

Evaluating the Association of State Regulation of Community Health Workers on Adoption of Standard Roles, Skills, and Qualities by Employers in Select States: A Mixed Methods Study

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Abstract

Background

The occupation of Community Health Worker (CHW) has evolved to support community member navigation of complex health and social systems. The U.S. Bureau of Labor Statistics formally recognized the occupation of Community Health Worker (CHW) in 2009. Since then, various national and state level efforts to professionalize the occupation have been undertaken. The Community Health Workers Core Consensus (C3) project released a set of CHW roles and competency recommendations meant to provide evidence-based standards for CHW roles across work settings. Some states have adopted the recommendations, however, there are a variety of approaches regarding the regulation of the occupation. As of 2020, 19 U.S. states have implemented voluntary statewide CHW certification programs. The purpose of this study was to explore the relationship between state regulation of CHWs and adoption of standard roles, skills, and qualities by employers in select states.

Methods

This mixed methods study used purposive sampling of job ads for CHWs posted by employers from 2017-2020 in select states. Natural language processing was used to extract content from job ads and preprocess the data for statistical analysis. ANOVA, chi-square analysis, and MANOVA was used to test hypotheses related to the relationship between state regulation of CHWs and differences in skills, roles, and qualities employers seek based seniority of state regulatory processes and employer types.

Results

We observe that the mean job ads with nationally identified roles ($F(6, 80549) = 109.43, p = 0.000$), skills ($F(6, 80549) = 136.13, p = 0.000$), and qualities ($F(6, 80549) = 257.29, p = 0.000$) included varies significantly between individual states, by state type, and by employer type.

Conclusions

Employment of CHWs is increasing as a means to provide culturally competent care, address the social determinants of health, and improve access to health and social services for members of traditionally underserved communities. Employers in states with CHW certification programs were associated with greater adoption of occupational standards set by state and professional organizations. Wide adoption of such standards may improve recognition of the CHW workforce as a valuable resource in addressing the needs of marginalized and difficult to serve groups.

Background

History of Community Health Workers

In recent years, efforts have evolved to professionalize the occupation by defining standardized core competencies, skills, and performance qualities. The U.S. Department of Labor (DoL) formally recognized CHWs as a distinct occupation by creating a standard occupational classification for the field in 2009.⁽¹⁾ Other national and state level efforts have also emerged to professionalize the occupation. The American Public Health Association defines CHWs as “frontline public health workers who are trusted members of and/or have an unusually close understanding of the community served. This trusting relationship enables CHWs to serve as a liaison or intermediary between health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery.” The Community Health Worker Core Consensus (C3) project released a set of CHW roles and competency

recommendations meant to provide those working in the field and those outside the field with a set of evidence-based standards to evaluate CHWs' work across employment settings. Some states have adopted the recommendations, however, there remains wide variation in state's approaches toward regulating the occupation.

In order to understand the adoption and evolution of CHW's and the occupation's professionalization, we sought to understand whether employers in states with and without regulation of the occupation were more likely to adopt C3 recommended roles, skills, and qualities in job ads for CHWs. The purpose of this study was to determine whether there is a relationship between state occupational regulation (i.e., certifications) and roles, skills, and qualities required by employers of community health workers.

Growth of the CHW Workforce

The Bureau of Labor Statistics projects the number of CHWs to grow 13 percent nationally from 2019 to 2029.(3) As of May 2020, the DoL reported that there were about 59,000 CHWs in the United States.(4) This number is likely under-reported due to the range of titles CHWs go by. Other sources estimate the number of CHWs in the United States to be closer to 100,000.(5)

