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Socioeconomic Status and Tobacco Use

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Cigarette smoking remains the leading cause of illness, disability and death in the United States, and more than 400,000 premature deaths occur each year in this country from tobacco-related causes (1). More than 80 percent of adult smokers first become regular smokers by the age of 18, and casual experimentation with smoking by adolescents frequently develops into regular smoking and a strong addiction. Despite the growth in anti-tobacco campaigns, research has shown that socioeconomic status (SES) is still a major determinant as to whether or not teens begin smoking (2). A recent analysis of data from the 2000 National Health Interview Study found that smoking prevalence was highest among persons with working class jobs, low education and low income, and that each of these indicators of SES was independently and positively associated with smoking prevalence (3). Previous research has shown that those with the least disposable income and lowest levels of education tend to smoke at the highest levels (4).

The purpose of this study was to review literature on the epidemiologic relationship between low SES and prevalence of tobacco use. This review will also illustrate how the factors that influence low SES teens to begin smoking are the same factors keep lower SES adults from quitting and lead to a life-long addiction to nicotine.

A study by Reijneveld (1998) explored what influence living in a deprived area has on poor health and lifestyle, beyond the effect of individual SES. The study was conducted in Amsterdam by researchers at the Institute of Social Medicine, and 5,121 subjects were randomly selected from the Amsterdam municipal directory. Poor health was measured by self-rated health, physical complaints, long-term physical limitations and body mass index. Individual SES was measured by income, occupation and educational level. Area deprivation was measured by registered income, household income below minimum and unemployment rate, and poor lifestyle was measured by whether or not participants currently smoked cigarettes (5).

Results showed that individual SES explained many of the differences by area deprivation regarding all measures of poor health, but not regarding smoking. The smoking status of participants was worse if they lived in a deprived area and living in one of these areas was shown to increase the risk of smoking regardless of individual SES. These results show how large an impact a person's environment can have on health behaviors such as smoking. Even if an individual is not determined to be low SES, living in a deprived area can lead to the same health outcomes. The researchers found several factors that were common to deprived areas in Amsterdam including greater availability of cigarettes and fewer preventive health care providers. They concluded that in order to be effective, preventive smoking interventions should be both area-based as well as individually-based (5).

This study was well executed and the concept of looking at the amount of deprivation in an area beyond individual SES was very interesting. One issue was that cigarette smoking was the only measure used to determine poor lifestyle. While this was their main...
behavior of interest, it seems that the exclusion of other lifestyle measures could lead to incomplete information and to a potential bias of research results (5).

A prospective study by Harrell et al. (1998) was designed to examine the smoking habits of children and to predict whether SES influenced the early initiation of smoking. This study used longitudinal data from the Cardiovascular Health in Children and Youth (CHIC) Study, a 10-year study that was conducted in North Carolina. At the beginning of the data collection period, participants were in third and fourth grades, and were followed for six years until they were in eighth and ninth grades. Information on smoking was obtained through the administration of three different age-appropriate questionnaires. Socioeconomic status was determined by the educational level of participants' parents (6).

Results from this study showed that race and family SES were important factors in determining whether or not participants began smoking during childhood and adolescence. Low SES significantly increased the chance of a child beginning to smoke and low SES children were likely to begin experimenting with cigarettes earlier in life than those in higher SES families. This study concluded that low SES is an important predictor of initiation of smoking and that smoking prevention programs should be particularly sensitive to the needs of low SES youth. The researchers argued that there was a need to begin smoking prevention classes in elementary school and also to specifically target disadvantaged youth (6).

One issue with the research methods of this study was that according to the authors, parents' education was the only instrument used to measure SES. There are several problems with this. Education does not necessarily determine income or occupation and therefore cannot reliably determine SES. There are high school dropouts that are millionaires and highly educated people that work at low-income jobs. The entire SES measure is basically invalid even though the results tend to agree with previous research (6).

