Research Article

Use of Research-based Information among Leaders of Public Health Agencies

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ABSTRACT

Background: *Researchers have identified numerous policies and programs effective in reducing public health problems, yet many of these programs and policies have not been implemented throughout communities and states.* ***Purpose:*** *To assess the use of research-based information among leaders in the local public health system.* ***Methods:*** *We conducted a mailed survey of county commissioners and directors, and selected managers (n = 591) of all local public health agencies located in Minnesota.* ***Results:*** *Forty-nine percent of respondents reported not using research information in making decisions about priority areas. The most common ways of accessing research information were by: (1) reading a research article, (2) through a state/federal health agency, or (3) attending conferences. However, these methods varied from those reported as the most effective ways for accessing research information, which included: (1) having a summary of journal articles regularly sent to them, (2) having funding agencies provide research information, and (3) through a staff-prepared summary.* ***Discussion:*** *Findings suggest that while many agency leaders use research evidence in public health practice, there is room for improvement.* ***Translation to Health Education Practice:*** *To increase use of research information, effective methods for disseminating research need to be identified, evaluated, and broadly used.*

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BACKGROUND

To improve the public's health, priority areas, programs, and policies that are evidence-based and have been shown to be effective in practice are clearly needed.[1] Given that the priority areas and recommendations identified by researchers are not being implemented by practitioners in the field,[2-5] researchers need to identify and work with organizational systems that can help translate health research findings into practice.[6] Health-related organizational systems, such as the public health, health care, and social services systems, need to be assessed to identify receptivity to research-based information, extent of use of health research-based information and programs, and ways to encourage adoption of research-based information.

Hallfors and Godette[7] assessed the educational system to evaluate the level of implementation of research-based substance use prevention programs in schools; they found that only about half the schools reported using one or more of the research-based programs, and nearly 60% of respondents reported using programs shown to be ineffective. This study provides important information about diffusion of research-based information, but only for substance use interventions within the educational system.

Few studies have examined the use of research information by leaders of public health agencies or methods for disseminating research information. Brownson et al.[8] conducted a preliminary study of dissemination of evidence-based physical

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activity promotion guidelines to public health departments. They found that active dissemination of guidelines increased implementation, especially among *local* public health departments. However, we did not find any studies further assessing local public health leaders' use of research-based information. The goal of the current study is to assess how research information is used to guide decisions about priority areas among leaders in the local public health system—a system designed to affect the health of all individuals in the U.S. and a system that has a history of implementing both individual- and environmental-level interventions.[9] Findings from this study will help guide dissemination of research findings and, hopefully, translation of research into practice.

PURPOSE

Local public health agencies (LPHAs) are defined as "an administrative or service unit of local or state government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than the state."[10] There are approximately 3000 LPHAs throughout the United States.

LPHAs are complex systems, and their jurisdictions vary widely from single cities or counties to multiple counties.[11] An LPHA may be governed by a political body, such as a city council or county board of commissioners, or by a board of health. These governing bodies usually set the priorities for their agencies; however, members of these bodies may or may not have a public health or medical background. Agency priorities may also be influenced by directors or managers within LPHAs (Figure 1).

We conducted a survey in June through August 2005 of governing bodies, directors, and selected managers of all LPHAs located in Minnesota. Minnesota is an ideal state for this study, due to its extensive and active local public health system. We assessed: (1) whether scientific research information is being accessed to inform decisions about priority areas; (2) to *what degree* research information informs decisions about priority areas; (3) most *common* methods used to access scientific research information; (4) most *effective* methods used (as self-reported) to access research information; and (5) whether use of research varies by position, educational background, and demographic characteristics of local public health agency leaders.

METHODS

Survey

We created a separate survey instrument for each of the three groups, modifying specific wording to reflect the respondents' positions, with input from staff from the Local Public Health Association of Minnesota, the U.S. Centers for Disease Control and Prevention, the Minnesota Department of Health, and a local public health agency. We mailed surveys to 591 individuals along with a self-addressed stamped envelope, but also gave respondents the option to complete the survey via the Internet. We mailed non-respondents a second copy two weeks later, and a third copy four weeks later, if needed.

