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Prevalence and correlates of local health department activities to address mental health in the United States

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ABSTRACT

Mental health has been recognized as a public health priority for nearly a century. Little is known, however, about what local health departments (LHDs) do to address the mental health needs of the populations they serve. Using data from the 2013 National Profile of Local Health Departments – a nationally representative survey of LHDs in the United States (N = 505) – we characterized LHDs' engagement in eight mental health activities, factors associated with engagement, and estimated the proportion of the U.S. population residing in jurisdictions where these activities were performed. We used Handler's framework of the measurement of public health systems to select variables and examined associations between LHD characteristics and engagement in mental health activities using bivariate analyses and multilevel, multivariate logistic regression. Assessing gaps in access to mental healthcare services (39.3%) and implementing strategies to improve access to mental healthcare services (32.8%) were the most common mental health activities performed. LHDs that provided mental healthcare services were significantly more likely to perform population-based mental illness prevention activities (adjusted odds ratio: 7.1; 95% CI: 5.1, 10.0) and engage in policy/advocacy activities to address mental health (AOR: 3.9; 95% CI: 2.7, 5.6). Our study suggests that many LHDs are engaged in activities to address mental health, ranging from healthcare services to population-based interventions, and that LHDs that provide healthcare services are more likely than others to perform mental health activities. These findings have implications as LHDs reconsider their roles in the era of the Patient Protection and Affordable Care Act and LHD accreditation.

Introduction

The promotion of mental health and management of mental illness are integral to population health (Cottler, 2011; Eaton, 2012; Cohen and Galea, 2011; Slade et al., 2015; O'Connell et al., 2009; Perry et al., 2010a). Diagnosable mental illnesses are highly prevalent in the United States (U.S.) – with a past year prevalence of 18.6% (Substance Abuse and Mental Health Services Administration, 2013) among adults and 13.1% among youth ages 8–15 (National Institute of Mental Health) – and among the leading causes of disability (US Burden of Disease Collaborators, 2013). Serious mental illness has a past-year prevalence of 4.1% among U.S. adults (Substance Abuse and Mental Health Services Administration, 2013) and results in approximately $100 billion annually in healthcare expenditures (Insel, 2008). Mental illness is also a risk factor for injuries (Wan et al., 2006; Hiroeh et al., 2001), physical health problems (e.g., cardiovascular disease, obesity) (Pagoto et al., 2011; Jonas et al., 1997; Barlinn et al., 2014; Chapman et al., 2005; Coughlin, 2012), and is associated with health risk behaviors (e.g., smoking, substance misuse) (Centers for Disease Control and Prevention, 2013; McElroy et al., 2004). For these reasons, mental health has been heralded as a public health priority for nearly a century.

In 1926, American Public Health Association President Charles-Edward A. Winslow proclaimed that mental hygiene should play a more central role in public health practice (Winslow, 1926). The second half of the 20th century was marked by interest in applying principles of public health to prevent mental illnesses, as evidenced by a special address from President Kennedy to Congress in 1963 (Kennedy), the First Vermont Conference on the Primary Prevention of Psychopathology in 1975 (Forgays and Albee, 1977), and major reports published by the Institute of Medicine (IOM) (Mrazek and Haggerty, 1994) and National Institute of Mental Health (National Institute of Mental Health, 1994) in 1994. In 1999, the U.S. Surgeon General's report on mental health called for the integration of mental health into core public health functions (Office of the Surgeon General, 1999). In the decade that followed, scholarship focused on how mental health research could be translated into public health practice—such as by integrating physical and mental health promotion initiatives at state and federal levels (Eaton, 2012; Cohen and Galea, 2011; Lando et al., 2006; Colpe et al., 2010; Druss and Satcher, 2010; Druss et al., 2010; Perry et al., 2010b; Power, 2010; Primm et al., 2010; Presley-Cantrell et al., 2010).

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Today, mental health is the focus of 12 Healthy People 2020 objectives (U.S. Department of Health and Human Services), "Mental and Emotional Well-Being" is one of seven priorities of the National Prevention Strategy (National Prevention Council, National Prevention Strategy, 2011), and the Centers for Disease Control and Prevention's chronic disease action plan lists "Develop[ing] strategies for integrating mental health and mental illness into public health systems" as an objective (Centers for Disease Control and Prevention, 2011).

