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Substance-use coping and self-rated health among US middle-aged and older adults

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Abstract

The prevalence of alcohol, drug, and tobacco use among US middle-aged and older adults is increasing. A subset of this population uses substances to cope with stress, but the characteristics of these individuals, and the association between substance-use coping and health outcomes remain unclear. We identified correlates of substance-use coping and measured its association with self-rated health in a community-based sample of adults aged 54–99 in the Health and Retirement Study (HRS). In the 2008 HRS, 1,351 participants reported their frequency of prescription/other drug-, alcohol-, and cigarette-use coping with stress and reported self-rated health (excellent/very good, good, or fair/poor); 1,201 of these participants also reported self-rated health in 2010. One in six participants frequently used substances to cope. The oldest participants were least likely to engage in frequent alcohol-use coping. Those with elevated depressive symptoms were more likely to frequently engage in cigarette- and prescription/other drug-use coping. In multivariable-adjusted analyses, participants who frequently used cigarettes (compared to participants who infrequently used cigarettes) to cope had 2.7 times (95% CI=1.1–6.7) the odds

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Contributors

Ms. Mauro conducted the statistical analyses and drafted the manuscript. Ms. Mauro and Dr. Canham conducted the literature review, wrote the introduction, and synthesized the findings in the discussion. Drs. Spira and Martins reviewed and edited the manuscript for content and clarity. All authors contributed to and approved the final manuscript.

Conflict of Interest

The authors have no conflicts of interest to disclose.

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of poor (vs. excellent) self-rated health. Relative to participants who infrequently used prescription/other drugs to cope, participants who frequently used prescription/other drugs to cope had 2.4 times (95% CI=1.1–5.1) the odds of reporting poor self-rated health. The association between prescription/other drug-use coping in 2008 and self-rated health in 2010 was statistically significant (relative OR=3.5, 95% CI=1.7–7.2). Participants engaging in substance-use coping likely have particular demographic and clinical characteristics. Interventions to reduce substance-use coping may prevent adverse health outcomes.

Keywords

Older adults; self-rated health; substance use; coping

1. Introduction

Attention to the prevalence of alcohol and nonmedical prescription drug use among older adults is growing,^{1,2} due in part to the entry of baby boomers into older adulthood.³ Risk factors for substance use among older adults include stress, anxiety, and depression,^{4–7} which can stem from the death of loved ones, social isolation, loneliness, and disease.^{8–10} In a sample of older Caucasians, 8.5% used prescribed or over-the-counter psychoactive drugs, and 12% used alcohol to cope with stress.¹¹ Substance use in older age may be particularly harmful due to age-related reductions in the ability to metabolize drugs and the increased likelihood of multiple drug interactions.^{8,12}

Self-rated health is correlated with health-related outcomes and physician ratings of health,¹³ offering a quick and inexpensive means of assessing the effect of substance use on overall health. Prescription drug use, alcohol consumption, and smoking have been associated with lower self-rated health.^{14–18} Studies of the association between self-rated health and either alcohol use or alcohol use disorders among older adults have shown mixed results.^{14,19,20,21} Additional studies are needed to clarify these associations among adults in mid- and late-life.

Longitudinal findings indicate that while adaptive coping generally increases with age, maladaptive coping may become more common in later life.²² This is problematic for substance-use coping, which can lead to increased substance use; using alcohol to cope predicts alcohol use and drinking problems over a 10-year period in adults.²³ Understanding the association between substance-use coping and self-rated health could have implications for targeted interventions that enhance adaptive stress-related coping strategies.

In the present study, we examined the prevalence and correlates of frequent use of three substances (alcohol, cigarettes, or prescription/other drugs) to cope with stress in a population-based sample of US middle-aged and older adults. We examined the association between frequent use of alcohol, cigarettes, or prescription/other drugs to cope and self-rated health, both cross-sectionally and prospectively, two years later.

