



## Full length article

## Perceived social status and unhealthy habits in Korea

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## ARTICLE INFO

## Keywords:

Alcohol  
Tobacco  
Social status  
Korea

## ABSTRACT

**Background:** The association between socioeconomic status and unhealthy behaviors is well-documented in the literature. Less is known, however, about the role of subjective social status, but recent evidence shows that perceived standing in the social hierarchy has important roles in health.

**Methods:** This paper studies the association between perceived social status and the consumption of alcohol and tobacco among the South Korean elderly. Using data from a large longitudinal survey in Korea, we empirically estimate these correlations while controlling for a large set of confounders that include measures of objective social status.

**Results:** Respondents who view themselves as lower in the social hierarchy are more likely to be active smokers but equally likely to be drinkers as respondents who view themselves better off socially. We also find that among smokers and drinkers, the actual amounts of tobacco and alcohol consumed correlate well with perceived social status. In terms of drinking, the higher the subjective social status, the lower the amount of alcohol consumed. In terms of smoking, people at the two extremes of the social hierarchy smoke more than people in the middle.

**Conclusions:** South Korea is facing unique problems regarding aging, economic and social inequality, and high rates of tobacco and alcohol consumption. Understanding the role of perceived social status on these unhealthy habits is therefore extremely important for designing policies that address these health issues from multiple perspectives.

## 1. Introduction

There is a well-documented association between socioeconomic status (SES) and unhealthy behaviors such as tobacco and alcohol consumption. Lower SES individuals in Chile and Finland were found more likely to abstain from alcohol but also more likely to engage in heavy episodic drinking (Pena et al., 2017). Lower SES was also found to be associated with tobacco, cannabis, and alcohol consumption among French young adults (Redonnet et al., 2012) and with alcohol consumption in India (Kumar et al., 2018). However, most of the previous literature focuses on objective measures of SES such as income, education, occupation, and living standards, while much less is known about the impact of subjective SES on these unhealthy habits.

Subjective or perceived SES measures how someone perceives his relative position in the social hierarchy and relative economic well-being. Since people evaluate themselves based on their own education, income, etc., subjective SES can be correlated with objective SES. However, recent studies show that subjective SES plays important roles in health even after controlling for objective SES. For instance, Camelo et al. (2014) and Reitzel et al. (2014) find that perceived social status correlates with smoking, while Ghaed and Gallo (2007) and Reitzel

et al. (2013) find a similar correlation with healthy dietary and exercise habits.

This paper examines the association between perceived SES and smoking and drinking behaviors among the elderly population in South Korea. South Korea has specific cultural and social issues related to both aging and alcohol and tobacco consumption, and specific research using local data is of utmost importance. Extrapolating the results from other countries is generally not a good approach.

Aging in South Korea is a serious issue. While the country was a youthful country a decade ago, with only 9% of the population being elderly in 2005, a rapid demographic transition put South Korea on the path to becoming one of the oldest countries in the world with projections showing a 38% elderly ratio by 2050 (Howe et al., 2007). An economic boom that increased life expectancy dramatically, coupled with a massive decline in fertility rates, led to Korea aging faster than any country in history (Choi, 2008). Inevitably, the rapid economic development and aging lead to significant socioeconomic problems in which much of the economic opportunities are being exploited by the young, while the old are put through additional stress and difficulties. The poverty rate of the elderly is three times that of the young (Howe et al., 2007). An additional issue, discussed in Chung (2005) and Kim

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<https://doi.org/10.1016/j.drugalcdep.2018.09.014>

Received 22 June 2018; Received in revised form 14 September 2018; Accepted 21 September 2018

Available online 24 October 2018

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(1999), is the rapid increase in the number of elderly living alone and receiving less support from their children as a result of the massive youth migration from rural to urban communities.

