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Driving to Better Health: Cancer and Cardiovascular Risk Assessment among Taxi Cab Operators in Chicago

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Abstract

While a number of investigations of the health of taxi cab drivers have been conducted in Europe, Asia, and Africa, virtually none have been conducted in the United States. We undertook a survey of taxi cab operators in the Chicago area to understand better their health status and health promotion practices. The survey was completed by a convenience sample of 751 Chicago taxi drivers. Taxi drivers had low rates of insurance coverage, fruit and vegetable consumption, and physical activity compared with the general Chicago population. Participation in cancer screening tests was also lower for this group. A high proportion of taxi drivers are immigrants. They tend to be highly educated and report a readiness to engage in more health-promoting behaviors. Further research is needed to develop a targeted intervention for this population.

Keywords

Taxi drivers; risk assessment; cancer; cardiovascular

Predominantly, taxi drivers are male, many are immigrants, and many are under the age of 50 and without health insurance, attributes that often are associated with poor health practices. Circumstances common to taxi drivers contribute to their risk profile: drivers routinely work long hours with frequent shift changes and irregular time for meals and relaxation, are subject to high stress levels due to uncertain income and traffic congestion, are at relatively high risk for violence and homicide, and are exposed to toxic materials and exhaust fumes on a regular basis. Because taxi drivers are a relatively autonomous and hard-

to-reach group, there is a gap in knowledge about their health. To address the research question *What is the health status of Chicago taxi drivers?* and inform future intervention development, a survey of the health and health risk factors of Chicago taxi drivers was conducted by the Midwestern Region of the National Black Leadership Initiative on Cancer. This paper reports findings of that survey.

Since the survey was conducted by a cancer research and advocacy organization, the focus was on cancer risk factors such as smoking and diet. However, these overlap with risk factors for other diseases, so that the survey findings reflect overall risk factors for the respondents.

The number of taxi and limousine drivers in the U.S. is growing and parallels the revitalization of urban areas and the growth in business and leisure travel in the U.S. The total number of taxi and limousine drivers in the U.S. reached an all-time high of 238,000 in 2008. There are about 5,300 taxi and limousine drivers in the Chicago area, the fourth-largest number of any U.S. metropolitan area.¹

In addition to the increase in the number of drivers, there has been a significant shift in the composition of the driver work force. In 1970, 8% of taxi drivers were immigrants. By 1990, that figure had climbed to 27%, and by 2000, 38% of taxi drivers were immigrants.² Census Bureau data collected 2005–2007 indicate that 42% of taxi drivers were immigrants. In Chicago, about 59% of drivers are immigrants.³

Taxi/limosine driving is one of the most predominantly male occupations in the U.S., although the percentage of female drivers increased to 12.9% in 2004, up from 11% in 1990 and 3% in 1960.⁴ Chicago has only 3% female drivers.

Educational attainment of taxi/limousine drivers is high; nationally, 14% of drivers have college degrees. Illinois has one of the highest proportions of college graduates driving taxis and limos (22%).³ Chicago provides an ideal setting for research about taxi driver health because of the large number of drivers and the diversity of the workforce.

Previous studies of the health of taxi drivers

Despite the increase in the overall number of taxi drivers and the importance of the taxicab industry as a source of employment in the U.S., almost no research has been conducted on the health, health risk factors, and health behaviors of taxi drivers in this country. By contrast, the health of taxi drivers has been studied in recent years in Singapore,⁵ Hong Kong,⁵ Australia,⁵ New Zealand,^{6,7} Canada,⁸ Bangladesh,⁹ Iran,^{9,10} Italy,^{11,12} Serbia,¹³ Nigeria,¹⁴ Japan,¹⁵ Sweden,¹⁶ Jordan,¹⁷ China,¹⁸ Morocco,¹⁹ Belgium,²⁰ Nepal,²¹ Denmark,²² and Thailand.²³ The relatively infrequent use of seat belts by Chinese taxi drivers (despite laws requiring their use) has been an item of particular interest.^{24–28} The single U.S. study found that there was a significant decrease in occupational homicides of taxi drivers during the 1994–2003 decade.²⁹

In the Japanese Taxi Drivers' Health Study of 5,523 drivers, Ueda^{30,31} found that hypertension risk increased among those drivers who were employed for one-to-four or more than 20 years and also was associated with obesity. Drivers reported gastrointestinal disorders, fatigue, musculoskeletal system disorders, sensory system disorders, and hemorrhoids at rates higher than the general Japanese population. Nearly half of the respondents reported a desire to change jobs, with 62% of these reporting "condition of health" as the reason for seeking a change in employment.