2. Material and Methods

2.1. Health and Retirement Study

We obtained data from the 2008 and 2010 Health and Retirement Study (HRS), a longitudinal US-based survey aiming to understand the needs of a growing population living past retirement age.²⁴ The HRS, conducted by the University of Michigan and sponsored by the National Institute on Aging (grant U01AG009740), includes questions about health, family, economic status, and retirement.^{24,25} The study's multi-stage area probability sample design, described previously,²⁴ implemented four stages of sampling, oversampling Blacks, Hispanics, and Florida residents; survey weights provided by the HRS create a nationally representative dataset.

2.2. Study

Approximately 16,000 respondents of the 2008 HRS were randomly assigned to one of 10 experimental modules after finishing the core interview.²⁶ Of these, 1,452 participants completed the Coping Strategies Module; we excluded seven participants with “unknown” or “refused” responses to the substance-use coping variables, seven participants in a nursing home, 65 who were “not cohort-eligible”, and 22 labeled as “non-original sample member”.

Our final sample of 1,351 participants who completed the 2008 Coping Strategies Module and provided self-rated health had a mean age of 67.3 years (standard error=0.3; range 54–99). Participants were primarily White/Caucasian (87.9%), non-Latino (92.1%), female (54.5%), high school educated (53.9%), married (60.3%), and retired (44.1%). After multivariable adjustment for demographic variables and elevated depressive symptoms, the odds of inclusion in our sample increased 1% with each year of age (odds ratio (OR)=1.01, 95% confidence interval (CI)=1.00–1.02, $p<0.01$); we found no other statistically significant differences in demographics or self-rated health between included and excluded individuals. Self-rated health data were obtained from 1,201 participants in the 2010 HRS.

2.3. Measures

2.3.1. Substance-use coping—Participants were prompted: “Because of all the demands of work, home, family or friends, we all feel stressed at times. The following questions ask about things you are most likely to do after having what you think is a stressful event or day.”²⁷ Three separate questions ascertained (1) alcohol, (2) cigarette, or (3) prescription/other drug-use coping: “How often do you use [alcohol/cigarettes/prescription or other drugs] to help make it easier to bear? Would you say very often, fairly often, not too often, hardly ever or never?” For each substance-use question we dichotomized responses into “frequent” (very/fairly often) and “infrequent” (not too often/hardly ever/never).

2.3.2. Self-rated health—Self-rated health is an internally valid¹³ and reliable²⁸ measure of overall health status that predicts healthy behaviors,²⁹ functional ability,³⁰ and mortality.^{31,32} HRS participants reported their health status in both 2008 and 2010. We categorized responses as “excellent” (excellent/very good health—reference category), “good” (good health), or “poor” (poor/fair health), as has been done previously.^{33,34}

2.3.3. Covariates—In 2008, participants reported their age, gender, race (categorized in the HRS as White/Caucasian, Black/African-American, or Other), ethnicity (dichotomized in the HRS as Hispanic/Latino or non-Hispanic/Latino), marital status (which we dichotomized as married or other), education (which we categorized as less than high school, high school diploma or GED, or more than high school), and employment status (which we categorized as working, retired, or “other”—i.e. unemployed, laid off, disabled, or homemaker). Depressive symptoms were ascertained using the eight-item version of the Center for Epidemiologic Studies Depression Scale.³⁵ Reporting four or more symptoms “most of the time” during the week prior indicated elevated depressive symptoms.^{36,37}

2.4. Statistical Analysis

We used Pearson’s chi-squared tests accounting for complex survey data to describe the relationship between participant characteristics and frequent use of each type of substance use to cope with stress. We ran multinomial logistic regression models, separately regressing 2008 self-rated health on (1) alcohol-, (2) cigarette-, and (3) prescription/other drug-use coping variables, controlling for demographic variables and elevated depressive symptoms. We then ran longitudinal multinomial logistic models regressing 2010 self-rated health on 2008 substance-use coping for a subset of 1,201 participants. All models accounted for the complex sampling design, using 2008 HRS individual sampling weights³⁸ and Taylor linearization variance estimation.³⁹ Analyses accounted for data clustering and stratification, and were conducted in Stata 13SE.⁴⁰

