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Gender-based Structural Models of Health Care Costs: Alcohol Use, Physical Health, Mental Health, and Functioning

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Abstract

Background: Most models of health services use or costs include gender as a covariate, combining data for men and women in analyses. This strategy may obscure differences in underlying processes producing differential health care use by men and women, particularly in examinations of factors that affect health care use and differ by gender (e.g. alcohol consumption and depression).

Aims: To examine gender differences in the relationships between alcohol consumption, physical and mental health and functioning, and costs of health care.

Methods: The setting was Kaiser Permanente Northwest, a large non-profit group practice model HMO serving northwest Oregon and southwest Washington in the northwest United States. Primary (survey) and secondary (health plan records of service use; diagnoses from medical chart review) data were collected for random samples of health plan members in the period 1989-1993 (n = 5,669). Health plan administrative records of service use were used to estimate health care costs. Gender-specific latent structure models predicting health care costs were created using self-reported mental health, physical health, functioning, alcohol consumption, and prior-year health plan record-based diagnoses of depression and alcohol problems.

Results: Alcohol consumption and prior alcohol problems were directly related to health care costs, although in opposite directions, for both men and women. Alcohol consumption was negatively associated with costs, while prior alcohol problems predicted higher costs. Gender differences existed in the relationship between physical health and health care costs indirectly via drinking status. Prior depression had direct effects on increased health care costs, and this relationship was stronger for men than for women. The roles played by mental health symptoms were similar for men and women. Better mental health at the time of the survey was associated with reduced alcohol consumption or likelihood of consuming alcohol, but had no direct effects on later costs. Indirect effects of mental health were found via alcohol consumption.

Conclusions: Gender plays an important role in the factors underlying total costs of health care, and gender differences in these relationships appear more common among those who consume alcohol. For both genders, alcohol use predicts lower health care costs in this light-to-moderate drinking population, although prior diagnoses of alcohol problems predict higher costs. The direct relationship between depression diagnosis and higher health care costs is stronger among men.

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Introduction

Alcohol consumption has complex relationships with morbidity and mortality, and with the use and cost of health services. For example, excessive alcohol consumption and alcohol dependence adversely affect health and are generally thought to increase health care utilization and costs,[1,2] while moderate drinking may benefit health and well-being (especially cardiovascular health),[3-7] potentially lowering health care service use and costs. The exact nature of these relationships remains unclear, however, and efforts to understand the pathways between alcohol consumption and health care use and costs have produced inconsistent results.[8-18] In particular, despite expectations that the greatest need for service use would be among heavy-drinking individuals with comorbid conditions, results of studies remain equivocal. Controlling for gender and other sociodemographic factors, Jackson *et al.*[12] found that current alcohol consumption was generally related to greater likelihood of making outpatient doctor office visits, but not mental health visits, while, unexpectedly, persons with problems related to drinking used *fewer* outpatient medical and mental health services. In a similar study, where men's and women's utilization were considered separately and

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health problems and psychological well-being were controlled, Kunz[11] found that greater alcohol consumption led to fewer visits to health professionals among men, but not among women. Other gender differences have been reported by Polen *et al.*,[17] who found that among current drinkers, hazardous drinking patterns were associated with increased costs and utilization among men, but not among women.

These results lead to the overarching research question in the present study: Do inconsistencies in findings regarding the effects of alcohol consumption on health care costs result from gender differences in the underlying factors and processes that affect both alcohol consumption and health care service use?

Andersen's[9-21] behavioral model of health service utilization provides a theoretical framework for understanding the factors that influence use of health care services. *Predisposing* factors are those that predispose individuals to use or avoid health care, and may include sociodemographic characteristics, such as gender and age, as well as beliefs and attitudes about illnesses and medical care, and perhaps some health-related practices (such as heavy alcohol use or smoking). *Enabling* factors are those that facilitate or impede the use of services by persons with a predisposition for service use, such as having medical insurance or a regular health care provider. *Need* factors comprise indicators of health status and include chronic illnesses, psychiatric problems, and substance abuse.

Gender, a predisposing factor, has the potential to play a critical role in our understanding of how the complex pieces of the alcohol consumption-health care service use puzzle fit together. Gender is one of the most important individual predictors of both alcohol use and amount of alcohol consumed,[22-25] as well as of health and health services use.[26-32] Gender differences also exist in many of the other factors known to influence both consumption of alcohol and use of health care services, including the effects of employment status, income, and marital and socioeconomic status. These are predisposing and enabling factors for service use,[27,28] as well as predictors of alcohol consumption patterns.[25,33-36] In addition, gender differences have also been found among the need factors of self-reported health status,[12,31,36,37] prevalence of psychiatric conditions comorbid with alcohol use,[38,39] number and types of chronic illnesses,[12,31] and functional status,[36] as well as in the effects of health status on alcohol consumption.[40]

To date, most models of health services use and costs have included gender as a covariate, combining data for men and women in analyses. This strategy may obscure differences in underlying processes producing differential health care use by men and women, and could result in failure to identify (i) predictors of health care costs in cases where the direction of the relationship is opposite for men and women, (ii) differences in the magnitude of relationships when the relationships are of the same direction but of different strength, or (iii) factors that influence health care costs for only one gender.

Most researchers have found that enabling and medical need factors are the primary determinants of health care use when the predisposing factors of age and gender are taken into account.[26,41-47] Several of these need-related factors stand out as critically important in the study of the relationships between gender, alcohol use, and costs of health care. Established gender differences have been found in physical health and functioning, mental health and functioning, and presence of alcohol problems. Alcohol-related problems are more prevalent among men,[48] while depression is more prevalent both among women[49] and individuals with alcohol-related problems.[39] Additionally, the relationship between alcohol use and depression may be synergistic,[38,50,51] and may differ by gender.[39,52-54]

In hopes of clarifying some of these important relationships, we adopt a different approach to studying how gender, alcohol consumption, physical and mental health, and functioning jointly affect costs of health care service use. We use a cost measure because it provides a single reliable summary of the intensity of services used and contains more information than counts of service use types. For example, using a cost estimate allows us to differentiate the intensity of services used for routine inpatient care from that in an intensive care unit.

Andersen's behavioral model of health services use[19-21] provides the theoretical framework for a series of comprehensive gender-specific latent structure models of health care costs. Covariance structure models of this type are superior to traditional regression modeling when the purpose of analyses is explanatory rather than predictive–that is, when the purpose of the models is to evaluate the importance of specific predictors, or to understand the relationships between *independent* variables and their resulting indirect effects on dependent variables.[55] Such models allow us to understand more than just the direct relationships between predictor and outcome variables. Additionally, the ability to compute simultaneous models, stacked on gender, allows us to evaluate group differences systematically. Recent work by Rapkin and Dumont[56] suggests that such techniques are critical to advancing behavioral health services research.

Our ability to evaluate these relationships is also improved in the present study because data were gathered from members in a prepaid group practice model HMO, where enabling factors such as comprehensive coverage and low outofpocket costs essentially equalize access to care and allow more careful examination of service use based on need and predisposing conditions. Additionally, because the capitated pre-paid structure of the not-for-profit HMO creates an incentive to provide needed but not excessive health care, our analyses should more accurately model the combined effects of the factors of interest on health care costs: alcohol use (drinking versus not drinking; amount consumed by those who drink) and alcohol problems, mental and physical health, depression diagnosis, and functional status.

