

ORIGINAL RESEARCH

Subjective Age and Health Care Avoidance Among Aging Men Living With or Without HIV

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Introduction

Negative aging perceptions have been shown to influence one's health care-seeking behaviors; this relationship has not been studied among middle-aged and aging adults living with HIV. The current study uses data from the Multicenter AIDS Cohort Study (MACS) to investigate the association between subjective age and health care avoidance.

Objective

To examine the hypothesis that adults living with HIV who perceive themselves as older, after adjustment for covariates, would be more likely to avoid care than their HIV-negative counterparts who perceive themselves as older.

Methods

The MACS is a prospective study of more than 7000 sexual minority men living with and without HIV from 4 metropolitan US areas. The Understanding Patterns of Healthy Aging in Men Who Have Sex With Men sub-study of the MACS was conducted from April 2016 to March 2019. Current analyses use cross-sectional data on 1118 participants from this sub-study from October 2016 to March 2017. Logistic regression was used to produce odds ratios and 95% CIs examining the association between subjective age and health care avoidance. Covariates included age, HIV status, race and ethnicity, education, and comorbid conditions. Further analyses were conducted among persons living with HIV, which included CD4 counts and viral load detection as covariates.

Results

In the full sample and sample of people living with HIV, after adjustment for covariates, there was a positive association between older subjective age and health care avoidance and a negative association between younger subjective age and health care avoidance, albeit both not statistically significant. Living with HIV was positively associated with health care avoidance, but not statistically significant.

Conclusions

Future studies with larger sample sizes are needed to elucidate the significance of subjective age and health care avoidance. Aside from the pivotal role of health care avoidance, the field of HIV and aging may benefit from identifying other psychological, physiological, and behavioral mechanisms by which perceptions of aging influence health.

Introduction

Self-perception of aging refers to how people experience their own aging process. Specifically, it consists of 2 main constructs: subjective aging and aging satisfaction. Although they have often been studied together, it is important to note the distinction between the 2, as well as the different impacts they may have on peoples' health and well-being.

Subjective age is one's self-perception of their own age subtracted from their chronological age. Perceived age has been operationalized by look age, act age, interest age, and, most commonly, felt age, in which participants are asked how old they feel. Older adults tend to feel younger than their chronological age.^{1,2} *Aging satisfaction* refers to how satisfied somebody is with their aging experience. It can be measured by simply asking, "How would you rate your life overall these days?"³ or, more commonly, by using more in-depth instruments, such as the Attitude Toward Own Aging subscale of the Philadelphia Geriatric Center Morale Scale. *Subjective age* refers to how old one perceives themselves, which is often different from their chronological age.⁴ Although subjective age and aging satisfaction are core concepts that define self-perception of aging, they are distinct concepts that should be studied individually to better understand how each of them impact health outcomes.

Self-perception of aging has far-reaching implications for the health and well-being of older adults and has been associated with mortality and longevity.^{5,6} Negative aging perceptions have been shown to predict the onset and persistence of depression and anxiety.⁷ Subjective age serves as a general indicator of successful aging, and it influences developmental outcomes throughout the lifespan, including physical and psychological outcomes, as well as cognitive functioning.⁴ The stereotype embodiment theory argues that there is an important psychosocial component to the aging process, noting that "the aging process is, in part, a social construct."⁸ In this way, one's perception of their aging process, formed by internalized information from their surrounding environment, may manifest as physical age-related outcomes. Based on the stereotype embodiment theory, perceptions of aging influence health through 3 pathways: psychological, physiological, and behavioral.⁸ Consequently, negative aging perceptions have been shown to influence one's health care-seeking behaviors.⁷

Health care avoidance is an umbrella term for a range of behaviors in which patients purposefully do not use health care services, even when they know the services are needed. Past research has investigated health care avoidance as the third and final stage of health care delay. Specifically, it occurs on the utilization stage "after symptoms have been assessed as a sign of illness and the need for medical care has been determined."^{9,10} While past research often focuses on issues related to the health care system, patient-centered concerns serve as the focal point of health care avoidance. Put simply, health care avoidance is "attributable to the patient as opposed to the healthcare system."¹⁰ A significant portion of older adults avoid medical care, even when they believe they should go—these estimates vary from 22.5% to 36.4%.^{9,11-13}

