV infection, financial problems, access to work, etc.) The score for this variable was obtained by summing the responses, resulting in a range from 0 to 16. Social participation was assessed with a single question: "How often do you participate in the activities of a club or a society, a political party or another association?" Response options ranged from *never* to *daily*. Perceived discrimination was assessed with a question on the experience of HIV-related discrimination that required affected participants to specify the source(s) (e.g., health care providers, colleagues at work, friends, family, etc.)

To measure disclosure, a multiple-response question was used with choices for different persons who might have known about the respondents' HIV infection (e.g., partner, parents, brothers and sisters, friends, colleagues at work, neighbors, other persons living with HIV, self-help group, dentist, etc.). The scores for perceived discrimination and for disclosure were obtained by summing the responses, resulting in a range from 0 to 8 and 0 to 19, respectively.

Employment was assessed using a single-response question on current work situation (regular full-time employment, part-time employment, student, unemployed, retired, not fit to work, housewife/househusband, other). To yield the variable workplace integration, employment was dichotomized into *regular full-time employment and part-time employment* = 1 and *student, unemployed to housewife/househusband* = 0. Financial difficulties were assessed with one multiple-response question on the occurrence of different kinds of financial problems during the past 6 months (e.g., rent or mortgage; health insurance scheme, other insurances; taxes; food; transport; etc.). The score for financial problems was obtained by summing the responses, resulting in a range from 0 to 8.

Education was measured with a single-response question on the highest education level completed (e.g., no educational qualifications, compulsory school, college, maturity/training, vocational maturity, apprenticeship, university, specialized high school, etc.). Migration background was assessed by asking "What is your country or region of origin?" The response options were either Switzerland or "another country." Gender and sexual orientation were both measured using three categories: male; female; transgender, and homosexual/gay; bisexual; heterosexual, respectively. Age was measured in years by the question "How old are you?"

### Data Analysis

We analyzed the data using IBM SPSS Statistics 22 (IBM, 2013). We performed descriptive statistics by conducting frequency analysis and described the results using central tendency, dispersion ( $M$ ,  $SD$ ), and distribution where appropriate. Furthermore, we examined associations and

group differences between age, gender, sexual orientation, migration background, the duration of HIV, and the living condition variables using chi-square tests, correlation analysis,  $t$  tests, or ANOVAs, according to the scaling of the respective variables. The living condition variables were financial problems, education, workplace integration, physical impairments, mental health, adherence, social support and social participation, need for support, perceived discrimination, and disclosure. To identify the impact of living conditions on the six quality-of-life domains, we first performed correlation analyses between each of the six domains and the above mentioned living condition variables, age, gender, sexual orientation, migration background, and the duration of HIV infection. Second, we performed a simultaneous multiple regression analysis for each of the six domains only on the variables that were significantly correlated in the univariate analyses.

## Results

### Financial Problems, Education, and Workplace Integration

Most of the participants (37.5%,  $n = 27$ ) had obtained vocational training. Nine participants (12.5%) had only finished compulsory school and another nine participants (12.5%) had university degrees. Approximately 26% ( $n = 19$ ) had migration backgrounds, that is, had been born in another country and had migrated to Switzerland. Fewer than half ( $n = 32$ , 44.4%) had steady partners and 54.2% ( $n = 39$ ) lived in single households. More than one third of participants ( $n = 24$ ) reported having financial difficulties. The unemployment rate was high: More than half of participants who had not yet reached the retirement age of 65 years ( $n = 58$ ) were unemployed (51.7%,  $n = 30$ ).