At the same time, Korea has high rates of smoking and alcohol consumption. Korea ranks among the countries with the highest rates of male smoking prevalence in the world (Chung et al., 1992; Jee et al., 2004a; Jee et al., 2005). While male smoking prevalence has decreased over time, following global trends, from 60 to 70% in the late 1990s to about 33% in 2016, it remains very high, particularly when compared to other developed nations (OECD, 2018). Alcohol consumption is also elevated in Korea, where there is a long-established drinking culture that goes back centuries. Korea consistently ranks high for alcohol consumption regardless of the measure being used. For instance, WHO (2018) data shows Korea at number 38 out of 189 countries in terms of liters of pure alcohol consumed per capita with 10.2 liters of pure alcohol consumed per capita in 2016. The same data shows Korea at number 5 out of 193 countries in terms of daily alcohol grams consumed by drinking men with an average of 77.7 g of alcohol consumed per day among drinkers. Ferdman (2014) reports a study by Euro-monitor International, based on a smaller sample of only 44 countries, that places Korea at the very top in terms of daily hard liquor consumption. This highly elevated alcohol consumption has been found to have severe negative consequences on different health dimensions such as metabolic syndrome (Yoon et al., 2004), gastric cancer (Sung et al., 2007), liver cancer (Jee et al., 2004b), and even suicide (Han et al., 2009; Park, 2008).

Among the very few previous studies to tackle these issues in South Korea, Hwang and Chung (2016) use data from the Korean Health Panel to show that lower social status is associated with problematic drinking. However, their data does not include actual alcohol amounts consumed but only the respondents' answers to two out of four questions in the CAGE questionnaire. Ko et al. (2014) show correlations between perceived SES and smoking, but their data focuses solely on adolescents.

We use data from the Korean longitudinal study of aging (KLOSA) to study the association of perceived social status on both alcohol and tobacco consumption. To the best of our knowledge, this is the only study to date that focuses on Korean aging adults and uses actual quantitative data regarding the amounts of alcohol and cigarettes consumed. We find that perceived social status is significantly associated with both smoking and drinking even after controlling for objective measures of social status like household income and education level.

Korean elderly with higher perceived social status are less likely to be smokers, and among smokers they smoke fewer cigarettes per day. On the other hand, perceived social status is not related to the respondent's status as a drinker but is associated with the daily amount of alcohol consumed among drinkers.

## 2. Material and methods

### 2.1. Data

We use data from the latest (sixth) wave of KLOSA, which was fielded in 2016. KLOSA covers Koreans aged 45 or older who reside in communities outside Jeju Island. There are currently six waves of the survey conducted in 2006, 2008, 2010, 2012, 2014, and 2016. The survey uses a computer assisted personal interviewing (CAPI) method to collect the data, where respondents record their answers in the computer by themselves to minimize interviewer-based measurement errors.

### 2.2. Smoking measures

The questionnaire asks respondents if they are current smokers, former smokers, or never smokers. Those who are current smokers are also asked how many cigarettes they smoke per day. We first create a

smoker indicator variable coded with 1 if the respondent is a current smoker and 0 otherwise. Among those who currently smoke, we also use the number of cigarettes smoked per day as an additional smoking measure.

### 2.3. Drinking measures

Several questions are asked to evaluate the respondents' drinking habits in KLOSA. Respondents are first asked if they are current drinkers, and if so they are further asked which type of alcoholic drink they drink and how much. The options for types of drinks are beer, wine, whisky, soju, and makgeolli. Soju, a traditional distilled liquor, is the most popular drink in Korea, while makgeolli is a traditional rice wine.

Following Kim and Song (2014), in order to make equivalent comparisons between different types of drinks, we calculate the overall quantity of alcohol consumed. We use 40% vol. for whisky, 20% vol. for soju, 12% vol. for wine, 6% vol. for makgeolli, and 4.5% vol. for beer. Using information on the frequency of drinking days, the amount of drinks, and the type of drinks, we calculate the average daily quantity of alcohol consumed. This average daily quantity of alcohol, together with an indicator variable that takes value 1 if the respondent is a current drinker and 0 otherwise, are the two measures of alcohol consumption we use in our analysis.

