Texas Public Health Employee Perspectives on Public Health Training Needs

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ABSTRACT

Background: *This study asked Texas state and local public health employees to rate perceived importance of public health skills for their current positions and sought to identify key training needs and skills gaps in workforce development.*

Methods: *This study used a prospective, cross-sectional design to distributie an anonymous online survey to public health officials across Texas between November 2022 and January 2023, using a snowball sampling approach. Respondents were prompted to provide Likert scale responses to rate the perceived importance of various public health skills and software tools for respondents' current positions. Additionally, free-text responses were analyzed for thematic trends in training needs.*

Results*: Respondents most frequently rated professional communication, cultural competence, and assessment/evaluation as "extremely important." Individuals with an MPH rated epidemiology, case investigation, and cultural competence skills more highly than their non-MPH counterparts. Qualitative comments emphasized the need for real-world field training.*

Conclusions*: The findings highlight meaningful needs in public health workforce training, particularly in the areas of leadership, data management, and public health knowledge. Despite the ongoing need for skilled public health professionals, especially with an aging workforce, there is a notable shortage of individuals with formal public health education. This study emphasizes the importance of integrating public health training across disciplines, including clinical education, and promoting continuing education to build a resilient, adaptable workforce capable of addressing evolving public health challenges.*

Keywords: Public health workforce; public health skills; training needs; burnout and retention; workforce development

BACKGROUND

The public health workforce has dealt with substantial challenges in recent years, from managing the COVID-19 pandemic to rapid turnover among employees.[1] One estimate indicates that U.S. state, local, and tribal health departments hired about 53,600 new employees in response to the COVID-19 pandemic.[2]

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DOI: 10.12746/swjm.v14i58.1571

In 2022, more than 70% of the public health workforce is at the state and local levels. However, estimates range between 25% to 44% of the public health workforce is considering leaving their positions by 2026.[3] The most common reasons cited for departure include the pandemic, low pay, burnout, and lack of advancement opportunities.[4] Additionally, 38% of the workforce and 48% of the public health agency leadership is older than age 50, creating a large need for future public health workers.[3]

The 2021 PH Workforce Interests and Needs Survey (WINS) of U.S. public health employ-ees found that the most frequently self-reported training

needs included budgeting and financial management, systems thinking, strategic thinking, change management, and community engagement.[5] Similarly, a qualitative study of public health department employees 12–14 months after the beginning of COVID-19 in the U.S. identified resource management as a top priority, including both financial and human resources.[6] Although about 37% of U.S. public health workers report holding an advanced degree, only 14% hold a degree in public health.[4]

The public health workforce expanded rapidly during the COVID-19 pandemic, although long term trends suggest substantial intent to leave, particularly among public health employees under age 35.[1] Most of the positions were short-term, filled by non-public health trained individuals (e.g., students, displaced workers from other fields, retirees) and were tied to pandemic response surge funding.[7] Some of these workers transitioned to permanent positions by leveraging their experience with statistics, community engagement and emergency preparedness. However, most public health agencies recognize the need to sustain and maintain a public health workforce but do not have the financial resources to do so.[7] Although the Bureau of Labor Statistics estimates epidemiologist positions will be among the 20 fastest growing occupations through 2033, understanding both persistent and changing needs of the workforce is critical.[8] This study assesses perceived importance of a number of public health skills, as reported by employees of Texas state and local public health organizations.

Methods & Data

This quasi-experimental study used a prospective descriptive cross-sectional design. The research team distributed an anonymous online survey to public health officials across the state of Texas between November 2022 and January 2023. Dissemination occurred through leadership in two specific populations. First, the team sent the survey to public health department directors listed in the Texas Association of City and County Health Organizations (TACCHO). Second, the team sent the survey to the Texas Department of State Health Services (DSHS) regional directors and deputy directors listed on the DSHS website. Communications encouraged directors to complete the survey themselves and distribute the survey to their employees. The Texas Tech University Health Sciences Center Institutional Review Board approved the study on October 28, 2022, Protocol #L23-033. Participants were provided an informed consent statement via Qualtrics survey software and instructed to proceed only if they were at least 18 years of age, worked in public health in Texas, and voluntarily consented to participate in the study.

