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State-level factors influencing tobacco cessation quitline spending in 2008

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Abstract

Tobacco cessation quitlines are an effective population-based smoking cessation treatment. However, quitline funding varies widely. Analyzing state-level factors may help explain these differences.

We used data from the North American Quitline Consortium's 2008 survey of state quitlines and U.S. Census estimates to calculate per capita spending on quitline services. Publicly available data sources were used to identify demographic, tobacco use, tobacco control spending, and political and economic climate variables for the analysis.

Linear regression analyses were used to identify potential predictors of per capita quitline services budgets in 2008. States with a greater percentage of their population with at least a high school degree, and states that spent more per capita on tobacco control programs overall, spent more per capita on quitline services ($p > 0.05$). In multivariate analysis, only per capita tobacco control expenditures was statistically significant ($\beta=0.73$, $p=0.00$, 95%CI 0.11-0.19).

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Disclosures: Paula A. Keller, Eric J. Beyer, and Linda A. Bailey have no competing interests. Timothy B. Baker has served as an investigator on research projects sponsored by pharmaceutical companies, including Sanofi-Synthelabo, Pfizer Inc., and Nabi Biopharmaceuticals. Over the last three years, Michael C. Fiore has served as an investigator in research studies at the University of Wisconsin that were funded by Pfizer, GlaxoSmithKline and Nabi Biopharmaceuticals. In 1998, the University of Wisconsin (UW) appointed Dr. Fiore to a named Chair funded by an unrestricted gift to UW from Glaxo Wellcome.

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It appears that per capita tobacco control expenditures is the most consistent predictor of state per capita quitline expenditures. Additional research into whether and how state-level factors influence quitline funding levels is needed to allow advocates and policy-makers to understand better how to advocate for ongoing support of these population-based services.

MESH Keywords

Smoking; smoking cessation; policy making

Introduction

Tobacco cessation quitlines are an effective population-based smoking cessation treatment (Stead et al., 2006; Fiore MC et al., 2008). However, quitline funding varies widely. As both quitlines and tobacco control programs face significant budget constraints due to the global recession, understanding whether state-level factors may influence funding levels is increasingly important. This study builds on our earlier efforts to explore state-level factors that may influence per capita quitline funding (Keller et al., 2007; Keller et al., 2009).

Methods

Data from the North American Quitline Consortium's 2008 survey of state quitlines and U.S. Census estimates were used to calculate per capita spending on quitline services. As in our previous research, publicly available data sources were used to identify demographic, tobacco use, tobacco control spending, and political and economic climate variables (Keller et al., 2007; Keller et al., 2009). The University of Wisconsin Health Sciences Minimal Risk IRB reviewed the study and determined it to be exempt from full IRB review.

Data were inspected to ensure they were normally distributed to permit regression analysis. Outliers above or below three standard deviations of the mean for four variables: median age, median family income, percentage of state residents with a high school degree, and per capita tobacco control expenditures were rescaled, maintaining rank order, to address distributional problems, and re-inspected for normality.

Linear regression analyses were used to identify potential predictors of per capita quitline services budgets in 2008. Univariate regression results were considered statistically significant at $p \leq 0.05$. Backwards model building techniques described by Hosmer and Lemeshow were utilized in multivariate analysis comprising all variables significant at $p \leq 0.25$ in the univariate analyses (Hosmer and Lemeshow, 2000). Variables were removed one at a time from the model until all remaining variables were significant at $p \leq 0.05$.

Results

Findings from the univariate analysis are displayed in Table 1. States with a greater percentage of their population with at least a high school degree, and states that spent more per capita on tobacco control programs overall, spent more per capita on quitline services. In multivariate analysis, only per capita tobacco control expenditures was statistically significant ($\beta=0.73$, $p=0.00$, 95%CI 0.11-0.19).

Discussion

It appears that per capita tobacco control expenditures is the most consistent predictor of state per capita quitline expenditures. This finding is consistent with our previous research

(Keller et al., 2007; Keller et al., 2009) and not unexpected – it can be reasonably assumed that states with greater investments in tobacco control would fund all aspects of comprehensive tobacco control programs at relatively high levels, including quitlines. An unexpected finding was that other variables such as consumption, political ideology, and other factors that predicted state-level spending on quitlines in past analyses were not statistically significant in this analysis. An inspection of the data suggests that the reduction in significant predictors was not due to a restriction in range of the dependent variable. Possible explanations include the global economic recession that began in 2008, random variation from year to year, and the fact that the sample size is modest rendering year-to-year findings unstable (n=51). An alternative explanation is that quitlines have become better integrated into state tobacco control programs, as recommended by CDC's Best Practices for Comprehensive Tobacco Control Programs (Centers for Disease Control and Prevention, 2007). Additional research into whether and how state-level factors influence quitline funding levels is needed to allow advocates and policy-makers to understand better how to advocate for ongoing support of these population-based services.

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Table 1

Univariate Results, U.S. State-Level Factors Associated with Per Capita Tobacco Cessation Quitline Services Spending, 2008

	β	p-value	95% CI
Demographic Information			
Education: % of state pop. w/ \geq high school degree	0.38	0.01*	0.02-0.11
Median income	0.07	0.63	0.00-0.00
Median age	0.09	0.53	-0.07-0.13
Tobacco Use			
Adult smoking prevalence	0.02	0.88	-0.06-0.07
Consumption	0.01	0.94	-0.01-0.01
Tobacco Control Spending			
Securitization of MSA Payments	-0.15	0.32	-0.65-0.22
Per capita tobacco control expenditures	0.73	0.00*	0.11-0.19
Economic and Political Climate			
Cigarette Excise Tax Rate	0.09	0.57	-0.21-0.38
Political Ideology	0.21	0.18	0.00-0.02
Governor's Political Affiliation	-0.28	0.06	-0.81-0.02
Legislature's Political Affiliation	0.15	0.32	-7.43-2.20
Agriculture: Tobacco Production (\geq 1 million pounds)	-0.14	0.71	0.00-0.00

* Statistically significant ($p < 0.05$)