Despite sustained recognition of the need to address mental health as a public health issue, little empirical research has assessed the extent to which mental health is addressed by local health departments (LHDs). A review of 1166 publications in the Public Health Services and Systems Research Reference Library – a database of articles published between 1946 and 2014 about the structure and functions of public health systems – reveals only five relevant reports assigned the keywords "mental health" and/or "behavioral health" and/or "psychological" (Public Health Services and Systems Research and the Public Health Practice-Based Research Networks). These reports have described LHD strategies to enhance psychological resilience after disasters (Morton and Lurie, 2013; Plough et al., 2013), reduce mental health disparities through public policy (Alegría et al., 2003) and organizational cultural competence initiatives (Siegel et al., 2003), and meet the needs of homeless persons with serious mental illness through interagency collaboration (Rosenheck et al., 2001). Only two of these reports present findings from empirical research, neither of which focus on LHDs (Siegel et al., 2003; Rosenheck et al., 2001).

The gap in knowledge about the prevalence and correlates of LHD activities to address mental health warrants attention because LHDs have great potential to improve population mental health through the 10 Essential Public Health Services (Centers for Disease Control and Prevention)—such as mental health surveillance (Colpe et al., 2010; Perou et al., 2013), policy advocacy to address the social determinants of mental health (Eaton, 2012; Cohen and Galea, 2011), and stigma reduction campaigns (Presley-Cantrell et al., 2010; Substance Abuse and Mental Health Services Administration, 2006). While local behavioral health departments – government entities responsible for addressing the mental health and/or substance abuse needs of a population in a jurisdiction smaller than a state – exist alongside LHDs in many jurisdictions, behavioral health departments are typically limited to the provision of clinical healthcare services (i.e., testing and treatment of disorders) to individuals and do not have the mandate or capacities to implement population-based interventions (National Association of County Behavioral Health & Developmental Disability Directors). Understanding LHDs' level of involvement in mental health activities and identifying factors associated with these activities are first steps toward developing strategies for LHDs to promote population mental health, independently or in collaboration with local behavioral health departments. Such information also has practice implications as LHDs redefine their roles and responsibilities in the era of Patient Protection and Affordable Care Act (ACA) implementation, growing interest in population health, and health department accreditation.

The purpose of this study was to address these knowledge gaps. The primary aim was to estimate the proportion of LHDs in the U.S. that perform different types and combinations of mental health activities. The secondary aims were to estimate the proportion of the U.S. population living in jurisdictions where these activities are performed and to identify associations between LHD characteristics and the types of mental health activities performed.

Methods

Data

We analyzed data from the 2013 National Profile of Local Health Departments Study (Profile Study), a web-based survey conducted by the National Association of County and City Health Officials (NACCHO) (National Association of County and City Health Officials, 2013). The Profile Study is widely used and regarded as the premier source for information on the structure and functions of LHDs in the U.S. (Leep and Shah, 2012) NACCHO maintains a comprehensive list of LHDs in the U.S. (2532) which served as the sampling frame for the 2013 survey (National Association of County and City Health Officials, 2013). A core survey was sent to every LHD and an additional supplemental survey (module 2) was sent to a population-stratified random sample of 616 LHDs. The core and module 2 surveys were completed by 505 LHDs (response rate 82%). We limited our analysis to these 505 LHDs because module 2 included the majority of questions about mental health activities.

Measures

LHD mental health activity variables

We used eight Profile Study variables to assess LHD mental health activities. These variables were classified by NACCHO as spanning four domains of LHD activity: 1) mental healthcare services, 2) activities to ensure access to mental healthcare services (e.g., assessing gaps in access to services), 3) population-based primary prevention activities to address mental illness, and 4) mental health policy/ advocacy activities. Because the proportion of LHDs reporting that they contracted out healthcare services was small (i.e., <4.0%), we combined these responses with those indicating that the LHD directly provided services and use term "provided services" throughout. All mental health variables were coded dichotomously (0, 1).

The Profile Study survey used a variety terms related to LHDs' mental health activities (e.g., "provided mental health services," "performed mental illness prevention," "implemented strategies to address mental health service needs"). Throughout this article, we use the terms as they appeared in the survey when discussing each mental health activity variable.

Covariates

The selection of covariates was informed by Handler and colleagues' framework of the measurement of public health system performance. We focused on three of the five elements of the conceptual framework: macro environmental factors, structural capacity, and process measures of services provided (Handler et al., 2001). To assess macro environmental factors (i.e., those beyond the control of LHDs), we classified each LHD according to the size of its jurisdiction's population and, at the regional level, its U.S. Census region (i.e., West, Midwest, Northeast, or South) (U.S. Census Bureau). As a measure of structural capacity (i.e., resources available for LHDs to achieve their mission), we used Profile Study data on jurisdiction size and workforce to calculate the number of full-time equivalent (FTE) staff per 10,000 population and classified each LHD according to its staffing quartile rank. Number of FTE staff was highly correlated with LHD annual budget ($p = .974$). As a process measure (i.e., services provided to address public health problems), we also classified each LHD according to whether it provided primary healthcare or substance abuse services. Although substance abuse services are considered mental health activities in some jurisdictions, we classified substance abuse services separately because the Profile Study differentiates between the two.

