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ORIGINAL RESEARCH

Community-Based Case-Finding for Chronic Obstructive Pulmonary Disease and Self-Management Education in Partnership with Faith-Based Organizations

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Purpose: Chronic obstructive pulmonary disease (COPD) is poorly diagnosed with millions unaware they have the condition, preventing or delaying treatment and behavioral changes. We partnered with faith-based organizations (FBOs) to raise awareness of COPD among Black Americans by facilitating diagnosis and offering self-management education in the community.

Methods: Cross-sectional and pre-post study designs were applied. Three churches identified representatives to serve as COPD liaisons (CLs). CLs received training on screening procedures and an overview of COPD. Case-finding was conducted at health fairs where CLs helped administer a screening tool (COPD-population screener (PS)) to identify high-risk individuals and refer those who scored ≥5 for spirometry performed by respiratory therapists (RTs). RTs referred those with high risk of having COPD (scores ≥5 and FEV1/FVC ~ 0.70) to discuss results with their provider, and those eligible (COPD high-risk, COPD diagnosed, caregivers, and current or former smokers), to attend bi-monthly educational sessions. Bristol COPD Knowledge Questionnaire was used to assess participants' knowledge pre-post intervention and CL training. CLs also completed a self-efficacy questionnaire. Independent *t*-test, paired *t*-test, and Chi-squared test or Fisher's Exact test were applied.

Results: We attended seven health fairs and engaged four CLs. CL self-efficacy was higher, while knowledge increased by 6.2% post-training then declined by 5%. Of the 170 people who completed the screening tool, 40 received spirometry, 3 (8.1%) and 9 (24.3%) had FEV1/FVC ratios of 0.70, and >0.70 to <0.80, respectively. Prevalence of COPD was approximately 12.6%, smoking history (former: 27.3%, current: 3.6%), and sleep apnea, 23.8%. About 11/38 people attended at least one educational session and knowledge scores increased significantly from baseline to post-session, 42% to 55% (t=−4.82, df=12, p=0.00).

Conclusion: COPD case-finding implemented in partnership with FBOs can supplement efforts in primary care. Routine educational sessions in the community improved access to self-management education for people with COPD and their caregivers. Engaging CLs in addressing respiratory health inequities can lead to greater impact in minority populations.

Keywords: COPD screening, COPD knowledge, Bristol COPD Knowledge Questionnaire, Black Americans, Community setting, Faith Based-Organizations

Introduction

Chronic Obstructive Pulmonary Disease (COPD) affects about 30 million adults in the United States (US) and is a leading cause of death.[1] Most people who experience COPD symptoms such as coughing and breathlessness never

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get tested and therefore remain undiagnosed, leading to delays in treatment. Underdiagnosis prevalence is about 72%[2] in US adults and 14–26% in symptomatic smokers.[3] The challenge also includes overdiagnosis with about 25–50% of patients taking COPD medication having no airflow obstruction on postbronchodilator spirometry.[3] Proper diagnosis is also critical because 25–30% of COPD cases have been found in never-smokers[4,5] who developed the disease due to physiological,[6] occupational[7,8] or socioeconomic factors.[9] Efforts to improve diagnosis of COPD in primary care have been employed, but barriers continue to prevent effective implementation, and the underutilization of the gold standard test, spirometry, continues to contribute to poor diagnosis.[2,10]

The challenge in COPD diagnosis was recently highlighted by the Global Initiative for Obstructive Lung Disease (GOLD) 2024 World COPD Day theme, "Know Your Lung Function", emphasizing the importance of using spirometry to diagnose and monitor lung function.[11] Active case-finding (ACF) approaches have been implemented inconsistently in the primary care setting; however, evidence still shows that they are more effective and cost-effective than routine care.[12–14] Despite this, case-finding approaches have not been adequately integrated into the primary care setting, leaving the diagnosis problem unresolved.

In historically marginalized populations, community-based approaches have been effective in addressing chronic disease disparities,[15] leading to community-engaged research (CEnR) becoming a critical avenue for health equity.[16,17] CEnR prioritizes the engagement of community members as stakeholders in research and the foundation of trust among those involved in collaborative efforts. As a result, community-academic partnerships (CAPs)[18] continue to be established and strengthened across the US to implement prevention efforts and improve health outcomes for all groups, particularly in cancer screening, hypertension and cardiovascular diseases. Faith-Based Organizations (FBOs) have become a key community partner to academic institutions in the advancement of health using community-based participatory research (CBPR) approaches, a type of CEnR.[19–21] Churches have a trusted position in the Black American community and provide resource capacity, environmental support[22] and recruitment potential,[23] partnering with academic institutions to assess nutrition,[22] improve health behaviors,[19] screen for blood pressure, promote physical activity,[20] and educate on obesity.[24]