3. Results

3.1. Prevalence and correlates of substance-use coping

Approximately 17% of participants reported frequent use of at least one substance to cope with stress, though participants could report using multiple substances to cope. Examined separately, 5.1% reported alcohol use, 6.3% reported cigarette use, and 7.5% reported prescription/other drug use to cope with stress. Frequent alcohol-use coping was associated with younger age; frequent cigarette-use coping was associated with non-Latino ethnicity, being unmarried, not retired, and having elevated depressive symptoms; and frequent prescription/other drug-use coping was associated with female gender, high-school education or less, “other” employment status, and having elevated depressive symptoms (all p ’s<0.05) (Table 1).

3.2. Association between substance-use coping and self-rated health

In 2008, 40.2% of participants had excellent health, 31.4% good health, and 28.3% poor health. Of participants reporting frequent alcohol-, cigarette-, and prescription/other drug-use coping, 17.1%, 37.6%, and 61.4% had poor health, respectively. Frequent cigarette-use coping was associated with greater odds of both good compared to excellent health (adjusted relative odds ratio (aROR)=3.40; 95% CI=1.60–7.23; p =0.001) and poor compared to excellent health (aROR=2.69; 95% CI=1.08–6.69; p =0.033), compared to infrequent cigarette-use coping (Table 2). Frequent prescription/other drug-use coping was associated with greater odds of poor compared to excellent health (aROR=2.40; 95% CI=1.12–5.08;

$p=0.023$), compared to infrequent prescription/other drug-use coping. The association between frequent alcohol-use coping and self-rated health was not statistically significant.

Prospective multinomial analyses indicated that, compared to infrequent prescription/other drug-use coping, frequent prescription/other drug-use coping in 2008 was associated with greater odds of poor health (ref. excellent) in 2010 (aROR=3.46; 95% CI=1.67–7.18; $p=0.001$). Cigarette- and alcohol-use coping in 2008 were not associated with poor health in 2010.

We ran post-hoc analyses in the 2008 sample including only participants with self-rated health data at both time points to assess sensitivity to sample size. Post-hoc findings were consistent with findings using the full sample, although poor self-rated health was only marginally associated with frequent cigarette-use coping (aROR=2.63, 95% CI = 0.97–7.09, $p=0.056$).

4. Discussion

In this nationally representative community-based sample of US middle-aged and older adults, approximately one in six participants (17.4%) frequently used at least one substance to cope with stress, highlighting the prevalence of substance-use coping in middle-aged and older adults. Frequent cigarette- or prescription/other drug-use coping was associated with over twice the odds of concurrent poor self-rated health, after adjusting for covariates. The prospective relationship between prescription/other drug-use coping and poor health was stronger than the cross-sectional relationship. These findings did not apply to alcohol, only partially supporting our hypotheses that frequent substance-use coping would be associated with worse self-rated health when compared to infrequent substance-use coping.

Middle-aged and older adults reporting frequent prescription/other drug-use coping had greater odds of poor health than participants reporting infrequent prescription/other drug-use coping. Increased availability of prescription drugs in later life might contribute to this observation, as older adults have more prescriptions and therefore opportunities to use drugs to cope with stress. Even though older adults represent 13% of the US population, they account for about a third of prescription drug spending in outpatient settings,⁴¹ and increases are expected.² Prescription drug use may also act as a reminder of poor health.¹⁷ Additionally, an older adult's attitude toward drugs may influence the degree to which they use prescription drugs to cope.⁴² Older adults may have more positive attitudes toward prescription/other drug-use coping than toward alcohol- or cigarette-use coping. Efforts to understand attitudes regarding coping behaviors and how to change unhealthy behaviors may reduce substance-use coping.

We found no association between frequent alcohol-use coping and self-rated health, consistent with previous findings.²⁰ Participants may have discontinued drinking as their health deteriorated, or turned to prescription/other drugs to cope with stress. Because alcohol is contraindicated when taking certain medications, adults with a greater number of medical conditions (who may be prescribed more medications) may be less likely to use alcohol to cope.

