



THE ASSOCIATIONS BETWEEN AREA OF RESIDENCE, SEXUAL VIOLENCE VICTIMIZATION AND ASTHMA EPISODES AMONG U.S. ADULT WOMEN IN 13 STATES, 2005-2006

Robert M. Bossarte, PhD^{1,2}, Monica H. Swahn, PhD³, Ekta Choudhary, MS, MPH^{1,2}

^{1,2}Department of Community Medicine and Injury Control Research Center, West Virginia University

³Institute of Public Health, Georgia State University

INTRODUCTION

- In the U.S., an estimated 7% of adults (15.7 million) currently have asthma making asthma a critical clinical and public health problem^{1,2}
- Studies on children or adolescents in urban settings have found links between mental health and asthma morbidity, exposure to violence and asthma morbidity, violent victimization and asthma episodes, and assault hospitalization rates and asthma hospitalizations³⁻⁶
- One small study of white, middle to upper middle class adults, in the U.S. examined the adverse effect of sexual assault in women and men and did not find an association between sexual assaults and asthma⁷
- Few studies have compared the associations between exposure to violence and asthma episodes in urban and rural areas⁸
- One study reported consistent associations between exposure to domestic violence and childhood and adult asthma prevalence across different areas in India⁹
- The extent to which the associations between exposures to violence are associated with asthma prevalence among U.S. adults across places of residence has not yet been documented

OBJECTIVE

The current investigation will extend previous research by examining the associations between sexual violence victimization and asthma episodes across three different metropolitan settings in a representative sample of U.S. adult women in 13 states.

METHODS

- Analyses used cross-sectional data from the 2005 and 2006 Behavioral Risk Factor Surveillance System (BRFSS) surveys.
- Categories of sexual violence victimization included unwanted touching (past 12 months), attempted unwanted intercourse (lifetime), and forced unwanted intercourse (lifetime) after the woman said no or without her consent.
- Demographic measures included age, race, and education. Potential confounders included current cigarette smoking, physical exercise not related to work, self-perceived health status, frequency of social and emotional support, body mass index (BMI), number of routine health visits for asthma in the past 12 months, and number of days with use of preventative asthma medications.
- A three category measure of metropolitan status was constructed including metropolitan statistical area (MSA) center, MSA (including outside the center-city of an MSA and inside a suburban county of the MSA) and non-MSA categories.
- All analyses are based on weighted data computed using SUDAAN statistical software (Research Triangle Institute, Research Triangle Park, NC). Missing data were managed using list-wise deletion.

DISCUSSION

- Our findings show that all three forms of sexual victimization are significantly associated with asthma episodes among adult women in the U.S.
- While all three forms of sexual victimization were associated with asthma episodes in the combined sample, stratified analyses by metropolitan setting indicated the highest odds for asthma episodes among those sexually victimized who lived within a metropolitan setting

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RESULTS

- Among all women participating in BRFSS asthma and sexual violence questionnaires, 3.99% reported unwanted touching (past 12 months), 25.98% reported attempted unwanted intercourse, and 21.09% reported unwanted sexual intercourse.
- Differences in the prevalence of sexual violence victimization across the three metropolitan categories were not statistically significant
- Women who were victims of unwanted physical touching (past 12 months) were nearly four times more likely to have had an asthma episode in the past 12 months compared to women reporting no unwanted touching (Table 2)

- Overall, 55.8% of all participants experienced an asthma episode in the past 12 months (Table 3)
- While the percentage of participants reporting an asthma episode was higher in non-MSA areas (58.9%) when compared to participants from MSA (55.4%) or MSA-center areas (54.7%), these differences were not statistically significant

- All three forms of sexual victimization increased risk for asthma episodes specifically among participants in MSA center
- None of the three forms of sexual violence victimization were associated with asthma episodes among residents of rural/non-MSA areas

Table 1: MSA/Non-MSA Differences in Sexual Violence Victimization among Adult Women Reporting Asthma, 2005-2006

	All Areas % (95% CI) n = 4018	MSA Center % (95% CI) n = 1534	MSA % (95% CI) n = 1299	Non-MSA % (95% CI) n = 1185
Unwanted touching (past 12 months)	3.99 (2.73-5.78)	4.12 (2.34-7.15)	4.28 (2.24-8.03)	3.11 (1.69-5.66)
Attempted intercourse	25.98 (23.47-28.66)	27.59 (23.95-31.55)	26.97 (22.49-31.99)	20.76 (17.08-25.00)
Sexual intercourse	21.09 (18.77-23.61)	22.65 (19.14-26.59)	19.71 (15.80-24.32)	20.93 (17.08-25.38)

Table 3: Associations between Asthma Episodes and Sexual Violence Victimization by Metropolitan Status, 2005-2006

