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Unleashing leadership potential in unprecedented times: Lessons learned from an evaluation of a virtual cohort-based adaptive leadership program for public health executives

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ABSTRACT

Objectives: This paper presents the evaluation results from the Adaptive Leadership Academy (ALA), a pilot program aimed at developing executive-level leaders in public and community health.
Study design: Mixed methods study.
Methods: The evaluation followed the Kirkpatrick Model to assess program participants' satisfaction with the training, knowledge and skill gain, and behavior change. Data were collected beginning in December 2021 through August 2022 from 20 program participants via online surveys and key informant interviews.
Results: The findings indicated that ALA helped participants improve their leadership knowledge, skills, and capabilities. In particular, the study highlighted the effectiveness of cohort-based leadership development programs using adaptive leadership as the foundation for the curriculum. Participants found the cohort-based model and synchronous components particularly useful in creating a supportive environment in which to be vulnerable and grow.
Conclusions: Overall, the evaluation provided evidence that the ALA pilot enhanced leadership knowledge, skills, and capabilities. The findings support the use of adaptive leadership as a framework for leadership development programs in the public health sector.

1. Introduction

Throughout the many developments of the COVID-19 pandemic, communities across the United States (U.S.) relied on their public health leaders, such as local health departments (LHDs), to provide direction, comfort, and stability. Armed with inadequate funding and a dwindling workforce, local health officials fought to communicate effectively to the public about the largely unknown threat in a context of quickly shifting priorities, changing directives, and political pressure [1]. With tensions high and daily uncertainty, public health leaders needed to be "adaptive" in their response.

The COVID-19 pandemic response was an example of an "adaptive" challenge, as defined by adaptive leadership theory. It required incremental progress, ongoing learning and experimentation, and the investment of many different stakeholders [2]. Adaptive leadership theory is "a practical leadership framework that helps individuals and organizations to adapt and thrive in challenging environments," originally developed for for-profit organizations and recently underscored as

essential for public health leaders [2–4]. Adaptive leaders aim to see a challenge from multiple perspectives and respond with an awareness of what each stakeholder will lose or gain through the process of change. A local health official who responded "adaptively" to the pandemic would have provided a sense of order through the discomfort of the unknown, while mobilizing communities to work through the discomfort of change together.

In 2014, the National Association of County and City Health Officials (NACCHO) created an Adaptive Leadership program to cultivate adaptability, agility, and willingness to experiment among public health and healthcare practitioners. A 2020 evaluation of the first five years of NACCHO's program demonstrated its utility and applicability, as well as identified opportunities to better meet the leadership development needs of local public health staff [5]. In addition to these recommendations, new adaptive challenges emerged during the pandemic that highlighted the need for a public health leadership training focused on responding to evolving future threats. In response, NACCHO launched a pilot of the Adaptive Leadership Academy (ALA) in December 2021. The

program is a seven-unit (one per month) curriculum designed for LHD executives. Each unit engages participants in seven synchronous and asynchronous activities delivered virtually to create a dynamic, transformative experience for adult learners (Table 1). These activities allowed learning to be staged on a spectrum, from low-risk applications of new ideas in practice settings (e.g., case studies) to more high-risk actions to make progress on a real-world adaptive challenge (e.g., peer advising). The curriculum facilitates a transformative learning experience, in which participants reflect on their own experiences through the lens of the concepts to create long-lasting change in the way they think and act [6]. In addition, ALA utilizes a cohort-based model to establish a sense of community and accountability to complete the curriculum [7]. Cohort models have been shown to promote collaboration, sense of support from peers and instructors, accountability, consideration of diverse perspectives, and networking [8].

Current research on the effectiveness of virtual leadership development—and especially in public health and healthcare—is scarce [9]. Most available research on virtual learning is focused on broader professional development opportunities for a variety of fields, including public health, medicine, and pharmacy. These studies suggest that virtual learning increases access to opportunities, knowledge, and self-efficacy for professionals; whether behavior changes or long-term knowledge retention occurred is less clear [10–13]. The effectiveness of virtual learning can be influenced by the infrastructure quality (e.g., internet connectivity, technical issues), instructional factors (e.g., course design, characteristics of the instructor), and convenience and flexibility of the online learning environment [14].