A similar approach can be adopted in the respiratory health field to address underdiagnosis in COPD and inadequate knowledge of the disease.[25,26] This would facilitate timely initiation of treatment and self-management which is associated with improved lung function and reduced incidence of exacerbations, which are more frequent in Black Americans with COPD.[27] Disparities in diagnosis by race are also evident with the likelihood of being diagnosed with COPD being lower in Black Americans when compared to White Americans,[28,29] necessitating different approaches in populations experiencing greater burden. The purpose of this project was to engage the Black American community in a faith-based setting (FBS) and to collaborate with stakeholders (church representatives) to identify individuals at high risk for COPD through targeted screening. The project also aimed to promote self-management education and create ongoing opportunities for continued learning for this progressive chronic disease.

Materials and Methods

Study Design, Setting and Participants

This project applied cross-sectional and pre-post study designs. There were four groups in the project including 1) church member representatives who served as CLs, 2) adults who completed the first step of screening at local health fairs, 3) adults who completed the first and second step of the screening process, and 4) adults with COPD, chronic bronchitis, emphysema, and their caregivers who attended the "Improving Community Understanding of Respiratory Behaviors for COPD" (I CURB COPD) educational sessions. The criteria for participating as a CL included being a member of the church health ministry or having a health background. Adults at the health fairs completed the paper-based screening tool, step 1 of a 2-step case-finding technique.[14,30,31] Participants identified to be at high-risk of having COPD based on the screening tool were eligible to complete step 2. Adults who had ever been told by a healthcare provider that they had COPD, chronic bronchitis, or emphysema were eligible to participate in the I CURB COPD educational program. Caregivers of people with COPD and individuals at risk, ie, current and former smokers, were also invited to participate in the educational program. Participants were predominantly Black Americans who attended our three partner churches and five health fairs organized by churches and local community health organizations.

Ethics

This study complies with the Declaration of Helsinki and was approved by the Augusta University Institutional Review Board (IRB) (IRB #1967713) which provided a waiver of written documentation of consent. The AU-IRB determined that the project presented no more than minimal risk of harm to participants and that the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. All participants provided verbal consent before completing the anonymous paper-based questionnaire.

Project Description

The COPD Community Project (CCP) was a 2-part project undertaken collaboratively by three key partners (Figure 1). The churches identified representatives, later referred to as COPD Liaisons (CLs), to help coordinate all program activities. At the beginning of the project, the CLs attended a 4-hour educational and training workshop on COPD, including an overview of the research project and their role. The CLs also assisted in promoting two COPD awareness events/health fairs organized through our project and attending local health fairs organized by other health agencies.

Screening for COPD was done using the 2-step case-finding technique.[14,30,31] This includes administering the screening tool, in our case, the COPD Population Screener (COPD-PS), a publicly available clinically validated symptom-based screening tool.[32–34] The CLs helped to administer and score the tool (*step 1*) at the health events and referred those who scored ≥5 to our RT who performed spirometry to detect COPD (*step 2*) and provided appropriate follow-up for further testing and linkage to resources based on test results and smoking status.

The I CURB COPD educational program was delivered at one church. The 1.5 hr sessions were delivered by a COPD educator (nurse practitioner) and RTs. Individuals from group four and current and former smokers were invited to attend. Eight sessions were delivered on topics linked to improved health outcomes and based on COPD guidelines (Table S1).