Sociodemographic, cognitive, psychosocial, and patient-clinician-related factors are key correlates of health care avoidance.^{13,14} Younger individuals, that is, those with a lower chronological age, are more likely to report health care avoidance.^{10,12,13} Being male, having low income, having a low education

level, and being uninsured are associated with higher odds of reporting health care avoidance.^{10,12,13} The most reported cognitive reasons for health care avoidance were discomfort with a body examination and fear of serious illness.^{9-11,15} Serious psychological distress is among the most decisive factors.^{11,13} In terms of psychosocial factors, having a usual source of care, having higher health self-efficacy, and receiving high-quality care were associated with 38%, 46%, and 30% lower odds of avoidance, respectively.⁹ Further, health care avoidance can have substantial financial, emotional, and health consequences. Avoidance is associated with increased morbidity and mortality, and older adults are particularly susceptible to the negative consequences of health care avoidance.¹⁴ Chronological age, defined by the date somebody was born, is a salient predictor of health care avoidance, but there is a dearth of research on the influence of subjective age, or how old someone feels.

Self-perceptions of aging, as well as general beliefs on the aging process, directly influence health care avoidance. In a nationally representative sample of 5340 older adults, participants with negative self-perceptions of aging were more likely to delay care and reported more reasons for delay.¹⁶ Further, higher aging satisfaction is prospectively associated with increased use of several key preventive health services, such as cholesterol tests, mammograms, breast x-rays, Pap smears, and prostate examinations. If individuals see chronic conditions and negative physical symptoms as an inevitable part the “normal” aging process, they are less likely to pursue preventive care and avoid care in the future.¹⁷ Seeing the effect of self-perceptions of aging more generally, the influence subjective age has on health care avoidance may be worthy of investigation. This is especially true for chronic diseases, such as HIV, which require frequent visits to health care providers and, therefore, more opportunities to avoid care.

In a cohort of men in the Multicenter AIDS Cohort Study (MACS), there was a positive association of being HIV positive (compared with being HIV negative) and feeling older after adjustment for comorbidities, such as high blood pressure, diabetes, liver disease, kidney disease, dyslipidemia, and depression, which for most had an independent positive association with feeling older.² These comorbidities may promote feeling older among people living with HIV (PLWH) and, therefore, serve as a barrier to scheduling and attending medical visits.

To our knowledge, an investigation of the relationship between subjective age and health care avoidance among middle-aged and aging adults living with or without HIV has not been conducted. We aimed to do so in this study. We hypothesized that PLWH who perceived themselves as older, after adjustment for covariates, would be more likely to avoid care than their HIV-negative counterparts.

Methods and Materials

Population

The MACS is a prospective study of sexual minority men living with and without HIV. Since its inception in 1984, more than 7000 participants have been enrolled in the following 4 US sites: Baltimore, Maryland/Washington, DC; Chicago, Illinois; Los Angeles, California; and Pittsburgh, Pennsylvania/Columbus, Ohio. Participants attended semiannual clinic visits that used audio computer-assisted self-interview and a standardized clinical examination to collect demographic information, medical history, behavioral assessments, and biospecimens. Details on the MACS study design have been described elsewhere.^{18,19}

Sample

The Understanding Patterns of Healthy Aging in Men Who Have Sex With Men sub-study of the MACS seeks to understand psychosocial resiliencies that promote healthy aging among middle-aged and older sexual minority men with and without HIV.²⁰ The sub-study included 1317 MACS participants and was conducted over 6 MACS visits from April 2016 to March 2019. Eligible MACS participants for this sub-study had to be at least 40 years old on or before April 2016, reported at least 1 incidence of sexual intercourse with another man since enrolling in the MACS, and completed 2 consecutive MACS visits prior to April 2016. The current analyses included 1118 participants (84.9%) with data on age discrepancy and health care avoidance at visit 66 (October 2016-March 2017). Institutional review boards at each respective study site approved the MACS and the sub-study's protocol, and informed consent was obtained from all study participants.