Limited literature exists about the outcomes of adaptive leadership as a leadership development framework, especially in the public health sector. Furthermore, there is limited evidence for effectiveness of virtual

learning to support adaptive leadership development. This paper describes the evaluation results from a pilot of ALA with seventeen executive-level leaders from LHDs and three from health centers.

2. Methods

The evaluation of this pilot program aimed to identify the strengths and opportunities for improvement of the curriculum and structure, as well as assess changes in leadership knowledge, skills, and capabilities among participants. The Kirkpatrick Model, a well-established standard for evaluating leadership development programs in public health, guided the evaluation design [15,16]. This training evaluation model encompasses four levels of assessment: (1) reaction (i.e., satisfaction with and relevance of the training); (2) learning (i.e., change in knowledge and skills); (3) behavior (i.e., application of learnings); and (4) results (i.e., achievement of organizational outcomes). The evaluation focused on the first three levels, as the timeline did not allow for the longer-term assessment required to explore organizational outcomes.

Data was collected from a purposive sample of ALA pilot participants using a mixed methods approach between December 2021 and August 2022 (Table 2). Two web-based surveys were distributed via Qualtrics approximately monthly to assess reaction. One survey was administered immediately following an online synchronous class ("live learning session") to explore participants' satisfaction with the class instruction and the value of the concepts taught during the session. Participants rated their satisfaction with various aspects of the live learning session on a five-point scale (1 = very dissatisfied, 5 = very satisfied). The second survey was administered immediately following completion of an entire unit of curriculum to assess participants' perspectives about the degree to which objectives were met, the usefulness of each unit activity, and the extent to which they feel confident about and interested in applying adaptive leadership concepts. Participants rated the extent to which unit objectives were met on a three-point scale (1 = not at all met, 3 = fully met); usefulness of resources on a three-point scale (1 = not at all useful, 3 = very useful); confidence to apply concepts on a four-point scale (1 = not confident, 4 = very confident); and interest in applying concepts on a three-point scale (1 = not interested, 3 = very interested). Another online survey was distributed via Qualtrics at the end of the pilot; it included a retrospective posttest to assess learning and ask questions about whether participants had applied concepts since the beginning of the program to assess behavior. This design has been shown to accurately measure learning outcomes, while addressing some of the validity

Table 1
Components of the Adaptive Leadership Academy pilot program.

Activity	Description
Synchronous	
Live learning sessions	The primary method for delivering content via 90-min, live, virtual sessions facilitated by NACCHO to train on core concepts of the theory and facilitate discussion and exercises.
Peer advising	The Peer Advising protocol slows down the process of problem diagnosis, a key theme of the adaptive leadership theory. Participants implemented the protocol with a small group of peers each month, and each participant had a turn to share an adaptive challenge and gather diverse interpretations of and responses to it from peers.
Peer-to-peer exchange	30-min, unmoderated partner discussions with discussion prompts complemented the structured components of the Adaptive Leadership Academy. Participants used the time to discuss their adaptive challenges and learnings with peers, encouraging each other in new ways of thinking and being.
Office hours	NACCHO staff hosted an optional, 1-h session each month for cohort members to ask questions, workshop challenges, or discuss a recommended reading.
Asynchronous	
Readings	Monthly recommended readings include book excerpts and articles highlighting key concepts of the theory or applying the framework to public health.
Case study	The case study is a fictional, realistic story created by the NACCHO Adaptive Leadership team with chapters corresponding to each unit of the academy. The story details a small town managing competing responses to the opioid crisis. Each unit includes reflection questions and activities to apply concepts of the theory to the story.
Mindfulness guide	A mindfulness practice was encouraged throughout the academy to set the stage for more intentional leadership practice and help participants tune into their emotions surrounding their work and learning. The Mindfulness Guide provides a structure and sample activities for practicing mindfulness for 5–10 min each month.
Reflection journal	The individual Reflection Journal includes questions to help participants process and internalize new concepts and ideas and apply them to their adaptive challenge.