Analysis

Profile Study module 2 sampling weights, provided by NACCHO, were applied to adjust for differential response rates—which ranged from 72% for LHDs serving a population < 25,000 to 93% for LHDs serving a population ≥ 1 million (National Association of County and City Health Officials, 2013). These weights allowed us to generate nationally representative estimates. Each of the eight mental health variables was independently analyzed as a binary (0, 1) outcome variable. Univariate descriptive statistics were produced to estimate the proportion of LHDs performing each mental health activity. We stratified LHDs by covariates and, within strata, estimated the proportions conducting different mental health activities with 95% confidence intervals (CIs). We summed the jurisdiction population sizes of LHDs performing each mental health activity to estimate the proportion of the U.S. population living in jurisdictions where these activities were performed by the LHD.

Bivariate analyses were then conducted in which X^2 tests were used to identify associations between each type of mental health activity and covariates. The X^2 tests had two degrees of freedom and compared the proportion of LHDs with one covariate characteristic to all other LHDs combined within that covariate category (e.g., the proportion of LHDs in the Northeast providing mental healthcare services vs. the proportion providing the services in the South,

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Midwest, and West combined). We also produced unadjusted odds ratios (ORs) with 95% CIs.

We additionally calculated the proportion of LHDs that performed different combinations of mental health activities (e.g., the proportion of LHDs that provided mental healthcare services and also performed mental illness prevention activities) and used multivariate logistic regression to produce adjusted odds ratios (AORs) and assess the strength of associations between each mental health activity, after adjusting for covariates. We used multilevel regression models in which LHDs' characteristics and activities were nested within their U.S. Census region. We constructed eight different regression models, with each mental health activity serving as the outcome variable in one of them, and controlled for the co-performance of other mental health activities and macro environmental, structural, healthcare delivery factors identified as significant ($p \leq .05$) in bivariate analyses. All analyses were conducted in SPSS 22.0 (IBM, Armonk, NY).

Results

Types of mental health activities performed

The mental health activity most frequently performed was assessing gaps in access to mental healthcare services (39.3%), followed by implementing strategies to increase access to mental healthcare services (32.8%) and implementing strategies targeting the mental healthcare services needs of underserved populations (25.8%) (Fig. 1). Providing mental healthcare services (14.0%) and addressing gaps in access to mental healthcare services through service provision (13.9%) were the activities least frequently reported, but a substantial proportion of the U.S. population resided in jurisdictions where the LHD performed these activities (25.5% and 20.8%, respectively).

LHD U.S. Census region was associated with the types of mental health activities performed (Table 1). Compared with other regions, the proportion of LHDs that provided mental healthcare services was significantly higher in the Northeast (17.6%; OR: 1.4; 95% CI: 1.1, 1.9) and lower in the West (9.2%; OR: 0.6; 95% CI: 0.4, 0.7). Involvement in mental health policy/advocacy activities was most common among LHDs in the South (22.7%; OR: 1.5; 95% CI: 1.2, 1.9).

The likelihood of a LHD providing mental healthcare services increased with each population size category—ranging from 10.8% of LHDs with a population < 25,000 (OR: 0.6; 95% CI: 0.5, 0.8) to 25.2% of LHDs with a population ≥ 500,000 (OR: 2.2; 95% CI: 1.4, 3.3). LHDs in the lowest staffing quartile were most likely to perform six of the eight mental health activities and LHDs in the highest staffing quartile were least likely. For example, 39.0% of LHDs in the lowest staffing quartile implemented strategies targeting the mental healthcare service needs of underserved populations compared with 13.1% of LHDs in the highest staffing quartile. This is likely attributable to the fact that LHDs in the lower staffing quartiles had larger populations (e.g., the median population size of LHDs in 1st quartile was 48,962 compared with 18,572 for LHDs in 4th quartile).