The goal of a study by Barbeau et al. (2004) was to address the gaps in knowledge about the relationship between occupational class and smoking. Additional indicators of social position were also examined including income, education, race/ethnicity and gender also were analyzed. This study used data from the 2000 National Health Interview Survey (NHIS), a cross-sectional household interview survey conducted throughout the United States. Surveys were administered to a random sample of 24,276 participants. SES was measured by education, income, and occupation and income data was categorized based on the U.S. Federal Poverty Guidelines. Respondents were asked about their smoking behavior and were put into one of three categories; ever smokers, current smokers or former smokers (7).

Results showed that among white and black populations, smoking prevalence was highest among those with less education, less income and occupations classified as "service" or "blue-collar." Similar results were found among Hispanic, Asian and Native American populations, but the authors felt that SES categories for these groups were less well defined. Findings from this study showed that the relationship between occupation, income and education could help explain the burden of smoking both within and across diverse racial and ethnic groups in the United States. The authors concluded that class does matter when attempting to understand the population burden of smoking and that
working class populations in any racial category are likely to be underserved by smoking prevention and cessation programs that focus solely on low-income groups (7).

This study was very interesting because it went beyond traditional SES measures to identify further distinctions among underserved populations. Although occupation is traditionally included in SES assessments, focusing on occupational “class” can help to further illustrate the burden of smoking. For example, employees of meatpacking plants generally make a modest living, but the working conditions under which these employees spend their days may not be “worth” the money. Most jobs are on an assembly line, where employees can take only scheduled breaks and are not even able to use the restroom without first asking permission. Workers in these jobs are much more likely to develop a work related injury, and the lack of “control” over their day is so small, research shows that the prevalence of smoking is extremely high (12). This illustrates the significance of looking further into traditional SES indicators.

Four behavioral risk factors (cigarette smoking, alcohol drinking, sedentary lifestyle and relative body weight) were examined in a study by Lantz et al. (1998) to help explain the observed association between socioeconomic characteristics and all-cause mortality. This was a longitudinal survey study that investigated the impact of education, income and health behaviors on the risk of dying within the next 7.5 years. Participants included a nationally representative sample of 3,617 adult men and women participating in the Americans' Changing Lives survey. SES measures included education and income, and behavioral risk factor measures included information gathered about the four behaviors (8).

Results showed that those with the least amount of education and with the lowest incomes were significantly more likely to be current smokers, overweight and in the lowest quartile for physical activity. This study also concluded that SES differences in mortality are most likely due to a wider variety of behaviors than once thought. Despite the existence of differences in health behaviors according to SES, these social inequalities explain only part of differences in mortality (8).

There were several limitations of this study that were identified by the authors. First, the health behaviors being investigated were self-reported and were not assessed retrospectively. Therefore, any discrepancies in the reporting of health behaviors would likely underestimate their effect on overall health. Also, the length of the follow-up period in this study limited researchers in their ability to investigate the longer-term effects of income, education and health behaviors on mortality. One possible confounding variable is that additional health behaviors and risk factors that were not studied could explain more of the relationship between income and mortality (8).

A study by Watson et al. (2003) examined the relationships among smoking, ethnicity, socioeconomic status (SES), and lifestyle variables among 715 women. This study was part of a two-year prospective evaluation of the determinants of weight gain in black and white women. A total of 715 participants were recruited from a metropolitan Mississippi community between the years of 1994 and 1997. Age, education, occupation, smoking status and yearly family income were assessed via self-report questionnaire (9).

Results showed several ethnic differences in smoking patterns as well as several correlates of smoking status. Overall, white current smokers began smoking at a much ear-
lier age and reported smoking more cigarettes per day than black current smokers. With regard to socioeconomic indicators, education and income were independently related to current smoking status. Women with high school education or less were more likely to smoke than women with college or post-college education. This finding is consistent with the literature, in which researchers have found an inverse relationship between smoking and education from both ethnicities. The researchers concluded that in the future it was important to target lower educated and medium-income women as these groups were most likely to be smokers (9).