Frequent cigarette-use coping was associated with concurrent, but not prospective, worse self-rated health. Previous research found that current and former smokers reported worse self-rated health.³³ Our study extends this research by focusing on US middle-aged and older adults who use cigarettes to cope with stress.

Our findings suggest a need for therapies that foster adaptive coping strategies that do not involve substance use. Cognitive behavioral therapy (CBT) could be used to encourage coping strategies that replace substance-use coping and also reduce depressive symptoms.⁴³ Treating depressive symptoms may lead to improvements in coping strategies among middle-aged and older adults. Mindfulness-based therapies, too, can prevent substance use relapse^{44,45} reduce worry, and improve cognition among older adults,⁴⁶ and provide an alternative to substance-use coping.

A limitation of the current study is the HRS question asking participants' use of both prescription and other drugs to cope; its wording precluded us from knowing whether participants were identifying their use of a prescribed or an illicit drug. Because the prevalence of illegal drug use is relatively low in older adults,^{1,3} we expect prescription drugs to comprise the majority of drugs used to cope. However, identifying adults who are at risk of using illicit drugs to cope is also clinically useful. For instance, opioid users have been previously found to report poorer self-rated health compared to users of other drugs.⁴⁷ We also were unable to differentiate between light, moderate, and heavy substance users, and because coping data were collected only in the 2008 HRS, our analyses did not capture change in coping behavior. Our study is strengthened by the consistency of our cross-sectional findings with those from prospective and post-hoc analyses, and the use of a random sample of nationally representative middle-aged and older adults; prior epidemiological studies using broader age ranges lacked this focus.

5. Conclusions

Our findings indicate that frequent cigarette- and prescription/other drug-use coping are associated with concurrent poor self-rated health, and that frequent prescription/other drug-use coping is associated with poor self-rated health two years later. An important next step is to determine why middle-aged and older adults may choose one form of coping over another, and to explore ways to encourage the most healthful coping strategies.

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Highlights

- One in six middle-aged and older adults used substances to cope with stress.
- Cigarette-use coping was associated with concurrent poor self-rated health (SRH).
- Prescription/other drug-use coping was associated with concurrent poor SRH
- Alcohol-use coping was not associated with concurrent poor SRH.
- Prescription/other drug-use coping was associated with poor SRH two years later

Table 1

Weighted Characteristics of Participants Completing the Coping Strategies Module in the 2008 HRS, and Bivariate Associations with Substance Used to Cope with Stress

Characteristics	Total N=1351 ^a % (SE)	Frequent Substance-use coping, <i>weighted %^b</i> n=194 (17.41%)		
		Alcohol % (SE)	Cigarette % (SE)	Prescription/other drug % (SE)
<i>Total n (weighted %)</i>	1351 (100.00%)	48 (5.13%)	66 (6.31%)	98 (7.49%)
<i>Age – years</i>				
54–59	27.19 (1.65)	6.57 (2.02)*	8.55 (2.29)	8.43 (2.03)
60–69	34.96 (1.61)	6.83 (1.50)	7.23 (1.63)	7.19 (1.67)
70–99	37.85 (1.46)	2.53 (0.81)	3.85 (0.80)	7.09 (1.02)
<i>Gender</i>				
Male	45.53 (1.65)	6.10 (1.32)	6.61 (1.17)	4.73 (1.06)**
Female	54.47 (1.65)	4.32 (1.03)	5.95 (1.39)	9.80 (1.36)
<i>Race</i>				
White/Caucasian	87.86 (0.95)	5.32 (0.90)	6.43 (0.99)	7.18 (0.96)
Black/African American	9.32 (0.82)	2.72 (1.84)	6.23 (2.18)	11.06 (2.98)
Other	2.82 (0.50)	7.30 (5.14)	2.76 (2.73)	5.39 (3.30)
<i>Ethnicity</i>				
Non-Hispanic/Latino	92.08 (0.91)	5.27 (0.87)	6.70 (0.97)*	7.33 (0.92)
Hispanic/Latino	7.92 (0.91)	3.50 (2.19)	1.82 (1.16)	9.31 (3.56)
<i>Marital Status</i>				
Married	60.30 (1.63)	5.94 (1.11)	4.61 (0.94)*	6.09 (1.01)
Other	39.70 (1.63)	3.90 (1.21)	8.90 (1.75)	9.61 (1.62)
<i>Education</i>				
Less than HS	16.38 (1.12)	2.29 (1.00)	7.37 (2.16)	8.13 (2.04)**
High School/GED	53.91 (1.64)	4.94 (1.16)	7.28 (1.36)	9.60 (1.39)
More than HS	29.71 (1.54)	7.05 (1.69)	3.97 (1.26)	3.30 (1.13)
<i>Employment Status</i>				
Working	37.29 (1.67)	7.16 (1.63)	7.34 (1.69)*	4.42 (1.21)***
Retired	44.10 (1.59)	3.40 (0.91)	4.02 (0.81)	6.26 (1.03)
Other	18.61 (1.34)	5.18 (2.02)	9.69 (2.81)	16.54 (3.18)
<i>Elevated Depressive Symptoms</i>				
0–3	86.95 (1.12)	4.73 (0.83)	5.36 (0.89)**	4.75 (0.77)***
4–8	13.05 (1.12)	7.82 (2.95)	12.67 (3.48)	25.72 (4.10)

