Adapting Community Educational Programs During the COVID-19 Pandemic: Comparing the Feasibility and Efficacy of a Lung Cancer Screening Educational Intervention by Mode of Delivery

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Abstract
Few eligible patients receive lung cancer screening. We developed the Lung AIR (awareness, information, and resources) intervention to increase community education regarding lung cancer screening. The intervention was designed as an in-person group intervention; however, the COVID-19 pandemic necessitated adapting the mode of delivery. In this study we examined intervention feasibility and efficacy overall and by mode of delivery (in-person group vs. one-on-one phone) to understand the impact of adapting community outreach and engagement strategies. Feasibility was examined through participant demographics. Efficacy was measured through pre/post knowledge, attitudes, and beliefs about lung cancer screening, and intention to complete screening. We reached $N = 292$ participants. Forty percent had a household income below $35,000, 58% had a high school degree or less, 40% were Hispanic, 57% were Black, and 84% reported current or past smoking. One-on-one phone sessions reached participants who were older, had lower incomes, more current smoking, smoked for more years, more cigarettes per day, lower pre-intervention lung cancer screening knowledge, and higher pre-intervention fear and worry. Overall pre/post test scores show significant increases in knowledge, salience, and coherence, and reduced fear and worry. Participants in the one-on-one phone sessions had significantly higher increases in salience and coherence and intention to complete screening compared to participants in the in-person group sessions. The Lung AIR intervention is a feasible and effective community-based educational intervention for lung cancer screening. Findings point to differences in reach and efficacy of the community-based intervention by mode of delivery.

Keywords Lung cancer · Community outreach and engagement · Community education · Cancer screening

Introduction

New evidence-based lung cancer screening guidelines have refined our ability to identify high-risk individuals who would optimally benefit from lung cancer screening with low-dose computed tomography (LDCT); however, few eligible high-risk patients receive lung cancer screening [1]. Unlike other types of cancer screening, like mammography, community awareness of lung cancer screening remains low [2]. Lung cancer remains the highest cause of cancer-related mortality [3]. There is a need for community outreach and engagement to increase awareness and knowledge of lung cancer screening to promote access to this newer cancer screening modality and decrease lung cancer rates in the population.

Decades of research in other screening contexts has highlighted the importance of direct community education to
remove barriers to cancer screening. For example, research on colorectal cancer screening education has shown that increasing awareness and attitudes of friends and family members are two critical factors that shape a patient’s screening behavior [4]. These domains—the knowledge and attitudes of both patients and their social network members—are factors that can be modified through community-based screening education programs. Community education about cancer screening has been effective in increasing cancer screening completion [5, 6], screening knowledge [7–10], and perceived benefits to participating in cancer screening [8].

Community outreach and education is particularly important for reducing disparities in lung cancer screening. In the USA Black patients are diagnosed with lung cancer at later stages than White patients[11] and Black patients are less likely to receive lung cancer screening [12, 13]. Recent research has found that awareness of lung cancer screening was lower in Latinos when compared to other ethnic groups, but after lung cancer education more Latinos were interested in being screened [14]. Programs to provide direct community outreach and education to high-risk communities are an important step to prevent further increasing disparities by race and ethnicity as lung cancer screening is increasingly implemented across the USA [11].

Building upon this research we developed the Lung AIR intervention (awareness, information, and resources for lung cancer screening). The Lung AIR intervention is a community-based lung cancer screening education program designed to increase knowledge, empower individuals, and reduce barriers to lung cancer screening tailored specifically for diverse communities. The Lung AIR intervention is informed by the health belief model [8] and focuses on the following: (1) perceived susceptibility and perceived severity through enhancing knowledge about lung cancer and disease burden among diverse populations; (2) perceived benefits through education about the importance of early detection in impacting lung cancer outcomes; (3) perceived barriers through addressing fear/concerns about stigma and providing information about accessing lung cancer screening; and (4) cues to action through inviting participants to fill out a screening eligibility assessment and connecting eligible participants to local lung cancer screening.