Several key policy changes have contributed to the growth in the CHW workforce. In 2010, the Affordable Care Act specifically listed CHWs as health professionals who function as members of health care teams and mandated additional navigation and coordination support, increasing the opportunity for CHWs. In addition, changes to federal Medicaid rules in 2013 opened the door for potential reimbursement for preventive services offered by CHWs.(1) Some examples of funding programs that states have implemented include Medicaid 1115 waivers, state Managed Care Contracts (MCOs), and/or State Plan Amendments (SPAs) to financially support the work of CHWs. These funding mechanisms have allowed state Medicaid offices to change how they organize, pay for, and incentivize health plans and providers that serve low-income or vulnerable patient populations.(6) In recent years, the CDC supported CHW programs through the State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health grant (7) and more recently through COVID-19 Prevention and Control funding.(8)

National leaders have called for increased involvement of CHWs in the healthcare system, both as part of the COVID response and as a longer-term strategy to build a strong public health foundation.(9) Health plans are employing CHWs to address high costs from frequent-flyers or super-utilizers, and self-insured employers are employing CHWs for their health promotion and prevention programs to keep people healthy and on the job. Hospitals and health systems are using CHWs for proactive community engagement and post-acute care coordination to reduce 30-day readmissions and uncompensated care costs. Clinics and other outpatient offices are using CHWs to manage high-need chronic care patients and improve physician and nursing productivity.(10)

Across these settings, employers report integrating CHWs into multidisciplinary teams as a means to address pressing public health and healthcare needs, including improving service access and quality while reducing cost due to unnecessary utilization of services. Current literature is replete with articles citing the value and/or impact of CHWs' on improving chronic disease outcomes,(11–15) increasing access to health care services,(16,17) reducing unnecessary hospitalizations.(18–22), and overall add value to healthcare systems.(23,24) According to a Biden campaign analysis of studies on CHW programs, such roles may produce an annual return of \$2.47 for every dollar invested from the perspective of a Medicaid payer.(25)

Their knowledge, shared life experiences, trust-based relationships built on trust enable CHWs to address root causes of health issues in ways traditional systems often fall short (due to lack of time, cultural competence, and/or community linkages).(26) Continued growth in demand for CHWs will be driven by business models demonstrating success, policies that influence the evolution and expansion of CHW roles, standardization of the skills needed, and improved quality of jobs and career paths available to CHWs.

CHW Regulation

There has been a shift towards increased state regulation, specifically certification, of the CHW occupation to ensure standardization and quality of the role, due to growth in employment and new/different types of organizations employing CHWs.(1) As of 2020, 19 U.S. states have implemented voluntary statewide CHW certification programs. Certification is seen as a mechanism to build a workforce with a common set of core skills, abilities, knowledge base, and training, signaling competency to employers, payers, and other members of health care teams.(27)

CHW certification is a specific form of credentialing related to recognizing an agreed-upon set of occupational standards, with certification itself often being voluntary. Broader occupational credentialing options also include licensure, registration, and permitting. To our knowledge, no states are exploring licensure for CHWs because CHWs do not perform clinical duties requiring a license and CHW practice does not pose a significant risk of harm to the public. (28,29)

Key benefits of certification include legitimizing the role of CHWs and ensuring consistency in the quality of care provided, conferring opportunities for educational and career advancement, improving employment stability, assuring that CHWs have a standard skillset and knowledge base, and increasing funding for services.(30,31) Key factors many states cite as rationale for instituting a CHW certification process include establishing a reliable indicator or definition of CHW qualifications, gaining recognition for CHWs as an occupation or profession, and/or meeting reimbursement requirements.(28) CHW certification may provide the necessary support context to enable successful CHW programs within the larger healthcare system,(27) although there is lacking evidence regarding the relationship between certification and quality of care or patient outcomes.(32)

Although certification has several benefits, there are risks that certification and increased regulation may lead to narrow or rigid scopes of practice and over-medicalization of the field, undermining the community-centric orientation that often make CHWs so successful. In addition, there is a risk that certification processes could exclude people who may naturally be very effective CHWs but are turned away by regulatory criteria serving as barriers to entry and due to cost.