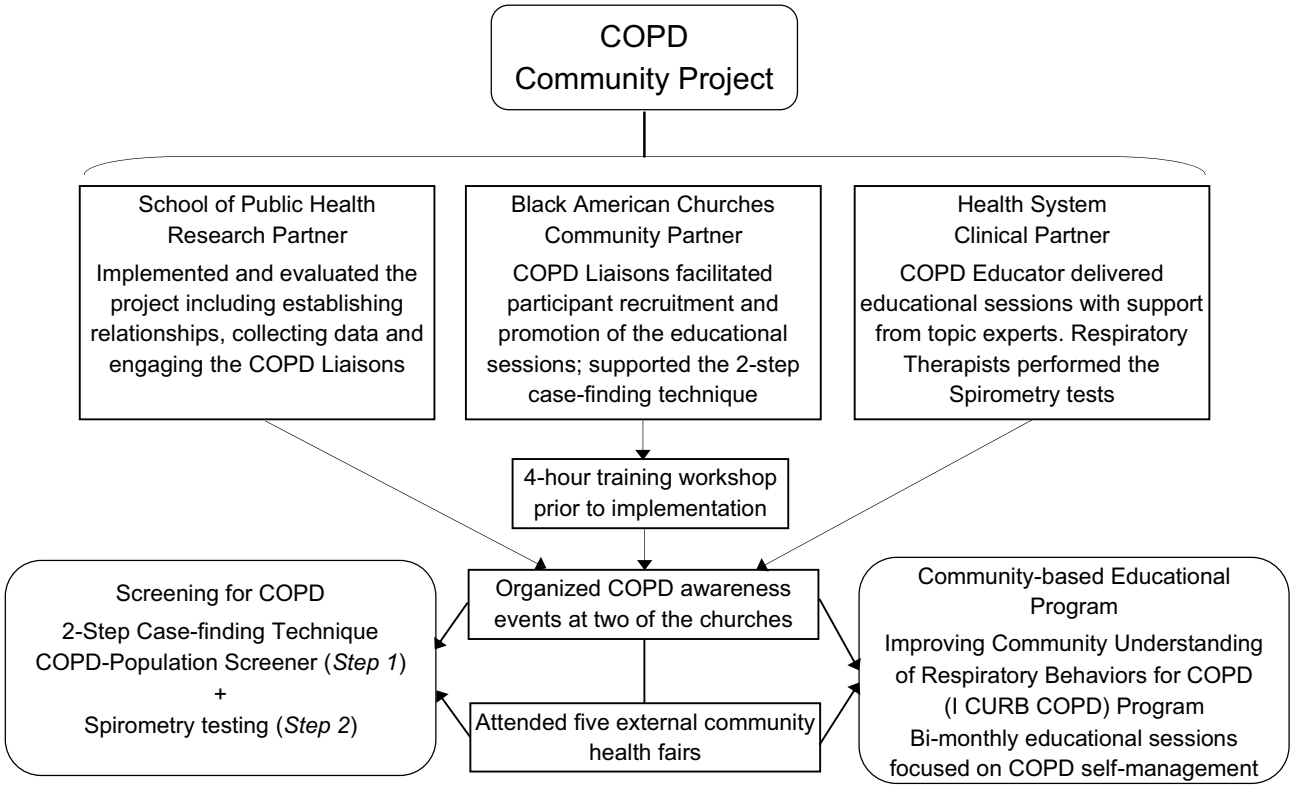

Figure 1 COPD Community Project: Partners, Roles and Activities.

Measures

The COPD-PS was appended to a questionnaire that included questions on demographics (age, sex, race, education level, employment, income, marital status), health insurance, chronic pulmonary diseases, spirometry testing, COPD medication intake, other chronic diseases, having a primary care provider (PCP), workplace fumes or chemical exposures, smoking status, and uptake of the flu, pneumonia, and COVID-19 vaccines. The COPD-PS includes questions about shortness of breath, coughing mucus or phlegm, breathing problems during activities, smoking history and age group. Participants with no previous COPD diagnosis, who scored ≥5 on the COPD-PS, were considered to be at high risk of having COPD.

The 40-item Bristol COPD Knowledge Questionnaire (BCKQ)[35,36] was used to assess COPD knowledge among CLs, and I CURB COPD program participants. The BCKQ is a validated tool with good internal consistency (Cronbach's alpha = 0.73) and test-retest reliability (r = 0.71) on the 65 statements (on 13 topics) with "True", "False", and "Don't Know" response options. One point is earned for every statement answered correctly; thus, scores can range from 0 to 65. When percentages are calculated, scores range from 0 to 100% where a higher score indicates greater knowledge. The BCKQ has been used to assess both COPD patients and healthcare professionals.[36] COPD knowledge was assessed at three timepoints for CLs, before training, after two months, and after 18 months (end of 2024). Program participants completed the BCKQ before attending their first session and at the last session of 2024.

Questions on demographics (age, sex, race, employment status), medical background, working history and training on respiratory care were appended to a self-efficacy tool developed to assess the CLs' belief in their ability to complete step 1 of the 2-step case-finding technique. The tool comprised eight statements to which CLs had to provide their level of agreement from 1=strongly disagree to 5=strongly agree. Statements included their understanding of the COPD-PS, ability to explain the purpose of the COPD-PS, procedure and steps of using the COPD-PS, scoring it, interpreting the scores, completing the screening process, and based on the score, referring a participant for follow-up with a PCP or our RT present at the health fair. The scores ranged from 0 to 40 and higher scores indicated high self-efficacy. The assessment was done two times, immediately post-training and then two months post-training.

Procedures

Three predominantly Black American churches (two urban and one rural) were recruited through existing relationships with our COPD educator, a nurse practitioner at the health system, and a member of one of the churches. Each church identified 1–3 representatives with a health background to serve as a CL. The research team held regular virtual meetings with CLs to discuss study activities and logistics. The CL's COPD knowledge was assessed prior to the 4-hour workshop/training session at the beginning of the project. The training session covered COPD-related content on basic disease concepts, epidemiology, self-management strategies, and treatments. The research portion of the session included an overview of the project, use of the COPD-PS, and scripts to use when talking to potential participants. We provided CLs with a flowchart showing the sequence of steps after scoring the COPD-PS completed by participants. The step-by-step schematic served as reference for the CLs during the health fairs.

