

Exposure to Environmental Tobacco Smoke

Introduction

Background

Second-hand smoke, also known as environmental tobacco smoke (ETS), is a combination of the smoke exhaled by a smoker and the smoke emitted from the burning tip of a lit cigarette. Sixty-nine of the 4000 chemicals found in ETS are known cancer causing agents (carcinogens)¹. There is no known safe level of exposure to these substances.

In adults, ETS exposure is associated with heart disease, lung cancer, nasal sinus cancer, and fetal growth impairment. Other adverse health effects include cervical cancer, miscarriages, and exacerbation of cystic fibrosis. For children, exposure to ETS has been linked to sudden infant death syndrome (SIDS), asthma induction and exacerbation, middle ear infections, and acute lower respiratory tract infections, including bronchitis and pneumonia. Other childhood conditions linked to ETS exposure include an adverse impact on cognition and behaviour, and decreased lung function².

The Smoke-Free Ontario Act was enacted in May of 2006 to protect all Ontarians from exposure to ETS by making all enclosed public places and workplaces smoke free. New provisions also limit the display and promotion of tobacco products helping to reduce exposure to these products and keeping them out of the hands of children.

Rapid Risk Factor Surveillance System

The data presented in this report was obtained and analyzed from the Rapid Risk Factor Surveillance System (RRFSS). RRFSS is an on-going cross-sectional telephone survey occurring in various public health units across Ontario that provides timely and relevant local health unit data. A random sample of adults (aged 18+) in Leeds, Grenville and Lanark counties is interviewed monthly regarding risk behaviours, knowledge, attitudes and awareness about topics important to public health. The RRFSS survey is conducted by the Institute for Social Research (ISR) at York University, on behalf of the Leeds, Grenville & Lanark District Health Unit. Data collected in the RRFSS survey is used to support community awareness programmes, health unit programme planning and evaluation, media campaigns, public policy development and evidence-based research as mandated by the Ontario Public Health Standards.

Objectives and Methodology

1. To determine levels of ongoing exposure to ETS within the population of Leeds, Grenville and Lanark.
2. To assist the health unit in focussing its resources towards reducing the exposure of residents in Leeds, Grenville and Lanark to ETS.

This module was enlisted into the RRFSS questionnaire module inventory in April 2004. The validity and reliability of the tool as a measure of true exposure to ETS has not been established

Data from RRFSS were analyzed using standard data analysis protocols. All analysis was produced using SPSS v.15.0 software (Chicago, IL) and MS Excel software (Redmond, WA). Results are weighted to adjust for household size and inequality in selection probability. Estimates are presented with 95% Confidence Intervals (C.I.) which indicate that there is a 95% probability that the true value of the variable measure (proportion) is contained within the interval. When the data is presented in a chart or table, an "E" indicates that the estimate may be released, but has a high coefficient of variation (C.V.) and must, therefore, be interpreted with caution due to a high sampling variability (C.V between 16.6 and 33.3). A "--" indicates the estimate is suppressed due to small cell size/high sampling variability (C.V greater than 33.3).

Questions pertaining to ETS were collected from January 2006 to March 2007. There were a total of 724 weighted respondents. However, response rates varied between questions in the module.

Results

The mean age of respondents to this module was 51.1 years (S.D. = 15.9), with a range of 77.5 years (min = 18.5, max = 96.0). In terms of gender, 44.2% (95% C.I.: 41.1, 47.2) of respondents were male and 55.8% (95% C.I.: 51.7, 59.9) were female.

Question 1: *In the past month, were you exposed to second-hand smoke every day or almost every day?*

	Frequency (n=724)	Percent	95% C.I.
Yes	147	20.2	17.5, 23.4
No	577	79.5	76.8, 82.6

Table 1: 20.2% of respondents (n = 147) in Leeds, Grenville and Lanark stated that they were exposed to ETS "every day or almost every day" within the past 12 months. Only those respondents who answered "Yes" to question 1 were asked further questions in the ETS module.