### Physical and Mental Health Status

Fifty-eight (80.6%) respondents reported having a non-detectable viral load. Among the 67 participants who were taking ART, 48 (71.6%) had missed taking their medications at least once since beginning treatment, with the main reason being that they had "simply forgotten." Nearly half of participants (47.8%,  $n = 32$ ) had forgotten to take their medications during the past month because they had had changes in their daily routines. Nearly 35% ( $n = 25$ ) had physical impairments stemming from the HIV infection, with 5 (20.0%) having AIDS-specific illnesses. Age was not associated with physical impairments, but compared with the participants who had no physical impairments ( $M = 16.34$ ,  $SD = 8.63$ ), there was a longer duration of HIV infection in participants who did have impairments ( $M = 22.32$ ,  $SD = 6.69$ ),  $t(64) = -2.96$ ,  $p = .00$  (two-tailed),  $d = -.74$ . Mental health problems were also quite frequent. Approximately, 31% ( $n = 22$ ) of respondents were in medical treatment because of a



mental health problem. Nine participants (12.5%) were suffering from extremely severe mental health problems. Nineteen participants (26.3%) reported having feelings of loneliness, 22 (30.6%) were quite frequently unhappy, and 16 (22.2%) had often felt depressed during the past 4 weeks before the survey. Heterosexual men and women reported more mental health problems ( $M = 14.09$ ,  $SD = 4.57$ ) than men who have sex with men ( $M = 11.90$ ,  $SD = 4.05$ ),  $t(65) = 2.00$ ,  $p = .05$  (two-tailed),  $d = .50$ , and mentioned also more feelings of loneliness ( $M = 2.55$ ,  $SD = 0.86$ ) than did the men who had sex with men ( $M = 1.93$ ,  $SD = 0.73$ ),  $t(64) = 3.04$ ,  $p = .00$  (two-tailed),  $d = .76$ . However, satisfaction with health status was quite high ( $M = 3.6$ ,  $SD = 1.1$ ).

### Social Support, Support Needs, and Social Participation

Fifty-seven percent ( $n = 41$ ) reported that they could count on friends if required, and 54.2 % ( $n = 39$ ) received support from their social environments, mainly for company, financial concerns, or maintaining their households. However, only 23% ( $n = 9$ ) of respondents needed this support specifically because of the HIV infection. Approximately, 69% ( $n = 50$ ) would have liked more support, especially in living healthy lives, maintaining their households, access to work, and finding partners. One third ( $n = 24$ ) regularly (at least once a month) took part in the activities of a club or society, and 44% ( $n = 32$ ) had met other people who were living with HIV, mainly to exchange experiences and meet new people.

### Perceived Discrimination and Disclosure

Thirty-four (47.2%) respondents perceived discrimination because of their HIV status, mostly in clinical settings or workplaces, from insurance agencies, or from public authorities who had denied them travel visas. Heterosexual men and women reported more discrimination experiences ( $M = 1.61$ ,  $SD = 0.99$ ) than did the men who have sex with men ( $M = 1.14$ ,  $SD = 0.51$ ),  $t(65) = 2.15$ ,  $p = .04$  (two-tailed),  $d = .81$ , and the perception of discrimination diminished with increasing age ( $r = -.25$ ,  $p = .04$ ). Concerning disclosure of the HIV infection, three persons (4.2%) had told no one except their attending physicians. The five groups of persons who had most often been informed about the infection were physicians and medical staff ( $n = 62$ , 92.5%), siblings ( $n = 48$ , 71.6%), chosen friends ( $n = 46$ , 68.7%), dentists ( $n = 45$ , 67.2%), and other HIV-infected persons, for example, people in self-help groups ( $n = 33$ , 49.3%).

### Quality of Life and the Impact of Living Conditions

The mean general quality of life was 14.9 ( $SD = 4.14$ ) (cf. Table 2). Only nine participants (12.5%) rated their