Meetings were held regularly with the CLs to plan the two health fairs and continued after the events. The CLs were compensated $50 every two months for their time and efforts in the project. The CLs supported the design of promotional material, disseminated the flyers and handouts, and coordinated posting in the church bulletin and announcements during Sunday service. The main activity at the health fair was for the CLs to help administer the COPD-PS to identify individuals with scores of five and more for spirometry testing performed by our RTs. The RTs then explained the spirometry results and advised participants to follow up with their/a primary care physician for further discussion and referral. In addition, we attended five health fairs organized by other churches and health agencies and performed the 2-step case-finding process and invited people who had a history of smoking, those who had ever been told they had COPD, chronic bronchitis, or emphysema, and their caregivers, to the educational sessions.

The I CURB COPD sessions were held every other month at one of the urban churches after obtaining buy-in from the Pastor. The sessions were held on Saturday mornings beginning September 2023, and those who attended were compensated $15–20 and asked to invite their friends and family who met our eligibility criteria. Each session was promoted through the church bulletin, announcements, and mass emails. The two health fairs organized through the

project were held first (April 2023). The other five were attended as the researchers became aware of the events through contacts established during the project-organized health fairs.

Analysis

Descriptive statistics were used to summarize the results, including means, standard deviation (±) and frequencies, percentages (%). The independent sample *t*-test and Chi-squared test or Fisher's Exact test were performed to determine differences between groups. Paired *t*-tests were used to determine significant changes from baseline to post-session for knowledge and self-efficacy of CLs. A p-value <0.05 was considered statistically significant. SAS Version 9.4, Cary, NC, was used for analysis.

Results

The CCP has reached >170 community members, of which 102 attended the two project-organized health fairs while 68 completed the screening tool at the five events organized by other churches and community organizations. Of the respondents, 40 received spirometry testing, and 11/38 attended at least one I CURB COPD session.

Five CLs were identified, and 4/5 engaged at the beginning of the project with all three churches. Three CLs maintained project activities with 2/3 churches after the second project-organized health fair. No new CL joined the group after project initiation. Table 1 shows the characteristics of the CLs. On average, the CLs were 66.2 (±3.5) years of age and were mostly women. All were employed and 40.0% had prior training in respiratory care. CLs had high average scores for each statement on the self-efficacy tool immediately post training (minimum: M=4.5 (±0.5), maximum: M=5.0 (±0)), which reduced two months post training to (minimum: M=3.2 (±1.8), maximum: M=4.8 (±0.4)). There was no significant change in total self-efficacy scores for CLs conducting the first step of the 2-step case-finding technique, M=38.3 (±2.4) vs. M=35.2 (±6.1), immediately and two months post training.

Table 2 shows the characteristics of participants who completed the COPD-PS (step 1). Overall, participants were about 63.3 (±13.1) years old, with women being significantly more in number (77.5%, 131/169) and older than men (64.4 (±12.9 vs. 59.5 (±13.2)), p=0.04). Significant differences were also found in employment (p=0.04), with a larger proportion of women working part time compared to men (41.2% vs. 18.9%), while the latter had more people reporting unemployment status (24.4% vs. 48.7%). More women reported single/never married or separated/divorced/widowed status compared to men (21.4% vs. 10.5%, p=0.01). Visits to a PCP were also significantly different (once a year: 89.2%

Table 1 Demographic Characteristics of COPD Liaisons (N=5)

Demographics	Freq (%)
Age (years) (M, SD)	66.2 (±3.5)
Gender	
Male	1 (20.0)
Female	4 (80.0)
Race	
Black/African American	5 (100.0)
Health-related background	
Nurse	3 (60.0)
Social worker	2 (40.0)
Length of time in profession (years) (M, SD)	40.2 (±8.2)
Employment status	
Part-Time	3 (60.0)
Full-Time	2 (40.0)
Previous training in respiratory care	
Yes	2 (40.0)
No	3 (60.0)

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Table 2 Demographics Characteristics of Participants (Step 1) (N=170)