Nearly one-third (29.1%) of LHDs that provided primary healthcare services also provided mental healthcare services. Compared with LHDs that did not provide primary healthcare services, those that did were three times more likely to have provided mental healthcare services (OR: 3.1; 95% CI: 2.3, 4.1). Over half (52.1%) of LHDs that provided primary healthcare services also assessed gaps is access to mental healthcare services. LHDs that provided primary healthcare services were also more than twice as likely as others to perform population-based primary prevention activities to address mental illness (30.4%; OR: 2.5; 95% CI: 1.9, 3.3) and be involved in policy/advocacy activities to address mental health (32.3%; OR: 2.5; 95% CI: 1.9, 3.2). LHDs that provided substance abuse services were slightly more likely to have provided mental healthcare services (19.2%; OR: 1.6; 95% CI: 1.2, 2.2), but not significantly more likely to have performed any other mental health activities and significantly less likely to have implemented strategies to increase access to mental healthcare services (OR: 0.6; 95% CI: 0.5, 0.8).

Associations between types of mental health activities performed

Table 2 shows the proportion of LHDs that performed different combinations of mental health activities and the odds that a LHD would perform one mental health activity given the co-performance of another. Multivariate logistic regression revealed that a LHD's performance of

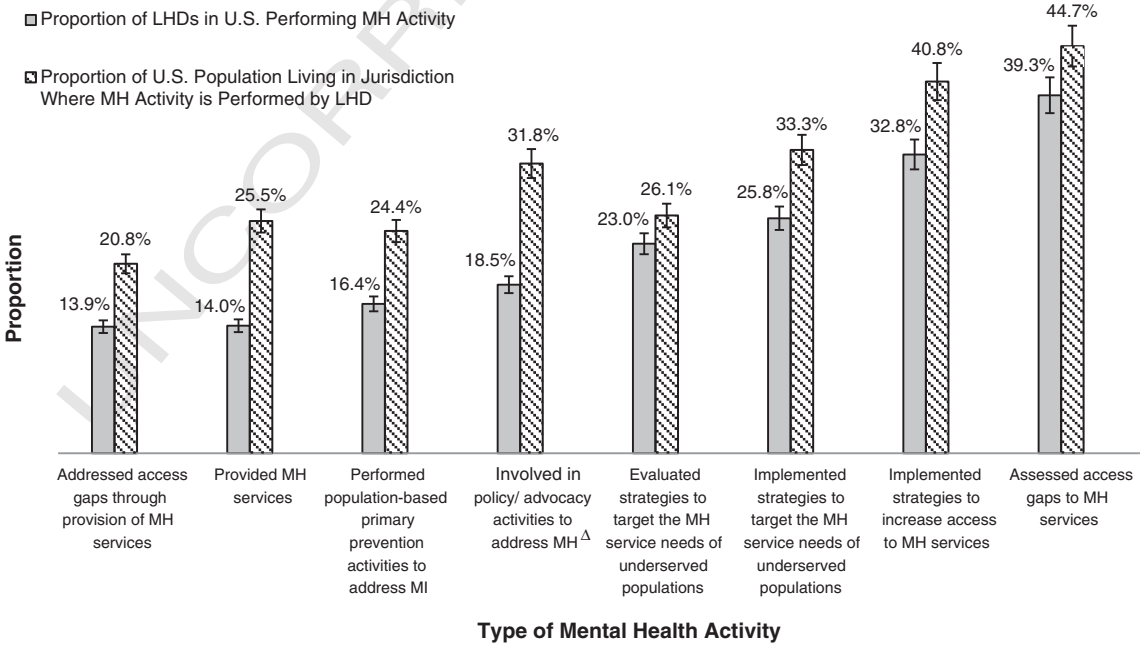

Fig. 1. Proportion of LHDs in the U.S. performing mental health activities and the proportion of U.S. population living in jurisdictions where mental health activities are performed. Note. LHD = local health department; MH = mental health; MI = mental illness. Error bars showing 95% confidence intervals. Data are weighted to produce nationally representative estimates.
Δ Performed by LHD in past two years, all other activities performed by LHD in past one year.
Source. National Association of Country and City Health Officials Profile Study, United States, 2013.

Table 1
Proportion of LHDs performing mental health activities stratified by region, Population size, FTE staff per 10,000 population, and provision of primary healthcare or substance abuse services and within strata bivariate comparisons. Source. National Association of Country and City Health Officials Profile Study, United States, 2013.