^a Frequent indicates “very often” or “fairly often” substance-use coping; sample (n) is not weighted;

^b Percentages and standard errors (SE) are weighted and were obtained using the Health and Retirement Study (HRS) survey weights to account for the HRS complex sampling design;

^c *p*-values were based on tests for binary and categorical variables.

* *p*<0.05;

**
 $p < 0.01$;

 $p < 0.001$

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Table 2

Weighted adjusted Relative Odds Ratios of 2008 and 2010 Self-Rated Health by Frequent Alcohol-, Cigarette-, and Prescription/Other Drug-Use as Coping Behavior in the 2008 HRS

Substance Used to Cope with Stress	Self-Rated Health	
	Good vs. Excellent aROR (95% CI)	Poor vs. Excellent aROR (95% CI)
2008 Self-Rated Health^a		
<i>Alcohol</i>		
Infrequent	1.00 (Ref)	1.00 (Ref)
Frequent	0.75 (0.34 – 1.69)	0.41 (0.14 – 1.20)
<i>Cigarette</i>		
Infrequent	1.00 (Ref)	1.00 (Ref)
Frequent	3.40 (1.60 – 7.23)***	2.69 (1.08 – 6.69)*
<i>Prescription/other drug</i>		
Infrequent	1.00 (Ref)	1.00 (Ref)
Frequent	0.73 (0.32 – 1.64)	2.40 (1.12 – 5.08)*
2010 Self-rated Health^b		
<i>Alcohol</i>		
Infrequent	1.00 (Ref)	1.00 (Ref)
Frequent	0.67 (0.29 – 1.52)	0.83 (0.37 – 1.87)
<i>Cigarette</i>		
Infrequent	1.00 (Ref)	1.00 (Ref)
Frequent	2.04 (0.95 – 4.37)	1.54 (0.61 – 3.89)
<i>Prescription/other drug</i>		
Infrequent	1.00 (Ref)	1.00 (Ref)
Frequent	2.07 (0.91 – 4.71)	3.46 (1.67 – 7.18)***

Note: Reference group for self-rated health outcomes was “excellent/very good” self-rated health. Estimates were adjusted for gender, race, ethnicity, and the following 2008 variables: age, married status, education, job status, education, and depressive symptoms. HRS 2008 individual-level weights were implemented; analyses were run in Stata accounting for sampling design.

aROR = adjusted Relative Odds Ratios

Infrequent = Never/hardly ever/not too often; Frequent = Very often or fairly often.

SE = linearized standard error; 95% CI = 95% confidence interval

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$

^a2008 Sample size = 1351;

^b2010 Sample size = 1201