The COVID-19 pandemic substantially impacted cancer-related community outreach and engagement initiatives [15, 16]. Outreach teams needed to be resourceful and adapt to evolving pandemic-related restrictions and changing community priorities. Strong community-academic partnerships became the foundation for rapid development of coordinated COVID-19 response strategies and pandemic-related interventions [17]. These pre-existing partnerships allowed for expedited delivery of accurate information about COVID-19 testing, risk prevention, contact tracing, and care navigation [17–19]. In addition to changing the focus of outreach initiatives, the COVID-19 pandemic also necessitated adaptation in community outreach and engagement approaches and in-person education needed to be shifted to other dissemination strategies [16]. For the Lung AIR program we adapted to restrictions on in-person gatherings by transferring the mode of intervention delivery to one-on-one telephone sessions when needed. The goal of this study was to assess the feasibility and preliminary efficacy of the Lung AIR intervention and adaptations made to mode of intervention delivery. We measured intervention feasibility through program reach and participant demographics. Efficacy was measured through pre/post participant knowledge, attitudes, and beliefs about lung cancer screening, and intention to complete screening.

We examined feasibility and efficacy for the Lung AIR intervention overall and differences by mode of intervention delivery (in-person group vs. one-on-one phone) to understand more about the impact of adapting community outreach and engagement strategies throughout the COVID-19 pandemic.

**Methods**

**Intervention Design**

The Lung AIR program is a 45-min community educational program delivered in-person or virtually and includes 20 min of direct didactic educational content, group discussion/Q&A, and pre/post questions. The intervention is manualized with interventionist script and accompanying slide deck presentation for the didactic component. The intervention script and slide deck have been developed in English and Spanish. As described in Table 1 the Lung AIR program includes components designed to address individual-level barriers to lung cancer screening identified in the scientific literature [20].

**Intervention Delivery**

Intervention programs were led by two community health educators in either English or Spanish. The health educators both contributed to intervention development. Each health educator received training in the final intervention program and completed practice programs before delivering the intervention to community participants. The Lung AIR intervention was originally designed to be an in-person group program; however, due to the COVID-19 pandemic, we needed to adapt this procedure to accommodate evolving restrictions on in-person group gatherings. Based upon community partner feedback, we offered sessions in two formats: in-person group and phone one-on-one.
Intervention delivery began in September 2020 and ended in September 2021. New York State COVID-19 shutdown began on March 22, 2020 and limited capacities and social distancing measures were still in effect for periods of time in many public and private institutions until March 2022. The study’s community health educators contacted community partner organizations to host sessions. Participants were recruited through a variety of community-based organizations including local churches, community centers, social service organizations, public housing authorities, a safe house for victims of domestic violence, and local automotive businesses. Recruitment flyers were distributed to local community organizations to disseminate and provide study-related information to the community members they serve. Due to the community-based nature of this research, there were no inclusion or exclusion criteria for participating in the educational programs. All community members interested in learning more about lung cancer screening were welcomed to participate.

The study was approved and overseen by the Roswell Park Comprehensive Cancer Center Institutional Review Board. At the beginning of the intervention session, the community health educator obtained verbal consent from participants. Participants were informed of the purpose of the study and were told that their participation was voluntary and their responses to questions will be kept confidential. Participants completed a pre/post survey at the beginning and conclusion of each intervention session. For in-person group sessions, we collected pre/post test data using pen and paper surveys, while for the one-on-one phone calls, the health educator administered the same pre/post-test using electronic surveys in REDCap.

### Measures

#### Sociodemographic Characteristics

Using items from the widely used Health Information National Trends Survey® (HINTS; hints.cancer.gov), we captured participant age, ethnicity, race, gender, highest degree earned, total household income, and marital status.