	Type of MH activity							
	Provided MH services, % (95% CI)	Assessed access gaps to MH services, % (95% CI)	Addressed access gaps through provision of MH services, % (95% CI)	Implemented strategies to increase access to MH services, % (95% CI)	Implemented strategies to target the MH service needs of underserved populations, % (95% CI)	Evaluated strategies to target the MH service needs of underserved populations, % (95% CI)	Performed population-based primary prevention activities to address MI, % (95% CI)	Involved in policy/ advocacy activities to address MH, % (95% CI)$^{\Delta}$
Covariates								
U.S. census region								
Northeast	17.6*	40.9	14.5	29.3	29.0	27.6*	15.5	15.9
	(14.0, 21.5)	(36.0, 45.8)	(11.0, 18.1)	(24.7, 33.8)	(24.3, 33.5)	(23.0, 32.1)	(12.0, 18.9)	(12.4, 19.5)
South	14.5	32.8***	10.0***	27.9***	22.4**	19.0***	17.9	22.7***
	(12.0, 16.9)	(29.6, 36.1)	(7.9, 12.1)	(24.8, 31.0)	(19.5, 25.3)	(16.3, 21.8)	(15.2, 20.5)	(19.8, 25.6)
Midwest	13.7	43.9***	15.9*	39.4***	28.6*	27.1***	17.9	16.6
	(11.4, 15.9)	(40.6, 47.2)	(13.4, 18.4)	(36.2, 42.7)	(25.6, 31.7)	(24.2, 30.2)	(15.4, 20.4)	(14.1, 19.1)
West	9.2**	40.9	17.3	31.5	22.8	15.8**	10.0***	16.1
	(6.2, 12.4)	(35.7, 46.3)	(13.1, 21.7)	(26.1, 36.6)	(18.0, 27.5)	(11.5, 20.0)	(6.9, 13.2)	(12.3, 20.1)
LHD population size								
<25,000	10.8***	36.3*	10.8***	31.8	23.3*	22.4	13.8**	11.1***
	(8.9, 12.8)	(33.3, 39.3)	(8.9, 12.9)	(28.9, 34.8)	(20.5, 26.0)	(19.8, 25.2)	(11.8, 16.0)	(9.1, 13.1)
25,000–49,999	12.3	37.1	17.7**	29.2	26.3	19.6*	13.7	21.2
	(9.4, 15.3)	(32.8, 41.4)	(14.3, 21.2)	(25.1, 33.3)	(22.3, 30.3)	(15.9, 23.2)	(10.7, 16.7)	(17.6, 24.8)
50,000–99,999	13.4	47.5***	15.6	39.8**	29.1	31.7***	14.5	23.1**
	(10.0, 16.8)	(42.6, 52.5)	(11.9, 19.3)	(34.8, 44.7)	(24.5, 33.7)	(27.0, 36.3)	(11.0, 17.9)	(18.8, 27.4)
100,000–499,999	20.1***	42.4	16.0	34.0	26.9	21.5	27.2***	26.1***
	(16.4, 23.9)	(37.7, 47.1)	(12.5, 19.5)	(29.5, 38.6)	(22.6, 31.0)	(17.5, 25.5)	(23.0, 31.2)	(21.9, 30.2)
≥500,000	25.2***	33.9	9.3	29.4	29.7	18.6	16.1	24.8
	(17.5, 32.5)	(25.4, 42.5)	(3.9, 14.5)	(21.2, 37.4)	(21.3, 38.0)	(11.4, 25.7)	(9.6, 22.0)	(17.1, 32.0)
FTE on LHD staff per 10,000 population, by quartile								
1st	17.9**	49.6***	21.4***	44.0***	39.0***	30.2***	19.8*	26.0***
(<2.55)	(14.7, 21.1)	(45.5, 53.8)	(18.0, 25.0)	(39.9, 48.2)	(35.0, 43.1)	(26.3, 34.0)	(16.6, 23.2)	(22.3, 29.8)
2nd	14.9	40.0	15.1	28.4**	23.5	19.0*	16.0	17.7
(2.56–4.08)	(11.8, 17.9)	(35.8, 44.2)	(11.9, 18.1)	(24.5, 32.3)	(19.9, 27.2)	(15.5, 22.3)	(12.9, 19.0)	(14.5, 20.9)
3rd	15.1	34.0**	10.0**	30.5	29.0*	30.4***	20.3**	21.6*
(4.09–6.88)	(12.3, 18.0)	(30.2, 37.8)	(7.5, 12.4)	(26.8, 34.3)	(25.3, 32.8)	(26.6, 34.3)	(17.2, 23.4)	(18.3, 24.8)
4th	10.2***	33.1***	9.9***	28.0**	13.1***	14.0***	12.4***	11.2***
(>6.89)	(7.8, 12.4)	(29.4, 36.8)	(7.5, 12.3)	(24.5, 31.6)	(10.4, 15.7)	(11.2, 16.7)	(9.9, 14.9)	(8.8, 13.7)
LHD provided healthcare services								
Primary	29.1***	52.1***	22.0***	36.0	25.5	27.7*	30.4***	32.3***
	(24.0, 34.3)	(46.3, 57.8)	(17.2, 26.8)	(30.4, 41.5)	(20.3, 30.5)	(22.4, 33.1)	(25.3, 35.7)	(27.1, 37.8)
Substance abuse	19.2**	34.8	15.9	24.8***	25.9	22.0	19.8	17.8
	(14.5, 23.7)	(29.2, 40.3)	(12.9, 21.8)	(19.9, 30.0)	(20.9, 31.0)	(17.0, 26.9)	(15.2, 24.3)	(13.5, 22.3)