Study Population

Of the 80 LPHAs located in Minnesota, 76 are county- or multi-county based and four are city-based. The LPHAs are governed by 52 governing bodies, which are primarily made up county commissioners. We mailed surveys to: (1) directors of all LPHAs (n = 80); (2) one or two managers within each LPHA, if available (n = 64); and (3) all county commissioners (n = 447). We identified potential respondents through the Association of Minnesota Counties, the Local Public Health Association of Minnesota, and the Minnesota Department of Health.

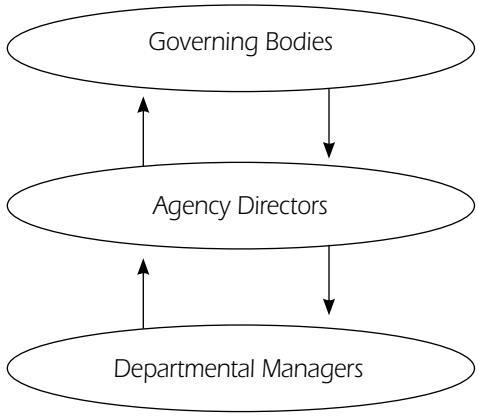
The overall response rate was 60.4% (357/591). The response rate varied by respondent group: directors = 82.5%; managers = 67.3%; and county commissioners = 55.5%, with most completing the paper survey (81.5%) versus the Internet-based version.

Of our final sample, 84% of the county commissioners were male, while most of the directors and managers were female (89% and 90%, respectively). The highest level of educational attainment varied by job position, with the majority of county commissioners (59%) reporting a high school or associate's degree, the majority of directors (59%) reporting a bachelor's degree, and all managers reporting either a bachelor's or master's degree, or higher. A large majority of directors (79%) and managers (80%) received public health training, but few county commissioners had (11%) received training. More than half of respondents in all job categories (54% - 65%) indicated tenure of five years or more.

Variables

We used two dependent variables: (1) whether the respondent accesses research

Figure 1. Local Health Department Leadership Structure and Potential Directions of Influence



information to inform decisions about priority areas, with a "yes or no" answer, and (2) to *what degree* research-based information informs the respondent's decisions about priority areas, with answers ranging from "1-very little" to "5-very much." We used five independent variables including: (1) gender; (2) education level (with options of: high school or associate's degree, bachelor's degree, and master's degree or higher); (3) formal training in public health (with a "yes or no" answer); (4) time in position (with options of: <1 year, 1 to 5 years, and >5 years); and (5) job position (with options of: county commissioner, director, or manager). We also included the use of a research variable (with a "yes or no" answer) as an independent variable in some analyses.

Among respondents who reported accessing research-based information, we measured how the respondents accessed research information. Using "check all that apply," we provided ten response options: (1) read a research article, (2) searched the Internet, (3) worked closely with a researcher, (4) talked with a researcher, (5) through funding agencies, (6) through a state or federal health agency, (7) via media, (8) read summary prepared by staff, (9) attended conferences, (10) and other. We also measured the respondents' three most *effective* methods for accessing scientific research information. Using "check all that apply," we provided nine response options: (1) have key journal articles summarized on a website, (2) have a summary of journal articles regularly sent to you, (3) have a list of helpful websites, (4) work closely with a researcher, (5) have a list of researchers that can be called as a resource, (6) have funding agencies provide research information, (7) receive a copy of a PowerPoint® presentation summarizing key findings, (8) through a staff prepared summary, and (9) through some other means.

Analysis

We used logistic regression to assess variation in whether respondents access research information to help set priorities, and used linear regression to assess variation in to *what degree* research information informs decisions about priority areas. All independent variables that were significantly associated ($p \leq 0.10$) with the dependent variable in bivariate analyses were included in multivariate analyses (although arbitrary, we chose a liberal *p*-value so that no important independent variables were screened out, while at the same time eliminating those variables with clearly no association with the dependent variable). For multivariate models, we assessed statistical significance at $p \leq 0.05$. We also included contrasts in multivariate models to clarify the differences among independent variables with more than one degree of freedom. We conducted all analyses with SAS version 9.1.[12]

RESULTS

Overall, 51% of the respondents indicated that they used scientific research to help inform decisions about priority areas, however responses varied by position. Among managers and directors, 83% and 72%, respectively, reported using scientific research, but fewer than half (40%) of county commissioners did. Overall, managers, those with master's degrees, and those with formal public health training were more likely to report using scientific research information (Table 1). Specifically, managers had 4.8 times greater odds than county commissioners of using such information; those with master's degrees or higher had 2.8 times the odds than those who had associate's degrees or high school diplomas of using scientific research information. Respondents who had formal public health training had twice the odds of those who did not have formal training to use scientific