#### Smoking History

Smoking history was measured with three questions: (1) “What is your smoking status?” (current, former, never); (2) “On average, how many cigarettes did/do you smoke per day?” (less than half a pack, half a pack, one pack, two packs, more than two packs, never smoked); and (3) “How many years did/have you smoked cigarettes?” (less than 5 years, 5–15 years, 16–29 years, 30 years or more, never smoked).

#### Lung Cancer Screening Knowledge

Awareness of lung cancer screening was measured through the question: “Have you heard of lung cancer screening before today?” (yes, no, not sure). Knowledge about lung cancer screening was measured on the pre- and post-intervention questionnaire with four true/false items: (1) “Lung cancer is the leading cause of cancer death among both men and women in the U.S.,” “Smoking increases risk of lung cancer,” “Risk for lung cancer goes down after quitting smoking,” and “Lung cancer screening can help detect
cancer at an earlier stage, when it is more curable.” The awareness and knowledge items were developed by our study team for this study; the correct answer for each item was “true.”

Lung Cancer Screening Attitudes and Beliefs

We adapted items from a validated scale developed for research on predictors of colorectal cancer screening adherence [21, 22]. Lung cancer screening salience and coherence were measured through five items: “Doing lung cancer screening makes sense to me,” “I think the benefits of lung cancer screening outweighs any difficulty I might have in going through the tests,” “Going through lung cancer screening is an important thing for me to do,” “I believe that lung cancer screening can help protect my health,” and “I believe that lung cancer screening is an effective way to find lung cancer early.” Intention to complete lung cancer screening was assessed with the question, “I intend to undergo lung cancer screening.” Perceived susceptibility was assessed through two items: “I believe that the chance that I might develop lung cancer is high” and “I believe that compared to other persons my age, I am at lower risk for lung cancer.” Fear and worry were assessed through three questions: “I am afraid of having an abnormal screening test result,” “I am worried that screening will show that I have lung cancer,” and “I am bothered by the possibility that screening might be physically uncomfortable.” All items were administered in the pre- and post-intervention questionnaire and responses were scored on a 5-point Likert scale where 1 = strongly disagree and 5 = strongly agree.

Mode of Delivery

At the completion of each intervention, the community health educator completed a REDCap form that included the community partner for each intervention program (if applicable), date and location of program, the modality of program (in-person group, phone one on one), language of program (English or Spanish), and the number of participants reached.

Data Analysis

Scores from the pre/post-test knowledge were computed as average percent correct of the responses to each question and were compared across all participants. Comparison of test scores was made using paired-samples t-tests. Descriptive statistics were used to analyze feasibility and preliminary efficacy. Feasibility was assessed through comparing number of people reached and demographics of people reached, and how this varied by mode of delivery. Efficacy was assessed through comparing differences in pre/post scores in lung cancer screening awareness and knowledge, attitudes and beliefs, and referral to screening, and how this varied by mode of delivery. All analyses were conducted using SPSS 25.0 software.

Findings

Feasibility

Mode of Delivery. Across all programs 32% of participants participated in in-person group sessions and 68% in one-on-one phone sessions. For in-person group programs, 12 total programs were offered with an average of 7.6 participants (range 3–17). Partner organizations included a range of community-based organizations including faith-based centers, social service organizations, health centers, a police department, and minority-owned businesses. Group sessions took place at various locations including churches, community centers, social service organizations, a public housing authority, a safe house for victims of domestic violence, and private residential homes. Programs lasted approximately 45–60 min and were conducted using the educational PowerPoint, and 33% of programs were conducted in Spanish and the remaining programs were conducted in English. In order to identify potential participants for one-on-one phone sessions, health educators were provided membership lists from partnering organizations including local churches, community centers, and public housing authority to contact individuals via phone and provide the intervention. Health educators also recruited potential participants at minority-owned businesses and the cancer center’s community breast screening program monthly events.