Note. LHD = local health department; MH = mental health; MI = mental illness; FTE = full-time equivalent; CI = confidence interval. Data are weighted to produce nationally representative estimates. * = $p \le .05$. ** = $p \le .01$. ** = $p \le .001$ for X^2 tests comparing the proportion of LHDs in the MH activity category with one covariate characteristic to LHDs all others within that category (e.g., Northeast vs. South, Midwest, and West combined). $^{\Delta}$Performed by LHD in past two years, all other activities performed by LHD in past one year. Odds ratios are not displayed to simplify presentation.

Table 2
Proportion of LHDs performing each mental health activity, conditional on the co-performance of another mental health activity; odds of a LHD performing each mental health activity, conditional on the co-performance of another mental health activity and adjusting for all other mental health activities, region, population size, FTE staff per 10,000 population, and provision of primary healthcare or substance abuse services (multivariate logistic regression models).

	Type of MH activity (outcome variable)															
	Provided MH services		Assessed access gaps to MH services		Addressed access gaps through provision of MH services		Implemented strategies to increase access to MH services		Implemented strategies to target the MH service needs of underserved populations		Evaluated strategies to target the MH service needs of underserved populations		Performed population-based primary prevention activities to address MI		Involved in policy/advocacy activities to address MH	
	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)	%	AOR (95% CI)
Type of MH activity (predictor variable)																
Provided MH services	–		60.1	0.4 (0.3, 0.7)	46.7	7.0 (4.5, 11.1)	48.3	0.5 (0.3, 0.8)	50.2	1.0 (0.6, 1.8)	45.7	1.7 (1.0, 2.8)	61.6	7.1 (5.1, 10.0)	56.8	3.9 (2.7, 5.6)
Assessed access gaps to MH services	21.7	0.5 (0.3, 0.8)	–		32.6	5.1 (3.1, 8.5)	61.8	2.2 (1.7, 3.0)	53.4	2.0 (1.4, 3.0)	51.4	7.5 (5.1, 11.2)	30.1	1.8 (1.3, 2.5)	36.1	2.8 (2.0, 3.9)
Addressed access gaps through provision of MH services	48.7	7.0 (4.5, 10.9)	89.4	4.1 (2.5, 6.7)	–		76.2	1.3 (0.7, 2.2)	80.6	5.5 (3.2, 9.5)	68.5	1.4 (0.9, 2.2)	46.3	1.2 (0.8, 1.8)	62.3	3.3 (2.3, 4.8)
Implemented strategies to increase access to MH services	21.1	0.5 (0.3, 0.8)	72.7	2.1 (1.6, 2.9)	32.6	1.3 (0.8, 2.2)	–		68.9	20.4 (13.8, 30.2)	58.7	8.1 (5.3, 12.3)	28.8	0.8 (0.5, 1.2)	34.9	1.2 (0.8, 1.8)
Implemented strategies to target the MH service needs of underserved populations	27.2	0.8 (0.4, 1.4)	80.7	2.1 (1.4, 3.0)	43.8	5.9 (3.5, 9.9)	88.3	18.8 (12.8, 27.7)	–		72.1	6.2 (4.2, 9.2)	35.8	2.4 (1.5, 3.8)	44.2	1.5 (0.9, 2.3)
Evaluated strategies to target the MH service needs of underserved populations	29.2	2.7 (1.6, 4.7)	86.0	5.5 (3.8, 7.9)	41.1	1.1 (0.7, 1.8)	85.2	5.3 (3.7, 7.8)	80.7	6.6 (4.5, 9.8)	–		37.1	1.4 (0.9, 2.1)	43.2	1.2 (0.8, 1.7)
Performed population-based primary prevention activities to address MI	50.6	7.7 (5.4, 10.9)	69.1	1.9 (1.3, 2.7)	37.3	1.3 (0.9, 2.0)	54.5	0.8 (0.5, 1.3)	54.3	2.4 (1.5, 3.8)	49.4	1.6 (1.0, 2.5)	–		51.8	2.1 (1.5, 3.0)
Involved in policy/advocacy activities to address MH	43.8	3.2 (2.2, 4.7)	74.9	3.0 (2.1, 4.2)	45.5	3.5 (2.4, 5.3)	60.5	1.3 (0.9, 2.0)	59.9	1.4 (0.9, 2.2)	52.5	1.1 (0.7, 1.6)	47.9	2.1 (1.5, 3.0)	–	