State Differences in CHW Certification

Although there are no national certification standards, C3 offers a single set of roles, skills, and qualities that are endorsed by major national stakeholder groups and is meant to be used by states as they develop the requirements for CHW certification. In spite of the C3 standards, there is variation in how state regulation and certification programs are carried out.(33) Key differences in CHW programs across states include the maturity of the program, type of certifying organization (i.e., public or private), entity certified, and cost of certification. The requirements for CHW certification include specific competencies (e.g., roles, skills, and qualities) that must be met. Some differences in select state CHW programs are displayed in Table 1.

Table 1 Differences in CHW Regulation Across Select States

	Mature CHW certification programs	New CHW certification programs			No CHW certification program		
	Texas	Rhode Island	Virginia	Pennsylvania	Tennessee	Alabama	Wyoming
Statewide CHW certification program exists	Yes	Yes	Yes	Yes	No	No	No
Start dates for CHW certification program	2002 (34)	2016 (35)	2018 (36)	2019 (37)	n/a	n/a	n/a
Certifying organization	TX Dept of State Health Services (public)	RI Certification Board (private)	VA Certification Board (private)	PA Certification Board (private)	n/a	n/a	n/a
Entity certified	Individuals, training programs, and/or instructors	Individuals only	Individuals only	Individuals only	n/a	n/a	n/a
Certification cost	No cost	\$125	\$100	\$50	n/a	n/a	n/a

In states that have been certifying CHWs for a longer period of time and have more mature regulatory programs, we expect to see increased standardization in job competencies. The results of adoption of such standardization are expected to be seen in in the job ads from employers as they recruit for a consistent workforce that meets established competencies and quality standards.

Methods

The study was conducted in three phases: qualitative interviews, Natural Language Processing (NLP) and main analysis. The first phase included semi-structured interviews with nine subject matter experts on CHWs. The experts included representatives from a state-level CHW program manager, a CHW certifying organization, a state CHW association, a Medicaid managed care CHW program director, and a chair of a state level CHW council, to name a few. Input from these experts provided insights that helped shape this study.

The second phase, NLP, included extracting jobs ads and analyzing the text content of ads. Job ad data were obtained from Chmura, a company based in Richmond, Virginia that provides proprietary labor market software and data that collects job ads daily using Real-Time Intelligence. From the Chmura dataset we retrieved 134,844 job ads from 2017-2020 for employers in Alabama, Maryland, Rhode Island, Tennessee, Texas, Virginia, and Wyoming using SOC 21-1094 Community Health Workers and the following titles commonly used for community health workers: community health worker, peer health educator, peer specialist, peer support specialist, doula and promotor de salud. The fields retrieved included: job title, employer, and job ad URL.

The job ad URLs were used to generate a unique identifier for each observation and retrieve the content of each job ad. The observations were deduplicated using the unique identifier; 20,050 duplicate observations were removed. Employers were categorized by type as (1) hospitals/health systems, (2) other non-hospital healthcare, (3) health department, (4) health plans, (5) community-based organizations, (6) other, and (0) unknown. The observations with employer types other and unknown were removed to reduce false positive results for community health worker related job ads. The final sample includes 80,569 job ads. Table 2 and Table 3 display the distribution of ads by search term and state, respectively. Table 4 displays the distribution of ads by employer type and Table 5 displays the count of unique employers by employer type and state.

Table 2 Job Ads by Search Term

Search Term	Frequency	Percent
BLS SOC 21-1094	47,820	59.35
community health worker	12,692	15.75
doula	76	0.09
peer health educator	745	0.92
peer specialist	8,919	11.07
peer support specialist	10,316	12.80
promotor de salud	1	0.00
Total	80,569	100*

Table 3 Count of Job Ads for Community Health Workers by State and Year

State Occupational Regulation	2017	2018	2019	2020	Total	Percent
Alabama	791	958	1,118	959	3,826	4.75
Pennsylvania	7,497	4,478	6,481	1,761	20,217	25.09
Rhode Island	514	808	648	698	2,668	3.31
Tennessee	1,854	2,743	3,532	2,929	11,058	13.72
Texas	5,435	6,837	7,262	7,162	26,696	33.13
Virginia	2,884	2,913	4,027	5,170	14,994	18.61
Wyoming	321	241	264	284	1,110	1.38
Total	19,296	18,978	23,332	18,963	80,569	100