Using the same Taxi Drivers' Health Study survey data, Chen, Chang, Chang, and Christiani found that lower back pain (LBP) was reported by 51% of taxi drivers, a significantly higher proportion than found among other professional drivers (bus and truck drivers). Lower back pain was associated with long driving times, job stress and dissatisfaction, and frequent bending/twisting activities.³² Chen and colleagues also found that the prevalence of reported knee pain increased with the duration of daily driving, as did hematologic markers of systemic inflammation and haemostatic alteration.^{32,33}

In a Danish study of hospital admissions among professional drivers, Tuchsén, Hannerz, Roepstorff, and Krause found excess risk for stroke among all drivers, with higher risk reported in drivers transporting passengers than among drivers carrying goods.²⁶ Other authors have commented on the negative health effects of job-related stress among professional drivers, induced by public safety concerns, concern about daily earnings, time pressures, and public contact as negative influences.^{34,35}

Many taxi drivers are self-employed and rent their cabs from a taxi company. Alternatively, they may own their own cab. Those employed by taxi companies do not receive health insurance as a benefit of employment. However, for some, driving is a second job; they may have health insurance through their primary employer.

Taxi drivers are subject to stress from driving in heavy traffic for long periods and sitting in the same position for most of the day. They may have to load and unload heavy luggage and packages. The rate of nonfatal illness and injury for persons engaged in "transit and ground passenger transportation" in 2008 was 5.2 cases/1000 workers, compared with a national average of 4.2/1000.³⁶

In order to learn more about risk factors among Chicago taxi drivers, we conducted a brief survey to assess their health behaviors, beliefs, and knowledge.

Methods

This study was approved by the Institutional Review Board of the University of Illinois at Chicago as exempt research.

There are approximately 5,300 taxi drivers in Chicago, including those employed by large, medium-sized, and small companies as well as independent drivers. To gain access to the drivers, letters were sent to all taxi companies in Chicago requesting support for the survey. The letters were followed by phone calls to the taxi companies requesting a meeting to discuss the project. The director of one large taxicab company agreed to meet with project leadership and this director was influential in helping project staff to contact and meet with the directors of other taxicab companies to explain the purpose of the survey and elicit their support. In all, 22 taxi companies agreed to participate and allow access to their drivers (an Internet search for Chicago transport services lists over 120 taxi companies³⁷).

A survey instrument was developed by project staff, using questions adapted from those asked in several large national surveys: the Behavioral Risk Factor Surveillance System, the National Health Interview Survey, the National Health and Nutrition Examination Survey, and the Continuing Survey of Food Intakes by Individuals. Using these questions offered the opportunity to compare the responses of our sample to national data. The items inquired about fruit and vegetable consumption, exercise, cigarette smoking, blood pressure, medical examinations, and cancer screening tests. The questions were not pilot-tested with our sample. The instrument was shared with the taxi company directors to ascertain their views and to increase their comfort with the method of survey administration. Since English was not the first language of the many immigrant drivers, the questions were developed to be

easily and quickly answered rather than to provide in-depth information. Response data were compared with local and national data (data sets are listed in Table 2) and *Healthy People 2010* objectives to identify areas of greatest disparity between Chicago taxi drivers, the general population and national objectives.

The questionnaire was administered by project staff from the National Black Leadership Initiative on Cancer (NBLIC) Midwestern Regional Office in Chicago. The NBLIC is a national network of volunteer coalitions engaged in advocacy and health education to reduce the disproportionate cancer burden borne by African Americans. Staff members were assisted by trained volunteers from three of the NBLIC partners: Chi Eta Phi Nursing Sorority, the Healthcare Consortium of Illinois, and the Cancer Information Service. The survey was administered over a two-month period to a convenience sample of taxi drivers, who were approached while they were waiting for fares or services.