There are several potential confounding variables in this research. Study participants were not randomly selected and only healthy women were allowed to participate. Also, participation was limited to one geographic area in metropolitan Mississippi. It would be very interesting to expand this study to include women from different urban and rural areas as well as those from different parts of the United States. Again, this research concludes the importance of targeting low-income populations with smoking cessation efforts, but emphasizes that within this SES category, programs may need to be specifically targeted to women based on ethnicity (9).

A study by Soteriades and DiFranza (2003) examined the association between parental SES and adolescent smoking. Researchers used data from the 1993 Massachusetts Tobacco Survey that was based on a probability sample of Massachusetts households drawn from random-digit dialing. Telephone interviews were conducted with 1,308 adolescents aged 12 to 17 years old. Those who had smoked 100 cigarettes or more were classified as established smokers. Parental SES was measured by education and household income and parent or guardian who was in the highest category was used as the reference for that household. Results showed that the risk of adolescent smoking increased by 28 percent with each step down in parental education and increased by 30 percent of each step down in parental household income. These associations persisted after adjustment for age, sex, race/ethnicity and adolescent disposable income (10).

According to the authors, this was the first study conducted in the United States that reported a multivariable-adjusted association between parental SES and adolescent smoking. They also found that both low parental education status and low household income were significantly independent predictors of adolescent smoking. They suggest that implementing smoking cessation programs for low SES adults may also be an effective way to target adolescents who are at higher risk for smoking (10).

The goal of the study by Epstein et al. (1999) was to determine the connection between risk factors and cigarette use among minority adolescents in New York City. Participants were part of prospective investigation about the etiology and prevention of smoking, alcohol and other drug use. A total of 37 junior high schools participated in this longitudinal study, and all participating students completed a questionnaire that was administered during a regular 40-minute class period. Measures included current and future cigarette use, demographic information, SES determinants and decision-making skills (11).

Results showed that social influences from friends and family members were strong predictors of cigarette use among study participants. Psychosocial characteristics such as advertising resistance skills, anti-smoking attitudes and refusal skills lowered the odds of
smoking. Results also showed that participants experienced high levels of poverty, had limited access to health care and were exposed to increasingly aggressive marketing efforts by the tobacco industry (11).

The researcher concluded that these findings have several implications for developing effective smoking prevention models among ethnic minority youth living in low-income public housing developments. Smoking prevention programs for this population should provide them with an awareness of the various social influences to smoke cigarettes and include training to resist media pressures to smoke cigarettes. One limitation to this research was that since the study focused on a school-based sample, findings could not be generalized to adolescents not in school (11).

**DISCUSSION**

After reviewing this literature, more questions than answers arise. There are endless influences that lead adolescents to begin smoking and adults to continue smoking; behavior patterns of family and friends, income, education, occupation, neighborhood, ethnicity, marital status, parental status and the list goes on. This review shows that smoking prevention and cessation programs have to be extremely specific.

This body of research has shown that those with the least disposable income and lowest levels of education tend to smoke at the highest levels. However, while some groups in the population are more likely to smoke than others, high levels of education and white collar employment does not guarantee an individual will not be a smoker.

Over the past several years there has been an increasing amount of attention geared toward preventing adolescents from beginning to smoke. Adolescence is the time when most people become regular smokers. As most research indicates, preventing smoking in the first place is much better and possibly easier than trying to convince adults to quit smoking. Teenagers think that they are invincible and that they will only smoke for a few years. What they don't realize is how quickly they will become addicted to nicotine and how they are unwittingly being targeted by tobacco companies. Low SES adolescents may feel that they don't have much control over their lives, but smoking prevention programs can help increase perceived control. If individuals understand all the influences that may tempt them to begin smoking, they will understand that they have the power to make intelligent health behavior choices. Programs need to be particularly sensitive to the needs of low SES youth and start as early as elementary school. If programs can effectively change the social norm among low SES adolescents, this will eventually lead to adults that will be healthier regardless of their economic status.

**REFERENCES**


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