Moreover, several types of quality-related incentives were in effect in the HMO. Physician bonuses were based, in part, on results of post-visit ''Art of Medicine'' surveys with their patients. The HMO maintained Joint Commission on Accreditation of Health Care Organization (JCAHO) accreditation and was very responsive to NCQA's Health Plan Employer Data and Information Set (HEDIS®)

measures in the latter part of the study period (personal communication, Merwyn R. Greenlick, April 13, 2004).

In this context, we explore our two primary questions: (i) How are alcohol consumption, mental and physical health, functioning, alcohol and depression diagnoses, and demographic characteristics in Year 1 related to total health care costs in Year 2?, and (ii) Do these relationships differ by gender?

Methods

Core data for this project were originally collected for a study of pathways to care for depression (the parent study), and have been combined with other data sources and reanalyzed to create models of health care costs that include the effects of alcohol consumption, physical health, mental health, functioning, and past diagnoses of depression or alcohol abuse/dependence. Details of the original study and data collection procedures appear in Shye, Freeborn, and Mullooly[57] and are summarized below; those specific to analyses presented here are explained in detail.

Study Setting

Kaiser Permanente Northwest (KPNW) is a federally qualified not-for-profit group model health maintenance organization (HMO) that provides comprehensive outpatient and inpatient care to its members in the northwestern United States. At the time of data collection, 1989-1993, the enrolled population included approximately 375,000 members in the metropolitan areas that comprise northwestern Oregon and southwestern Washington. In general, KPNW members resemble the local area population in age distribution as well as in health status and major sociodemographic traits.[58,59]

Survey Methods

Questionnaires were sent to subscribers and when married, spouses of randomly selected KPNW member households in 1990, 1991, and 1992. A cover letter explained that the survey was about health and use of health services and that all information provided would be kept strictly confidential. Reminder postcards were sent one week following the initial mailing. A second survey was mailed to non-respondents. The response rate was about 60% across the three surveys. Survey respondents slightly underrepresented young adult members and overrepresented older adults and women, compared to the sampling frame. The parent study was limited to respondents aged 25 and over who had at least one year of health plan eligibility prior to, and one year following, the returned survey. Male respondents were oversampled (in order to obtain adequate numbers of men with depression symptoms), and all Hispanic and non-White survey respondents were included (final *n* for the parent study = 7,844). For the present study, we randomly selected one respondent from each household with two respondents in order to avoid violating analytic assumptions of independent observations.

Participants

Study participants were 3,069 male and 2,600 female (5,669 total) HMO members who responded to one of three mail surveys conducted in 1990-1992. Subjects in the present study were aged 25 to 100 years ($M = 58.1$, $SD = 16.0$). About 90.2% of the sample identified themselves as White, 2.4% as Black or African American, 2.6% as of Asian or Pacific Islander descent, 0.9% as Aleut, Eskimo, or American Indian, and 3.9% either did not respond to the questions or marked ''other.'' Among all groups, 2.4% described themselves as of Hispanic origin.

Data Sources and Processing

The survey was the source of most sociodemographic characteristics, the SF-36 Health subscales,[60] the BSI eight-item depression-screening instrument,[61] and frequency and quantity of alcohol consumption. Survey data were linked to health plan records that provided some demographic information (age and sex), details of service use, and diagnoses (via chart review). Cost data were obtained by applying cost coefficients to health plan service use records using methods developed by Hornbrook *et al.*[62,63] Details of data collection and processing appear below.

Chart Review

Mental health and substance abuse/dependence diagnoses were obtained through chart review. Only mental health and medical charts were abstracted for the parent study. Consequently, diagnoses specific to addiction medicine treatment were not abstracted unless they were made by a medical provider (rather than a counselor) in the Addiction Medicine department. Therefore, substance misuse/dependence diagnoses were those received from medical or mental health care providers and do not include those individuals who received diagnoses of these problems by non-medical Addiction Medicine Department staff alone.

Variables Used in the Models

Age

We coded age as a binary measure, with those age 60 and over = 1 and those younger than 60 = 0. This method of coding was used to capture the relationship between older age and lower alcohol consumption.[64]

Gender

Gender was coded female = 1 and male = 0.

Ethnicity

We created two ethnicity variables. In the first, White ethnicity was coded 1, while respondents of non-White ethnicity were coded 0. Although this measure collapses individuals from many different ethnicities into one group, there was not adequate representation in the sample to include separate subgroups. The second variable indicated presence (coded 1) or absence (coded 0) of Hispanic origin.

Self-reported Social Class

Respondents reported their social class on a five-point scale: lower (coded 1), working, middle, upper-middle, and upper class (coded 5). Analyses of member survey data from other years (education was omitted from the surveys used in these analyses) indicate that self-reported social class is related to both education level (Pearson's $r = .39$) and income level ($r = .56$). The measure has also been shown to have good predictive ability in other analyses.[36,65]

Adjusted Income

Respondents reported their yearly household income on a nine-point categorical scale, ranging from under $5000/year (coded 1) to $70,000 or more/year (coded 9), and the number of people supported by that income (1 to 8 or more). Adjusted income was computed by dividing the midpoint in the income range by the number of persons supported by that income.

Marital Status

Marital status was a binary variable with married coded = 1.

Employment Status

Employment was coded as a binary variable, with primary status as employed or a student at the time of the survey = 1.

Smoking Status

Smoking was coded as a binary variable, with current smokers at the time of the survey = 1.

Alcohol Consumption in Drinks/Month

The questionnaire contained two alcohol-related questions: (a) How often do you have a drink containing alcohol? (never [coded 0], once a month or less [coded 1], two to four times a month [coded 3], two to three times a week [coded 10], four or more times a week [coded 16]), and (b) If you ever drink alcohol: On days when you have a drink, how many drinks do you typically consume? (one or two drinks [coded 1.5], three or four [coded 3.5], five or six [coded 5.5], seven to nine [coded 8], 10 or more [coded 11]). We created a dichotomous drinker/non-drinker variable based on the first question. We then calculated the drinks/month variable for drinkers, using the reported number of drinking sittings/month multiplied by the number of drinks typically consumed in one sitting, log-transforming the variable to reduce skewness in the distribution. Of the women in the sample, 40.3% were non-drinkers; among drinkers, the average number of drinks per month was 6.33 ($SD = 14.04$), ranging from 1.5 to 131 drinks. For men, 27.6% were non-drinkers; among drinkers, the average number of drinks per month was 16.69 ($SD = 32.81$), ranging from 1.5 to 262 drinks.

Health, Psychological Well-being, and Functioning

Our primary measures of physical health, psychological well-being, and functioning came from the SF-36,[60] an instrument designed to provide general indicators of health and functional status for use in population-based surveys and health policy evaluations.[66] We used the following SF-36 subscales: General Health ($M = 71.32$, $SD = 19.32$), Physical Functioning ($M = 79.26$, $SD = 24.82$), Role Limitations Due to Physical Health ($M = 71.64$, $SD = 39.99$), Role Limitations Due to Emotional Problems ($M = 83.58.53$, $SD = 30.80$), Vitality ($M = 60.05$, $SD = 20.92$), Social Functioning ($M = 85.72$, $SD = 22.23$), Bodily Pain ($M = 70.22$, $SD = 25.29$), and Emotional Well-Being ($M = 76.98$, $SD = 16.11$). The Emotional Well-Being (EWB) scale measures four mental-health dimensions–anxiety, depression, loss of behavioral/emotional control, and psychological well-being.[67] We also used the BSI-8 Depression Screen–an eight-item scale that measures mood and neurovegetative symptoms, as well as items that screen for dysthymia by asking about duration of depressed mood. It has good positive predictive value for recent major depression and dysthymia in primary care, general, and mental health populations.[61] Although related to the EWB scale, the shared variance was only moderate in our sample ($r^2 = .34$). Mean BSI score was .119 ($SD = .307$), and 574 people (10.1%) screened positive for depression. We used a binary indicator of a positive BSI screen in our analyses.