**Table 2.** Means and Standard Deviations of the General Quality of Life and the Six Domains.

Quality-of-life domains	M	SD	N
General	14.9	4.14	72
Physical	14.8	3.75	72
Psychological	14.4	3.27	72
Level of independence	15.6	3.33	72
Social relationships	14.4	3.48	72
Environment	15.7	3.17	72
Spirituality/religion/ personal beliefs	14.7	3.52	72

general quality of life as very bad ( $\leq 8$ ), whereas two thirds of the participants ( $n = 48$ ) rated it as very good ( $\geq 16$ ). Although the mean values of the six domains varied, in general, they were also quite high (cf. Table 1). The independent samples  $t$  tests identified significant differences by sexual orientation in general quality of life and in four of the six domains. Heterosexual men and women had lower scores for general quality of life ( $M = 13.21$ ,  $SD = 3.70$ ) than men who have sex with men ( $M = 16.27$ ,  $SD = 3.84$ ),  $t(65) = -3.27$ ,  $p = .00$  (two-tailed),  $d = -.81$ . Also, the scores of the physical domain ( $M = 13.22$ ,  $SD = 3.84$ ) and the psychological domain ( $M = 12.84$ ,  $SD = 3.35$ ) were lower in heterosexual men and women than in men who have sex with men— $M = 16.1$ ,  $SD = 3.12$ ,  $t(62) = -3.29$ ,  $p = .00$  (two-tailed)  $d = -.84$  and  $M = 15.44$ ,  $SD = 3.00$ ,  $t(63) = -3.21$ ,  $p = .00$  (two-tailed),  $d = -.81$ , respectively. Moreover, we determined lower scores for independence ( $M = 14.00$ ,  $SD = 3.56$ ) and environment ( $M = 14.33$ ,  $SD = 3.33$ ) in heterosexual men and women than in men who have sex with men— $M = 16.71$ ,  $SD = 3.00$ ,  $t(62) = -3.24$ ,  $p = .00$  (two-tailed),  $d = -.82$  and  $t(62) = -2.81$ ,  $p = .01$  (two-tailed),  $d = -.71$ , respectively.

Univariate analyses revealed significant correlations between the selected variables and the quality-of-life domains (cf. Table 3). In particular, mental health problems, less perceived available social support, and a high level of needed support were associated with all six domains. Excluding the spirituality/religion/personal beliefs domain, physical impairments caused by the HIV infection, social participation, workplace integration, perceived discrimination, and sexual orientation were also significantly associated with all domains. However, simultaneous multiple regression analyses identified no effects for social participation, workplace integration, perceived discrimination, or sexual orientation on any of the six domains (cf. Table 4).

Simultaneous multiple regression analyses showed that quality of life in the physical domain decreased with HIV-related physical impairments, mental health problems, and long-term living with HIV. Quality of life in the psychological domain was negatively predicted by mental health problems, whereas high perceived available social support increased quality of life in this

**Table 3.** Summary of the Univariate Analyses for the Variables that Predicted the Quality-of-Life Domains (N = 72).

Variable	Physical	Psychological	Level of independence	Social relationships	Environment	Spirituality
	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
Physical impairments	-.64***	-.29**	-.46***	-.23*	-.30**	-.13
Mental health problems	-.61***	-.85***	-.51***	-.58***	-.63***	-.37***
Long-term HIV	-.36***	-.15	-.44***	-.08	.00	.07
Adherence	.18	.04	.04	.10	.09	-.05
Perceived social support	.38***	.54***	.39***	.77***	.64***	.57***
Social participation	.48***	.41***	.35***	.32**	.38***	.18
Need for support	-.46***	-.52***	-.51***	-.55***	-.64***	-.58***
Perceived discrimination	-.32**	-.32**	-.32**	-.34**	-.34**	-.42***
Disclosure	-.18	-.01	-.13	.22*	.17	.14
Educational level	.14	.24*	.07	.20*	.26*	.18
Workplace integration	.35***	.30**	.41***	.20*	.23*	.11
Financial problems	-.07	-.29**	-.05	-.25*	-.37***	-.30**
Age	.11	-.03	.16	-.05	.18	-.03
Female	-.30**	-.24*	-.35***	.09	-.10	.01
Homo-/bisexual orientation	.35***	.35***	.36***	.20*	.32**	.15
Migration background	.08	-.01	-.10	-.01	-.13	.01

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

**Table 4.** Summary of the Simultaneous Multiple Regression Analyses of the Quality-of-Life Domains on the Significant Variables of the Univariate Analyses (N = 72).