Module questions 2 to 6 were collapsed into a single graphic for simplicity. These questions attempted to specify and categorize the location/situation of a person's ETS exposure. The question categories asked were:

In the past month, were you exposed to second-hand smoke every day or almost every day:

- ***...at home?***
- ***...in a car or other private vehicle?***
- ***...in public places such as bars, restaurants, shopping malls, arenas, bingo halls or bowling alleys?***
- ***...when visiting friends or relatives?***
- ***...at your workplace?***



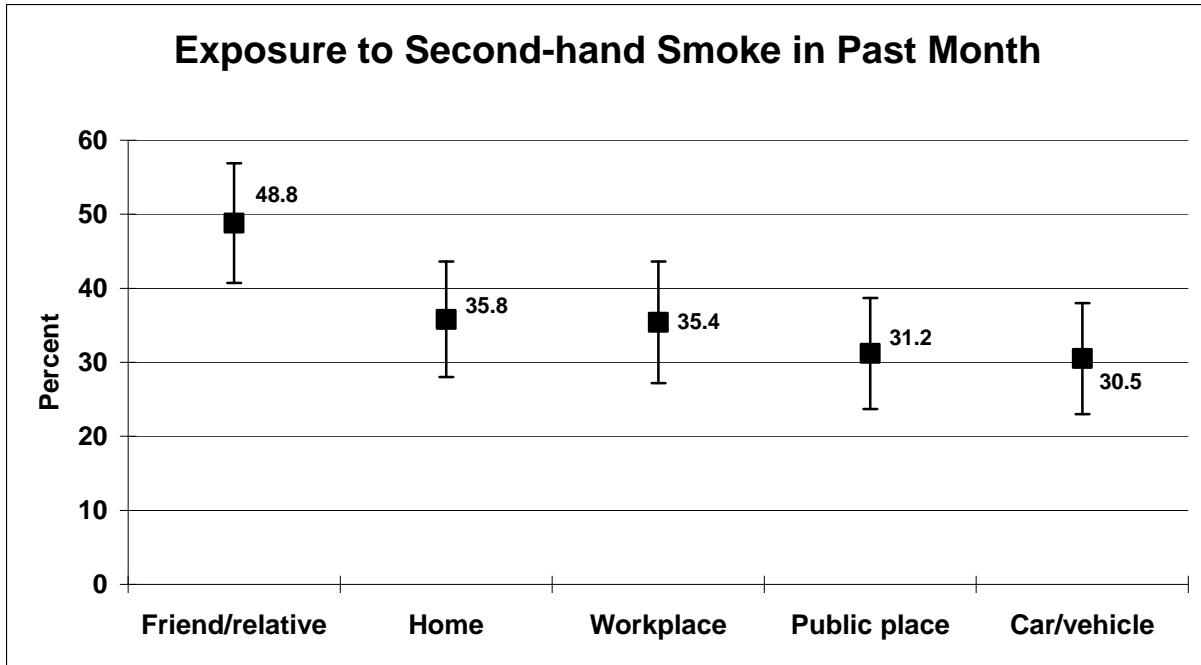
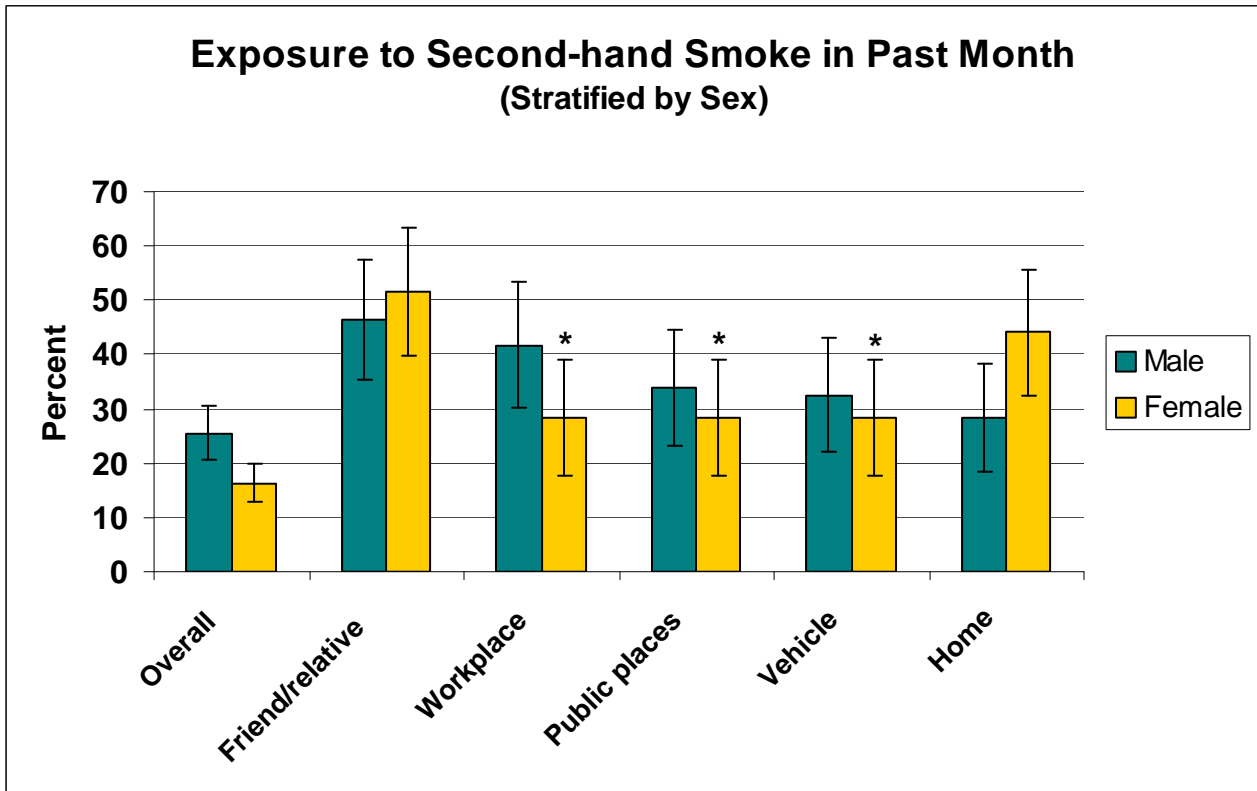