Table 1. Multivariate Results (full model) for Characteristics Associated with whether Scientific Research Information is Used for Informing Priority Decisions.*

Independent Variable	OR (95% CI)	X^2	p	df
Job Position		7.64	0.02†	2
Directors vs. County commissioners	1.9 (0.8, 4.4)	2.42	0.12	1
Managers vs. County commissioners	4.8 (1.5, 15.0)	7.31	0.007†	1
Time in Position		6.42	0.04†	2
< 1 Year vs. > 5 Years	0.5 (0.3, 1.1)	2.94	0.09	1
1-5 Years vs. > 5 Years	1.5 (0.9, 2.6)	1.95	0.16	1
Degree		8.7	0.01†	2
Bachelor's vs. High School/Associate's	1.1 (0.6, 2.1)	0.13	0.72	1
Master's or higher vs. High School/Associate's	2.8 (1.3, 5.7)	7.56	0.006†	1
Formal Public Health Training				
No vs. Yes	0.5 (0.2, 1.0)	4.23	0.04†	1

* Dependent variable was measured as yes/no
† $p < 0.05$

research information (Table 1).

As to *what degree* research-based information informs decisions about priority areas, respondents with either a bachelor's degree or master's degree (vs. lower educational levels), county commissioners (vs. directors), and those who accessed research (vs. those who did not) were more likely to report that research-based information "very much" informed their decisions about priority areas (Table 2).

Of the 171 respondents who indicated that they accessed scientific research information, the most common ways of doing so were by reading a research article (81%), through a state or federal health agency (78%), or attending conferences (76%; Table 3).

The three methods most frequently reported as *effective* ways to get scientific research information were: (1) through a staff prepared summary (62%), (2) having funding agencies provide research information (38%), and (3) having a summary of journal articles regularly sent to them (37%). Other methods that were mentioned almost as frequently were: having a list of helpful websites (36%), having journal articles summarized on a website (32%), and receiving journal summaries via copies of PowerPoint® presentations (28%).

Table 2. Multivariate Results (full model) for Characteristics Associated with Degree to Which Scientific Research Information Informs Priority Decisions.*

Independent Variable	LSMeans			F-value	p
Gender				1.82	0.18
Male	3.6				
Female	3.8				
Degree				5.66	0.004†
High School/Associate's	3.4				
Bachelor's	3.7	†	†		
Master's or higher	3.9				
Formal Public Health Training				0.02	0.90
Yes	3.7				
No	3.7				
Job Position				2.14	0.12
County commissioners	3.9				
Directors	3.5	†	ns		
Managers	3.7				
Access Research				28.76	< 0.0001†
Yes	4.0				
No	3.4				

*Dependent variable was measured on 1-5 scale (1 = very little; 5 = very much)
† $p < 0.05$
ns = not significant

DISCUSSION

Almost half of our respondents have not used scientific research information to help with setting priorities for their LPHA; however, likelihood of using research information did vary by job type. Sixty percent of county commissioners had not used scientific research information and 17% and 28% of managers and directors, respectively, had not used such research information.

The likelihood of a respondents' use of research information was also varied by education level and background. Individuals with master's degrees (vs. lower educational levels) and those with formal training in

Table 3. Proportion of Respondents Who Use Specified Methods for Accessing Research Information

Method of Accessing Research Information	County Commissioners N = 92	Directors N=46	Managers N=33	Total N=171
	%	%	%	%
Read research article	73	89	94	81
Through a state/federal health agency	69	87	91	78
Attended conferences	67	85	88	76
Read summary prepared by staff	82	37	42	62
Searched the internet	32	80	79	54
Through funding agencies	44	52	52	47
Via media	22	33	28	26
Talked with a researcher	15	22	15	17
Worked closely with a researcher	12	22	15	15
Other	3	4	0	3

public health (vs. those who did not have training) were more likely to access research when making decisions about setting priorities. Individuals with more education also had higher odds of reporting that research information very much informed their decisions about priority areas. Individuals with higher education and those with training in public health may have more knowledge about where to access research information and skills for understanding the research. Interestingly, although the county commissioners indicated they were less likely than the other two groups to access research when setting priorities, they were more likely than the other groups to report that research-based information very much informed their decisions about priority areas for their LPHA (education level held constant).