Characteristics	Freq (%)	Female (n=131)	Male (n=38)	p-value
	Overall			
Race				<0.00*
Black American	153 (91.6)	125 (96.2)	28 (75.7)	
White American	14 (8.4)	5 (3.9)	9 (24.3)	
Education				0.77
Some high school or lower	69 (40.8)	55 (42.0)	14 (36.8)	
High school graduate	61 (36.1)	48 (36.6)	13 (34.2)	
Some college	23 (13.6)	17 (13.0)	6 (15.8)	
College graduate or higher	16 (9.5)	11 (8.4)	5 (13.2)	
Employment				0.04*
Full time	15 (8.9)	11 (8.4)	4 (10.8)	
Part time	61 (36.1)	54 (41.2)	7 (18.9)	
Unemployed	51 (30.2)	32 (24.4)	18 (48.7)	
Disability/Welfare/Income support	16 (9.5)	13 (9.9)	3 (8.1)	
Retired	26 (15.4)	21 (16.0)	5 (13.5)	
Annual Income				0.59
Less than 10,000	15 (10.1)	14 (12.2)	1 (3.0)	
10,000–25,000	21 (14.2)	17 (14.8)	4 (12.1)	
25,000–35,000	29 (20.0)	22 (19.1)	7 (21.2)	
35,000–50,000	34 (23.0)	26 (22.6)	8 (24.2)	
50,000 and above	49 (33.1)	36 (31.3)	13 (39.4)	
Marital Status				0.01*
Single/Never married	32 (18.8)	28 (21.4)	4 (10.5)	
Married	83 (48.8)	55 (50.0)	27 (71.1)	
Separated/Divorced/Widowed	55 (32.4)	48 (36.6)	7 (18.4)	
Health Insurance				0.56
Medicare	47 (28.7)	37 (29.6)	10 (26.3)	
Medicaid	20 (12.2)	17 (13.6)	3 (7.9)	
Private	44 (26.8)	31 (24.8)	12 (31.6)	
Other	49 (29.9)	38 (30.4)	11 (29.0)	
Uninsured	4 (2.4)	2 (1.6)	2 (5.3)	
Primary Care Provider (PCP)				0.00*
Once a year	147 (87.0)	116 (89.2)	30 (80.0)	
Once every two years	10 (5.9)	7 (5.4)	3 (7.9)	
Once every three years	7 (4.1)	7 (5.4)	0 (0.0)	
I do not visit a PCP	5 (3.0)	0 (0.0)	5 (13.2)	

Note: *p-value=0.05.

vs. 80.0%, p=0.00) between the two groups with 5 (13.2%) of the men reporting that they do not visit a PCP, and none having visited one in the last three years.

History of smoking was reported in about a third of the participants (Table 3). Approximately 45 (27.3%) were former smokers, while 6 (3.6%) were current smokers. There was a significant difference between women and men for exposure to dust and chemicals at workplaces, 11 (8.7%) vs. 10 (27.8%), p=0.006. However, no differences were noted for the COPD-PS scores, and all the pulmonary conditions, though a higher burden was noted in women. The prevalence of hypertension (68.3% vs. 35.1%, p=0.00), osteoporosis (9.8% vs. 0.0%, p=0.05), and COVID-19 infection (yes, one time: 40.0% vs. 56.3%, p=0.01) were significantly different between the groups with women experiencing greater burden than men. Lower uptake was reported for the flu and pneumonia vaccines, 88 (53%) and 76 (46.1%) participants, but higher for completion of the COVID-19 full dose, 92 (55.4%).

Table 3 COPD Risk Factors, Comorbidities and Preventive Behavior (N=170)