Diagnoses of Depression and Alcohol-Related Disorders

Diagnoses of depression and of alcohol-related disorders were obtained from medical and mental health chart review. Any past-year ICD-9 diagnosis of depression was coded = 1, as was any diagnosis of an alcohol-related disorder for past-year alcohol diagnosis. Specialty substance abuse treatment charts were not abstracted as part of the parent study, so diagnoses that appeared only in these charts were not included.

Mental Health and Chemical Dependency Benefit Levels

In the parent study,[68] mental health benefit levels within KPNW were evaluated and categorized into three ordinal levels: better than standard, standard (the most common package of benefits), and worse than standard. The standard KPNW benefits for mental health and chemical dependency were very similar to the benefit levels offered by many other HMOs in the U.S.,[69] covering up to 40 outpatient visits and 80% of the cost of inpatient services up to a limit of $4000 during a two-year period. Because of distributional characteristics, we recoded this variable into a binary measure indicating better than standard benefit = 1 and standard or worse than standard benefit = 0. An example of a standard mental health benefit package included 40 outpatient visits with a $15 copayment and no copayment thereafter, two group visits counted as one regular visit, and 80% coverage for inpatient care with a $4000 2-year maximum for members age 18 and over and $6000 two-year maximum for children under age 18. We used similar procedures to create a measure of chemical dependency benefit level. An example of a typical standard chemical dependency benefit level included up to 40 visits with a minimal copayment (usually the same copayment as was used for medical care), with two group visits equaling one individual visit, 80% of inpatient care with a maximum of $4500 paid over two years for adults and $4000 for children, 80% of residential or day treatment with a two-year maximum of $3500 for adults and $3000 for children, 80% of reserve for inpatient or residential for children with a

$1500 maximum over two years, and a total two-year benefit maximum of $6500 for adults and $10,500 for children. The binary chemical dependency benefit level measure was coded as standard and worse than standard benefit package = 0, better than standard = 1.

Medical Copayment

Medical copayment was obtained from health plan records, and represents each member's copayment for routine outpatient medical visits at the time the survey was returned. Typical copays ranged from $0 to $10; $5 was the most common copay (41.7%), and 98.8% of respondents had copays of $5 or less.

Total Cost of Care

This variable represents members' total cost of health care in the year after survey completion. Using methods developed by Hornbrook *et al.*,[62,63] costs were assigned to ambulatory encounters by department and provider type, based on a specific positions assessment commissioned by the HMO in 1993. Imaging procedures were classified by profession and technical resource-based relative value units, and a cost coefficient applied to each unit. Costs for medications were obtained from pharmacy records, and costs for inpatient care were based on the HMO's Medicare Cost Report for the time period, using a standard algorithm for calculating costs of units of care provided (days in critical care, days in routine care, minutes in operating room, minutes in recovery room). Costs for service use outside the HMO were captured in a claims database. A total of 433 participants (7.6%) did not have any health care costs. Final total costs for the year following survey return ranged from 0 to $126,468.31 (Mean = 3389.22, SD = 8,509.41). Because the distribution of this variable was positively skewed, we log-transformed it (after having added 1 to all values to eliminate zeros). The transformed measure very closely approximated a normal distribution. An example of the algorithms used to estimate cost appears in the footnote below.*

Data Preparation and Data Analytic Procedures

We examined missing survey data (health plan data were complete), using the SPSS version 10[70] missing data module, to determine if patterns existed that might bias results. We found no evidence of patterns, so we replaced missing data based on the characteristics of the measure. For continuous measures, we used maximum likelihood estimation procedures–a multivariate between-subjects technique considered among the best approaches for such measures.[71,72] For binary categories indicating presence or absence of a condition, we took the most conservative approach, setting missing data points = 0, indicating absence of the condition. In all cases we created missing value indicator variables and included these in preliminary analyses. Two of the missing value indicators had modest independent relationships with alcohol consumption at the bivariate level. We evaluated the impact of each of these in covariance structure models.

Covariance Structure Models

We explored two primary questions with our analyses:

(i) How are alcohol consumption, mental and physical health, functioning, alcohol and depression diagnoses, and demographic characteristics in Year 1 related to total health care costs in Year 2?, and

(ii) Do these relationships differ by gender?

To answer study questions, we used covariance structure modeling procedures to build simultaneous models of total health care costs for men and women, testing them to determine if the paths in the models differed significantly across gender. Modeling procedures follow.

Model Specification

Figure 1 shows the conceptual model that guided our specification of the initial models. We began by building a measurement model with latent variables for mental health, physical health, and functioning, then followed with gender-based structural models predicting alcohol consumption. Detailed results of these models are presented elsewhere.[40] The measurement model included three hypothesized latent constructs–mental health, physical health, and functioning–and fit indices indicate that the model is considerably better than the independence model. Structural models predicting alcohol use, built upon the measurement model, indicate good fit of both the model predicting drinking status (drinking vs. not) and the model predicting amount of alcohol consumed among drinkers. See Green *et al.*[40] for additional details of model results.

For analyses presented in the current paper, we built upon the above-referenced models[40] to model total costs of care. We hypothesized, and then tested, paths (from latent and measured variables established in the prior models) to cost of care, and added (and tested) additional measures of chemical dependency and mental health benefit levels. We computed two sets of gender-based, stacked, between-group models of total costs of health care. Model 1 used binary drinking status (drinking vs. not drinking) as the alcohol measure; Model 2 used amount of alcohol consumed and was computed for drinkers alone. Sociodemographic variables were exogenous in the model, each measured by a single indicator, and included age, ethnicity, Hispanic origin, social class, adjusted income, marital status, and employment status. We computed separate models to examine the effects of drinking vs. not drinking, and the effects of amount of alcohol consumed, on costs of care, because of the large number of individuals who do not drink. This approach, developed for studying services use and cost,[73] results in better distributions for the variables

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* Inpatient Expense = [(# of Routine Hospital Days)*(Daily Routine Nursing Cost + Daily Hospital Overhead + Daily Inpatient Medical Physician Costs)] + [(# of ICU Days + # of CCU Days) * (Daily ICU + CCU Costs + Daily Hospital Overhead + Daily Inpatient Medical Physician Costs)] + [(# of Inpatient OR Minutes) * (Operating Room Cost Per Minute + Inpatient Surgical Physician Cost Per Minute) + (# of Recovery Room Minutes) * (Recovery Room Cost Per Minute)] + [(# of admissions from Emergency Room) * (Cost per Admission from Emergency Room)]