Demographic Characteristics of Total Sample. Table 1 displays a summary of demographic variables from the in-person group (n = 92) and one-on-one (n = 200) sessions. Overall, most attendees were female (62%), ranged in age from 18 to 81 years, and were 44 years old on average. Forty percent of participants reported yearly household incomes of less than $35,000, 33% reported $35,000 to $49,999, 11% from $50,000 to $74,999, 7% reported incomes of $75,000 or greater, and 10% did not report their household income. The majority of participants (58%) attained a high school diploma/GED or less, 22% had associates degree, 14% had bachelor’s degrees, and 6% had master’s degree or higher. Almost 40% were Hispanic, over half (57%) identified as African American or Black, and 24% as White.

Demographics of In-person Group Programs. Study staff conducted 12 community-based in-person group programs reaching a total of 92 individuals with a range of 3–24 attendees per session. The majority of attendees were female (62%), with a mean average age of 40 years, primarily Black (77%), with 54% attaining a high school diploma/
GED or less, and 27% reported yearly household incomes of less than $35,000. Of the 92 participants attending the group sessions, 20 (22%) had never smoked, 38 (41%) currently smoked, and 34 (37%) reported past smoking. On average per day, 40% of participants reported smoking less than half a pack, 29% reported smoking half a pack, 9% smoked one pack, and 22% never smoked. Of the participants who reported current and former smoking, 14% smoked less than 5 years, 57% smoked 5–15 years, 18% smoked 16–29 years, and 11% smoked 30 or more years.

Demographics of One-on-One Phone. A total of 200 participants were reached for the one-on-one phone session, approximately 52% of the phone sessions were conducted in Spanish. As shown in Table 2, 63% were female, with an average age of 46 years, 51% were Hispanic, 48% identified as African American or Black, and 29% White. Approximately 60% attained a high school diploma/GED or less and 46% reported yearly household incomes of less than $35,000. Of the 200 participants that completed the one-on-one sessions, 27 (14%) had never smoked, 115 (58%) currently smoked, and 58 (29%) reported past smoking. On average per day, 22% of participants reported smoking less than half a pack, 26% reported smoking half a pack, 21% smoked one pack, 16% smoked two packs, 3% smoked more than two packs, and 14% never smoked. Of the participants who reported current and former smoking, 8% smoked less than 5 years, 43% smoked 5–15 years, 31% smoked 16–29 years, and 18% smoked 30 or more years.

Efficacy

Awareness and Knowledge. Table 2 presents the overall mean pre/post knowledge scores for each of the 4 knowledge items and the total knowledge score of all participants in both groups. Total knowledge score indicates a statistically significant difference in pre- and post-test scores, with participants scoring higher on the post-test (99.4% correct) than on the pretest (73.5% correct) ($p < 0.001$).

Table 3 displays the pre/post test scores for the in-person group and phone one-on-one sessions. There were no statistically significant differences across the two groups for overall pre/post knowledge scores. However, there was a significant difference for pre-test scores on the risk knowledge item (question 3) ($p < 0.001$) by mode of delivery, with participants in the in-person group session demonstrating a higher pre-test score for the risk knowledge item compared to the phone one-on-one sessions; 71.7% vs. 51.0%, respectively.

Lung Cancer Screening Attitudes and Beliefs. Table 3 presents the overall mean pre/post lung cancer screening attitudes and beliefs scores. Individual item and total scores show significant increases in participants’ perceived salience and coherence of lung cancer screening after the intervention. For fear and worry, individual item and total scores show significant decreases in fear and worry after the intervention. There were not significant pre/post differences in lung cancer screening intention and perceived susceptibility (Table 4).

Table 3 shows the pre/post-test scores for the group and one-on-one sessions. There were no significant difference in pre-test scores for salience and coherence, screening intention, and perceived susceptibility between the group and one-on-one sessions; however, there were statistically significant differences in post-test scores with the one-on-one sessions having a significantly higher increase in lung cancer screening salience and coherence and screening intention after the intervention. There were significant differences in pre-test scores for fear and worry, with participants in the one-on-one sessions endorsing higher fear and worry before the intervention than participants in the group sessions.