Two hundred two individuals participated in the survey. The response rate is unknown given the distribution of the survey via a snowball approach through health department directors and regional directors. Individual response rates by item varied, including several free text responses, which are reported when appropriate. The survey asked respondents to rate the importance of specific skills and software for their current positions. Responses of "not applicable/don't know" are displayed for completeness. Descriptive statistics used Stata 16.0 for analysis.[9] Free text/qualitative responses were analyzed using content thematic analysis.

Results

Table 1 shows the distribution of survey respondents across the state of Texas, with the highest percentage from West Texas (41.1%, n = 81). Respondents reported the following organizational affiliations: 65.4% from city or county health departments, 26.4% from state health departments, and 8.0% from other organizations.

Respondents represented a wide range of positions, including director, health educator, epidemiologist, and nurse; the largest percentage (61.9%) selected "other" and wrote in a specific job title (Table 2). These titles included administrators and managers, program specialists, data specialists, and community health workers.

Although 41.1% (n = 81) of respondents reported holding a Master's degree or higher, only 16.4% (n = 32) of respondents reported that they held a Master of Public Health degree. A larger overall percentage (31.3%, n = 51) reported holding a degree in a clinical field. Of the 45 individuals who provided a free text

Table 1. Characteristics of Organizations Represented Among Respondents

	Frequency	Percent
Region of Texas – Physical location of work		
West Texas/Panhandle	81	41.1
North Texas	28	14.2
East/Southeast Texas	23	11.7
South Texas/Rio Grande Valley	20	10.2
Central Texas	42	21.3
Other/Undefined	3	1.5
Organization type		
City Health Department	101	50.2
State Health Department	53	26.4
County Health Department	31	15.4
Other	16	8.0
What type of population does your department serve?		
Mostly urban/suburban	52	32.7
Equally urban/suburban and rural	66	41.5
Mostly rural	41	25.8

Table 2. Individual Characteristics of Respondents

Role		
Director	11	6.1
Health Educator	10	5.6
Epidemiologist	17	9.4
Nurse	18	10.0
Medical Officer	1	0.6
Fiduciary	3	1.7
Laboratory Technologist	8	4.4
Other	112	62.2
Education		
High School Diploma/GED	46	23.5
Associate's Degree	19	9.7
Bachelor's Degree	51	26.0
Master's Degree	60	30.6
Doctorate or other terminal degree	20	10.2
Do you have an MPH?		
Yes	32	16.4
No	163	83.6
Do you have a license in a clinical field?		
Yes	51	31.3
No	112	68.7

response listing their clinical degree, twenty listed a nursing degree (RN, BSN, APRN, FNP), six a medical degree (MD, DO), and the remaining respondents reporting a range of other clinical degrees in behavioral health, laboratory science, and other fields.

Respondents rated thirteen skills needed for their current positions by level of importance (Table 3). The highest frequency of "extremely important" ratings were reported for professional communication (77.9%), cultural competence (53.1%), assessment/evaluation (51.9%), health education/health promotion (49.1%), and leadership (48.8%). For the importance of proficiency with various software programs, the highest frequency of "extremely important" ratings was reported for Microsoft Word (58.9%), Microsoft Excel (56.8%), and Microsoft PowerPoint (39.9%).

Respondents were asked in a free text response, "What areas of training would you be most interested in?" Eighty-five individuals responded. Responses were coded and grouped for thematic alignment. Training in epidemiology, data visualization, and statistics were the most reported themes, mentioned by 29% of respondents (n = 25). Communicable disease, infection control, and vaccine-related training were next most frequent at 12.9% (n = 11). The two next most common themes were reported by 8.2% (n = 7) of respondents included training in administration/leadership and interest in pursuing an MPH or DrPH.

A final item asked respondents to share additional skills relevant to training future public health professionals. A number of these responses elaborate on the need for professional communication skills:

> *"Being able to take complex processes/vocabulary such as epidemiology, mental health, fully realized personhood, pharmacokinetics, etc., and making them digestible for the average person or child. Without making anyone feel stupid."*

Table 3. Rating of Importance of Skills and Software or Programs for Your Current Position

