Effects of Field Interviewer Gender on Smoking Data from a Global Household Survey on Tobacco Use

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Second International Conference on Survey Methods in Multinat
Multiregional and Multicultural Contexts (3MC)
26 July 2016

Overview

- Background
- Objective
- Methods
- Results
- Summary of Findings
- Implications

Background: Interviewer Effects

- "Interviewer Effects in Public Health Surveys" (Da
  al. 2010*)
  - "Interviewer Error" = variance in estimates due to difference
    data collected from different interviewers
  - "Interviewer Effects" = measurement error attributable to a
    interviewer characteristic such as race or gender
  - Interviewer effects especially occur in public health su
    measuring topics prone to social desirability
  - Little evidence to suggest interviewer-respondent matching
    improves validity

*Davis, R. E. et al. "Interviewer Effects in Public Health Surveys." *Health Education Research* 25.1 (2010): 14–26. *PMC*

Background: Underreporting Smoking

- Widespread belief that women from certain regions underreport smoking behaviors because of social desirability
  - Smoking by females is considered socially undesirable in parts of Asia, Middle East
- Limited evidence
  - South Korea Health and Nutrition Examination Survey used Cotinine validation
    - 58.9% of females and 12.1% of males misclassified themselves as non-smokers*
  - Biomarkers would be a gold standard to validate self-reported tobacco use and measure potential misreporting
    - Usefulness may be limited because of cost/burden

*Jung-Choi, K. et al. "Hidden female smokers in Asia: a comparison of self-reported with cotinine-verified smoking prevalence rates in representative national data of Asian populations." *Health Education Research* 25.1 (2010): 14–26. PMC

Study Objective

- Examine relationship between interviewer gender and self-reported smoking status in a global survey on tobacco use
- Hypotheses:
  - Female respondents will report significantly different prevalence of smoking to female interviewers than to male interviewers
  - No differences in prevalence of smoking among male respondents, by interviewer gender

Methods: Global Adult Tobacco Survey (

- Global surveillance system for monitoring adult tobacco us and tracking key tobacco control indicators
  - Smoking, smokeless, cessation, exposure to secondhand sm economics, media, knowledge & attitudes
- Nationally representative in-person household survey of persons 15 years of age and older
- Standard questionnaire, sample design, data collection management procedures
- In-country partners/agencies implement GATS
  - CDC/WHO/partners provide consultation to ensure standardization/quality

*http://www.cdc.gov/tobacco/global

Methods: Global Adult Tobacco Survey (

- Interviewer administered using hand-held computers
  - GATS standard design: roster all eligible household m and select 1 to complete the tobacco survey
  - Optional design feature: Gender Randomization
    - Randomly pre-designate sampled households as male or femal
    - Roster only eligible males or females
    - Primarily used for cultural reasons, where interviewer-respondent gender matching is required

Methods: Analysis

- Included 4 Asian countries where gender matching was
  used and data were available on field interviewer (FI) ge
  - China 2010 (East Asia): n=13,354; response rate (RR)=96.0%
  - Kazakhstan 2014 (Central Asia): n=4,425; RR=96.7%
  - Malaysia 2011 (Southeast Asia): n=4,250; RR=85.3%
  - Vietnam 2010 (Southeast Asia): n=9,925; RR=92.7%
- Examined results of smoking prevalence among males/f
  by FI gender
  - Among females: analyzed by age, urbanicity, education
- Weighted prevalence estimates were reported
- Z-test with two-tailed hypothesis (significance $p < .05$)

Results

Current Tobacco Smoking Prevalence Among Males ≥15 years old, by Interviewer Gender – GATS 2010-2014

	All males (regardless of interviewer gender)	Interviewer Gender		Z-score, p-value
		Male	Female	
China 2010	52.9%	53.9%	51.9%	Z=0.87, p=.38
Kazakhstan 20	42.4%	40.2%	44.0%	Z=-1.25, p=.21
Malaysia 2011	44.1%	46.8%	40.6%	Z=1.92, p=.05
Vietnam 2010	47.4%	46.2%	49.6%	Z=-1.65, p=.10

Results

Current Tobacco Smoking Prevalence Among Females ≥15 years old, by Interviewer Gender, GATS 2010-2014

	All Females (regardless of interviewer gender)	Interviewer Gender		Z-score, p-value
		Male	Female	
China 2010	2.4%	1.8%	3.0%	Z=-1.90, p=.06
Kazakhstan 20	4.5%	1.9%	6.0%	Z=-4.03*, p<.001
Malaysia 2011	1.1%	1.6%	0.4%	Z=2.69*, p<.01
Vietnam 2010	1.4%	1.5%	1.3%	Z=0.43, p=.67

Current Smoking Prevalence Among Females, by FI Ger
Respondent's Demographic Characteristics