Characteristics	Freq (%)	Female (n=131)	Male (n=38)	p-value
	Overall			
Smoking				0.22
Never smoker	114 (69.1)	91 (71.7)	23 (62.2)	
Former smoker	45 (27.3)	32 (25.2)	12 (32.4)	
Smoker (process of quitting)	5 (3.0)	4 (3.2)	1 (2.7)	
Smoker (planning to change next month)	0 (0.0)	0 (0.0)	0 (0.0)	
Smoker (planning to quit within the next 6 months)	0 (0.0)	0 (0.0)	0 (0.0)	
Smoker (not planning to quit)	1 (0.6)	0 (0.0)	1 (2.7)	
Work Exposure (dust/chemicals)				0.006*
Yes	21 (12.8)	11 (8.7)	10 (27.8)	
No	96 (58.5)	75 (59.1)	20 (55.6)	
I currently do not work	47 (28.7)	41 (32.3)	6 (16.7)	
COPD-PS Score				0.91
0 to 4	152 (89.9)	118 (90.1)	34 (89.5)	
5 to 10	17 (10.1)	13 (9.9)	4 (10.5)	
Pulmonary Conditions *(Yes)*				
COPD	8 (4.8)	8 (6.3)	0 (0.0)	0.11
Chronic bronchitis	11 (6.6)	8 (6.3)	3 (7.9)	0.72
Emphysema	2 (1.2)	2 (1.6)	0 (0.0)	0.44
Active asthma	10 (6.0)	8 (6.3)	2 (5.3)	0.82
Asthma without symptoms	11 (6.6)	8 (6.3)	3 (7.9)	0.72
Childhood asthma	7 (4.2)	4 (3.1)	3 (7.9)	0.2
Comorbidities *(Yes)*				
Depression	16 (9.9)	15 (12.2)	1 (2.7)	0.09
Diabetes	50 (31.1)	37 (30.1)	13 (35.1)	0.56
Heart disease	24 (14.8)	19 (15.3)	5 (13.5)	0.79
Hypertension	97 (60.3)	84 (68.3)	13 (35.1)	0.00*
Osteoporosis	12 (7.5)	12 (9.8)	0 (0.0)	0.05*
Sleep apnea	38 (23.8)	25 (20.5)	13 (35.1)	0.07
COVID-19 Infection				0.01*
No	21 (37.5)	19 (47.5)	2 (12.5)	
I do not know	5 (8.9)	4 (10.0)	1 (6.3)	
Yes, one time	25 (44.6)	16 (40.0)	9 (56.3)	
Yes, more than once	5 (8.9)	1 (2.5)	4 (25.0)	
Flu Vaccination				0.67
No	78 (47.0)	59 (46.1)	19 (50.0)	
Yes	88 (53.0)	69 (53.9)	19 (50.0)	
Pneumonia Vaccination				0.09
No	89 (53.9)	64 (50.4)	25 (65.8)	
Yes	76 (46.1)	63 (49.6)	13 (34.2)	
COVID-19 Vaccine				0.045*
No	19 (11.5)	11 (8.6)	8 (21.1)	
Yes, one dose	9 (5.4)	5 (3.9)	4 (10.5)	
Yes, two doses	46 (27.7)	36 (28.1)	10 (26.3)	
Yes, three doses	92 (55.4)	76 (59.4)	16 (42.1)	

Note: *p-value=0.05.
Abbreviation: COPD-PS, Chronic Obstructive Pulmonary Disease - Population Screener.

Table 4 Descriptive Characteristics of Spirometry Testing Participants (Step 2) (n=40)

Characteristics	n	Freq (%)
Age, Mean (SD)	40	60.5 (±13.7)
Race	40	
Black		33 (82.5)
White		5 (12.5)
Other		2 (5)
Sex	40	
Female		31 (77.5)
Male		9 (22.5)
Weight (lbs.), Mean (SD)	40	196.5 (± 42.6)
Body Mass Index (Kg/M^2) Mean (SD)	40	32.6 (± 6.9)
Smoking History	15	
Former smoker		11 (73.3)
Current smoker		4 (26.7)
Years of Smoking, Mean (SD)	16	17.2 (± 10.2)
FEV1/FVC Ratio	37	
0.70		3 (8.1)
0.73–0.79		9 (24.3)
0.80–0.89		15 (40.5)
0.90 >		10 (27.0)

Abbreviations: FEV1, forced expiratory volume in 1 second; FVC, forced vital capacity.

The average age of participants who had spirometry testing performed was 60.5 (±13.7) years and those with a smoking history, reported approximately 17.2 (± 10.2) years of smoking (Table 4). The sample also had an average body mass index of 32.6 (± 6.9) Kg/m^2, indicating class 1 obesity. None of the participants had an FEV1/FVC ratio <0.70 which is consistent with COPD. About 8.1% had a ratio of 0.70, and 24.3% ranged between 0.73 and 0.79.

COPD Knowledge

COPD Liaisons

The total BCKQ knowledge score increased by 6.2% from baseline, 65.5% to 71.7% in post-session 1 but declined to 66.7% at post-session 2. The lowest scores (<50%) at baseline were in topics on Breathlessness and Inhaled Steroids, while Inhaled Bronchodilators and Epidemiology were slightly above. The highest scores (>75%) across timepoints were in topics on Etiology, Symptoms, Phlegm, Smoking and Vaccination.

There was an increase in knowledge at post-session 1 on seven topics, Epidemiology, Etiology, Infections, Smoking, Inhaled Bronchodilators, Oral and Inhaled Steroids (Figure 2). There was a decline in scores for Symptoms and Antibiotics topics, with the other topics remaining relatively the same, particularly Breathlessness. There was no significant change from baseline to post session 1 in overall average scores.

I CURB COPD Participants

The participants had lower baseline overall scores, which increased post-session 1 by 7%, from 42% to 55% (Figure 2). They had <50% scores at baseline for all topics except Phlegm, Exercise, Smoking, and Vaccination, with Etiology being slightly above. There was an increase in knowledge scores post-session 1 for all topics except Exercise and Smoking, with Etiology and Antibiotics having the highest increases. There was a significant increase from baseline to post session 1 in the overall average scores ($t=-4.82$, df=12, $p=0.00$).