### 2.4. Perceived social status

Respondents were asked to evaluate their social status and choose where they see themselves on the social hierarchy relative to others. The choices the respondents were faced with were "top of top", "bottom of top", "top of middle", "bottom of middle", "top of bottom", and "bottom of bottom". Only around 0.67% of the respondents classified themselves as being in the "top of top" group and so we grouped these individuals together with those in the "bottom of top" to avoid possible biased results associated with a small sample. We went on and created indicator variables for each of the remaining groups except for the "bottom of bottom", which we use as our reference group.

### 2.5. Other covariates

In order to rule out the concern that subjective SES is merely a proxy for objective SES, we control for household income and respondents' education in our regressions. To capture possible differential impacts of education levels on smoking and drinking behaviors, we constructed indicator variables for junior high graduates, senior high graduates, and college graduates and above. Hence, elementary education or less is the reference category.

We also control for respondent's age, marital status, gender, retirement status, urban or rural location, and health status. We include a number of different variables to account for different dimensions of health: cognition, depression, chronic diseases, and subjective health measures. Cognition is measured using the Korean version of the Mini-Mental State Examination, while depression is measured following the CESD score. Both measures take values from 0 to 30, with higher values representing better cognitive functioning and more severe depression, respectively. Subjective health is accounted for using a series of indicator variables for how respondents classify their own health: very good, good, fair, and poor, with excellent as the reference group.

### 2.6. Data analysis

Simple summary statistics are presented in Table 1. Out of a total of 7099 respondents, 780 (about 11%) are currently smokers, and 2446 (about 35%) are currently drinkers. On average, the smokers smoke 15.21 cigarettes per day, while the drinkers drink an average of 14.24 g of alcohol per day.

We employ ordinary least squares (OLS) regressions to estimate the

**Table 1**  
Summary Statistics.

| Variable                       | Description                         | Mean  | SD    | N    |
|--------------------------------|-------------------------------------|-------|-------|------|
| Smoker                         | currently smoking = 1, 0 otherwise  | 0.11  | 0.31  | 7099 |
| Number of cigarettes per day   |                                     | 15.21 | 6.41  | 780  |
| Subjective social status       | top of top + bottom of top          | 0.03  | 0.17  | 7099 |
|                                | top of middle                       | 0.19  | 0.39  | 7099 |
|                                | bottom of middle                    | 0.35  | 0.48  | 7099 |
|                                | top of bottom                       | 0.27  | 0.44  | 7099 |
|                                | bottom of bottom (Reference group)  | 0.16  | 0.37  | 7099 |
| Drinker                        | currently drinking = 1, 0 otherwise | 0.34  | 0.48  | 7099 |
| Mean daily alcohol consumption | gram                                | 14.24 | 21.51 | 2446 |

relationship between smoking/drinking and subjective social status. For the binary outcome variables (smoker/drinker status), we also estimated probit models and found the results to be robust to this alternative modeling.

### 3. Results and discussion

#### 3.1. Smoking

We begin with the association between perceived social status and smoking. The results of our estimations are presented in Table 2. The first column presents the association between perceived social status and being a current smoker, while the second column presents the association between perceived social status and the number of cigarettes smoked per day among current smokers.

Compared to the reference group of people who view themselves in the “bottom of bottom” group, those who view themselves to be on a higher social standing are less likely to be smokers. Those with the most optimistic view of being at the very top of the social hierarchy are 6% less likely to smoke than those at the very bottom. Respondents in the two middle categories are 5% and 3% less likely, respectively, to smoke than those at the bottom. These effects are estimated while controlling for objective social status measures and other correlates.