Skills	Not at All Important	Moderately Important	Very Important	Extremely Important	Not applicable/ Don't Know
Epidemiology	8.07	24.84	21.74	32.92	12.42
Professional Communication	0.61	3.07	17.79	77.91	0.61
Assessment/Evaluation	1.85	11.73	29.63	51.85	4.94
Public Speaking	4.94	25.31	28.40	35.80	5.56
Case investigation/Contact tracing	14.81	25.31	12.96	34.57	12.35
Grant writing/management	24.22	19.88	14.29	19.88	21.74
Cultural competence	4.32	8.02	25.93	53.09	8.64
Budgeting	19.25	19.25	16.77	27.33	17.39
Management	9.88	14.81	24.07	37.65	13.58
Leadership	5.00	15.00	23.13	48.75	8.13
Policy development/Rules & regulations	10.49	17.90	24.69	35.19	11.73
Health education/Promotion	3.68	15.95	23.93	49.08	7.36
Health informatics/data science	6.17	20.37	27.16	33.95	12.35
Software/Programs	**Not at All Important**	**Moderately Important**	**Very Important**	**Extremely Important**	**Not applicable/ Don't Know**
Microsoft Word	1.84	11.04	26.99	58.90	1.23
Microsoft PowerPoint	5.52	24.54	27.61	39.88	2.45
Microsoft Excel	1.23	17.90	22.22	56.79	1.85
Epi Info	22.36	24.84	18.63	16.15	18.01
ImmTrac	22.36	20.50	19.88	22.36	14.91
Texas Cancer Registry	44.72	16.77	4.35	3.11	31.06
SPSS/Stata/R/etc.	30.43	21.12	11.80	8.07	28.57
Video editing software	46.88	18.13	5.63	3.13	26.25
Tableau/Data visualization	31.06	22.98	11.18	6.83	27.95

"… The ability to speak public health in the language of your audience, can you present your public health message using the terminology that is understood by your city council, county commissioners court or to rotary club members at a meeting. Determining what is important versus getting bogged down in the weeds …"

"Communication skills are vital as well as professional development. Internships can be extremely beneficial."

"… being personable, relatable, kind, easy to talk to, comfortable to be around, confident and trustworthy in speech; they don't teach these things in programs, but they are vital, crucial, to daily public health work …"

An additional theme that emerged from these responses was the need for field training.

"Skills needed-field work, not just classroom study to pass an exam for a diploma. Many MPH degree personnel cannot differentiate between theoretical and actual."

"A lot of what I learned in my MPH was helpful and relevant to my current job but learning in a program is different than learning on the job/in the field. Not

in the sense of an internship but actually jumping into the deep end and doing the work, that's where the real learning happened. Taking a class on Community-Based Participatory Research was probably the most useful class I took…"

Discussion

Health department employees perceive common workforce training needs for experiential training in areas such as professional communication, cultural competence, assessment and evaluation, and proficiency in the Microsoft Office suite. However, free text responses demonstrated particular interest in communication skills and experiential training. The skills mentioned by the respondents mirror the current 22 competencies covered in MPH programs of accredited schools and programs by the Council on Education in Public Health (CEPH).[10] All CEPH accredited MPH programs are required to teach these competencies but due to limited time, some competencies are taught in isolation with limited time for practical application, mastery, and integration.

Some schools and programs across the country have elected to develop close relationships with local and state health department, referred to as "academic health departments."[11,12] An Academic Health Department is a partnership arrangement between governmental health departments and academic institutions through which there is mutual teaching, service, research and practice. The aim of these partnerships is to increase student interaction with the public health agency throughout the course of study and not solely through the applied practice experience or their first job.

With almost fifty percent of the public health agency leaders over age 50 and 44% of the workforce set to retire before the end of the decade,[3] the study survey identifies the following critical skills for future public health workers: professionalism (leadership, communication, policy development, and cultural competency), core data management (assessment, evaluation and data software proficiency), and public health knowledge (education training, health promotion). These skills directly address the dynamic, interdisciplinary, and community-facing challenges in public health, making them a fundamental requirement for any public health professional.

A significant gap exists in public health credentials in the public health workforce, as only 16.4% of respondents reported having a MPH degree, despite the recognized importance of the MPH to the public health discipline. The relatively small percentage of Texas public health workers who hold an MPH shows that most (83.6%) enter the public health workforce without graduate training in the field. As such, substantial opportunity exists for expanding training to meet the needs of this workforce. This highlights a pressing need to expand continuing education programs and create initiatives that incorporate public health knowledge into a wider range of degrees and career pathways. Addressing this gap is essential for equipping the workforce with the specialized training required to meet the dynamic evolving public health challenges, particularly in areas such as leadership, policy development, and data-driven decision-making. Enhanced access to graduate-level public health education would not only bolster workforce capacity but also prepare professionals from diverse disciplines to effectively contribute to public health goals.