Table 2
Data collection activity, dates, and response rates of participants.

Data Collection Activity	Data Collection Month	Number of Responses (Response Rate)
Live Learning Survey		
Live Learning – Unit 1	December 2021	18 (90 %)
Live Learning – Unit 2	January 2022	16 (80 %)
Live Learning – Unit 3	February 2022	12 (60 %)
Live Learning – Unit 4	March 2022	13 (65 %)
Live Learning – Unit 5	April 2022	11 (55 %)
Live Learning – Unit 6	May 2022	12 (60 %)
Live Learning – Unit 7	June 2022	11 (55 %)
End-of-Unit Survey		
Unit 1	January 2022	16 (80 %)
Unit 2	February 2022	8 (40 %)
Unit 3	March 2022	15 (75 %)
Unit 4	April 2022	11 (55 %)
Unit 5	May 2022	14 (70 %)
Unit 6	June 2022	15 (75 %)
Unit 7	July 2022	19 (95 %)
End-of-Pilot Data Collection		
Survey with retrospective posttest	July 2022	18 (90 %)
One-on-one interviews	July to August 2022	16 (80 %)

issues of the traditional pretest-posttest design and reducing participant burden [17–19]. Participants were asked to rate their knowledge before and after participating in ALA on a four-point scale (0 = none, 3 = high).

In addition, one-on-one interviews were conducted virtually via web conferencing at the end of the pilot to contextualize the quantitative data about all three Kirkpatrick levels. Mixed methods designs are common in evaluating leadership development programs and have been used alongside the Kirkpatrick Model, specifically [20,21]. A semi-structured interview guide was developed to explore their motivation to participate in ALA, experiences with the pilot, facilitators and barriers to learning during ALA, application of new knowledge and skills, and perspectives about broader team- and organization-level outcomes. Probes were used to encourage depth and detail.

Unweighted descriptive statistics were generated from the quantitative data using Microsoft® Excel®. A Wilcoxon signed-rank test was conducted to assess statistically significant differences for the retrospective posttest items assessing knowledge gain. Interviews were audio recorded and transcribed verbatim. A retroductive approach was used to analyze the qualitative data. Coding was conducted in Nvivo (released in March 2020). Author C. B. developed an initial codebook to structure and define codes and subcodes based on the interview guide. Then, authors K. H. and C. B. each coded the same two transcripts to refine the codebook inductively. They met to discuss the codebook and resolve differences in coding. Author C. B. coded the remaining transcripts, and the codebook was refined inductively with each transcript. Once the codes and subcodes were finalized, relationships among categories were examined to develop themes.

3. Results

All 20 ALA pilot participants completed at least one data collection activity. Most ALA pilot participants identified as white, non-Hispanic women (Supplemental Digital Content. Participants in the program reflected the demographics of local public health leaders; most LHD top executives in 2019 were white, non-Hispanic, women [22]. Participants represented a diverse range of jurisdiction sizes—35 % of jurisdictions served fewer than 50,000 people, 40 % served 50,000–499,999 people, and 20 % served 500,000 or more people—and regions of the United States.

3.1. Reaction

Across all aspects and all units, the average satisfaction rating was 4.81; participants rated the quality of the facilitators and session content highly (Supplemental Digital Content. Satisfaction with session content was rated lower in the first two units—which focused on the adaptive leadership theory—compared to later units—which focused on practical adaptive leadership skills. Across all units, participants reported that unit objectives were met (mean = 2.92), that they felt confident (mean = 2.87), and were interested in applying the concepts they learned (mean = 2.78, Supplemental Digital Content. Participants' confidence in applying concepts improved over time. On average, participants found the synchronous activities to be the most useful activities within each unit (Supplemental Digital Content. The live learning sessions were the most useful synchronous activity with a mean of 2.94. Meanwhile, the asynchronous reflection journal activity was rated as least useful—while still receiving a "somewhat useful" score (mean = 2.23). Overall, participant reactions to the ALA curriculum were positive, as is reflected in the relatively high mean scores across items within the Live Learning and End-of-Unit Surveys.