Note. LHD = local health department; NACCHO = National Association of Country and City Health Officials; MH = mental health; MI = mental illness; FTE = full-time equivalent. AOR = adjusted odds ratio; CI = confidence interval. Data are weighted to produce nationally representative estimates. [Δ]Performed by LHD in past two years, all other activities performed by LHD in past one year.

any one mental health activity significantly increased its odds of performing almost every other mental health activity. The magnitude of many of these associations remained high after adjusting for covariates (Table 2).

The majority (61.6%) of LHDs that provided mental healthcare services also performed population-based primary prevention activities to address mental illness. These LHDs were seven times more likely to perform these activities than LHDs that did not provide mental healthcare services after adjusting for covariates (AOR: 7.1; 95% CI: 5.1, 10.0). LHDs that assessed gaps in access to mental healthcare services were less likely to provide mental healthcare services (AOR: 0.5; 95% CI: 0.3, 0.8), with 21.7% of these LHDs performing the activity, but were nearly three times more likely to be involved in policy/advocacy activities to address mental health (AOR: 2.8; 95% CI: 2.0, 3.9). Nearly three-quarters (72.1%) of LHDs that implemented strategies targeting the mental healthcare service needs of underserved populations also evaluated such strategies. LHDs that were involved in policy/advocacy activities to address mental health were three times more likely to assess gaps in access to mental healthcare services (AOR: 3.0; 95% CI: 2.1, 4.2), with 74.9% of these LHDs performing the activity.

Discussion

Our results indicate that mental health is being addressed by many LHDs in the U.S. and that the provision of healthcare services and performance of population-based activities to address mental health are interrelated. We found that LHDs that provided primary healthcare services were significantly more likely to also perform population-based mental health activities such as policy/advocacy. Similarly, LHDs that provided mental healthcare services were seven times more likely to perform population-based primary prevention activities to address mental illness, even after controlling for covariates. The provision of healthcare services may serve an entry point (e.g., screening for depression in public primary healthcare clinics) or impetus (e.g., an increase in depression prevalence is detected through medical records) for LHDs to engage in population-based mental health activities. These findings can inform ongoing discussions about the appropriate role of LHDs in providing healthcare services in the post-ACA implementation environment (Institute of Medicine, 2012a; Institute of Medicine, 2012b; National Association of County and City Health Officials).

Our finding that many LHDs are engaged in activities to address mental health suggests that they could support opportunities for population mental health improvement that stem from the ACA. One such opportunity might exist with accountable care organizations (ACOs). An ACO is a group of healthcare providers that coordinate care for a population of patients and share savings when positive outcomes are achieved (Centers for Medicare and Medicaid Services). ACOs have proliferated as a result of the ACA's Medicare Shared Saving Program provision (Centers for Medicare and Medicaid Services) and have great potential to improve outcomes for people with mental illness by integrating mental health and primary healthcare services (O'Donnell et al., 2013; Maust et al., 2013). Research, however, indicates that ACOs have been slow to integrate these services. A nationally representative survey of ACOs found that 37% had no formal relationships with mental healthcare providers and that 43% reported little to no integration of mental healthcare services (Lewis et al., 2014). LHDs can support the integration of mental healthcare services into ACOs by serving a partner that provides mental healthcare services (we found that 14.0% of LHDs perform this activity), helping inform ACO planning by conducting assessments of gaps in mental healthcare services (we found that 39.3% of LHD performed this activity), and acting as a convener that facilitates partnerships between ACOs and mental healthcare providers (Centers for Disease Control and Prevention).

Another area where LHDs might leverage ACA opportunities to improve population mental health is through non-profit hospitals' community benefit activities (The Network for Public Health Law). The ACA requires non-profit hospitals to conduct a community health needs assessment (CHNA) every three years and implement strategies to address needs in order to maintain tax-exempt status (http://www.irs.gov/Charities-%26-Non-Profits/Charitable-Organizations/New-Requirements-for-501%28c%29%283%29-Hospitals-Under-the-Affordable-Care-Act). LHDs have collaborated with non-profit hospitals on CHNAs (Beatty et al., 2015; Wilson et al.) and our study indicates that LHDs could be a valuable partner to hospitals that identify mental health a priority in their CHNAs.