Variable	Physical <i>R</i> <sup>2</sup> <sub>adj</sub> = .69***			Psychological <i>R</i> <sup>2</sup> <sub>adj</sub> = .80***			Level of independence <i>R</i> <sup>2</sup> <sub>adj</sub> = .55***			Social relationships <i>R</i> <sup>2</sup> <sub>adj</sub> = .66***			Environment <i>R</i> <sup>2</sup> <sub>adj</sub> = .65***			Spirituality/religion/ personal beliefs <i>R</i> <sup>2</sup> <sub>adj</sub> = .46***		
	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$
Physical impairments	-3.69	.67	-.48***	-0.01	.46	-.02	-1.25	.71	-.18	-0.08	.65	-.01	-0.46	.59	-.07			
Mental health problems	-0.39	.07	-.44***	-0.54	.05	-.71***	-0.22	.08	-.29**	-0.22	.07	-.27**	-0.22	.06	-.29***	-0.04	.08	-.04
Perceived social support	0.01	.27	.00	0.44	.19	.15*	0.20	.29	.06	1.78	.27	.56***	0.96	.24	.33***	1.11	.34	.34**
Social participation	0.23	.20	.09	0.18	.14	.08	-0.01	.22	-.00	0.06	.20	.03	0.10	.18	.05			
Need for support	-0.26	.15	-.15	-0.08	.10	-.05	-0.48	.16	-.32**	-0.29	.14	-.18*	-0.47	.13	-.33***	-0.56	.18	-.35**
Perceived discrimination	0.08	.44	.02	-0.41	.31	-.09	0.17	.47	.04	-0.20	.45	-.04	0.19	.40	.04	-0.50	.50	-.10
Disclosure										0.10	.10	.08						
Financial problems				-0.24	.17	-.08				0.02	.24	.01	-0.44	.22	-.15*	-0.37	.30	-.11
Workplace integration	-0.44	.61	-.06	0.59	.44	.09	0.34	.65	.05	0.13	.59	.02	-0.31	.54	-.05			
Long-term HIV	-0.08	.03	-.16*				-0.14	.04	-.33**									
Educational level				-0.37	.18	-.13*				-0.10	.24	-.03	-0.03	.22	-.01			
Female	-1.35	.92	-.14	-0.14	.69	-.02	-1.48	.99	-.17									
Homo-/bisexual orientation	-0.73	.79	-.09	0.56	.57	.08	-0.32	.84	-.05	-0.22	.59	-.03	0.60	.54	.09			

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

domain. In addition, the quality-of-life domain related to independence was negatively predicted by mental health problems and by long-term living with HIV. Moreover, participants with high levels of support needs rated their quality of life in this domain as being worse than did participants who needed less support.

Quality of life regarding social relationships increased with available social support and decreased

with mental health problems and with needing high levels of support. Environment-related quality of life was negatively predicted by financial problems, mental health problems, high levels of needed support, and less perceived available social support. Quality of life with regard to spirituality/religion/personal beliefs decreased with high levels of needed support, whereas high perceived available social support increased the quality of

life in this domain. Table 3 shows the summary of these multivariate regression analyses.

## Discussion

This study provides important information about the quality of life of an aging HIV-positive population in Switzerland. Moreover, the study also identified predictors of quality of life. In general, quality of life was rated quite high, but the means for the psychological and social relationship domains were considerably below the mean for general quality of life and also lower than the means for the other four domains. In summary, mental and physical health problems, long-term living with HIV, a high degree of needed support, and financial problems decreased quality of life. The frequent mental health problems found in our sample correspond with the investigation by Grov et al. (2010), in which older people who were living with HIV had an increased risk of depression. Available social support was a supportive factor in maintaining good quality of life. This is consistent with the study by Emlet et al. (2013) that identified social support as a protective factor associated with improved mental health. The identified frequent mental health problems are contrary to the results found by Sherr et al. (2009) where the older age group reported less psychological and global distress and had fewer symptoms, for example, depression/anxiety or sleep disturbance, compared with the younger age group. However, our sample did not include a younger comparison group of HIV-positive people (<50 years); thus, we are not able to determine such a difference. The lower scores for the psychological and social relationship domain than for the general quality of life and the other four domains might be due to the fact that HIV is still a stigmatized illness that excludes affected persons from social participation. Our analysis showed that especially HIV-positive persons with less social support rated their quality of life worse in the psychological as well as in the social relationship domain.