We administered the questionnaire in locations where taxi drivers waited in large numbers: taxi lines and taxi depots. Three locations with substantial taxi lines were chosen for survey administration: Chicago O'Hare Airport (with the largest number of taxi operators waiting for fares), Midway Airport, and the Chicago Hilton and Towers Hotel. Surveyors obtained security clearance to work at the airports. Drivers also were approached regarding survey participation in the taxi depot, but there taxi operators completed the questionnaire as they paid their weekly bills to the cab companies or as they waited for their taxis to be serviced.

A media campaign was launched to provide project visibility and to improve the survey completion rate. The message emphasized the fact that taxi drivers are vital to the economy of the city of Chicago and that their well-being is important. Media response was encouraging. Several radio stations broadcast information about the study through public service announcements and as news items, and project staff provided interviews on the air. A locally produced call-in show that provides program content for taxi drivers, "*R U Talking to Me?*" invited project leadership to promote the project on the air and to announce the project's data collection schedule and venues.

Survey administration began on Valentine's Day as the kickoff date to correspond with the project's message of care and concern for the health of taxi drivers. To encourage survey completion, respondents were provided red lunch pouches in which they might pack healthy lunches to avoid fast food restaurants.

Results

A total of 751 questionnaires were completed. Results were calculated as percentages of responses to each item.

Table 1 presents the demographic characteristics of the respondents. They were almost exclusively male (99%); only seven females were included in the sample. The sample was predominantly minority, with 86% of respondents identifying their race or ethnicity as African American/Black, Hispanic/Latino, Asian, or other. Blacks made up the largest proportion of the sample (50%), while Hispanics/Latinos constituted only 3%. However, the questionnaire used in this survey was double-sided, and of the 751 total respondents, 110 did not complete the back side of the instrument. This side included the questions on race/ethnicity, so these data are missing from many responses reported in Table 1.

Similar to the national data reported earlier, this sample was relatively young (80% under the age of 50 with a median age of 37) and well-educated, with nearly half of the respondents having completed college or graduate-level educational programs. Only 4% did not complete high school. Immigrants with permanent resident status constituted 43% of the

sample, 40% were naturalized citizens, 10% were U.S. born, and 7% reported temporary residence status in the U.S.

Table 2 presents taxi driver responses to questions about their health practices compared with estimates for adult males in Chicago, corresponding national data, and health goals for the U.S. Only about 5% of the respondent drivers met recommended levels of fruit and vegetable consumption and physical activity participation, compared with about 22% of the general adult male population in Chicago. Approximately 40% of respondents said that they *never* exercised. Reported smoking by respondents was slightly lower than Chicago and national figures but far short of the target level of 12%. Only 30% of taxi drivers reported having health insurance, compared with 73% of all adult Chicago males and 81% of males under 65 years of age nationally. About 58% of the taxi drivers know their blood pressure, far short of the national goal of 85%. Among those who knew their blood pressure, about 24% reported that it was high, which is comparable to citywide and national data for males. A higher proportion of taxi drivers reported getting a physical exam in the past year (86%) than the general adult male population in Chicago (67%).

Taxi drivers were asked about their knowledge of heart disease and stroke risk. Nearly three-fourths (72%) of respondents recognized that hypertension could be asymptomatic, and 84% reported that they have had their blood pressure taken by a physician or other health professional. Forty-seven percent reported that they have had a close relative diagnosed with high blood pressure, 25% reported a close relative had had a heart attack, and 22% had a relative who had been diagnosed with a stroke.

Table 2 also presents data regarding participation in cancer screening tests by taxi drivers over 50 years of age. There were 154 taxi drivers over the age of 50 in this sample, and less than one third of them have had a cancer screening test. Only 27% have ever had a digital rectal exam (DRE), 26% have had a sigmoidoscopy/colonoscopy, 32% have had a fecal occult blood exam and 32% have had a prostate-specific antigen (PSA) test performed.

Drivers' responses to some of the questions suggested a desire to improve their health promoting behaviors. For example, 88% of the taxi drivers indicated that they plan to start eating more fruits and vegetables, and 33% considered their weight too much for their height.