Discussion

New evidence-based lung cancer screening guidelines have refined our ability to identify high-risk individuals who would optimally benefit from lung cancer screening with low-dose computed tomography (LDCT). However, few eligible high-risk patients receive lung cancer screening due to limited or lack of awareness of lung cancer screening among patients [1, 23]. Community outreach and education is particularly important for reducing disparities in lung cancer screening. Programs to provide direct community outreach and education to high-risk communities are an important step to prevent further increasing disparities by race and ethnicity as lung cancer screening is increasingly implemented across the USA [11]. We developed the Lung AIR intervention to increase community education regarding lung cancer screening. The intervention was designed as an in-person group intervention; however, the COVID-19 pandemic necessitated adaptation of the mode of intervention delivery. The goals of this study were to examine intervention feasibility and efficacy by mode of delivery (in-person group vs. one-on-one phone) to understand more about the impact of adapting community outreach and engagement strategies throughout the COVID-19 pandemic.

Our findings support the feasibility of the intervention. Overall, 292 community members participated in the intervention and we were able to reach a high proportion of minority and underserved community members. Forty percent of intervention participants had a household income below $35,000, 58% had a high school degree or less, 40% were Hispanic, 57% were Black, and 84% reported current or past smoking. Interestingly, we found differences between participants by mode of intervention delivery. One-on-one phone sessions reached participants who were
| Demographics by mode of delivery | n     | %     | n     | %     | n     | %     |
|----------------------------------|-------|-------|-------|-------|-------|-------|
| **Gender**                       |       |       |       |       |       |       |
| Male                             | 35    | 38.0  | 75    | 37.5  | 110   | 37.7  |
| Female                           | 57    | 62.0  | 125   | 62.5  | 182   | 62.3  |
| **Age**                          |       |       |       |       |       |       |
| 18–39                            | 50    | 54.3  | 55    | 27.5  | 105   | 36.0  |
| 40–49                            | 18    | 19.6  | 59    | 29.5  | 77    | 26.4  |
| 50–59                            | 15    | 16.3  | 55    | 27.5  | 70    | 24.0  |
| 60+                              | 9     | 9.8   | 31    | 15.5  | 40    | 13.7  |
| **Ethnicity**                    |       |       |       |       |       |       |
| Hispanic                         | 15    | 16.3  | 101   | 50.5  | 116   | 39.7  |
| Non-Hispanic                     | 77    | 83.7  | 99    | 49.5  | 176   | 60.3  |
| **Race**                         |       |       |       |       |       |       |
| African American or Black        | 71    | 77.2  | 96    | 48.0  | 167   | 57.2  |
| White                            | 12    | 13.0  | 58    | 29.0  | 70    | 24.0  |
| More than one race               | 7     | 7.6   | 36    | 18.0  | 43    | 14.7  |
| Some other race                  | 2     | 2.2   | 10    | 5.0   | 12    | 4.1   |
| **Education**                    |       |       |       |       |       |       |
| Less than high school            | 7     | 7.6   | 24    | 12.0  | 31    | 10.6  |
| High school diploma or GED       | 43    | 46.7  | 94    | 47.0  | 137   | 46.9  |
| Associate degree                 | 20    | 21.7  | 45    | 22.5  | 65    | 22.3  |
| Bachelor’s degree                | 16    | 17.4  | 26    | 13.0  | 42    | 14.4  |
| Master’s degree                  | 4     | 4.3   | 9     | 4.5   | 13    | 4.5   |
| Other professional degree        | 2     | 2.2   | 2     | 1.0   | 4     | 1.4   |
| **Household income**             |       |       |       |       |       |       |
| $0–$19,999                       | 9     | 9.8   | 20    | 10.0  | 29    | 9.9   |
| $20,000–$34,999                  | 16    | 17.4  | 72    | 36.0  | 88    | 30.1  |
| $35,000–$49,999                  | 30    | 32.6  | 65    | 32.5  | 95    | 32.5  |
| $50,000–$74,999                  | 11    | 12.0  | 31    | 15.5  | 42    | 14.4  |
| $75,000–$199,999                 | 10    | 10.9  | 10    | 5.0   | 20    | 6.8   |
| Don’t know/not reported          | 16    | 17.4  | 12    | 6.0   | 28    | 9.6   |
| **Smoking status**               |       |       |       |       |       |       |
| Current                          | 38    | 41.3  | 115   | 57.5  | 153   | 52.4  |
| Former                           | 34    | 37.0  | 58    | 29.0  | 92    | 31.5  |
| Never                            | 20    | 21.7  | 27    | 13.5  | 47    | 16.1  |
| **Cigarettes/day**               |       |       |       |       |       |       |
| Less than half pack              | 37    | 40.2  | 43    | 21.5  | 80    | 27.4  |
| Half pack                        | 27    | 29.3  | 51    | 25.5  | 78    | 26.7  |
| One pack                         | 8     | 8.7   | 42    | 21.0  | 50    | 17.1  |
| Two packs                        | 32    | 34.8  | 32    | 16.0  | 32    | 11.0  |
| More than two packs              | 5     | 5.6   | 5     | 2.6   | 10    | 3.4   |
| Never smoked                     | 20    | 21.7  | 27    | 13.5  | 47    | 16.1  |
| **Years smoked**                 |       |       |       |       |       |       |
| > 5 years                        | 10    | 10.9  | 14    | 7.0   | 24    | 8.2   |
| 5–15 years                       | 41    | 44.6  | 74    | 37.0  | 115   | 39.4  |
| 16–29 years                      | 13    | 14.1  | 54    | 27.0  | 67    | 22.9  |
| 30+ years                        | 8     | 8.7   | 31    | 15.5  | 39    | 13.4  |
| Never smoked                     | 20    | 21.7  | 27    | 13.5  | 47    | 16.1  |
older, had lower incomes, more current smoking, smoked for more years, more cigarettes per day, lower pre-intervention lung cancer screening knowledge, and higher pre-intervention fear and worry. These finding may point to this mode of delivery reaching more underserved community members. Our findings have important implications for cancer-related community outreach and engagement, and indicate that the mode (in-person, virtual, telephone) and format (group, one on one) can influence the demographic characteristics of participants reached.