Our study also identified precarious living conditions: One third of participants reported having financial difficulties. More than half of the respondents of working age were not integrated into the labor market. This is quite a high proportion, especially considering Switzerland's unemployment rate of 3% (State Secretariat for Economic Affairs SECO, 2014). The rate is particularly high compared with other studies, some of which have found that the proportion of people living with HIV who were in full- or part-time employment was approximately 79% (Nideröst et al., 2011).

Furthermore, the proportion of perceived discrimination attributable to HIV was high, although perceived discrimination decreased as age increased. This result was contrary to our hypothesis. A qualitative study showed that 17 of the 25 respondents experienced both HIV stigma and ageism (Emlet, 2006). Therefore, we

assumed that because of the double stigma of HIV and ageism, perceived discrimination would increase with age. A possible explanation is that the younger participants were still integrated into the labor market and had more active social lives than did their older counterparts, and therefore, they had also more opportunities to experience discrimination. Another explanation could be that with increasing age and experience with life, respondents had developed strategies for coping with HIV stigma and discrimination. At this point, we have also to concede that we did not directly address experiences or perceptions of ageism in the survey. Moreover, our sample includes only a limited range of age. Therefore, the decrease in stigma and discrimination with age must be carefully interpreted and need further research.

We also had slight evidence that there were differences in quality of life between men who have sex with men, heterosexual men, and women. In particular, men who have sex with men reported higher scores on the psychological quality-of-life domain, fewer mental health problems and fewer feelings of loneliness, and they perceived less discrimination than did heterosexual men and women. This appears to be in accordance with a study in a Canadian population that identified higher mental health quality of life, lower depression scores, and lower HIV stigma among men who have sex with men (Brennan, Emlet, Brennenstuhl, Rueda, & OHTN Cohort Study Research Team and Staff, 2013).

## Limitations

Although the study identified important issues that can and should be used for further research, we should note a number of limitations. First, our study was cross-sectional; therefore, causal inferences remain ambiguous because some factors may precede others. Second was the consecutive sampling strategy, that is, the sample could be limited with regard to generalization. It is possible that persons who lived in urban areas and had regular contact with NGOs and health care providers were overrepresented, and thus, this study's participants could have had more established social relationships and received more support and thus experienced better quality of life. Third, nearly all of the participants were under antiretroviral treatment. Therefore, we could neither compare persons who were being treated with those who were not nor include treatment as a variable in the multivariate regression analyses. Fourth, the data were self-reported, that is, the estimates of the different quality-of-life domains were subjective, which could have been subjected to bias. Fifth, the sample was rather small. Therefore, we were not able to conduct stratified analyses by gender and sexual orientation or by different HIV-related health statuses. Sixth, age range was very restricted in our sample, and therefore, age association seems to be limited in analysis and interpretation.

## Conclusion and Future Research

The predictors of quality of life identified in this study provide useful information for developing research-based interventions. Mental health problems, less available social support, and high levels of support needs were major factors in decreased quality of life in nearly all six of the domains. For older people with long-term HIV, independence levels will decrease, and physical impairments are more likely to occur. Interventions should especially focus on this population to provide them with the necessary support early on, enable them to engage in social relationships, and improve their mental health. The high unemployment rate and the high proportion of participants who had experienced discrimination should be analyzed deeper and compared with people who live with other chronic illnesses. Meanwhile, efforts to integrate the population who is still of working age into the labor market and to reduce the stigma and social marginalization of older HIV-positive individuals should be fostered. To verify the differences in quality of life between men who have sex with men, women, and heterosexual men, a broader investigation is needed that allows for conducting stratified analyses.

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