	Interviewer Gender		Z-score, p-value
	Male	Female	
Age			
18-24	0.5%	1.2%	Z=-0.79, p=.43
25-44	1.5%	1.5%	Z=0.00, p=1.00
45-64	1.8%	4.2%	Z=-2.36*, p<.05
65+	5.9%	7.5%	Z=-0.76, p=.45
Residence			
Urban	2.4%	2.8%	Z=-0.43, p=.67
Rural	1.5%	3.1%	Z=-1.84, p=.07
Education			
Primary or less	2.8%	5.7%	Z=-2.42*, p<.05
Secondary school	1.1%	2.1%	Z=-1.24, p=.21
High school	1.7%	1.2%	Z=0.35, p=.73
College or above	0.9%	1.5%	Z=-0.53, p=.60

Current Smoking Prevalence Among Females, by FI Gen
Respondent's Demographic Characteristics, Kazakhstan

	Interviewer Gender		Z-score, p-value
	Male	Female	
Age			
18-24	1.6%	4.2%	Z=-1.48, p=.14
25-44	4.0%	9.3%	Z=-2.80*, p<.01
45-64	0.1%	4.9%	Z=-2.98*, p<.01
65+	0.0%	3.1%	Z=-2.12*, p<.05
Residence			
Urban	1.5%	7.9%	Z=-4.44*, p<.001
Rural	2.1%	2.0%	Z=0.09, p=.93
Education			
Primary or less	0.0%	0.7%	Z=-0.96, p=.34
Secondary general	3.9%	8.2%	Z=-1.55, p=.12
Secondary technical	0.7%	4.8%	Z=-3.40*, p<.001
College or above	1.4%	7.2%	Z=-3.64*, p<.001

Current Smoking Prevalence Among Females, by FI Ger
Respondent's Demographic Characteristics, Malaysia

	Interviewer Gender		Z-score, p-value
	Male	Female	
Age			
18-24	0.8%	0.5%	Z=0.36, p=.72
25-44	1.7%	0.4%	Z=1.66, p=.10
45-64	0.8%	0.2%	Z=1.80, p=.07
65+	10.2%	1.3%	Z=2.24*, p<.05
Residence			
Urban	1.5%	0.3%	Z=2.20*, p<.05
Rural	2.1%	0.7%	Z=1.92, p=.06
Education			
Primary or less	4.8%	0.9%	Z=2.67*, p<.01
Secondary school	0.5%	0.2%	Z=0.92, p=.36
High school	2.2%	0.0%	Z=1.00, p=.32
College or above	0.0%	0.0%	-

Current Smoking Prevalence Among Females, by FI Ger
Respondent's Demographic Characteristics – Vietnam

	Interviewer Gender		Z-score, p-value
	Male	Female	
Age			
18-24	0.6%	0.0%	Z=1.24, p=.21
25-44	0.9%	0.7%	Z=0.45, p=.65
45-64	2.9%	2.8%	Z=0.09, p=.93
65+	3.2%	2.7%	Z=0.29, p=.77
Residence			
Urban	1.1%	0.7%	Z=1.07, p=.29
Rural	1.7%	1.7%	Z=0.00, p=1.00
Education			
Primary or less	2.8%	2.4%	Z=0.43, p=.67
Secondary school	0.1%	0.3%	Z=-0.82, p=.41
High school	0.0%	0.4%	Z=-1.25, p=.21
College or above	0.3%	0.6%	Z=-0.50, p=.61

Summary of Findings

- No significant differences among males in reporting smoking to male and female FIs
  - Marginally non-significant difference in Malaysia
- Significant differences among females in reporting sm to male and female FIs in two countries:
  - Kazakhstan: Higher overall prevalence reported to female
  - Malaysia: Higher overall prevalence reported to male FIs
- Significant differences among subgroups (for females
  - China: 45-64 year olds, low education
  - Kazakhstan: 25+, urban, higher education
  - Malaysia: 65+, urban, low education
- No differences found among Vietnamese women

Discussion

- There was evidence of interviewer effects as fem
  respondents may have underreported their smoki
  behavior in 2 out of 4 countries
- Underreporting by females may potentially lead to
  underestimation of overall smoking/tobacco use
- Accurately monitoring smoking among females is
  critical to effectively implement population based
  tobacco control strategies that lower tobacco use

Implications for Future

- On a case-by-case basis, countries may want to consider using respondent gender matching for FI validity concerns (not just cultural requirement
  - May be a need to match opposite genders for fem
- Future research
  - Subgroup analysis among males
  - Analyze additional countries
  - Explore possibility of multilevel modeling to control for FI effects (suggested by Davis et al. 2010)

Thank you for your time

Questions or further information?

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*The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.