Table 4 Count of Job Ads for Community Health Workers by Employer Type and State

Employer Type	AL	PA	RI	TN	TX	VA	WY	Total	Percent
Hospital/health systems	978	5,890	800	2,517	8,362	4,209	348	19,261	29.8
Other non-hospital healthcare	813	2,860	319	893	2,471	2,051	194	7,701	11.9
Health department	469	1,561	416	679	2,106	1,119	211	5,202	8.0
Health plans	714	4,576	573	5,667	6,843	3,436	146	15,428	23.9
Community-based organizations	853	5,330	560	1,306	6,914	4,179	211	16,983	26.3
Total	3,827	20,217	2,668	11,062	26,696	14,994	1,110	64,575	100

Table 5 Count of Unique Employer by Employer Type and State

Employer Type	AL	PA	RI	TN	TX	VA	WY	Total	Percent
Hospital/health systems	116	502	61	255	790	517	52	2,293	16.6
Other non-hospital healthcare	139	403	40	219	575	342	43	1,761	12.8
Health department	5	22	7	3	19	33	1	90	0.7
Health plans	57	712	58	93	926	700	11	2,557	18.5
Community-based organizations	112	5331	87	208	684	603	31	7,056	51.1
Total	429	6970	253	778	3044	2195	138	13,807	100

Analysis of content involved use of Python and BeautifulSoup, to parse the content of the job ads, which were then analyzed using Natural Language Toolkit (NLTK) 3.6, to tokenize the language data and lemmatize key words for this analysis. We then developed a list of key words using roles, skills, and qualities for community health workers identified by the Community Health Worker Consensus Project (38). See Table 6 for the list of lemmatized key words. A binary variable was created for each lemmatized key word and assigned 0 if the ad did not include the word(s) or 1 if it included the word(s). A composite variable for skills, qualities, and roles was generated from the sum of values for individual key words under each category.

Table 6 Lemmatized Key Words for CHW Skills, Qualities, and Roles

Skills	Qualities	Roles
Assessment	Care	Advocate
Communicate	Compassionate	Care coordination
Community	Honest	Case management
Evaluation	Motivate	Coach
Facilitation	Patient	Cultural
Health disparity	Reliable	Direct Service
Outreach	Self-direct	Health education
Professional		Mediation
Public health		Social support
Relationship building		System navigation
Social determinant		
Social service system		

Finally, in the third phase of this study, we tested a series of hypotheses using one-way analysis of variance (ANOVA), chi-square analysis (CHI2), and multivariate ANOVA (MANOVA) to examine the association between state CHW regulation (policy) and CHW skills, qualities, and roles. The first ANOVA compares composite scores for skills, qualities, and roles between individual states. The second ANOVA compares composite scores for skills, qualities, and roles between state groups (i.e., no policy, new policy, and mature policy). A Bonferonni post-hoc analysis was conducted for the first and second ANOVA. The third analysis used chi-square analysis to test the association between state groups and individual key words representing CHW skills, qualities, and roles (e.g., assessment, care, advocate). The final of analyses used MANOVA, to address possible threats to validity, because the data were not normally distributed, and the sphericity assumption is often violated.

Results

Table 7 presents the descriptive statistics for the outcome variables. Descriptive statistics for the independent variables (i.e., states, state type, and employer type) were presented in Methods (Table 3 and Table 4).