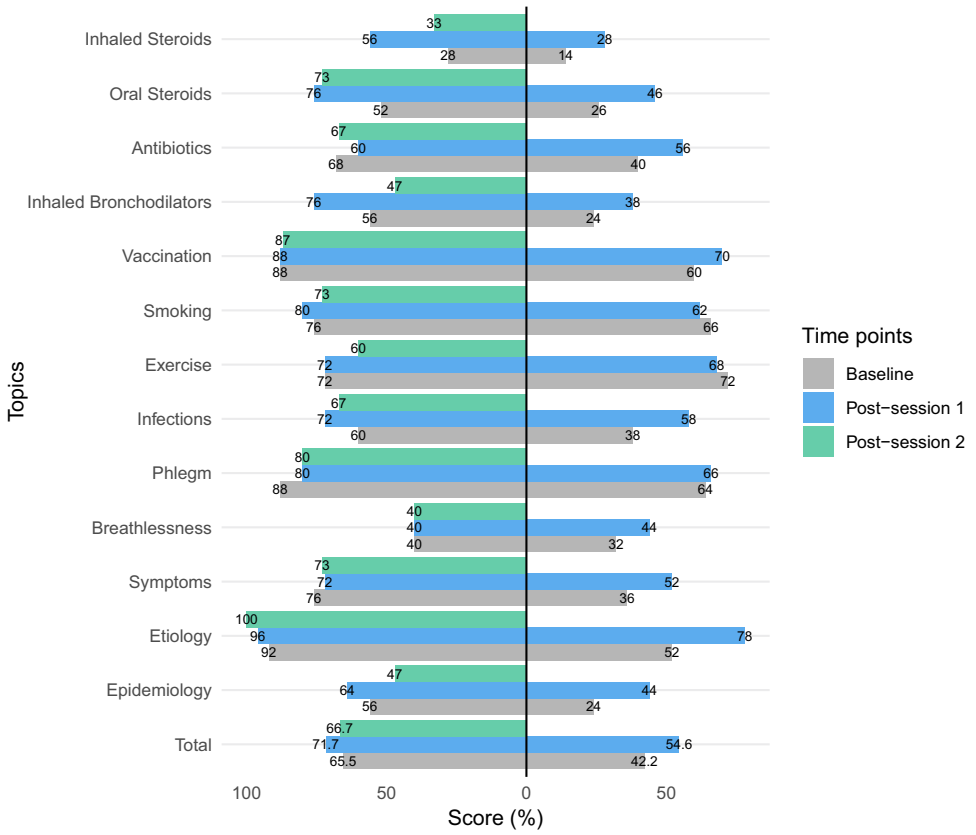

Figure 2 BCKQ Percentage Scores for COPD Liaisons (left) and I CURB COPD Participants (right).

Discussion

Through a collaborative approach in the CCP, an academic institution, a health system, and local FBOs implemented screening for COPD and delivered disease management education routinely in the community setting. More than 170 people were engaged through the screening process (step 1) and 40 had spirometry testing performed (step 2), of which 3 (8.1%) had borderline FEV_1/FVC ratio = 0.70 prebronchodilator, needing referral to their primary care provider to facilitate further discussion and pulmonary function tests as needed. Despite none of the participants having FEV_1/FVC <0.70, the 8.1% with 0.70 and 24.3% (9/40) with 0.73-0.79 are of concern due to reported innacuracies with the spirometric ratios as Black Americans with COPD have been found to have values 0.7 or higher.[37] This shows that our 2-step community-based approach of detecting people at high risk of having COPD could support diagnosis efforts in primary care.[12,30,38,39] The approach can also help overcome barriers linked to access, time constraints, underuse of spirometry,[40] and lack of symptom reporting and accurate smoking history by patients,[29,41] and their other immediate health issues.[25]

In addition, providers have suggested that providing community respiratory services can facilitate diagnosis in primary care,[42] while researchers have highlighted the importance of targeted questionnaire-based case-finding approaches in combination with physiological testing.[43,44] Such approaches can benefit hard-to-reach and medically underserved populations. In the Black American and Latino community, health fairs have become avenues for screening for hypertension, diabetes, cancer[45–47] and disseminating educational materials that are targeted culturally and linguistically for its intended audiences. A hospital in Florida belonging to a faith-based health care organization held a COPD screening health fair in 2016 during World COPD Day, but results and experiences remain unpublished.[48] To the best of our knowledge, few initiatives have focused on screening for COPD at health fairs,[31] offering an opportunity for public health secondary prevention to help address a major challenge in the pulmonary field.