Our findings are relevant to health department accreditation. The Public Health Accreditation Board's (PHAB) Standards & Measures document serves as a "blueprint" for LHD accreditation and has great potential to influence LHD activities (Public Health Accreditation Board). As the document is revised, PHAB should consider including measures related to population-based mental health activities or provide examples of such activities when illustrating how LHDs can satisfy accreditation requirements. Examples of population-based mental health activities (e.g., stigma reduction campaigns, mental health surveillance) are not provided in the most recent iteration of the document (Version 1.5) and the inclusion could encourage more LHDs to engage in such activities. Furthermore, the addition of mental health language could clarify that population-based mental health activities can satisfy accreditation requirements as long as they fall within the Ten Essential Public Health Services framework and are not clinical healthcare services, which are not considered in accreditation. Such clarification could be important as our results indicate that many LHDs are actively engaged in activities to address mental health.

Our study also has implications given that continuous quality improvement (CQI) is a core criterion for accreditation (Russo, 2007; Carman and Timsina, 2015). As our results suggest that mental health is within the scope of LHD practice in many jurisdictions, there is a need for CQI activities that relate to mental health and satisfy PHAB requirements. The Community Preventive Services Task Force, for example, has identified evidence-based mental health interventions (e.g., fostering collaboration to increase access to integrated and home-based depression care, advocating for state mental health parity legislation) that satisfy requirements across three PHAB domains (p. 63) (National Association of County and City Health Officials, Centers for Disease Control and Prevention, 2013). Additional population-based mental health interventions exist (Eaton, 2012; Cohen and Galea, 2011), but are fragmented across disciplines and practice settings. LHDs would benefit from tailored education and training resources.

It is also possible that the proportion of LHDs engaged in mental health activities will increase as a result of the accreditation process. LHDs are required to conduct a community health assessment and develop a community health improvement plan as a prerequisite for accreditation (Public Health Accreditation Board). As the number of LHDs pursuing accreditation and soliciting community input about health needs has increased (Public Health Accreditation Board), it is possible that mental health will increasingly surface as a new priority.

Although this is speculative, some evidence suggests that LHDs have become more engaged in mental health activities. Using 2010 Profile Study data, Luo and colleagues found that 32.0% of LHDs performed at least one-of-three activities to ensure access to mental healthcare services compared with 45.9% for dental care and 66.0% for medical care (Luo et al., 2013). Using 2013 Profile Study data, we found that the proportion of LHDs that performed at least one of these three activities increased significantly for mental healthcare (46.2%) while it remained relatively stable for dental care (48.2%) and medical care (66.8%).

Limitations

Our study is limited by its lack of information about state and local policies and organizational arrangements that likely influenced LHD mental health activities. We were unable to account for the presence

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or absence of a local behavioral health department in each LHD jurisdiction because we were unable to identify a comprehensive list of local behavioral health departments. The effectiveness and efficiency of population-based mental health interventions could be enhanced by research about the characteristics of local behavioral health departments and their inter-organizational relationships with LHDs. Future studies should examine the relationships between LHD mental health activities and the presence and characteristics of state and local behavioral health departments.

Our measures of LHD mental health activity are limited. The mental health variables in the Profile Study are broad and do not capture details about the mental activities performed (e.g., type of mental health policies that LHDs advocated for or against), the frequency with which they were performed (e.g., annually or weekly), or the population(s) they targeted. Mental health surveillance is an area where LHDs could complement the efforts of clinically-focused behavioral health departments (Colpe et al., 2010; Perou et al., 2013), but was not assessed in the Profile Study.

Our study provides no indication of quality of mental health activities performed or the likelihood that they had positive impacts on population mental health. Our construct of "mental health activity" lacks specificity because the terms "mental health," "mental illness," and "behavioral health" were used in the survey without operational definitions (National Association of County and City Health Officials, 2013). Although definitions have been proposed to differentiate these terms (O'Connell et al., 2009; Centers for Disease Control and Prevention, 2011; Manderscheid et al., 2010), we classified them all as relating to mental health because they are used interchangeably in the health science literature and by LHD officials (Irani et al., 2015).

Conclusions

In 2010, Giles and Collins observed that, "Appreciation for the inseparable relationship between physical and mental health is growing but has largely been insufficient to unite the 2 fields in any meaningful way." (p. 1) Our study provides the first empirical analysis of the extent to which mental health falls within the scope of local public practice and offers evidence that many LHDs are engaged in activities to address mental health. The degree to which these activities translate into meaningful population health improvements should be a priority area for future public health research.

Conflict of interest statement

The authors declare that there are no conflicts of interest.

Transparency document

The Transparency document associated with this article can be found, in the online version.

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