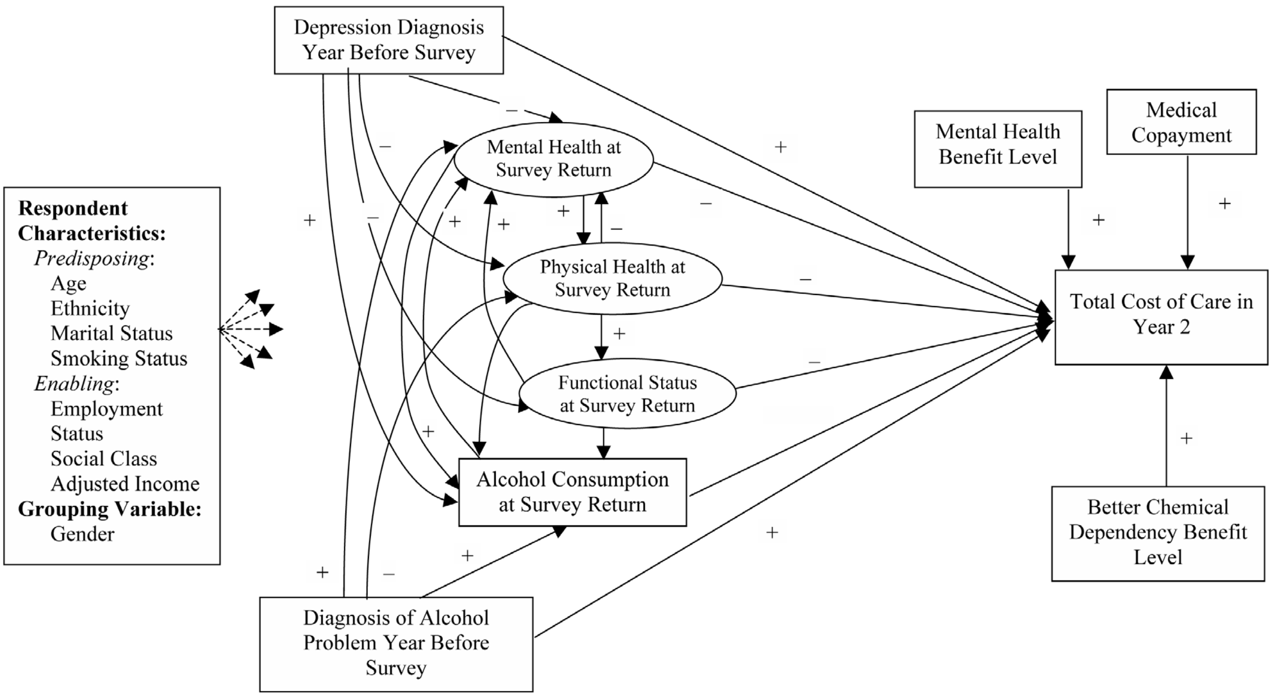

Figure 1. Conceptual Model of Mental and Physical Health Comorbidities, Alcohol Consumption and Total Cost of Care.

of interest and also provides important additional information about the specific roles played by both drinking status and amount of alcohol consumed. Although such modeling approaches are common in research on costs, since only a small percentage of study respondents had zero costs, the cost distributions for the study sample closely approximated a normal distribution after computing the natural log of costs (having added one to all costs to eliminate zeros). For these reasons, we deemed a second two-part model for costs unnecessary.

Testing the Models

We used a systematic approach for general model testing, and testing for gender differences, using a stacked simultaneous estimation approach with the software program AMOS 4.0.[74] First, we tested the factor structure of the latent variables in the measurement model to ensure that it was stable (see Green *et al.*[40]). Second, we examined paths describing the relationships among the exogenous variables, since these relationships would not theoretically be influenced by other variables in the model. We then added the variables that we hypothesized to intervene between the exogenous variables and the endogenous variables in the models, including depression and alcohol-related diagnoses, smoking status, health and functioning, and drinking status or alcohol consumption (depending on the model). Finally, we added the outcome variable–costs of care–and associated paths. During each stage of the analysis, we evaluated all paths and covariances for gender differences. To test for gender differences, we estimated men's and women's models simultaneously and compared constrained models assuming no gender differences (paths for men and women were set to be equal) to partially constrained models in which a specific path or paths were allowed to vary, using chi-square difference tests to evaluate gender differences. In such comparisons, a significant chi-square difference test indicates that gender differences exist (i.e., that the model allowing the path coefficients to vary for men and women fits the data significantly better than the model with paths constrained to be the same for men and women). We eliminated non-significant paths that did not differ by gender, while retaining those that differed and allowing them to vary. We imposed equality constraints on significant paths without gender differences. Finally, we also examined the modification indices for indications that adding paths or covariances would improve the models, but few changes were made based on these indices.

Results

Model Fit

To evaluate the fit of all models, we compared the hypothesized model to the independence model, which hypothesizes no relationships between the variables. If the hypothesized model fits substantially better than the independence model, then the hypothesized model is explaining systematic variance in the data. **Table 1** shows initial and final goodness-of-fit statistics for the two sets of structural models–those using the drinking status measure and those using the measure of amount of alcohol consumed.

Several measures of goodness of fit were examined to evaluate the overall fit of the models to the data. The adjusted goodness-of-fit index (AGFI) for all final models exceeded the desired value of .90; root mean square error of approximation (RMSEA) for the final models indicated close fit (RMSEA less than .05). For Models 1 and 2, RMSEA was .031 (90% confidence interval = .029-.032), indicating that the average differences between the observed covariances and those predicted by the models were small. The final Normed Fit Indices for both models of .93 indicate that the models were more than 93% of the way to perfect models, compared to the independence model.

Structural Models of Total Costs of Care

Model 1 resulted from tests of hypothesized models of total costs of care among the full sample, using binary drinking status as the alcohol measure (drinking vs. not drinking). **Table 2** shows predictors of costs from Model 1 (see **Table 2a**, **Appendix**, for remainder of the model). **Figure 2** shows a simplified version of Model 1 indicating statistically significant hypothesized paths and gender differences; relationships with demographic variables have been omitted to simplify the diagram. The initial structural model contained some non-significant paths, which we eliminated one at a time, examining the model for stability following each change. The following hypothesized paths to total costs were dropped: social class, medical copay, mental health benefit level (variable deleted), and Hispanic origin. Modification indices suggested that adding additional paths would not improve model fit.

We report both unstandardized and standardized coefficients (and associated ranks) to aid comparisons of relative weights and importance. Standardized coefficients allow accurate comparisons across variables *within* groups. Unstandardized coefficients allow comparison *across* gender for the same measured variable. **Table 2**, **Table 3** and, in **Appendix**, **Table 2a** and **Table 3a**, include path coefficients for all variables and constructs in the models, although we primarily discuss those with important direct or indirect relationships to costs. Coefficients presented in the text are unstandardized.

Model 1

Model 1 tested the hypothesized structural model of total costs of care among the full sample (n = 5,669; 3,069 men, 2,600 women), using binary drinking status (drinking vs. not drinking) as the alcohol measure. Model 1 explained 18.8% of the variance in total costs for men and 15.8% of the variance in total costs for women. The strongest predictor of costs of care was functioning, with respondents who reported better functioning having significantly fewer costs than those with worse functioning. This relationship was significantly stronger among men (-0.055; 95% CI: -0.061, -0.049) than among women (-0.040; 95% CI: -0.046, -0.034).

Among women, diagnosis of depression in the year prior to the survey was the second most important determinant of higher costs of care; it ranked seventh for men. There were no gender differences in the overall strength of the association for men and women.

Employment status was the second most important determinant of costs among men; it ranked fourth among women. There were significant gender differences for this predictor–men and women who were employed had lower costs of care than those who were not employed, but employment among men was a stronger predictor of lower costs (-0.699; 95% CI: -0.881, -0.517) than it was among women (-0.216; 95% CI: -0.380, -0.058).