Our findings also support the efficacy of the intervention. Overall pre/post-test scores show significant increases in lung cancer screening knowledge, salience and coherence, and reduced fear and worry. There were no significant pre/post differences in intention to complete lung cancer screening overall. This may be because not all participants were eligible for lung cancer screening, and this question was not relevant for all participants. Our findings also show differences by mode of delivery. After the intervention, participants in the one-on-one phone sessions had significantly higher increases in lung cancer screening salience and coherence and intention to complete screening compared to participants in the in-person group sessions.

Some aspects of the study design should be noted to give context to these findings. Our use of a one group pre/post-test design has limitations by not comparing effects to a control condition. We also did not capture screening behavior for participants who were screening eligible. An important next step is for a larger study that includes randomization, comparison to a control condition, and linking more proximal intervention outcomes to completion of lung cancer screening. For our study, if participants expressed an interest in completing lung cancer screening, the health educator referred them to the Roswell Park Lung Cancer Screening Program. However, we did not track screening completion. While our results point to differences in reach and efficacy by mode of delivery, these findings require additional research to fully understand differences by mode of delivery. Differences in reach may be due to participant preferences for in-person group vs. one-on-one phone sessions or to specific community partners engaged; this may be an artifact of community partner reach rather than intervention participant preferences. Similarly, differences in composition

