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Determinants of HIV Screening Among Adults in New Jersey After Hurricane Sandy

Nathaniel R. Geyer, DrPH

Abstract

HIV screening is recommended to destigmatize the condition, prevent partner transmission, and postpone AIDS progression. However, determinants associated with implementation of opt-out HIV screening are not well understood. In order to examine determinants that predicted HIV screening for people impacted by Hurricane Sandy, this study aims to evaluate this screening to medical care after a natural disaster.

Problem

HIV screening is the key step for destigmatizing the condition, preventing partner transmission, and postponing AIDS progression (Gardner et al., 2011; McNairy & El Sadr, 2012).

The general population lacked the understanding of the determinants connected with the continued failure of full implementation of opt-out HIV screening, without supportive data (Viall et al., 2016).

Davidow et al. (2016) advised that environmental damages caused by Hurricane Sandy compromised health care access for at-risk populations for supplemental medical services. Davidow et al. did not include HIV, which has become a chronic condition for screening and treatment purposes.

In this investigation, I addressed a gap in knowledge regarding the association among HIV screening, access-to-care post-Hurricane Sandy, and various confounding or moderating influences (i.e., demographic characteristics, geographical region, health-related quality of life [HRQOL] scores, access-to-care, and health insurance status) to determine the odds of screening variance with each predictor.

Purpose

The purpose of the study was to examine determinants that predicted odds of HIV screening for persons impacted by Hurricane Sandy, and how these factors differed according to demographic characteristics, geographical attributes, health-related quality of life score, access-to-care, and health insurance status.

Relevant Literature

Social Ecology Theory (i.e., Bronfenbrenner, 1979) as modified by Baral, Logie, Grosso, Wirtz, and Beyner (2013), and later the Centers for Disease Control and Prevention (CDC, 2015) provided a real-world efficacy to realize the dynamics of HIV screening barriers in New Jersey, as analyzed in the state-specific **behavioral risk factor surveillance system** (BRFSS) data set.

United States national policies on HIV/AIDS:

- Revised CDC's guidelines (Branson et al., 2006),
- United States Preventive Service Task Force's (USPSTF's) HIV screening recommendations (Moyer, 2013).
- National HIV/AIDS Strategy (Office of National HIV Policy, 2015).

Predictors of HIV screening-dependent variable:

- Sex at Birth (Hensen et al., 2014; Richardson et al., 2014).
- Race/Ethnicity (Morooka & Lampkins, 2014; Ortega, Rodriguez, & Bustamante, 2015)
- Age groups (Zanoni & Mayer, 2014; Geyer, Parham, Wallace, & Washington, 2013)
- Marital Status (Ford, Godette, Mulatu, & Gaines, 2015; Roundtree, Chen, Brown, & Pomeroy, 2009)
- Rurality at Residence (Carrel, Enron, Emach, & Hurt, 2014; Vaughan, Rosenberg, Shouse, & Sullivan, 2014; Weissman et al., 2014).
- Primary Health Insurance (Berry et al., 2016; Dietz et al., 2015; Yehia et al. 2014; Zhang et al., 2014)
- HRQOL Scores (Blosnich & Silenzio, 2013; Emler, Fredriksen-Goldsen, & Kim, 2013; Bucciardini et al, 2016; Odom, Fang, Zack, Moore, & Loustalot, 2016)
- Access to Medical Care post-Hurricane Sandy (Davidow et al., 2016)

Research Questions

RQ1: Among adults surveyed in the New Jersey BRFSS in 2014, is there an association between HIV screening and demographic characteristics, geographic attributes, health-related quality-of-life propensity score, access-to-care post-Hurricane Sandy, and health insurance status?

RQ2: Are there statistically significant odds ratios of HIV screening among geographic attributes, health-related quality-of-life propensity score, access-to-care post-Hurricane Sandy, and health insurance status?

Procedures

The BRFSS is a cross-sectional designed health-related telephone survey coordinated by the CDC to collect state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, use of preventive services, and other health-related issues (CDC, 2015).

The state of New Jersey has 13,045 survey participants in BRFSS in 2014.

The analysis used nominal confounding variables for this analysis, with a binary (no & yes) dependent variable on HIV screening, and nominal (no, yes, & unknown) for medical care post-Hurricane Sandy.

Data Analysis

The analysis of the New Jersey BRFSS included:

- Chi-square tests,
- Cramer's V statistics,
- Unadjusted logistic regression,
- Multiple logistic regression, and
- Weighted multiple logistic regression.

Findings

Selected chi-square and Cramer's V results:

- HIV screening group (29% of sample) had $p \leq .05$
- Age ($\chi^2=1,547.31$; $p < .001$; medium effect size, .344)
- Race ($\chi^2=673.62$; $p < .001$; small effect size, .227)
- Marital Status ($\chi^2=677.06$; $p < .001$; small effect size, .223)
- Health Insurance ($\chi^2=472.32$; $p < .001$; small effect size, .190)
- Medical Care post-Hurricane Sandy ($\chi^2=213.54$; $p < .001$; small effect size, .127).

Selected logistic regression results:

- Medical care post-Hurricane Sandy (Yes vs. No; OR=1.74, 95% CI=1.38-2.21; Weighted Odds Ratios [WOR]=1.91, 95%CI=1.35-2.69)
- Sex (males vs. females; WOR=1.16, 95%CI=1.02-1.32)
- Health Insurance (Medicaid vs. Private: Employee; OR=1.72, 95%CI=1.40-2.12; WOR=1.54, 95%CI=1.12-2.12)
- Race (non-Hispanic blacks vs. non-Hispanic Whites; OR=2.85, 95%CI=2.50-3.25; OR=2.69, 95%CI=2.22-3.27) and (Hispanics vs. non-Hispanic whites; OR=1.64, 95%CI=1.44-1.87; WOR=1.51, 95%CI=1.26-1.80).

Limitations

Possible limitations to the study included:

- Self-report information
- Missing or incomplete data (5-16%)
- Cross-sectional design
- 2014 data-short shelf life
- Prone to ecological fallacy
- Heterogeneity issue (Subramanian, Jones, Kaddour, & Krieger, 2009)
- Questionable validity of BRFSS data (Hayek et al., 2015)

Conclusions

I identified the relationship between the odds of residents to seek HIV screening and access-to-care post-Hurricane Sandy, adjusted by age, sex, HRQOL score, race/ethnicity, primary insurance, metropolitan code, and marital status affecting surveyed adults, in New Jersey's BRFSS.

Populations living in hurricane-prone areas in New Jersey should develop realistic, HIV-screening plans that account for key medical services (Pouget et al., 2015).

Need for additional multilevel analysis combined with a community-based participatory research approaches in order to promote program sustainability and community engagement (McElfish et al., 2016)

Stakeholders need to integrate HIV screening into routine medical treatment, by improving public health practice in New Jersey.

Social Change Implications

A better understanding the HIV screening determinants should help to raise awareness and to determine risk factors that cause a decline in access to medical care after Hurricane Sandy, and to impact lives in New Jersey.

Dr. Vasileios Margaritis, Chair; Dr. Nancy Rea, Committee Member; and Dr. Loretta Cain, URR