As a practice degree, MPH programs only stay relevant by training skills needed in the workforce but similarly should not limit orientation of skill development to governmental public health jobs. Research before the COVID-19 pandemic highlighted a growing trend toward MPH graduates securing employment in the outside the government public sector, estimated at roughly 20–30% and higher for public health bachelor's degree graduates.[13,14] Despite strong interest among professionals with an MPH in governmental public health jobs, the length, complexity, and interview process of the governmental application has been cited as a reason that graduates enter other workforce sectors.[15] The authors are not aware of data on the percentage of new MPH graduates entering for-profit, non-profit, or governmental sectors following the COVID-19 pandemic.

Respondents were more likely to hold a clinical degree than an MPH, suggesting the importance of

working to integrate public health content and skills into clinical pedagogy. Study results are consistent with national trends;[3] 31.3% of public health respondents held clinical degrees compared to MPH degrees. Nearly 60% of physicians with an MPH report using their MPH training every day, and most often for epidemiology or advocacy/policy development.[16] Training efforts must integrate public health principles into clinical education, ensuring that professionals with clinical backgrounds can effectively contribute to public health goals.

Workforce challenges are not only a pipeline problem, but the skills of the workforce also need to meaningfully change from the public health workforce of the past. Different and more diverse skills are needed in the public health workforce of tomorrow; public health workers need new and adaptable data science skills, digital capabilities (including the use of artificial intelligence), cultural and linguistic competencies, and political and advocacy skills to fundamentally change relationships with healthcare institutions, policy decision makers, and the lay public).[7]

The public health workforce faces significant challenges, including substantial turnover driven by burnout, low pay, and high stress exacerbated by the COVID-19 pandemic.[14] Burnout has been described as rooted in systemic issues such as inadequate support, escalating workloads, and underinvestment in public health infrastructure.[14] Addressing turnover issues requires strategies focused on workforce retention, equitable resource distribution, and systemic changes to mitigate burnout and strengthen the public health infrastructure.[3,18,19] However, building public health infrastructure requires funding and the political will to finance public health infrastructure and initiatives. This creates a training need for public health workers to become politically and policy savvy and to understand public budgeting to assure the public health resources and infrastructure is congruent with needs.

As technology complexity increases, computer proficiency becomes mandatory. Trends in workforce development show that lifelong learning and integration of continuing education is critical, which is particularly relevant to public health in an era marked by evolving public health demands, the rise of digital technologies, and data-driven decision-making.[20] Upskilling public health workers' computer training in using software, data visualization, and data analytics is an investment in strengthening the public health infrastructure. By building digital skills, the workforce becomes more equipped to manage modern health challenges, ensuring effective and equitable public health delivery in a rapidly evolving digital era.

Limitations

Over 41% of respondents work in West Texas, an area that represents a relatively small rural proportion of the population. The higher response numbers from this area likely stem from stronger engagement by existing partners of the research team. This factor may limit findings as being somewhat biased toward West Texas and therefore, rural health departments. Definitions of Texas regions are also subjective and may vary by individual perspectives on location. The time frame of data collection for this study was roughly two and a half years after the beginning of the COVID-19 pandemic in the United States, and as such, responses may reflect perspectives from individuals working in organizations that were still transitioning out of pandemic operations.

Conclusion

Understanding the needs of the public health workforce requires an ongoing commitment to gathering data and perspectives on the changing field of public health. This study aimed to document the perspectives of skill and training needs from those currently working in the Texas public health workforce. The study's findings on public health workforce needs in Texas provide valuable insights that can be adapted and generalized to broader contexts. Texas includes both a large urban population and a substantial rural population spread over a large geographic area, so comparative studies in other large states with rural-urban population divides could identify workforce disparities to guide localized workforce

development policies especially in underserved rural areas. Further, entities in other states can conduct similar studies to identify their unique needs of their public health workforce and potential solutions. The results from this study can inform federal entities about some of the challenges facing the public health workforce as well as opportunities and need for federal funding and support. Finally, the sizeable proportion of the public health workforce without formal education in the field highlights an ongoing need for training in public health skills beyond traditional degree programs.

Article citation: Dennis JA, Gittner LS, Byrd TL, St. John JA. Texas public health employee perspectives on public health training needs. The Southwest Journal of Medicine. 2026;14(58):22–29
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Conflicts of interest: none

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