	All Areas		MSA Center		MSA		Non-MSA	
	%	Adjusted OR (95% CI)	%	Adjusted OR (95% CI)	%	Adjusted OR (95% CI)	%	Adjusted OR (95% CI)
Total	55.8		54.7		55.4		58.9	
Unwanted touching (past 12 months)								
No	54.8	1.00	53.7	1.00	54.1	1.00	58.4	1.00
Yes	81.8	3.90 (1.78-8.53)	78.8	5.28 (1.41-19.69)	86.4	4.40 (1.38-14.04)	76.4	2.12 (0.58-7.71)
Attempted intercourse								
No	52.2	1.00	50.1	1.00	51.1	1.00	58.0	1.00
Yes	66.8	1.78 (1.33-2.38)	67.5	2.17 (1.44-3.26)	67.6	1.77 (1.03-3.03)	62.9	1.10 (.065-1.87)
Sexual intercourse								
No	52.5	1.00	50.6	1.00	52.4	1.00	56.4	1.00
Yes	68.8	2.11 (1.53-2.91)	69.2	2.61 (1.65-4.14)	68.4	1.64 (0.92-2.92)	69.0	1.67 (0.92-3.01)

* Adjusted for age, education, race/ethnicity, smoking cigarettes (current), BMI, exercise, emotional support, self-rated health status, medication use, and routine check-ups for asthma
Statistically significant associations in **bold**

RECOMMENDATIONS

- Exposure to violence and other psychosocial stressors have emerged as critical factors for asthma morbidity and prevalence in many different studies of both children and adults across metropolitan settings and countries
- Previous researchers have suggested that future research should consider socially patterned susceptibility, common spatial distributions of social and physical environmental factors as well as the potential synergistic effects among these factors to better understand asthma etiology.¹¹
- The next steps will be to implement prevention programs that proactively target the reduction of violence and other community stressors as well as providing better care and support for those who have been exposed to, or been victims of, violence.

LIMITATIONS

- Results may not generalize to those that were not captured by the sampling frame or those population groups less likely to participate in telephone surveys.
- Questions about asthma episodes and sexual victimization were self-reported and therefore subject to reporting bias, particularly underreporting.^{8,9}
- The data do not permit an assessment of the temporal ordering between sexual victimization and asthma episodes.
- The analyses do not consider the many potential mediators and moderators that may be part of the complex mechanisms linking a stressor such as sexual victimization with asthma.^{4,10}

Table 2: Associations between Asthma Episodes and Sexual Violence Victimization, 2005-2006

	Unwanted Touching OR _{Adj.} (95% CI)	Attempted Intercourse OR _{Adj.} (95% CI)	Sexual Intercourse OR _{Adj.} (95% CI)
Age	0.99 (0.99-1.00)	0.99 (0.98-1.00)	0.99 (0.99-1.00)
Race			
-African-American, Non-Hispanic	0.65 (0.43-1.00)	0.68 (0.44-1.05)	0.67 (0.44-1.02)
-Other, Non-Hispanic†	0.80 (0.41-1.55)	0.88 (0.45-1.71)	0.84 (0.44-1.60)
-Multiple-Race, Non-Hispanic	0.86 (0.48-1.52)	0.82 (0.45-1.49)	0.93 (0.51-1.71)
-Hispanic	0.87 (0.52-1.44)	0.85 (0.51-1.42)	0.87 (0.53-1.43)
Education (some college or more)	1.21 (0.94-1.57)	1.16 (0.89-1.50)	1.18 (0.91-1.53)
Current cigarette smoking (any)	1.10 (0.82-1.46)	1.05 (0.78-1.41)	1.05 (0.78-1.41)
BMI			
-Overweight	0.90 (0.66-1.21)	0.89 (0.65-1.20)	0.85 (0.63-1.16)
-Obese	1.14 (0.84-1.53)	1.07 (0.79-1.45)	1.05 (0.77-1.43)
Exercise (any in past 30 days)	1.01 (0.74-1.37)	0.99 (0.73-1.35)	0.99 (0.73-1.35)
Routine health visits for asthma			
- 1-12 visits in past 12 months	2.05 (1.58-2.65)	2.02 (1.55-2.63)	2.08 (1.60-2.70)
- 13 visits or more in past 12 months	3.25 (1.05-10.06)	3.06 (1.01-9.20)	3.26 (1.10-9.61)
Use of preventative asthma medications			
-1-14 days	2.34 (1.68-3.27)	2.39 (1.71-3.35)	2.38 (1.70-3.34)
-15-30 days	1.52 (1.13-2.05)	1.52 (1.13-2.05)	1.50 (1.11-2.02)
Emotional Support (always or usually)	0.91 (0.68-1.22)	0.97 (0.72-1.30)	0.96 (0.71-1.30)
Health status (good-excellent)	0.68 (0.51-0.91)	0.66 (0.50-0.89)	0.71 (0.53-0.96)
Victimization			
- Unwanted touching	3.90 (1.78-8.53)	-	-
- Attempted unwanted intercourse	-	1.78 (1.33-2.38)	-
- Forced unwanted intercourse	-	-	2.11 (1.53-2.91)

† Includes Asian, Native Hawaiian, American Indian, and Alaskan Native
Statistically significant associations in **bold**.

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