3.2. Knowledge

All survey respondents also reported their overall leadership capability, level of comfort in addressing adaptive challenges, and readiness as a leader to be self-reflective improved at least slightly throughout ALA (Fig. 1). In addition, 94 % reported their perspective on practicing leadership and behavior in the form of leadership actions improved, while 89 % reported their ability to form meaningful relationships improved.

On average, survey respondents retrospectively reported low to moderate knowledge across all the concepts measured prior to the program and moderate to high knowledge after the program (Fig. 2). Changes in knowledge ratings from pre to post were statistically significant for each of the 11 concepts measured. On average, knowledge gains were highest for practicing introspection and acknowledging how their own actions contribute to adaptive challenges; meanwhile, gains were lowest for knowledge about the difference in application of leadership and authority.

Most interviewees mentioned the program's virtual setting supported their learning. Its convenience allowed people from all over the country to participate, which enabled some diversity in the cohort that was important to the learning process. The cohort's diversity in terms of the range of career experiences (i.e., positions and tenures) and jurisdictional diversity generated robust discussion by bringing varying perspectives to the table. In addition to the virtual setting, ALA's live learning sessions, office hours, and peer advising activities were particularly effective. For example, interviewees attended office hours to gain additional clarity about concepts and used the peer advising sessions to learn through emotional support and practical advice.

Although participants gained knowledge and skills, there were barriers to doing so. Interviewees viewing the virtual setting negatively felt
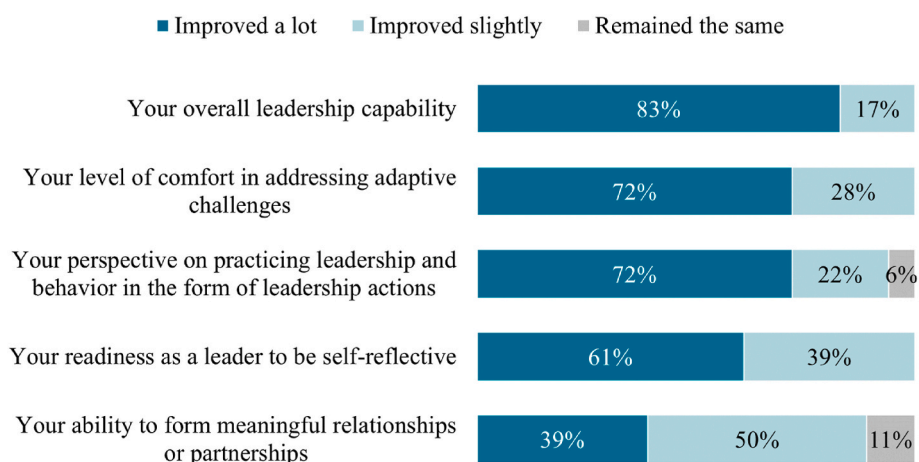

■ Improved a lot　■ Improved slightly　■ Remained the same

Your overall leadership capability	83%	17%
Your level of comfort in addressing adaptive challenges	72%	28%
Your perspective on practicing leadership and behavior in the form of leadership actions	72%	22% 6%
Your readiness as a leader to be self-reflective	61%	39%
Your ability to form meaningful relationships or partnerships	39%	50% 11%