Smoking cigarettes was the third most important predictor of lower costs among women, and was fifth among men, but the strength of the association did not differ by gender. The role played by adjusted income did differ by gender. Higher incomes predicted higher health care costs among men (0.166; 95% CI: 0.092, 0.240) but not women (0.023; 95%

Table 1. Model Fit Indices for Model 1 and Model 2

Model	χ^2	df	AGFI	NFI	RMSEA
Model 1: Independence model for costs using the binary drinking status measure, stacked by gender	27981.90	380	0.530	0.000	0.113
Model 1: Final cost model for costs using the binary drinking status measure, stacked by gender	1845.57	293	0.953	0.934	0.031
Model 2: Independence model for costs among drinkers, using the continuous alcohol consumption measure	17617.68	380	0.559	0.000	0.110
Model 2: Final model for costs among drinkers, using the continuous alcohol consumption measure	1302.80	287	0.949	0.926	0.031

Note. AGFI = adjusted goodness of fit index; NFI = normed fit index; RMSEA = root mean square error of approximation.

Table 2. Final Structural Model of Total Health Care Costs among Full Sample Using Drinking Status Alcohol Measure (Model 1).†

		Unstandardized Coefficients[a]		Standardized Coefficients			
Endogenous Measure Being Predicted	Predictors	Women	Men	Women	Rank	Men	Rank
Total Cost of Health Care	Functioning	−0.040***	−0.055***	−0.340	1	−0.350	1
	Depression Diagnosis in Year 1	0.548***		0.078	2	0.038	7
	Smoking	−0.321***		−0.059	3	−0.048	5
	Employment Status	−0.216**	−0.699***	−0.052	4	−0.136	2
	Drinks Alcohol	−0.168**		−0.041	5	−0.029	9
	Alcohol Diagnosis in Year 1	0.777**		0.037	6	0.046	6
	White Ethnicity	0.187*		0.030	7	0.020	10
	Chemical Dependency Benefit Level	−0.180*		−0.029	8	−0.024	8
	Adjusted Income	0.023	0.166***	0.013	9	0.080	3
	Married	0.049	0.341**	0.012	10	0.055	4

Note: † Coefficients for Predictors of Variables Other Than Costs Appear in **Table 2a** (see **Appendix**).
* = p < .05, ** = p < .01, *** = p < .001
[a] Merged cells indicate that there were no gender differences in the relationship.

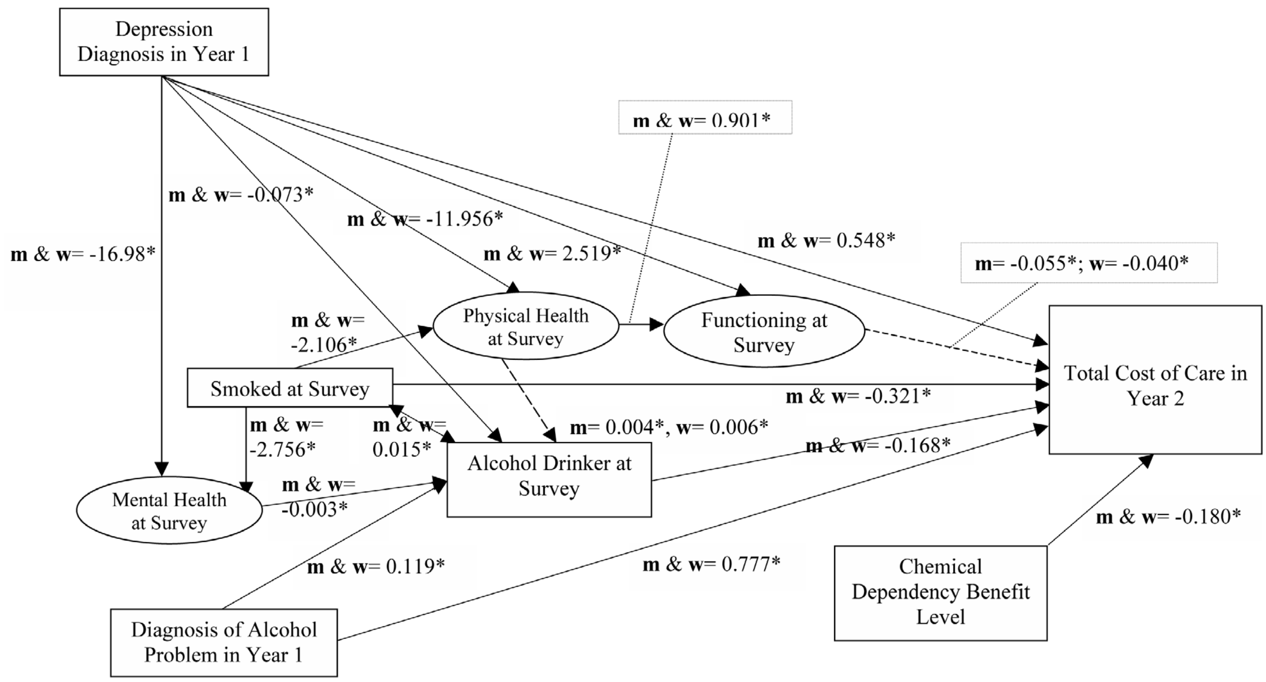

Figure 2. Simplified Model of Total Costs of Care (Model 1) Using Binary Alcohol Consumption Measure (Drinking vs. not Drinking).

Note: Demographic measures included in the models have been removed to simplify the diagram but appear in tables. Path coefficients are unstandardized.
m = Men; **w** = Women;
* = statistically significant path.
Dashed arrows indicate paths with gender differences.

CI: -0.044, 0.090). Additionally, for men, income was the third strongest predictor of costs of care, while for women it ranked ninth.

There were important gender differences related to marital status as well. Married men used more health care services (0.341; 95% CI: 0.121, 0.561) than women (0.049; 95% CI: -0.100, 0.198). Among men, being married ranked fourth among predictors of cost, whereas among women it ranked tenth.

Drinking alcohol was associated with lower costs of care for both men and women and, although it ranked fifth as a predictor of women's costs and ninth as a predictor of men's costs, there were no gender differences in the overall strength of the association. Alcohol-related diagnoses in the year prior to the survey, however, predicted *increased* costs for men and women equally and ranked sixth among predictors for both genders.

White ethnicity also predicted increased costs for men and women, although among women it ranked seventh and among men tenth. We found no gender differences in the strength of association. Finally, having a better chemical dependency benefit level predicted lower costs for both men and women, and this indicator ranked eighth for both genders.

Worth noting are several gender differences in predictors of drinking status itself, which appear in the base model. The relationship between better physical health and drinking alcohol was stronger among women, as was the relationship between being of White ethnicity and drinking. Finally, those age 60 and over were less likely to drink alcohol, and this relationship was stronger among women than among men (see Green *et al.*[40] for additional details on base models predicting drinking status).

Model 2

Model 2 tested the hypothesized structural model of total costs of care among current drinkers, using the natural log of average drinks per month as the alcohol measure (n = 3,775; 2,222 men, 1,553 women). This model explained 16.6% of the variance in total costs among male drinkers and 13.0% of the variance in total costs among female drinkers. **Table 3** shows predictors of costs in Model 2 (see **Table 3a**, **Appendix**, for the remainder of the model); **Figure 3** shows a simplified version of Model 2, indicating statistically significant hypothesized paths and gender differences. The initial structural model contained some non-significant paths. We eliminated these paths one at a time and examined the model for stability after each path was dropped. The following hypothesized paths to total costs were dropped: social class, marital status, medical copay, chemical dependency benefit level, mental health benefit level, and Hispanic origin. Our examination of modification indices suggested that adding additional paths would not improve model fit.