Figure 1: Of those who indicated that they were exposed to ETS, the most common source of ETS exposure occurred “when visiting friends or relatives” at 48.8% (95% C.I.: 40.7, 56.9). About similar proportions of respondents ($\approx 33\%$) reported being exposed to ETS “at home”, “in the workplace”, “in public places”, or “in a car or other private vehicle”. The sample sizes for each of these questions ranged between 147 and 130 respondents. Some respondents answered to more than one ETS exposure category. Proportions of ETS exposure that occurred “when visiting friends or relatives” was significantly higher than proportions of ETS exposure “in public places”, or “in a car or other private vehicle”.



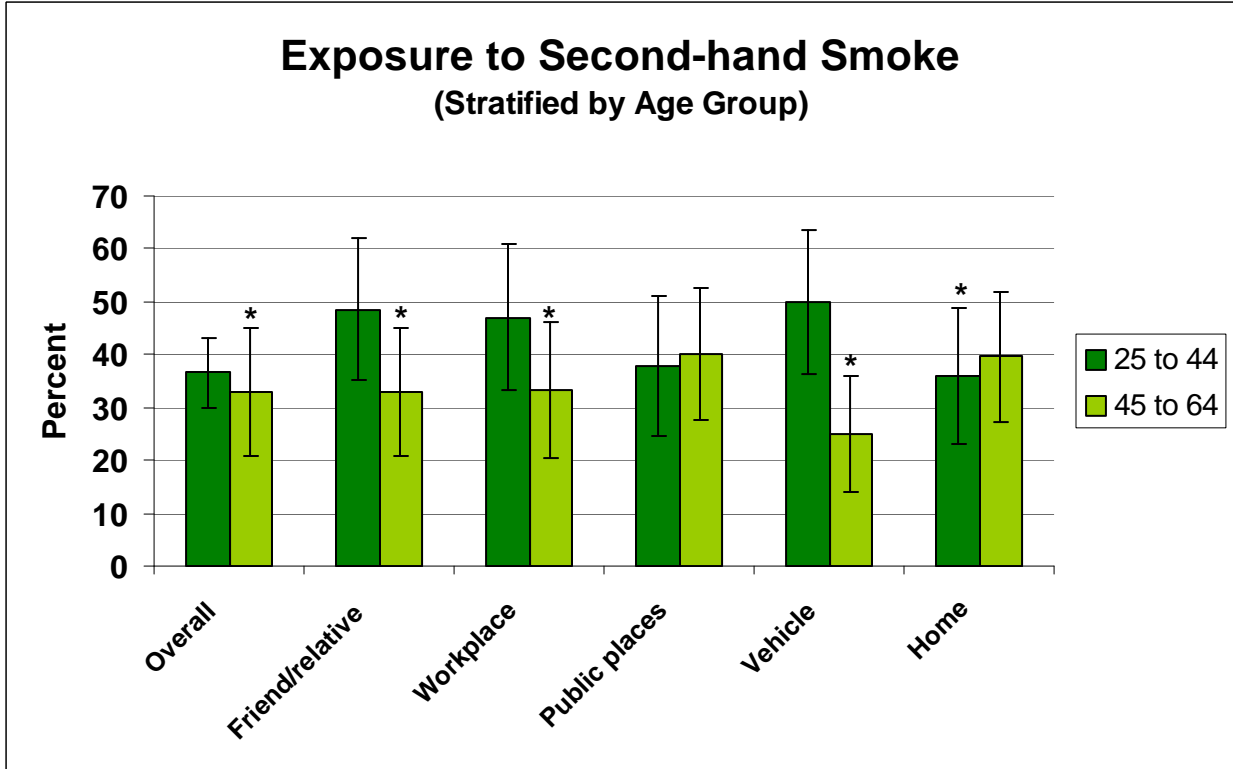
Notes: Respondents who answered “don’t know” or refused to respond were analyzed using RRFSS guidelines.