Fig. 1. Percent of survey respondents reporting the extent to which they experienced changes throughout the program (n = 18).
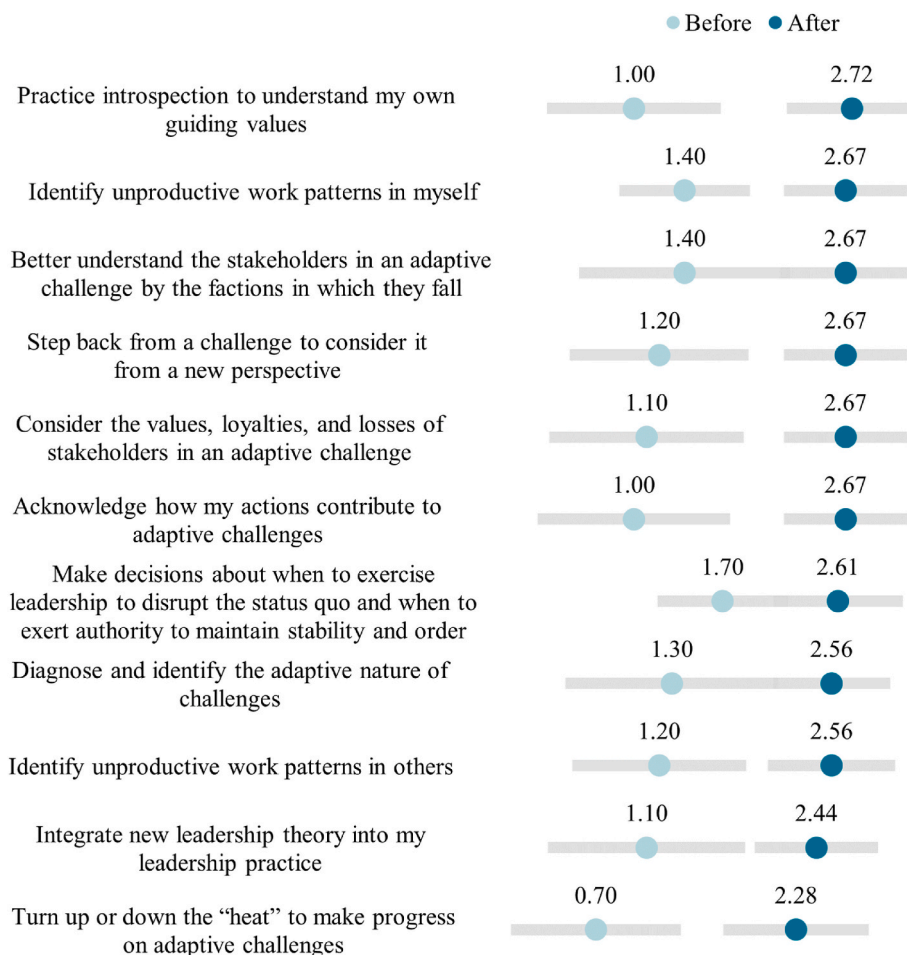
Fig. 2. Average survey respondent rating of level of knowledge for key Adaptive Leadership concepts before and after participating in the program, on a scale of 0 (none) to 3 (high); p < 0.001 for each before-to-after comparison; grey bars represent standard deviation (n = 18).

it was impersonal and experienced interruptions from colleagues. In addition, some interviewees noted they were not afforded the opportunity to have enriching cultural perspectives due to the lack of racial and gender diversity of their cohort. This was particularly important for those with an equity-focused real-world adaptive challenge. In terms of activities, mindfulness and journaling were often de-prioritized when time was limited because participants did not necessarily acknowledge or find these activities as valuable to their learning in comparison to other activities.

Overall, participants improved their adaptive leadership knowledge, skills, and abilities—as evidenced by both the self-reported survey ratings and the qualitative examples about how the virtual setting, variety of activities, and cohort's geographic diversity supported different learning styles.

3.3. Behavior

Most survey respondents reported putting the following concepts into practice since learning it in ALA: identifying unproductive work behaviors; getting on the balcony; and identifying the values, loyalties, and losses of stakeholders associated with adaptive challenges (Fig. 3). The least commonly selected concepts were habit building techniques, mindfulness practice, identifying which factors stakeholders fall into in an adaptive challenge, and applying the steps of a work inventory to an adaptive challenge.