Discussion

Implications for intervention development

This survey provides an overview of the health behavior and screening practices of a convenience sample of Chicago taxi drivers. In Table 2, we have compared these practices and behaviors with those reported in Chicago-area and national surveys. However, the wording of the questions in these comparison surveys often differed somewhat from the wording on our questionnaire. For instance, we asked drivers if they knew their blood pressure. The comparison surveys asked the respondents if they knew if their blood pressure was normal or high, which is not identical to knowing one's blood pressure. Because of these differences, the comparisons in Table 2 are approximations of differences between groups, and for the same reason, we did not apply statistical tests of significance. In addition, our respondent population was younger than the adult population of Chicago.

Taxi drivers are important candidates for health promotion initiatives for several reasons. First, they may have special motivation to improve health practices: for instance, smoking in their cabs is prohibited by local ordinance and is bad for business. Second, they are largely immigrant males, a group that is not often reached by health educators, as health promotion

efforts generally focus on women. Yet many immigrant cultures are strongly patriarchal, making it important to reach the male head of household. A request from a husband to a wife to serve more fruits and vegetables may have far more impact than a similar suggestion to the wife from a health educator. Third, immigrant taxi drivers are relatively well-educated. In our sample, nearly half had college degrees and three-quarters had attended at least some college. This may reflect the difficulty faced by immigrants in securing employment consistent with their education.

Despite the fact that only 30% of taxi drivers had health insurance, 86% had undergone a physical examination in the past year. This is likely related to the fact that Chicago taxi drivers are required to have a physical exam as a condition of being allowed to drive a cab (personal communication, T. Chapman, Chicago Yellow Cab Company).

The survey identifies several issues that require more detailed examination and suggest several potential intervention topics. Results from the survey identified poor nutrition, lack of physical activity, and low rates of participation in cancer screening tests as modifiable health behaviors for intervention development with this population. Although insurance status was identified as a significant barrier to health care access, taxi drivers appear motivated to make healthy changes; many respondents reported a desire to eat a more healthful diet and recognized the desirability of maintaining a healthy weight. Future studies should explore these topics in greater detail in order to develop programs and policies that will encourage taxi drivers to engage in healthier eating, increased physical activity, and increased utilization of cancer screening. As the survey demonstrates, taxi drivers have the desire and awareness to engage in a healthy lifestyle, but must be encouraged and supported through appropriate programs and policies.

Limitations

The most important limitation of this study is the fact that we surveyed a convenience sample (rather than a random sample) of taxi drivers. However it appears that our sample was representative of Chicago taxi drivers. For example the distribution of women and immigrants in our sample was similar to the known distribution of these demographics in Chicago taxi drivers generally. Moreover, we surveyed drivers at places where taxis are found in the greatest numbers: airports, a large hotel, and taxi depots.

Of the 751 respondents, 110 (15%) failed to respond to the questions on the reverse of the questionnaire. Since these were demographic questions, the demographic data in Table 1 represent only 85% of our sample. However, there is no reason to believe that the health practices of those who failed to turn over the questionnaire are different from those who did turn it over. Therefore, we have included data from the entire sample in Table 2 and do not believe that the inclusion of those who did not turn over the questionnaire biases these results.

Since English was not the first language of most of the immigrant drivers, they may not have understood some of the questions on the questionnaire. However, project staff were at hand to offer explanations as needed. Moreover, taxi drivers must have enough fluency in English to accommodate their clientele, most of whom are monolingual English-speakers.

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Notes

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Table 1
DEMOGRAPHIC CHARACTERISTICS OF CHICAGO TAXI DRIVERS

Chicago Taxi Drivers	Count	Percent (%)	Missing
Sex of Respondent			
Male	621	99	
Female	7	1	
Subtotal	628	100	123
Race/Ethnicity			
Black	319	50	
Hispanic/Latino	21	3.3	
White	87	13.6	
Asian	154	24.1	
Other	57	8.9	
Subtotal	638	100	113
Age (in years)			
18–24	220	29.3	
25–44	299	39.6	
45–59	193	25.8	
60+	39	5.2	
Subtotal	751	99.9	–
Education			
<High school	27	4.2	
High school	130	20.3	
Some college	168	26.3	
College	231	36.2	
Graduate degree	83	13	
Subtotal	751	100	–