Table 7 Descriptive Statistics for Outcome Variables

Variable	Obs	Mean	Std. Dev.
Skills			
Assessment	80,556	0.42	0.49
Community	80,556	0.92	0.27
Evaluation	80,556	0.23	0.42
Facilitation	80,556	0.03	0.18
Health disparity	80,556	0	0.04
Outreach	80,556	0.11	0.31
Professional	80,556	0.6	0.49
Public health	80,556	0.04	0.19
Social determinant	80,556	0.01	0.09
Social service system	80,556	0	0.05
Qualities			
Care	80,556	0.73	0.44
Compassionate	80,556	0.07	0.26
Honest	80,556	0.01	0.09
Motivate	80,556	0.06	0.23
Patient	80,556	0.43	0.5
Reliable	80,556	0.12	0.32
Self-direct	80,556	0.02	0.13
Roles			
Advocate	80,556	0.14	0.34
Care coordination	80,556	0.05	0.21
Case management	80,556	0.21	0.41
Coach	80,556	0.12	0.33
Cultural	80,556	0.14	0.35
Direct service	80,556	0.03	0.18
Health education	80,556	0.04	0.19
Mediation	80,556	0.01	0.08
Social support	80,556	0.02	0.14
System navigation	80,556	0	0.03

We used ANOVA to analyze and compare composite scores for skills, qualities, and roles between individual states. Among the key findings, the average number of job ads with roles ($F(6, 80549) = 109.43, p = 0.000$), skills ($F(6, 80549)$)

= 136.13, $p = 0.000$), and qualities ($F(6, 80549) = 257.29, p = 0.000$) identified varied significantly between states. See Table 8.

We also observed that the average number of jobs ads with roles ($F(2, 80553) = 218.36, p = 0.000$), skills ($F(2, 80553) = 274.78, p = 0.000$), and qualities ($F(2, 80553) = 634.91, p = 0.000$) identified varies significantly based on state type (Table 9). Using a Bonferroni post hoc test, we found states without CHW policies were significantly different than states with new CHW policy ($p = 0.000$) and those with mature CHW policy ($p = 0.000$). The mean number of job ads with C3 defined roles identified were higher in states with new policies (PA, RI, and VA) and in the mature policy state (TX). The mean number of job ads was higher in the mature policy state compared to states with CHW certification policy and those with new certification processes that were in place five years or less. Interestingly, job ads for community health workers were less likely to include C3 defined skills in states without state CHW certification regulation. The greatest number of job ads including C3 qualities were found in the mature state.

The number of job ads with individual roles (e.g., advocate, care coordination), skills, and qualities identified in them varied significantly ($p \leq 0.05$) by state policy type. Refer to results in Table 10, Table 11, and Table 12.

In states without state CHW regulation(s), the mean composite score for roles ($F(4, 15980) = 228.55, p = 0.000$), skills ($F(4, 15980) = 86.79, p = 0.000$), and qualities ($F(4, 15980) = 634.23, p = 0.000$) varied significantly based on employer type. The mean composite score for roles and skills was highest in health plans and the mean score for qualities was highest in hospital/health systems, followed closely by non-hospital healthcare organizations and health plans. See Table 13. The Bonferroni post-hoc test for roles indicated the means were not significantly different between non-hospital healthcare employers and health departments; all other differences are significant ($p = 0.000$). For skills, the means were not significantly different between hospital/health system employers and Community-based Organizations, or non-hospital healthcare organizations and health departments. The means for qualities were not significantly difference between non-hospital healthcare employers and health plans.

The composite scores for roles, skills, and qualities also varied significantly by employer type in new and mature policy states. The mean scores for roles and skills were again highest in health plans and the mean score for qualities were highest in hospital/health systems. The results were statistically significant for all outcomes ($p = 0.000$). See Table 14 and Table 15. The results of the Bonferroni were not significantly different between hospital/health system and non-hospital healthcare employers for roles in new policy states; all other means were significantly different between employer types for roles, skills, and qualities. In mature states, the means for roles were not significantly different between hospital/healthcare employers and Community-based Organizations or Community-based Organizations and health departments; all others were significant ($p = 0.000$). The means for skills were not significantly different between non-hospital healthcare and health plans, but all others were significant ($p = 0.000$). The means for qualities were statistically different ($p = 0.000$) between employer types with the exception of health plans and CBOs.