Interviewees highlighted ways they applied concepts in their professional relationships with others—specifically with direct reports, in leadership team meetings, and during transitions of change such as

organizational restructuring. Some specific concepts mentioned were assessing values, loyalties, and losses; humble inquiry; the PDSA framework; and the observation, interpretation, intervention (OII) framework. Some of these were concepts in which the most knowledge was gained. Fewer interviewees applied adaptive leadership concepts within their personal lives by sharing the concepts with their families or integrating ALA's emphasis on self-care into their daily routine.

Almost all interviewees shared how their perspective related to practicing leadership changed over the course of the pilot. They gained confidence in their approach to leadership, as well as better understood the value of being a self-reflective leader. In addition, interviewees shared broader impacts that participating in ALA had on their teams and organizations. Specifically, a few interviewees noticed that staff feel more supported, engaged, and empowered as their leadership approach shifted.

Overall, participants reported applying new leadership behaviors in both the survey and interviews, demonstrating that ALA was instrumental in shifting leadership capacities to overcome adaptive challenges.

3.4. Limitations

This study has several limitations. First, some ALA pilot participants did not participate in all evaluation activities. Those that did may have had a more positive experience with the program. Second, social desirability bias cannot be discounted. NACCHO staff both offered the program and conducted the evaluation; this may have influenced participants to underreport negative aspects of their experience. Third,
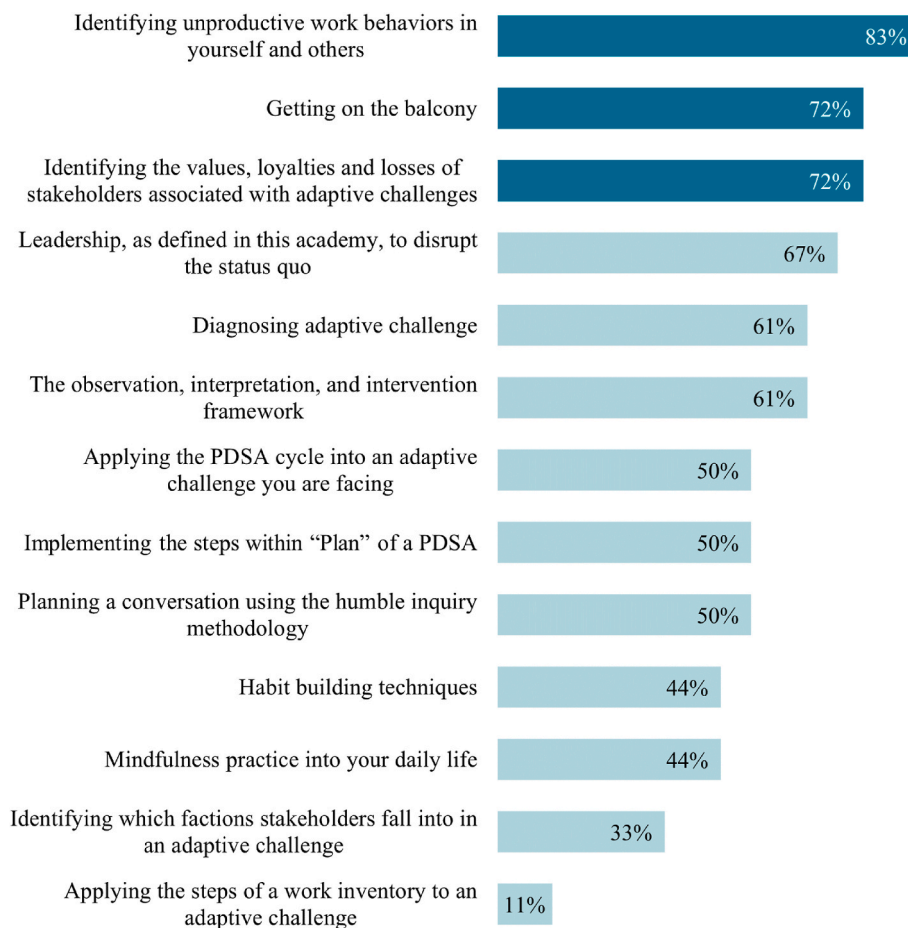
Fig. 3. Percent of survey respondents reporting they have put the concept into practice since completing the program (n = 18).