Outcome

Health care avoidance was assessed through the question: "Was there a time since your last visit, when you did not seek medical/dental care or prescriptive drugs that you thought you needed?" Affirmative response to the statement was categorized as "avoiding health care." Answering no was categorized as "not avoiding health care."

Primary Predictor

Age discrepancy was calculated as the difference between subjective age ("What age [years] do you feel most of the time?") and chronological age. Age discrepancy was categorized into 3 categories: older subjective age (subjective age > chronological age); no age discrepancy (subjective age = chronological age); and younger subjective age (subjective age < chronological age).²¹

Covariates

Participants' chronological age was calculated from self-reported date of birth and date of their visit. Race and ethnicity were categorized as Hispanic, non-Hispanic Black, non-Hispanic White, and other. Education was categorized as

less than a high school diploma, high school diploma, at least some college, and at least some graduate school. The presence of the following comorbid conditions were summed and categorized as no comorbid conditions, 1 comorbid condition, or 2 or more comorbid conditions: (1) high blood pressure (systolic blood pressure ≥ 140 mm Hg or diastolic blood pressure ≥ 90 mm Hg or diagnosis and use of medication); (2) high fasting glucose level (≥ 126 mg/dL); (3) liver disease (serum glutamic pyruvic transaminase or serum glutamic oxaloacetic transaminase > 150 U/L); (4) kidney disease (estimated glomerular filtration rate < 60 mL/min/1.73 m² or urine protein-to-creatinine ratio ≥ 200); (5) dyslipidemia (total cholesterol level ≥ 200 mg/dL or low-density lipoprotein cholesterol level ≥ 130 mg/dL or high-density lipoprotein cholesterol level < 40 mg/dL or triglyceride level ≥ 150 mg/dL); and (6) current hepatitis C infection (defined by seroconversion or acute/chronic infection).²²

HIV-Related Factors

HIV status (PLWH/person living without HIV) was assessed using enzyme-linked immunosorbent assay with confirmatory western blot on all MACS participants. PLWH included all participants with confirmed positive western blot at their baseline MACS visit and those who seroconverted at any time during follow-up in the MACS. Among PLWH, we assessed CD4 cell count (cells/mm³) and HIV viral load detection. CD4 cell count was categorized into 200 cells/mm³ or greater and less than 200 cells/mm³. Detectable viral load was defined as having plasma HIV RNA levels of greater than 20 copies/mL.

Statistical Analysis

We generated descriptive statistics of the outcome, primary predictor, and the covariates overall and by HIV status using counts (percentages) and medians (IQRs) where appropriate. We used logistic regression to examine the adjusted relationship between health care avoidance and age discrepancy. Covariates in the final model included age, HIV status, race and ethnicity, education, and the presence of comorbid conditions. Additionally, we examined this relationship among PLWH only and included CD4 counts and viral load detection as covariates. The “other” race and ethnicity category was removed from the models due to small cell size. We reported adjusted odds ratios (aORs) and 95% CIs. Analyses were performed in SAS version 9.4 (Statistical Analysis Software Inc).

Results

Descriptive Statistics

The overall median age of participants was 60 years (IQR, 54-66). Most of the sample was non-Hispanic White (68.8%), had at least some college education (85.6%), had 2 or more comorbid conditions (63.2%), reported younger subjective age (81.8%), and did not avoid health care (78.6%) ([Table 1](#)).

