



The association between family structure and adolescent smoking among multicultural students in Hawaii

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ABSTRACT

Objective. The purpose of this study was to examine whether the prevalence of smoking was associated with family structure among multicultural adolescents and whether there was gender disparity on the association.

Methods. Data were collected from a sample of 7th graders in Hawaii who completed in-class questionnaires in 2004. The final sample included 821 multicultural students from different family structures. Descriptive analyses, Chi-square tests and logistic regression were performed to examine the prevalence of smoking and the association between family structure and smoking prevalence.

Results. This sample contained students who lived in intact (61.7%), single-parent (16.5%), step-parent (15.6%), and no-parent (6.2%) families. The overall prevalence of ever/lifetime smoking was 24.0%, and was not significantly different between genders in each family structure ($P > 0.05$). Compared with living in intact families, living in single-parent, step-parent, or no-parent families was significantly associated with higher odds of ever/lifetime smoking among all students ($P < 0.05$) and living in single-parent and step-parent families was significantly associated with higher odds of ever/lifetime smoking among females ($P < 0.05$) and among males ($P < 0.05$) respectively, after adjusting for covariates.

Conclusions. These findings suggest that family structure is a risk factor for smoking among multicultural students. Anti-smoking programs should consider this factor.

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Introduction

Smoking remains the most preventable cause of disease and premature death in the United States. During 2005–2009, an estimated 480,000 Americans died each year as a result of cigarette smoking and smoking-related illness (National Center for Chronic Disease Prevention and Health Promotion Office on Smoking and Health, 2014). Adolescence is a critical time period in the life cycle for the onset of cigarette smoking. In 2010 more than 88% of adult daily smokers started smoking before they were 18 years old, and 99% of them started smoking before the age of 26 years (National Center for Chronic Disease Prevention and Health Promotion Office on Smoking and Health, 2012). In the United States, approximately 3900 youths between the ages of 12 and 17 years smoked their first cigarette and 1000 became daily smokers per day in 2008 (SAMHSA, 2009).

In 2004, a total of 11.7% of middle school students and 28.0% of high school students were current tobacco product users (e.g., cigarettes, cigars, smokeless tobacco, pipes, bidis, or kreteks) (CDC, 2005).

Studies have been conducted to examine the factors associated with adolescent smoking (Moolchan, Ernst, and Henningfield, 2000; Schepis and Rao, 2005; Turner, Mermelstein, and Flay, 2004; Tyas and Pederson, 1998). In general, parenting and family factors have played a rather minor role in these studies, with greater emphasis placed on personal, peer and social effects as well as on larger, socially contextual factors such as cigarette advertising. Recently there has been increased interest in family-based interventions both to deter adolescent substance abuse in general and to prevent adolescent cigarette smoking specifically (Simons-Morton and Farhat, 2010).

The negative and long-term effects of divorce on children, particularly during adolescence, have been a topic of frequent investigation. Findings from these studies continue to suggest that adolescents from divorced families experience poorer mental health, as well as more smoking and other drug use, than those from intact families (Fagan and Churchill, 2012). It has been shown that adolescents from non-intact families had higher prevalence of smoking and had earlier onset

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of cigarette use. Adolescents who lived in a step-family structure during their formative years were more likely to use tobacco and to consume alcohol by the age of 18 years (Brown and Rinelli, 2010). Similarly, single-parent households, or households with a mother and a stepfather present, have been shown to pose a risk for substance use (Musick and Meier, 2010).

While many studies have reported the effects of family structures on adolescents' health behaviors, most of these studies were conducted among general population in western countries. Little is known about the effects among Asian Americans and Pacific Islanders, a rapidly growing segment of the US population (US Census Bureau, 2012). Between 2000 and 2010, the Asian American population grew 43%, from 10.2 million to 14.7 million persons comprising 4.8% of the total population (Hoeffel et al., 2012). These statistics are significant in relation to racial and ethnic differences in the prevalence of smoking. For instance, Whites and Hispanics are more likely than African Americans to be smokers throughout adolescence (CDC, 1998) and Whites and Hispanics also appear to initiate smoking habits earlier than African Americans (CDC, 2013). Asian youths tend to exhibit lower rates of smoking than Whites and Hispanics but not African Americans (Chen and Unger, 1999; Epstein, Botvin, and Diaz, 1998). Pacific Islanders, unlike Asian Americans, smoke at high rates (Palmer et al., 2013).