causal relationships cannot be determined as there was no comparison group. Future studies should use a comparison, if possible, or consider behavior prior to the intervention as a type of control group. Fourth, the three- and five-point scales in the surveys lend themselves to ceiling and floor effects. To mitigate these, future evaluations should expand the survey item scales to at least seven points. Additionally, a follow-up evaluation capturing longer term data post-pilot completion that assesses knowledge retention—an important facilitator of behavior change—and organizational results can add evidence to the findings. Lastly, because this study had a small sample size and the participants were demographically homogeneous, generalizability of the findings is limited. Comparing and aggregating data from multiple future ALA cohorts can address generalizability beyond the pilot.

4. Discussion

Although limited, this evaluation demonstrates that the ALA pilot achieved its goal of leadership development, as signified by the increases in knowledge participants reported in the retrospective posttest. Satisfaction with the ALA experience—a precursor to learning in the Kirkpatrick model—was high overall, especially related to the variety of activities and geographic diversity of their cohorts. When understood alongside interview data, data suggest that participants were able to apply adaptive leadership concepts in their professional and personal lives. The examples of concept application signify that many participants began to change their behavior because of the program and, in some cases, the behavior of others.

A recent analysis reveals that 15 % of LHD employees experienced harassment during the pandemic, which led to poorer mental and emotional health and increased intentions to leave their LHD jobs [23].

Mitigating these impacts requires empathy, which is one of the most critical leadership skills and leads to improved innovation, engagement, retention, and inclusivity [24–26]. ALA participants reported a shift in their perspective on their leadership practice, noting specifically the ability to be more self-reflective had positive impacts on their teams and organizations. This evaluation offers initial evidence that cohort-based adaptive leadership development can develop empathetic public sector leaders.

The ALA program model integrates key aspects of effective leadership development and virtual training programs. Meta-analyses have found that training programs with multiple sessions, multiple delivery methods (e.g., lecture and practice), and feedback loops for participants are significantly more effective, and this applies to programs aimed at fostering leadership capacities [27,28]. The ALA's structure and activities of four synchronous and four asynchronous components allowed for layering of content. Accessing the material in repeated and multiple contexts gave participants the opportunity to learn at their own pace and in their preferred modality. The evaluation underscored the particular importance of the synchronous components in generating new knowledge and receiving support in a safe environment; meanwhile, the asynchronous components reinforced learnings by offering a variety of activities to reach participants' individual learning styles.

Other studies also show that peer relationships, including among peers of a shared identity—are an important factor in the effectiveness of virtual leadership development programs [29,30]. In alignment with this, participants underscored one of ALA's key strengths as its cohort-based learning that included both formal and informal opportunities for participants to interact with peers. The more formalized structure of breakout groups in the live learning sessions helped participants co-create an understanding of the new concepts being

presented, while the more informal and unmoderated peer-to-peer exchange allowed participants to discuss whatever was on their hearts and minds. This approach allowed for participants to engage with each other frequently and in different contexts, allowing real relationships to develop. As evidenced by the increased confidence in applying the concepts that participants developed over time, these relationships were essential to creating a safe space for participants to experiment with what they were learning.

As first responders to public health threats, LHDs need adaptive, self-reflective, and resilient leaders to guide, support, and protect staff in these kinds of conditions—especially as another crisis similar to or surpassing the scope and severity of COVID-19 is inevitable. Preparing public health executives to lead in this way requires training that advances both behavioral and cognitive skills [31]. This evaluation offers initial evidence that the virtual cohort-based, multi-modality ALA model is a valuable, useful, and effective resource for training LHD and healthcare leaders to adapt and thrive in challenging environments.

Declaration of competing interest

The authors have no conflicts of interest to report.

Acknowledgements

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhip.2024.100532.

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