Table 1. Sample Characteristics by HIV Status

	No. (%)		
	PLWOH (n = 561)	PLWH (n = 557)	Overall (n = 1118)
Age, median (IQR), y	62 (56-68)	57 (52-63)	60 (54-66)
Race and ethnicity			
Black non-Hispanic	69 (12.3)	162 (29.1)	231 (20.7)
Hispanic	28 (5.0)	66 (11.9)	94 (8.4)
White non-Hispanic	452 (80.6)	317 (56.9)	769 (68.8)
Other	12 (2.1)	12 (2.2)	24 (2.2)
Education			
Less than high school	10 (1.8)	19 (3.4)	29 (2.6)
High school diploma	42 (7.5)	70 (12.6)	112 (10.0)
At least some college	232 (41.4)	272 (48.8)	504 (45.1)
At least some graduate school	268 (47.8)	185 (33.2)	453 (40.5)
Missing	9 (1.6)	11 (2.0)	20 (1.8)
Presence of comorbidities			
None	58 (10.3)	46 (8.3)	104 (9.3)
1	176 (31.4)	131 (23.5)	307 (27.5)
≥2	327 (58.3)	380 (68.2)	707 (63.2)
HIV-related markers			
Detectable viral load	-	104 (18.7)	104 (18.7)
CD4 <200 cells/mm ³	-	11 (2.0)	11 (2.0)
Age discrepancy			
Younger subjective age	471 (84.0)	443 (79.5)	914 (81.8)
No age discrepancy	60 (10.7)	50 (9.0)	110 (9.8)
Older subjective age	28 (5.0)	59 (10.6)	87 (7.8)
Missing	2 (0.4)	5 (0.9)	7 (0.6)
Health care avoidance			
Do not avoid health care	459 (81.8)	420 (75.4)	879 (78.6)
Avoids health care	38 (6.8)	57 (10.2)	95 (8.5)
Missing	64 (11.4)	80 (14.4)	144 (12.9)

Abbreviations: PLWH, people living with HIV; PLWOH, people living without HIV.

Among PLWH, the median age was 57 years (IQR, 52-63), 56.9% were non-Hispanic White, 82% had at least some college education, 68.2% had 2 or more comorbid conditions, 79.5% reported younger subjective age, and 75.4% did not avoid health care. In regard to HIV-related factors, 18.7% had a detectable viral load and 2% had a CD4 count of less than 200 cells/mm³.

Among people living without HIV, the median age was 62 years (IQR, 56-68), 80.6% were non-Hispanic White, 89.2% had at least some college education, 58.3% had 2 or more comorbid conditions, 84.0% reported younger subjective age, and 81.8% did not avoid health care ([Table 1](#)).

Table 2. Multivariate Association of Health Care Avoidance and Age Discrepancy

	Adjusted odds ratio (95% CI)	P value
Age discrepancy		
Younger subjective age (vs no age discrepancy)	0.83 (0.39-1.74)	.20
Older subjective age (vs no age discrepancy)	1.39 (0.54-3.61)	.26
Age (per unit increase)	0.99 (0.96-1.02)	.52
HIV status		
Positive (vs Negative)	1.38 (0.85-2.24)	.19
Race and ethnicity		
Black non-Hispanic (vs White non-Hispanic)	1.16 (0.64-2.10)	.92
Hispanic (vs White non-Hispanic)	1.26 (0.59-2.69)	.66
Education		
Less than high school (vs at least some graduate school)	1.43 (0.37-5.48)	.78
High school diploma (vs at least some graduate school)	1.10 (0.47-2.56)	.69
At least some college (vs at least some graduate school)	1.54 (0.92-2.59)	.34
Presence of comorbid conditions		
1 (vs none)	0.72 (0.30-1.75)	.22
≥2 (vs none)	1.14 (0.52-2.53)	.27

Adjusted Association of Age Discrepancy and Health Care Avoidance in Full Sample

Younger subjective age was associated with lower odds of health care avoidance (vs no age discrepancy) (aOR, 0.83 [95% CI, 0.39-1.74]), while older subjective age (vs no age discrepancy) (aOR, 1.39 [95% CI, 0.54-3.61]) was associated with increased odds of health care avoidance ([Table 2](#)). However, these associations were not statistically significant. Living with HIV increased the odds of health care avoidance, but again was not statistically significant.