Work is needed to increase use of research information for decision making across all categories of LPHA leadership. Interestingly, the top three most frequently *used* methods to access scientific information did not align with the methods respondents indicated would be most *effective;* however, a limitation of this comparison is that the two lists did not completely overlap. The methods identified as most effective (e.g., through a staff-prepared summary) tend to require more time and resources than other methods. Before considerable resources are invested into using any of these methods, more research is needed to determine whether each method, or a combination of methods, can actually increase the prevalence of use of research information among LPHA leaders.

One limitation of this study is that some of the multi-county LPHAs are directed by community health boards, rather than county commissioners; but we were unable to specifically survey health board members because neither the self-reported membership list nor the public membership list provided to us was accurate. Hence, some of the county commissioners who responded may have no responsibility concerning the LPHA in their area; potentially resulting in an underestimation in the actual use of research information for this group of respondents. Another potential limitation is socially desirable response bias; however, none of our variables had ceiling or floor effects, decreasing the likelihood of a strong bias. Finally, this study did not assess use of research to guide selection of specific types of interventions, frequency of use of research information, or whether use of such information varies by type of health issue—each of which would be important topics for future research.

TRANSLATION TO HEALTH EDUCATION PRACTICE

LPHAs are charged with maintaining and improving the health of people in their jurisdictions. To do this effectively, it is critical that local public health leaders use research to guide their decisions as they set priorities in their agencies. Although many of the LPHA leaders participating in this study reported using scientific research information when making decisions about priority areas, half of the leaders reported not using scientific research. In order to disseminate research findings, researchers, funding agencies, and public health practitioners need to make research information easily accessible and assist individuals who are lacking skills in effectively using research information. Respondents identified three methods for dissemination of research information that they believe would be effective: through a staff prepared summary, having funding agencies provide research information, and having a summary of journal articles regularly sent to them. To begin expanding the translation of research into practice, these methods for disseminating research need to be developed, tested, and then widely put into practice if found to be effective

REFERENCES

1. Green LW, Glasgow RE. Evaluating the relevance, generalization, and applicability of research - Issues in external validation and translation methodology. *Eval Health Prof.* 2006;29(1):126-153.

2. Elder JP, Edwards CC, Conway TL, Kenney E, et al. Independent evaluation of the California Tobacco Education Program. *Public Health Rep.* 1996;111(4):353-358.

3. Maddock J, Takeuchi L, Netta B et al. Evaluation of a statewide program to reduce chronic disease: The Healthy Hawaii Initiative, 2000-2004. *Eval Program Plann.* 2006;29(3):293-300.

4. Komro KA, Toomey TL. Strategies to prevent underage drinking. *Alcohol Health Res World* 2002;26(1):5-14.

5. Toomey TL, Wagenaar AC. Policy options for prevention: The case of alcohol. *J Public Health Policy.* 1999;20(2):192-213.

6. Parcel GS, Perry CL, Taylor W. Beyond demonstration: Diffusion of health promotion innovations. In: Bracht N, ed. *Health Promotion at the Community Level.* Newbury Park, CA: Sage Publications; 1990:229-251.

7. Hallfors D, Godette D. Will the 'Principles of Effectiveness' improve prevention practice? Early findings from a diffusion study. *Health Educ Res.* 2002;17(4):461-470.

8. Brownson RC, Ballew P, Brown KL, Elliott MB, et al. The effect of disseminating evidence-based interventions that promote physical activity to health departments. *Am J Public Health.* 2007;97(10):1900-1907.

9. Winett RA, King AC, Altman DG. Public health: A major force in keeping our nation well. In: *Health Psychology and Public Health: An Integrative Approach*. New York: Pergamon Press; 1989:21-25.

10. Milne TL. The local health department. In: Scutchfield FD, Keck CW, eds. *Principles of Public Health Practice.* Clifton Park, NY: Delmar Learning; 2003:123-138.

11. National Profile of Local Health Departments. Washington, D.C.: National Association of County and City Health Officials; 1990.

12. SAS Institute. SAS/STAT 9.1 User's guide 1-7. Cary, NC: SAS Institute; 2004.