Findings from previous studies among general population about the effects of family structures on adolescent smoking may not directly apply to the Asian American and Pacific Islander subgroup, because culture specific differences in household, relationships, and customs may result in differences in effects (Unger et al., 2006). Therefore, the purpose of this study was to examine the association between family structure and the prevalence of smoking among multicultural adolescents in Hawaii. According to the 2000 U.S. census, 239,655 persons living in Hawaii reported a Native Hawaiian ethnicity and 503,868 individuals were of Asian ancestry, among a total population of 1,211,537 (Department of Business and Economic Development and Tourism, 2000). The gender specific association was also investigated.

Methods

Study sample

Data on adolescent smoking patterns were obtained from a baseline survey from a longitudinal school-based smoking prevention program conducted in 2004 in Hawaii. The study population was a sample of 7th graders from six schools in the Island of Hawaii. The schools were selected for their high native Hawaiian representation and all 7th grade students were invited to participate. The schools were first ranked by student population size, ethnic makeup and their location on the island. The largest student populations with ethnic diversity and no single ethnicity exceeding 30% of the school's population were ranked the highest. Single ethnicity refers to disaggregated racial/ethnic groups such as Japanese, Chinese, Filipino, and Native Hawaiian. While ranking the schools, the top schools fell into two of three Complex Areas within the Hawaii Island District. A Complex Area is how the Hawaii State Department of Education organizes their schools under each Island's district. The Hawaii District health resource coordinators provided by the Hawaii State Department of Education served as liaisons between the project and the schools. The resource coordinators helped recruit the top three schools in their respective jurisdictions (East Hawaii District and West Hawaii District). Health and Physical Education classes were chosen as the classes to conduct the survey, because these classes were required courses which allowed the study team to survey all 7th graders.

As a result, a total of 1154 students were invited to participate in this study, among which 93 students declined to participate, 9 students were lost because they moved to other places, and 179 did not provided parental informed consent. Among the remaining 873 students (75.6% of 1154), 52 were absent on the survey day. Therefore, this study

ultimately reported the results from 821 students, accounting for 71.1% (821 out of 1154) of those invited to participate, and 94.0% (821 out of 873) of those who consented to participate.

Procedure

Data were collected using a 118-item paper-and-pencil survey with questions about smoking, other health behaviors, and related factors. Parental informed consent and students' assent were obtained beforehand.

Measures

Smoking status

Three measures were used to assess three levels of smoking behaviors: ever/lifetime smoking ("Have you ever tried cigarette smoking, even a few puffs?"), past 30-day smoking ("Think about the last 30 days, on how many of these days did you smoke cigarettes?"), and established smoking ("Have you smoked at least 100 cigarettes in your life?").

Family structure

Family structures were defined with one question: "Which of these people live with you in your home?" Response options for this question included: "Mother", "Stepmother", "Father", "Stepfather", "Sister(s)", "Brother(s)", "Cousin(s)", "Aunt(s)", "Uncle(s)", and "Other: fill in". At analytical stage, students' responses were recoded into four categories representing four types of family structures: intact family (if respondents lived with assumed biological mother and biological father), single-parent family (if respondents lived with one assumed biological parent, but not both, and they did not live with a step-parent), step-parent family (if respondents lived with an assumed biological parent and a step-parent), and no-parent family (if respondents lived with grandparent(s), aunt(s), uncle(s), or others, and they did not live with a biological parent or step-parent).

Covariates

Demographic characteristics and other independent variables that had previously been demonstrated to be associated with smoking were included as covariates in the analyses.

Demographic variables examined included gender, age (years old), and race/ethnicity (students self-identified their race/ethnicity). At analytical stage, mean age was calculated and students' ages were dichotomized into two groups: <mean age and ≥mean age. Students' responses to race/ethnicity were also recoded into five categories at analytical stage: White, Latino, Asian (Chinese, Japanese, Filipino, Korean, Asian Indian etc.), Pacific Islander (Part/Native-Hawaiian, Marshallese, Samoan, or Guamanian/Chamorro), and Other (African American, American Indian, and other ethnicities).

Social economic status variables included: parents' highest levels of education, parent's employment, and household income. Because youth may know little or nothing about parents' absolute income, we used the following two questions as proxy measures of income: "How many people live in your home where you spend most of your time (including you)?" and "How many rooms does your house or apartment have (count every room EXCEPT the kitchen, bathrooms and closets)?" At analytical stage, a new variable, called housing status, was created by dividing the number of people living in the household by the number of rooms. This is a widely accepted proxy measure of income and has been validated as such (Rutstein and Johnson, 2004).

Other covariates include: mother smoking ("On an average day, about how many cigarettes does your mother smoke?"), father smoking ("On an average day, about how many cigarettes does your father smoke?"), friends smoking ("How many of your friends have ever tried smoking a cigarette?"), and alcohol drinking ("During your life, on how many days have you had at least one drink of alcohol?").

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