The associations between being a smoker and other correlates are mainly in line with what is expected. Age is inversely correlated with the likelihood of smoking, with the older cohorts and the retired status having lower rates of smoking. Men are significantly more likely to smoke than women, and married people are less likely to smoke than unmarried ones. The level of education is also strongly correlated with smoking, with higher levels of education lowering the probability of smoking. Somewhat interestingly, household income, cognition, and depression are not associated with the likelihood of being a smoker. Those with chronic diseases are less likely to smoke, while those with poor subjective health are more likely. This result again presents a contrast between subjective and objective measures.

As mentioned earlier, the second column presents the association between perceived social status and the amount of smoking. Because this column restricts attention to only those respondents who currently smoke, the sample size becomes smaller. The results are somewhat similar but with some notable differences.

In terms of the perceived social status, the number of cigarettes smoked per day seems to have a non-linear correlation. As perceived social status increases, the amount of smoking first decreases and then increases. Note that smokers in the top of bottom group smoke as many cigarettes as those in the bottom of bottom, those in the middle two groups smoke less, and then those in the top group again smoke just as much. A possible explanation of this pattern is that smoking is often times a way of coping with stress (see Rosario et al., 2011 or Torres and

**Table 2**  
Subjective Social Status and Smoking.

|                             | (1)<br>Smoker           | (2)<br>Num of Cigarettes per day |
|-----------------------------|-------------------------|----------------------------------|
| 60-69                       | -0.0252**<br>(0.0112)   | -1.697***<br>(0.635)             |
| 70-79                       | -0.0879***<br>(0.0126)  | -4.052***<br>(0.840)             |
| 80-                         | -0.126***<br>(0.0148)   | -5.421***<br>(1.207)             |
| Men                         | 0.253***<br>(0.00888)   | 1.773<br>(1.104)                 |
| Married                     | -0.0572***<br>(0.00853) | 1.112<br>(0.752)                 |
| Junior High                 | -0.0231**<br>(0.0108)   | -0.562<br>(0.723)                |
| Senior High                 | -0.0418***<br>(0.0103)  | 0.100<br>(0.684)                 |
| College and more            | -0.0792***<br>(0.0158)  | 1.030<br>(0.852)                 |
| Top of top + Bottom of top  | -0.0610***<br>(0.0208)  | -2.101<br>(1.489)                |
| Top of middle               | -0.0531***<br>(0.0129)  | -1.909**<br>(0.928)              |
| Bottom of middle            | -0.0310***<br>(0.0113)  | -2.134***<br>(0.746)             |
| Top of bottom               | -0.0311***<br>(0.0110)  | -1.069<br>(0.808)                |
| Cognition                   | 0.00108<br>(0.000691)   | -0.0433<br>(0.0738)              |
| ln (Household Income)       | 0.00287<br>(0.00378)    | -0.461<br>(0.432)                |
| Depression                  | 0.000657<br>(0.000732)  | -0.0551<br>(0.0556)              |
| Retired                     | -0.0298**<br>(0.00734)  | -1.429**<br>(0.607)              |
| Urban                       | -0.00207<br>(0.00844)   | -1.287**<br>(0.511)              |
| Number of Chronic Diseases  | -0.00686**<br>(0.00331) | 0.228<br>(0.235)                 |
| Very good subjective health | 0.0693<br>(0.0430)      | 2.768<br>(1.725)                 |
| Good subjective health      | 0.100**<br>(0.0409)     | 2.790 <sup>†</sup><br>(1.519)    |
| Fair subjective health      | 0.118***<br>(0.0412)    | 2.512<br>(1.531)                 |
| Poor subjective health      | 0.100**<br>(0.0416)     | 2.632<br>(1.770)                 |
| Constant                    | 0.0206<br>(0.0527)      | 19.56***<br>(4.514)              |
| Sample size                 | 7099                    | 780                              |

Robust standard errors are reported in parentheses.

\* Significant at 10% level.

\*\* Significant at 5% level.

\*\*\* Significant at 1% level.