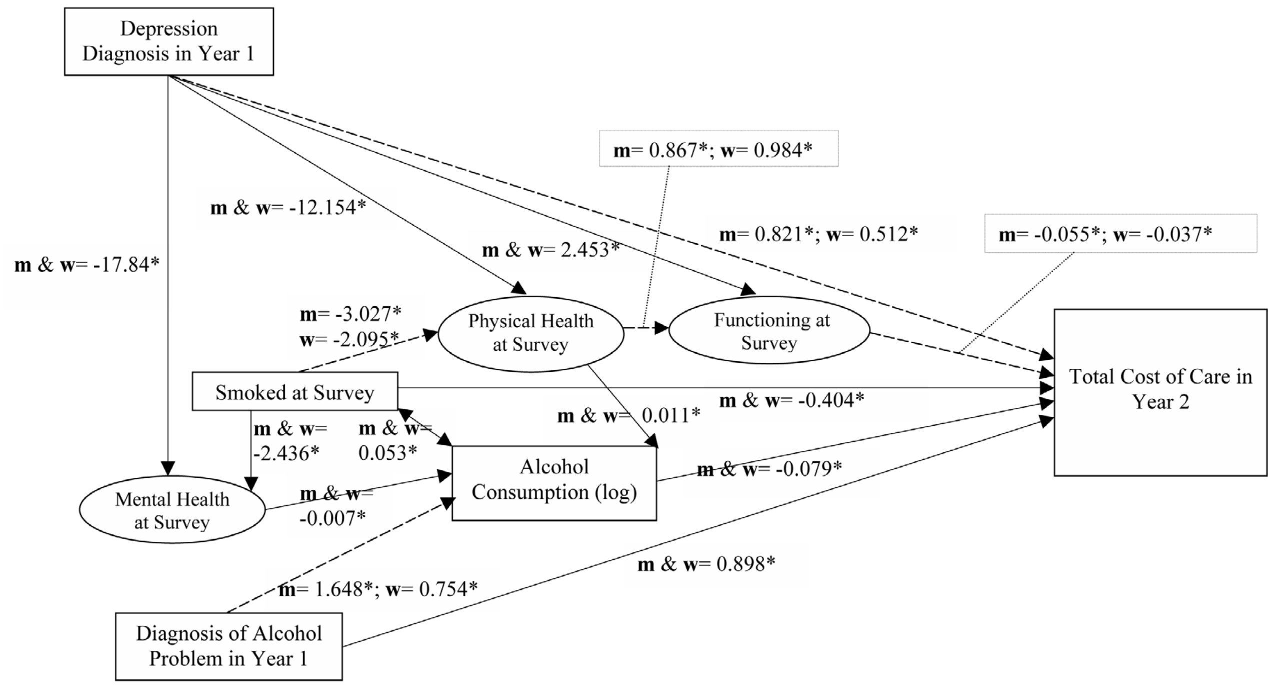

Figure 3. Simplified Model of Total Costs of Care Among Drinkers (Model 2), Using Continuous Alcohol Consumption Measure.

Note: Demographic measures included in the models have been removed to simplify the diagram but appear in tables. Path coefficients are unstandardized.
m = men; **w** = women;
* = statistically significant path.
Dashed arrows indicate paths with gender differences.

As was true in Model 1, functioning was the most important predictor of total cost of care for both men and women, and the relationship between better functioning and lower health care costs was stronger among men (-0.055; 95% CI: -0.063, -0.047) than among women (-0.037; 95% CI: -0.043, -0.031). Similarly, smoking was also associated with reduced health care costs for men and women in Model 2. Among women, smoking ranked second only to functioning in predicting lower costs, while among men it ranked fourth–there was no gender difference in the strength of the association.

As with Model 1, depression diagnosis in the year prior to the survey predicted greater health care costs among both drinking men and women. Compared to Model 1, however, there *was* a gender difference in the relationship between depression diagnosis and costs in this model: The strength of the association between depression and increased costs was stronger for men (0.821; 95% CI: 0.239, 1.403) than for women (0.512; 95% CI: 0.145, 0.879), yet depression diagnoses ranked third among predictors of women's costs and fifth among those of men.

Model 2, like Model 1, shows that employment status predicts costs of care for both men and women, and that the relationship was stronger among men (-0.690; 95% CI: -0.908, -0.472) than women (-0.248; 95% CI: -0.452, -0.044). Employment predicted lower health care costs and ranked second as a predictor of men's costs compared to a rank of four among women. Adjusted income was also an important determinant of costs among men (0.144; 95% CI: 0.066, 0.222) but not among women (0.008; 95% CI: -0.070, 0.086), with higher income predicting higher costs of care for men.

Having had an alcohol diagnosis in the year prior to the survey predicted increased costs for men and women equally, and ranked fifth among predictors for both genders. There was a gender difference in the relationship between prior diagnosis of an alcohol problem and alcohol consumption, however, and therefore also an indirect relationship to total costs via amount consumed. As was true in Model 1, alcohol consumption also predicted costs, but in the opposite direction. Greater consumption was associated with reduced costs of health care for both men and women, and ranked sixth for both genders. Similarly, White ethnicity predicted greater costs of health care for men and women, did not differ by gender, and ranked seventh for both men and women.

Worth noting were some gender differences in predictors of alcohol consumption from the base model. Among these, higher social class was a stronger predictor of greater alcohol consumption among women. The positive relationship between alcohol diagnosis in the prior year and greater amounts of alcohol consumed was stronger for men than women with such diagnoses. The positive relationship

Table 3. Final Structural Model of Health Care Costs among Drinkers, Using Log of Alcohol Consumed As the Alcohol Measure (Model 2).†

		Unstandardized Coefficients[a]		Standardized Coefficients			
Endogenous Measure Being Predicted	Predictors	Women	Men	Women	Rank	Men	Rank
Total Cost of Health Care	Functioning	−0.037***	−0.055***	−0.301	1	−0.321	1
	Smoking	−0.404***		−0.079	2	−0.062	4
	Depression Diagnosis in Year 1	0.512**	0.821**	0.067	3	0.055	5
	Employment Status	−0.248*	−0.690***	−0.061	4	−0.133	2
	Alcohol Diagnosis in Year 1	0.898**		0.048	5	0.055	5
	Alcohol Consumption	−0.079**		−0.041	6	−0.040	6
	White Ethnicity	0.228		0.033	7	0.024	7
	Adjusted Income	0.008	0.144***	0.005	8	0.071	3

Note: † Coefficients for Predictors of Variables Other Than Costs Appear in **Table 3a** (see **Appendix**)
$* = p < .05$, $** = p < .01$, $*** = p < .001$
[a] Merged cells indicate that there were no gender differences in the relationship.

between being age 60 and over and consuming more alcohol was true only for women, as was the impact of marital status. Being married, among women, was associated with more alcohol consumed. Finally, income was a stronger predictor of men's consumption than women's, although it predicted consumption among both genders (see additional details and discussion of these results in Green *et al.*[40]).

Discussion

We found important gender differences in the complex relationships underlying alcohol consumption and total health care costs. These differences were more pronounced among current drinkers than among the combined sample of drinkers and non-drinkers. We also found many similarities across gender, however, and gender differences were often a matter of magnitude rather than a difference in the direction of the relationship between two factors. Most importantly, across models and gender, current drinkers had lower health care costs than non-drinkers and, among current drinkers, those who drank more alcohol had lower costs than did lighter drinkers in this primarily light-to-moderate drinking population.