Adjusted Association of Age Discrepancy and Health Care Avoidance Among PLWH

Among PLWH, younger subjective age was associated with lower odds of health care avoidance (vs no age discrepancy) (aOR, 0.97 [95% CI, 0.35-2.70]), while older subjective age (vs no age discrepancy) (aOR, 1.43 [95% CI, 0.41-5.02]) was associated with increased odds of health care avoidance ([Table 3](#)). Both associations were not statistically significant.

Discussion

In the full sample and sample of PLWH, our data suggested a positive association between older subjective age and health care avoidance and a negative association between younger subjective age and health care avoidance; both associations were not statistically significant. In the full sample, being HIV positive was positively associated, albeit not statistically significant, with health care avoidance.

Table 3. Multivariate Association of Health Care Avoidance and Age Discrepancy Among People Living With HIV Only

	Adjusted odds ratio (95% CI)	P value
Age discrepancy		
Younger subjective age (vs no age discrepancy)	0.97 (0.35-2.70)	.57
Older subjective age (vs no age discrepancy)	1.43 (0.41-5.02)	.45
Age (per unit increase)	0.95 (0.91-1.00)	.04
Race and ethnicity		
Black non-Hispanic (vs White non-Hispanic)	1.48 (0.73-2.97)	.18
Hispanic (vs White non-Hispanic)	0.84 (0.31-2.27)	.44
Education		
Less than high school (vs at least some graduate school)	1.16 (0.21-6.40)	.79
High school diploma (vs at least some graduate school)	0.70 (0.22-2.19)	.42
At least some college (vs at least some graduate school)	1.15 (0.56-2.36)	.59
Presence of comorbidities		
1 (vs none)	0.57 (0.17-1.85)	.37
≥2 (vs none)	0.69 (0.24-2.03)	.82
HIV-related markers		
Detectable viral load (vs undetectable)	0.96 (0.43-2.13)	.92
CD4 < 200cells/mm ³ (vs ≥200 cells/mm ³)	3.28 (0.56-19.19)	.19

In the Health and Retirement Study, a nationally representative biennial panel study of 5340 US adults older than 51 years, Sun and Smith found that having negative subjective age made older adults more likely to delay care.¹⁶ Health care avoidance may play a key role in the association between self-perceptions of aging and health outcomes. Considering Levy's stereotype embodiment theory, Sun and Smith investigated health care delay as a behavioral explanation for the worse health outcomes associated with negative aging perceptions.^{8,16}

From a methodological perspective, one limitation of the current study was how the primary outcome, health care avoidance, was measured. This cohort responded affirmatively or negatively to the following question: "Was there a time since your last visit, when you did not seek medical/dental care or prescriptive drugs that you thought you needed?" Here, the assumption was that participants had a medical condition. Alternatively, we could have excluded patients without a confirmed medical diagnosis, as people may be more likely to avoid care without one. Further inquiry may be necessary to accurately assess a complex behavior such as health care avoidance.

The data regarding health care avoidance and subjective age were self-reported, so they may have been impacted by social desirability bias. The sample of MACS men included in the study by Wight et al²³ demonstrated a strong preference for youth and physical attractiveness, which may have influenced the current sample from MACS to report perceiving themselves as younger.

Despite estimates of health care avoidance ranging from 22.5% to 36.4% in the general population,^{9,11-13} the current sample reported low prevalence of health care avoidance and older subjective age (8.5% and 7.8%, respectively), as seen in [Table 1](#). This low variability in the predictor and outcome may have resulted in a lack of statistical power necessary to find a significant difference.

The current study was a convenient sample of White and college-educated individuals, so these results may not be generalizable to other men living with HIV in the US. Finally, the current study was cross-sectional, so the temporality of the relationship between subjective age and health care avoidance could not be studied.

Conclusions

Given the lack of statistical significance present in this study, larger sample sizes may be required to investigate the role of subjective age in health care avoidance. Additionally, there may be other psychological, physiological, and behavioral mechanisms by which perceptions of aging influence health that are worthy of investigation.

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Disclaimers

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Conflicts of Interests

None.

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