* Interpret with caution, high variability (C.V. 16.6 to 33.3).

Figure 2: When stratified by sex, a significantly higher proportion of males reported being exposed to ETS “overall” in the past month when compared to females ($n = 147$). Stratification of ETS exposure into physical location where the exposure took place suggests that similar proportions of males and females reported ETS exposure by physical location. The proportions of females who reported being exposed to ETS “when visiting friends or relatives” was significantly higher than females reporting exposure to ETS in “the workplace”, “in public places such as bars, restaurants, shopping malls, arenas, bingo halls or bowling alleys”, or “in a car of public vehicle”. This pattern of ETS exposure was not observed for males.

The sample sizes for each of these categories ranged between 147 and 63 respondents. Some respondents answered to more than one ETS exposure category.





Notes: Respondents who answered “don’t know” or refused to respond were analyzed using RRFSS guidelines.
 * Interpret with caution, high variability (C.V. 16.6 to 33.3).

Figure 3: Due to the limitations imposed by sample size, age stratification was limited to 2 of the approved RRFSS age groups. The “18 to 24” and “65 plus” age groups were eliminated due to extreme C.V. calculations (> 33.3). There were no significant differences between age groups and ETS exposure by physical location. However, exposure to ETS “in a car or other private vehicle” was significantly lower than would be expected by chance for the “46 to 64” year age group when compared to the “25 to 44” year age group. However, this interpretation must be made with caution due to high levels of sampling variability. The sample sizes for each of these categories ranged between 112 and 33 respondents. Some respondents answered to more than one ETS exposure category.



Summary of Key Findings

Some key findings in the study were:

1. The majority; 79.5% (95% C.I.: 76.8, 82.6) of survey respondents said that they were **not** exposed to ETS “every day or almost every day”.
2. 48.8% (95% C.I.: 40.7, 56.9) of those who report ETS exposure “every day or almost every day” stated that their exposure occurred “while visiting friends or relatives”.
3. Overall, males reported significantly higher proportions of ETS exposure when compared with females.
4. A larger sample size will ensure more detailed analysis via stratification using multiple variables.

Strengths & Weaknesses:

The data provided in this analysis demonstrates a timely and local perspective of patterns of exposure to ETS for residents of Leeds, Grenville and Lanark counties in 2006 and the first quarter of 2007.

Although the sample size ($n = 147$) was sufficient for basic descriptive analysis, it was not large enough to allow for multiple levels of stratification and therefore has resulted in a loss of potential for gaining information based on age and sex and ETS exposure simultaneously. However, the collection of ETS data continues.

References:

1. Shopland, DR. Risks associated with smoking cigarettes with low machine measured yields of tar and nicotine: National Cancer Institute Monograph [Online]. [2001 Oct]; Available from: U.S. Department of Health and Human Services.
URL http://cancercontrol.cancer.gov/tcrb/monographs/13/m13_complete.pdf
2. Samet, JM. The Health Effects of Tobacco Smoke Exposure on Children [Online]. [1999 Jan 7]; Available from [URLhttp://www.smoke-free.ca/Second-Hand-Smoke/health_kids.htm](http://www.smoke-free.ca/Second-Hand-Smoke/health_kids.htm)

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