Consistent with other models of health care use and costs,[26,41-47] we found that measures indicating ''need'' were among the strongest predictors of costs. Significant gender differences in the roles played by some of these need-related factors advance our understanding of factors underlying costs more generally. In particular, individuals with better functioning had lower costs, and this was particularly true among men across both models. Other need factors important in the model included prior diagnosis of depression and prior diagnosis of an alcohol problem. Interestingly, although depression diagnosis was an important predictor of future costs for both men and women, among those who drank it was a stronger predictor of costs among men. There was no gender difference in the relationship between prior alcohol diagnosis and cost of health care.

Physical health had indirect effects on costs, through alcohol use (both drinking status in Model 1 and amount consumed in Model 2) and functioning. There was a significant gender difference in the relationship between physical health and drinking status in Model 1, with a stronger association between better health and drinking alcohol among women than among men. In Model 2 (among drinkers), the relationship between physical health and functioning was much stronger among women than among men. Prior diagnosis of an alcohol problem also had an indirect relationship on costs via amount of alcohol consumed.

Interestingly, the effects of mental health on health care costs in both models were indirect, through the drinking variables (net of the direct effects of past depression diagnosis on costs of care). These relationships did not differ for men and women, although there was a gender difference in the relationship between depression diagnosis and higher total cost of care among drinkers, with that relationship stronger among men than women.

Predisposing factors were also important predictors of costs. Of particular interest are smoking and alcohol consumption, which appear to fall into the category of predisposing conditions, because they were directly related to lower costs of care. Among smokers, our results could be interpreted as indicating health care avoidance as a direct effect of smoking, while also showing that the negative effects of smoking indirectly lead to higher costs via physical health and functioning.

The different relationships between health care costs and alcohol use measures suggest more complicated explanations of some of these underlying processes. Our models show that individuals with diagnoses of alcohol problems have greater costs of care, but also provide indirect support for work showing health benefits of moderate alcohol consumption. The majority of respondents were light-to-moderate drinkers, and both being a drinker alone and consuming more alcohol among drinkers predicted lower costs. Unfortunately, we were unable to disentangle the possible positive effects of moderate alcohol consumption from possible health care avoidance among individuals who drink heavily. Future research should address this important question.

Marriage appears to be another important predisposing, or perhaps enabling, factor related to costs of care, particularly for men. This is consistent with work indicating that women may have a role in spurring men's health care consumption[75] – it is possible that married men's generally better health may result in part from use of more health care services (e.g., less avoidance of care). Additionally, consistent with findings from the social support literature, men appear to benefit more from marriage than do women[76] – marriage among men was associated with better mental health and reduced likelihood of depression, factors having indirect and direct effects on costs, respectively.

Finally, the enabling condition of having a better chemical dependency benefit level predicted lower costs of health care. Based on the Anderson model, we had expected that a more generous benefit level would predict higher costs. This unexpected finding may suggest that benefit level is a proxy for other factors related to socioeconomic status not otherwise included in the model. Alternatively, it is also consistent with recent research suggesting that benefit caps may not have significant effects on costs.[77]

Limitations

We would also like to note a few limitations of these analyses. Since only mental health and medical charts were abstracted for the parent study, diagnoses specific to addiction medicine treatment were not abstracted unless they were made by a medical provider (rather than a counselor) in the Addiction Medicine department. Consequently, substance misuse/dependence diagnoses were those received from medical or mental health care providers and do not include those individuals who received diagnoses of these problems by non-medical Addiction Medicine department staff alone. This may have produced an underestimation of the magnitude of the path coefficients between alcohol diagnosis in Year 1 and total cost of care in Year 2. We also made decisions to collapse some variables into categories that were less detailed than we would have preferred (e.g., ethnicity as White vs. other; employment as employed or student vs. other) to reduce the complexity of the models. Collapsing variables in this way obscures our ability to identify relationships between specific ethnic or employment groups that might differ from those of others in the same categories. Finally, we did not have access to non-monetary costs to members, such as waiting times, so could not account for these in analyses. As a result, the cost findings presented here represent solely costs to the health plan.

Conclusions

Gender appears to play an important role in the factors underlying total costs of health care, particularly for measures indicating need, such as functioning. Additionally, gender differences appear more common among those who consume alcohol. Alcohol consumption and prior alcohol problems were directly related to health care costs for both men and women, although there appear to be gender differences in the indirect relationship of physical health to health care costs via drinking status. Prior depression had direct effects on greater health care costs, and this relationship differed by gender, being stronger among men. Conversely, the roles played by mental health symptoms in the model were similar for men and women, and, although they did not directly affect costs, there was an indirect path to costs via the alcohol measures (both drinking status and consumption).

Policy Implications

Our results have several policy implications. In the ongoing controversy over short-term costs associated with risky health-related practices, our work is consistent with that of Terry *et al.*[78] suggesting that some known risk factors for poor health (e.g., smoking and alcohol consumption) are not necessarily associated with increased short-term health care costs. These findings are inconsistent with Pronk *et al.*,[79] however, who found increased costs. If our results are confirmed by future research, insurers and health plans may not reap benefits of investments in behavioral risk reduction efforts when individuals change their health care or insurance plans. For this reason, insurers may require additional incentives to encourage their support of efforts to reduce long-term behavioral risk reduction. Moreover, requiring increased health care premiums for individuals engaging in risky behaviors may be unfair in the short term if their health care costs are in fact lower than those of individuals with less risky behavior patterns. Combined with findings that behavior change *can* reduce long-term health care costs,[80,81] our work, if confirmed, should provide information for policy-makers addressing methods of managing disincentives to behavioral interventions produced by current healthcare financing mechanisms in the US.

Acknowledgements

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APPENDIX

Table 2a. Final Structural Model of Total Health Care Costs among Full Sample Using Drinking Status Alcohol Measure (Model 1).†

		Unstandardized Coefficients[a]		Standardized Coefficients			
Endogenous Measure Being Predicted	Predictors	Women	Men	Women	Rank	Men	Rank
Drinks Alcohol	Physical health	0.006***	0.004***	0.202	1	0.113	1
	Age ≥ 60	−0.150***	−0.044*	−0.151	2	−0.049	7
	White Ethnicity	0.117***	0.035	0.116	3	0.021	10
	Mental health	−0.003***		−0.103	4	−0.108	2
	Smokes (covariance, correlation)	*0.015****		*0.088*	*5*	*0.088*	*3*
	Adjusted income	0.029***		0.068	6	0.081	4
	Employment Status	0.058**		0.057	7	0.064	5
	Social class	0.038**		0.053	8	0.057	6
	Alcohol diagnosis in year 1	0.119*		0.023	10	0.040	8
	Depression Diagnosis in Year 1	−0.073**		−0.042	9	−0.029	9
Mental Health	*Physical health (covariance, correlation)*	*135.920****		*0.677*	*1*	*0.715*	*1*
	Depression diagnosis, Year 1	−16.980***		−0.313	2	−0.206	3
	Functioning (covariance, correlation)	*−46.671****	*−31.449****	*−0.405*	*3*	*−0.287*	*2*
	Age ≥ 60	3.738***		0.121	4	0.128	4
	Social class	2.474***		0.109	5	0.113	5
	Marital status	2.750***		0.090	6	0.078	6
	Smokes	−2.756***		−0.066	7	−0.072	7
	Employment	1.898**		0.060	8	0.065	8
	Adjusted income	0.0663**		0.050	9	0.056	9

→

→ Table 2a. Final Structural Model of Total Health Care Costs among Full Sample Using Drinking Status Alcohol Measure (Model 1).