O’Dell, 2016), and stress can be linked to subjective social status (Sakurai et al., 2010). Arguably, seeing yourself at the bottom of the social standing is very stressful, but so might be the case at the top where stress comes from maintaining that social status and the fear of losing it.

#### 3.2. Drinking

We now present and discuss the association between perceived social status and alcohol consumption. These results are presented in Table 3 and follow a similar format as the previous results: the first column presents the factors that correlate with the likelihood of being a current drinker, and the second column presents the factors that correlate with the amount of alcohol consumed by drinkers.

Unlike smoking, drinking alcohol does not seem to have any association with subjective social status. People who view themselves at the top of the social hierarchy are just as likely to drink as those who view

**Table 3**  
Subjective Social Status and Drinking.

|                             | (1)<br>Drinker          | (2)<br>Daily alcohol consumption |
|-----------------------------|-------------------------|----------------------------------|
| 60-69                       | -0.0871***<br>(0.0156)  | -2.634**<br>(1.281)              |
| 70-79                       | -0.174***<br>(0.0178)   | -5.813***<br>(1.749)             |
| 80-                         | -0.241**<br>(0.0212)    | -10.55***<br>(2.458)             |
| Men                         | 0.384***<br>(0.0115)    | 13.48***<br>(1.086)              |
| Married                     | -0.0271**<br>(0.0127)   | -4.320**<br>(1.770)              |
| Junior High                 | -0.0626***<br>(0.0157)  | 1.793<br>(1.660)                 |
| Senior High                 | -0.0277*<br>(0.0151)    | -1.167<br>(1.261)                |
| College and more            | -0.0677***<br>(0.0218)  | -0.0126<br>(1.990)               |
| Top of top + Bottom of top  | 0.0343<br>(0.0319)      | -6.498**<br>(2.832)              |
| Top of middle               | 0.0138<br>(0.0190)      | -4.831**<br>(2.252)              |
| Bottom of middle            | -0.0000341<br>(0.0158)  | -4.914**<br>(2.233)              |
| Top of bottom               | -0.0129<br>(0.0155)     | -3.827*<br>(2.016)               |
| Cognition                   | 0.00290***<br>(0.00104) | -0.0857<br>(0.164)               |
| ln (Household Income)       | 0.00769<br>(0.00613)    | -0.238<br>(0.772)                |
| Depression                  | -0.00146<br>(0.00105)   | 0.0567<br>(0.108)                |
| Retired                     | -0.0294***<br>(0.0112)  | -2.239**<br>(1.068)              |
| Urban                       | 0.00405<br>(0.0121)     | -2.778**<br>(1.162)              |
| Number of Chronic Diseases  | -0.0176***<br>(0.00474) | 0.298<br>(0.557)                 |
| Very good subjective health | 0.248***<br>(0.0702)    | -7.116<br>(8.979)                |
| Good subjective health      | 0.188***<br>(0.0675)    | -8.554<br>(8.923)                |
| Fair subjective health      | 0.184***<br>(0.0677)    | -6.626<br>(8.992)                |
| Poor subjective health      | 0.115*<br>(0.0687)      | -7.008<br>(9.210)                |
| Constant                    | 0.0762<br>(0.0880)      | 30.05*<br>(13.03)                |
| Sample size                 | 7099                    | 2446                             |

Robust standard errors are reported in parentheses.

- \* Significant at 10% level.
- \*\* Significant at 5% level.
- \*\*\* Significant at 1% level.

themselves in the middle or at the bottom of the social hierarchy. This might be due to the fact that drinking itself, in moderation, is neither socially unacceptable nor a way to cope with stress, and so people choose to drink or not regardless of subjective social status.

When it comes to the amount of alcohol consumed among drinkers, perceived social status does matter: higher amounts of alcohol are consumed daily by those with lower perceived social status. Compared with those at the very bottom, those at the top of bottom drink about 4 g of alcohol less per day, those in the two middle groups drink about 5 g of alcohol less per day, and those at the top drink about 6.5 g of alcohol less per day. While this pattern might not be consistent with alcohol being a way to cope with stress, it is consistent with excessive alcohol consumption being socially unacceptable and mainly prevalent at the bottom of the social hierarchy.