MANOVA was utilized as an alternative test to ensure validity of test because of the limitation of ANOVA and its susceptibility to violations of the assumption of sphericity. From our analyses, we reject the null hypothesis that state occupational regulation type ($F(2, 80553) = 374.34, p = 0.000$) and employer type ($F(4, 80551) = 1111.21, p = 0.000$) have no effect on roles, skills, and qualities identified in job ads.

Discussion

CHWs represent an important resource for addressing the health of underserved communities. Employment of CHW is increasingly as a strategy to provide culturally competent care, address the social determinants of health, and improve access to health and social services for members of traditionally underserved communities. As the occupation

becomes more 'professionalized' through state regulatory mechanisms such as certification, we expect employers of CHWs to rely on the standards set by the state and professional organizations to ensure the entrants in the occupation are fully prepared to fulfill the obligations of their roles in a variety of organizational settings.

This research represents an important contribution to understanding the diffusion and adoption of occupational standards by employers. This study found employers in states with CHW certification programs were associated with greater adoption of the occupational roles and skills recommended by C3. Health plans type employers may have greater standardization in how CHWs are employed and therefore were more likely to have job ads that incorporated the specific terms we searched for (in the job ad analysis part of this study). Hospitals/health systems job ads were associated with a higher number of the C3 qualities. Given that CHWs and CHW programs are leveraged by health systems for their unique ability to connect with and understand members of communities outside the direct healthcare setting, this finding is not surprising. Adoption of a uniformed framework for regulation that specifies CHW roles, skills, and qualities needed to function across various states, organizations, and practice types may improve recognition of the workforce, reduce role confusion, and ensure that the unique skillset of CHWs is well understood by employers, policy makers and the public.

There are a few limitations in our study. The results from this study may not be generalizable given our purposive sampling of job ads from specific states. Additionally, there are important differences in how states regulate CHWs. These differences may affect employer behavior and influence the adoption of occupational standards set by state and national CHW associations. Future studies may consider how the differences in state-level regulation affect the professionalization of this occupation.

Conclusions

The CHW workforce will likely continue to grow as the Biden administration aims to improve care to those in underserved communities by adding 150,000 community health workers.(39) As the number of practicing CHWs grow and the adoption of CHW programs climb, a certain degree of professional regulation may be beneficial to establish standard indicators or definitions of CHW qualifications, gain recognition for CHWs as a profession, and/or meet financing requirements. Adoption of national or state established competencies by employers may also lead to improved employment stability, career paths, and resourcing for CHW services.(40,41)

Abbreviations

AL Alabama

ANOVA Analysis of Variance

C3 Community Health Workers Core Consensus Project

CDC Centers for Disease Control and Prevention

CHI2 chi-square

CHW Community Health Worker

COVID Coronavirus

DoL Department of Labor

MANOVA Multivariate Analysis of Variance

MCO Managed Care Organization

NLP Natural Language Processing

NLTK Natural Language Toolkit

PA Pennsylvania

RI Rhode Island

SOC standard occupation code

SPA State Plan Amendment

TN Tennessee

TX Texas

URL The address of a web page

VA Virginia

WY Wyoming

Declarations

Ethics approval and consent to participate. The George Mason University institutional review board determined this study to be exempt.

Consent for publication. Not applicable.

Availability of data and materials. The data that support the findings of this study are available from Chmura but restrictions to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Chmura.

Competing interests.

The authors declare that they have no competing interests.

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Author's contributions.

TJ developed the concept and design for the research, conducted interviews, conducted literature review, conducted data analysis and interpretation, and led the writing of the article.

AS conducted background research, coordinated and participated interviews with stakeholders, and was a major contributor in writing the manuscript.

SR extracted data, conducted natural language processing, and conducted descriptive analysis.

MA extracted data, conducted natural language processing, and conducted descriptive analysis.

SR2 extracted data, conducted descriptive analysis, and was a contributor in writing the manuscript.

PM provided expertise in developing the concept for the research and was a contributor in writing the manuscript.

All authors read and approved the final manuscript.

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Tables

Due to technical limitations, table 8 to 15 is only available as a download in the Supplemental Files section.

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