		Unstandardized Coefficients[a]		Standardized Coefficients			
Endogenous Measure Being Predicted	Predictors	Women	Men	Women	Rank	Men	Rank
Physical Health	Depression diagnosis, Year 1	−11.956***		−0.220	1	−0.147	2
	Social Class	3.365***		0.149	2	0.156	1
	Employment status	4.029***		0.127	3	0.140	3
	Adjusted income	1.118***		0.084	4	0.096	4
	Marital status	2.426***		0.079	5	0.069	5
	Age ≥ 60	−1.609**		−0.052	6	−0.056	6
	Smokes	−2.106***		−0.050	7	−0.056	6
	White ethnicity	−1.408*		−0.030	8	−0.027	7
Functioning	Physical health	0.901***		0.812	1	0.797	1
	Age ≥ 60	−6.092***		−0.178	2	−0.187	2
	Employment status	2.934***		0.083	3	0.090	3
	Depression diagnosis, Year 1	2.519**		0.042	4	0.027	6
	Social class	−0.947**		−0.038	5	−0.039	4
	Adjusted income	0.481**		0.032	6	0.036	5
	White Ethnicity	−0.846		−0.016	7	−0.014	7
Depression Diagnosis, Year 1	*Alcohol diagnosis, Year 1 (covariance, correlation)*	*0.002****		*0.069*	*1*	*0.070*	*2*
	Marital status	−0.032***		−0.056	2	−0.074	1
Alcohol Diagnosis, Year 1	*Smokes (covariance, correlation)*	*0.004****		*0.076*	*n.a.*	*0.128*	*n.a.*
Smoking	Age ≥ 60	−0.100***		−0.136	1	−0.131	1
	Social class	−0.053***		−0.099	2	−0.093	2
	Marital status	−0.055***		−0.075	3	−0.059	3
Better Chemical Dependency Benefit	Income	0.021***		0.075	*n.a.*	0.075	*n.a.*

Note: † Coefficients of Predictors of Costs Appear in **Table 2**.
* = p < .05, ** = p < .01, *** = p < .001
[a] Merged cells indicate that there were no gender differences in the relationship.

Table 3a. Final Structural Model of Health Care Costs Among Drinkers, Using Log of Alcohol Consumed as the Alcohol Measure (Model 2).†

Endogenous Measure Being Predicted	Predictors	Unstandardized Coefficients[a]		Standardized Coefficients			
		Women	Men	Women	Rank	Men	Rank
Alcohol Consumption	Physical health	0.011***		0.137	1	0.115	1
	Smokes (covariance, correlation)	*0.053****		*0.134*	*2*	*0.110*	*2*
	Mental health	−0.007**		−0.104	3	−0.077	5
	Social class	0.136**	−0.047	0.087	4	−0.024	6
	Alcohol diagnosis in year 1	0.754**	1.648***	0.077	5	0.203	3
	Age ≥ 60	0.158**	−0.028	0.076	6	−0.011	7
	Marital status	0.134*	0.027	0.063	7	0.009	8
	Adjusted income	0.043	0.104***	0.049	8	0.103	4
Mental Health	*Physical health (covariance, correlation)*	*121.422****		*0.682*	*1*	*0.703*	*1*
Mental Health (continued)	*Functioning (covariance, correlation)*	*−48.036****	*−27.602****	*−0.395*	*2*	*−0.257*	*2*
	Depression diagnosis, Year 1	−17.843***		−0.301	3	−0.217	3
	Social class	2.658***		0.114	4	0.126	5
	Adjusted income	1.226***	0.593*	0.096	5	0.053	8
	Age ≥ 60	2.518***		0.082	6	0.088	6
	Smokes	−2.436***		−0.062	7	−0.068	7
	Marital status	0.087	4.577***	0.003	8	0.135	4
Physical Health	Depression diagnosis, Year 1	−12.154***		−0.240	1	−0.153	2
	Social Class	3.219***		0.162	2	0.159	1
	Adjusted income	1.200***	1.003***	0.110	3	0.094	3
	Age ≥ 60	−2.516***		−0.095	4	−0.092	4
	Smokes	−2.095**	−3.027***	−0.062	5	−0.088	5
	Employment status	1.603**		0.060	6	0.058	8
	White ethnicity	−1.526	−2.915**	−0.034	7	−0.059	7
	Marital status	0.515	2.484**	0.019	8	0.076	6

→

→ Table 3a. Final Structural Model of Health Care Costs Among Drinkers, Using Log of Alcohol Consumed as the Alcohol Measure (Model 2).†

<table>
<tr><th></th><th></th><th colspan="2">Unstandardized Coefficients[a]</th><th colspan="4">Standardized Coefficients</th></tr>
<tr><th>Endogenous Measure Being Predicted</th><th>Predictors</th><th>Women</th><th>Men</th><th>Women</th><th>Rank</th><th>Men</th><th>Rank</th></tr>
<tr><td>Functioning</td><td>Physical health</td><td>0.984***</td><td>0.867***</td><td>0.786</td><td>1</td><td>0.784</td><td>1</td></tr>
<tr><td></td><td>Age ≥ 60</td><td>−8.581***</td><td>−2.367**</td><td>−0.260</td><td>2</td><td>−0.078</td><td>3</td></tr>
<tr><td></td><td>Social class</td><td colspan="2">−1.193***</td><td>−0.048</td><td>3</td><td>−0.053</td><td>4</td></tr>
<tr><td></td><td>Depression diagnosis, Year 1</td><td colspan="2">2.453*</td><td>0.039</td><td>4</td><td>0.028</td><td>6</td></tr>
<tr><td></td><td>Employment status</td><td>1.252</td><td>5.619***</td><td>0.037</td><td>5</td><td>0.185</td><td>2</td></tr>
<tr><td></td><td>Adjusted income</td><td colspan="2">0.400*</td><td>0.029</td><td>6</td><td>0.034</td><td>5</td></tr>
<tr><td>Depression Diagnosis, Year 1</td><td>Alcohol diagnosis, Year 1 (covariance, correlation)</td><td colspan="2">0.003***</td><td>0.092</td><td>1</td><td>0.095</td><td>1</td></tr>
<tr><td></td><td>Marital status</td><td colspan="2">−0.020**</td><td>−0.038</td><td>2</td><td>−0.050</td><td>2</td></tr>
<tr><td>Alcohol Diagnosis, Year 1</td><td>Smokes (covariance, correlation)</td><td colspan="2">0.004***</td><td>0.100</td><td>n.a.</td><td>0.067</td><td>n.a.</td></tr>
<tr><td>Smoking</td><td>Social class</td><td>−0.077***</td><td>−0.074***</td><td>−0.130</td><td>1</td><td>−0.126</td><td>1</td></tr>
<tr><td></td><td>Age ≥ 60</td><td colspan="2">−0.094***</td><td>−0.120</td><td>2</td><td>−0.118</td><td>2</td></tr>
<tr><td></td><td>Marital status</td><td colspan="2">−0.059***</td><td>−0.073</td><td>3</td><td>−0.062</td><td>3</td></tr>
<tr><td>Better Chemical Dependency Benefit</td><td>Income</td><td colspan="2">0.021***</td><td>0.075</td><td>n.a.</td><td>0.075</td><td>n.a.</td></tr>
</table>

Note: † Coefficients of Predictors of Costs Appear in **Table 3**.
$* = p < .05$, $** = p < .01$, $*** = p < .001$
[a] Merged cells indicate that there were no gender differences in the relationship.