In regards to the other control variables, men are more likely to drink and drink more than women, younger demographics are more likely to drink and drink more than older demographics, married

respondents drink less and at lower rates, and income has no significant correlation. Health and education seem to correlate with the likelihood of drinking but not with the amount of alcohol consumed.

### 3.3. Discussion

Both tobacco and alcohol consumption were found to be significantly associated with subjective social status. These associations are estimated while controlling for a full range of objective social status measures and other possible determinants of smoking and drinking. While there are many common patterns between smoking and drinking, the results differ on certain issues.

While the likelihood of being a smoker is closely linked to subjective social status, the likelihood of being a drinker is not. We argue that smoking is much more socially unacceptable than drinking is, which makes people in higher social standings more likely to be non-smokers, whereas drinking in moderation might actually be socially acceptable or even encouraged.

On the other hand, when it comes to the actual amounts of tobacco and alcohol consumed among smokers and drinkers, alcohol consumption presents a linear association with subjective social status, while tobacco consumption presents a non-linear association. We argue that smoking is an important way for smokers to cope with stress and that stress may have a type of non-linear relationship with social status where people at both extremes of the social hierarchy are coping with more stress than people in the middle. Drinking, on the other hand, outside of binge drinking, might not have this stress coping characteristic; very few people (about 3%) are heavy drinkers in our total sample. Also, while moderate drinking might not be socially unacceptable, binge drinking actually might be.

Overall, however, the results show the importance of subjective social status for alcohol and tobacco consumption among the elderly in South Korea. Since South Korea is rapidly aging and is one of the developed countries with the highest rates of alcohol and tobacco consumption, more attention should be paid to these issues. South Korean society and culture is also highly hierarchic, which complicates the problem even further.

### 4. Conclusions

This paper studies the association between subjective social status and tobacco and alcohol consumption among the elderly in South Korea. We use data from a large longitudinal survey in Korea pertaining both to the respondent's status as a current drinker or smoker and also to the actual amounts of alcohol and tobacco consumed. We find significant correlations between subjective social status and tobacco and alcohol consumption even after controlling for objective social status and a variety of other confounders.

We find that the higher respondents view themselves in the social hierarchy, the less likely they are to be active smokers. Among smokers, respondents who view themselves as being in the middle of the social hierarchy smoke the least number of cigarettes per day, while those who view themselves either at the bottom or at the top of the social standing smoke more. We argue that smoking acts as a stress coping mechanism, and perceived social status is more stressful at the extremes.

On the other hand, we find subjective social status not to be associated with the respondents' status as drinkers but significantly associated with the amount of alcohol consumed by drinkers. We argue that, unlike smoking, which is socially unacceptable, drinking in moderation is socially acceptable or even desirable. Binge drinking, however, is not, thus respondents in all social classes are equally likely to drink, but those in higher social classes drink less.

Strikingly, objective social status seems to matter less than subjective social status, with income being completely insignificant and education only partially significant. Age and health seem to matter

more, with older respondents smoking and drinking less than younger ones.

These results are important from a general policy perspective, as they confirm other studies that show the importance of perceived social status in addition to objective socio-economic factors and also from a narrower perspective of the Korean society. There are very few studies that address this issue using data from Korea. Korea faces specific problems dealing with aging, economic and social inequality, and tobacco and alcohol consumption. It is therefore extremely important to understand the mechanism that can lead to unhealthy habits, since smoking and alcohol can lead to serious health issues that can further negatively affect economic and social outcomes.

#### Role of funding source

Nothing declared.

#### Contributors

Sole authored paper. Younoh Kim wrote the manuscript and approves of its submission.

#### Conflict of interest

No conflict declared.

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