Table 2
HEALTH PRACTICES OF CHICAGO TAXI DRIVERS COMPARED WITH LOCAL AND NATIONAL DATA

Taxi Driver Survey Question	Taxi Driver Survey Response (n=751)	BRESS Weighted Data for Chicago-Area Males Age 18+ (n = 1,022,035)	2000 Age-Adjusted National Data	Healthy People 2010 Goals
About how many servings of fruit & vegetables to you eat or drink on an average day?	4.6% eat the recommended 5 servings of fruits & vegetables/day	22.4% eat the recommended 5 servings of fruits & vegetables/day	–	N/A—targets children
On the average, how many times a week do you exercise for at least 30 minutes a day?	5.9% exercise more than 5×/week for at least 30 minutes/day	21.5% meet the moderate activity standard of 5 ×/week × 30 minutes/day	16% of males age 18 + engaged in moderate physical activity for at least 30 minutes 5+ days/week	Increase the proportion of adults who engage regularly, preferably daily, in moderate physical activity for at least 30 minutes/day Target: 30% ^b
Do you smoke cigarettes?	23.8% are current cigarette smokers	28.0% are current cigarette smokers	26% of males age 18+ were cigarette smokers ^c	Reduce tobacco use by adults Target: 12% ^b
What type of insurance do you have?	30.3% have health insurance	73.3% have health insurance	81% of males age <65 were covered by health insurance ^d	Increase the proportion of those with health insurance Target: 100% ^d
Do you know your present blood pressure?	58.0% know their blood pressure	NA	87% of males age 18 + had their blood pressure measured within the 2 years & could state whether it was normal or high ^d	Increase the proportion of adults who have had their blood pressure measured within the preceding 2 years & can state whether it was normal or high Target: 95% ^d
If you know your blood pressure, is it normal, low, or high?	23.5% of those who knew their blood pressure stated it was high	26.8% have been told by a health professional they have high blood pressure	30% of males age 20+ had high blood pressure ^e	Reduce the proportion of adults with high blood pressure Target: 16% ^d
How long ago did you have a general check up or routine physical exam?	85.7% have had a checkup within the past year 6.9% have had a checkup within the past 1–2 years 7.4% had a checkup 2 years ago	67.4% have had a checkup within the past year 13.8% have had a checkup within the past 1–2 years 18.7% had a checkup 2 years ago	NA	NA
Have you ever had a digital rectal exam (DRE)?	26.9% have had a DRE	73.4% have had a DRE	NA	NA
Have you ever had a fecal occult blood test (FOBT)? (Done by	31.8% have had a FOBT	37.1% have had a blood stool test	36% of males age 50+ received a FOBT within the preceding 2 years ^c	Increase in colorectal cancer screening: Adults age 50+ who have received a FOBT within the

Taxi Driver Survey Question	Taxi Driver Survey Response (<i>n</i> =751)	BREFFS Weighted Data for Chicago-Area Males Age 18+ (<i>n</i> = 1,022,035)	2000 Age-Adjusted National Data	Healthy People 2010 Goals
placing a sample of stool on a card)				preceding 2 years Target: 50% ^d
Have you ever had a sigmoidoscopy/ colonoscopy?	26.2% have had a sigmoidoscopy/ colonoscopy	54% have had a sigmoidoscopy/ colonoscopy	43% of males age 50+ received a sigmoidoscopy ⁰	Increase in colorectal cancer screening: Adults age 50+ who have ever received a sigmoidoscopy Target: 50% ^d
Have you ever had a Prostate Specific Antigen (PSA) test?	31.9% have had a PSA test	55% have had a PSA test	NA	NA

BRFSS = Behavioral Risk Factor Surveillance System

FOBT = Fecal Occult Blood Test

^aNational Health Interview Survey (NHIS). Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), 1997.

^bU.S. Department of Health and Human Services. Healthy People 2010, vol. 2 (2nd ed.). Washington, DC: U.S. Government Printing Office, 2000.

^cNational Health Interview Survey (NHIS). CDC, NCHS, 1998.

^dU.S. Department of Health and Human Services. Healthy People 2010, vol. 1 (2nd ed.). Washington, DC: U.S. Government Printing Office, 2000.

^dNational Health and Nutrition Examination Survey (NHANES). CDC, NCHS, 1988–94.

^eNational Health and Nutrition Examination Survey (NHANES). CDC, NCHS, 1988.