### Table 3 Pre-/post-test lung cancer knowledge scores

| Pre-/post-test scores | N | # Correct | % Correct | p-value |
|-----------------------|---|-----------|-----------|---------|
| Q1 Lung cancer is the leading cause of cancer death among both men and women in the U.S | | | | |
| Pre 291 | 146 | 50.2 | < 0.001 |
| Post 291 | 291 | 99.7 |
| Q2 Smoking increases risk of lung cancer | | | | |
| Pre 292 | 288 | 98.6 | 0.045 |
| Post 292 | 292 | 100 |
| Q3 Risk for lung cancer goes down after quitting smoking | | | | |
| Pre 292 | 168 | 57.5 | < 0.001 |
| Post 292 | 286 | 97.9 |
| Q4 Lung cancer screening can help detect cancer at an earlier stage, when it is more curable | | | | |
| Pre 289 | 253 | 87.2 | < 0.001 |
| Post 289 | 291 | 100 |
| Total Score Pre 288 | 211 | 73.5 | < 0.001 |
| Post 288 | 286 | 99.4 |

| Pre-/post-test scores by mode of delivery | Group | # correct | % Mean correct | One on one | # correct | % Mean correct | Total | # correct | % Mean correct | p-value |
|------------------------------------------|-------|-----------|----------------|------------|-----------|----------------|-------|-----------|----------------|---------|
| Q1 Lung cancer is the leading cause of cancer death among both men and women in the U.S | Group | | | | | | | | | | |
| Pre 92 | 52 | 56.5 | 199 | 94 | 47.2 | 291 | 146 | 50.2 | 0.142 |
| Post 92 | 91 | 98.9 | 200 | 200 | 100 | 291 | 290 | 99.7 | 0.141 |
| Q2 Smoking increases risk of lung cancer | Group | | | | | | | | | | |
| Pre 92 | 91 | 98.9 | 200 | 197 | 98.5 | 292 | 288 | 98.6 | 0.779 |
| Post 92 | 92 | 100 | 200 | 200 | 100 | 292 | 292 | 100 | - |
| Q3 Risk for lung cancer goes down after quitting smoking | Group | | | | | | | | | | |
| Pre 92 | 66 | 71.7 | 200 | 102 | 51.0 | 292 | 168 | 57.5 | 0.001 |
| Post 92 | 89 | 96.7 | 200 | 197 | 98.5 | 292 | 286 | 97.9 | 0.326 |
| Q4 Lung cancer screening can help detect cancer at an earlier stage, when it is more curable | Group | | | | | | | | | | |
| Pre 90 | 74 | 82.2 | 200 | 179 | 89.5 | 289 | 252 | 87.2 | 0.086 |
| Post 90 | 90 | 100 | 200 | 200 | 100 | 289 | 289 | 100 | - |
| Total Score Pre 90 | 70 | 77.8 | 199 | 142 | 71.6 | 288 | 212 | 73.5 | 0.053 |
| Post 90 | 89 | 98.9 | 200 | 199 | 99.6 | 288 | 286 | 99.4 | 0.136 |
of participants in the in-person group and one-on-one phone sessions may contribute to differences in efficacy by mode of delivery. We conducted this study during the COVID-19 pandemic, which may have impacted participants’ schedules and abilities to participate in intervention programs. We also did not use a formal assessment of intervention fidelity, which is an important next step in examining the Lung AIR program.
Overall, our findings show that the Lung AIR intervention is a feasible and effective community-based educational intervention for lung cancer screening. These findings are of increased relevance given the need for innovation to maintain community outreach and engagement activities throughout the COVID-19 pandemic and the imperative to create resilient outreach infrastructures. Our team had longstanding community partnerships in place before the pandemic, which proved critical in providing the foundation to continue implementing community-based interventions throughout the evolving demands of the pandemic. Our findings point to differences in reach and efficacy of the community-based intervention by mode of delivery, with implications of relevance for community outreach and engagement in the pandemic and post-pandemic cancer control environment. Outreach teams need to be prepared and resourced to offer interventions via multiple modes of delivery to adapt to changes in community needs, preferences, and priorities.

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Declarations

Conflict of Interest The authors declare no competing interest.

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