In our educational program, knowledge as measured by the BCKQ improved post-sessions among participants (11/13 topics) and CLs. Despite having overall low knowledge scores (42.2%) at baseline, I CURB COPD participants had higher scores for exercise, smoking,[49] phlegm and vaccination and lower for inhaled corticosteroids, inhaled bronchodilators, and epidemiology. Similar findings were reported by one of the few US-based studies that used the BCKQ to assess knowledge among COPD patients, of which 6% were Black Americans.[49] Smoking and vaccinations had highest baseline knowledge scores, while inhaled steroids, oral steroids and inhaled bronchodilators had the lowest.[49] Participants in one study had higher BCKQ knowledge levels for symptoms and phlegm, and lower knowledge for vaccination, inhaled steroids, and antibiotics.[50] Other studies found lower knowledge of infections, vaccinations, and inhaled steroids at baseline.[35]

Our CLs had lower knowledge scores for inhaled steroids, breathlessness, and oral steroids, as did internal medicine nurses who routinely cared for COPD patients in a tertiary hospital, but CLs had higher overall scores at baseline, 65.5% vs. 55%.[36] Findings show that patients and healthcare professionals alike are less knowledgeable about pharmacological treatments for COPD. This is important to note as the inadequate treatment knowledge can influence medication adherence which is critical to COPD self-management and improvement of health-related quality of life.

The GOLD guidelines highlight education as an important aspect of self-management and behavior change. This education is typically meant to be provided by healthcare providers with the intent that the knowledge translates into self-management skills that patients can use to manage their COPD. However, providers may not have adequate time to offer it,[51] and pulmonary rehabilitation remains inaccessible to many.[52] Also, evidence shows that knowledge alone does not change behavior, but it does help improve self-management coping skills and health status among people with COPD.[53] Our program offered access to information in the community, especially for those who do not visit their provider as frequently as recommended, allowing for group learning and ample time for one-on-one interaction as needed. The inclusion of caregivers of people with COPD, current and former smokers also allowed for patient support systems and people engaging in risky behaviors to learn about the disease, especially with about 25% of Americans having never heard of COPD.[25] To our knowledge, this is the first study to assess COPD knowledge using the BCKQ in a predominantly Black American sample.

Our study was centered on partnerships with the churches, as Black American churches have always provided a holistic approach to serving communities, not only to meet spiritual needs but also social needs such as education, childcare and health care. The church is also trusted and has welcomed partnerships to address various health issues in their communities. For the CCP, the presence of CLs who were viewed as extensions of health ministries that exist in some churches,[54] was a significant factor. Some of the CLs were retired, thus having time to dedicate their expertise to the project. In addition to their work experiences, CLs were trained in the screening process and educated about COPD prior to project activities, which made them instrumental at the health fairs. The CLs also reminded participants (using phone calls or at church service) from their respective churches about upcoming educational sessions. Most of the CLs (4/5) were women, a pattern that was also noted in adults who were screened in step 1 (77.5%, 131/169), those who received spirometry (77.5%, 31/40) and all who attended the educational sessions. This might reflect women being more willing to be involved in research or health related projects or the COPD burden in this subgroup.

Like the health fairs, most health programs in FBOs focus on primary and secondary prevention (educational resources, ie, handouts, screening), general health, cardiovascular health, cancer,[21] and asthma.[55] This provides an opportunity to implement and establish the first ongoing CCP including screening and educational components, beginning with the FBO space, underlining that CAPs between academic health institutions and FBOs can fulfill the complex need for improved diagnosis of COPD while adapting to unique educational needs of the community. Testing and implementing the CCP approach in different areas, considering contextual, regional, and accessibility factors, could expand its reach and impact in the US pulmonary field. Furthermore, designing and scaling a larger project will contribute evidence to our approach, offer an opportunity to validate the BCKQ in the Black COPD population, allow for more advanced analyses and plans to investigate the influence of faith on health beliefs which was not accounted for in our study. Determining the relationship between spiritual and physical health in the FBS interventions would further our understanding of the outcomes.

Other limitations in our study included initiating attendance to the I CURB COPD program by eligible participants, leading to a small sample size, preventing a full evaluation of program impact. Approximately 40 participants are on our CCP listserv, however, about 11 started attending program sessions routinely. Therefore, efforts should be focused on getting participants to begin attending, which may increase the likelihood of participation and retention. Identifying high-risk individuals at the FBS health fairs was also a challenge as few eligible people were found. This could be explained by the idea that those who attended were more health conscious and willing or activated to participate in preventive behavior, introducing possibility of selection bias. To address this, we expanded our efforts to attend health fairs organized by organizations outside the FBS and invested in different modalities of program promotion. Time was a key factor to consider leading to adjustment of the timeline to achieve project goals. The perception of COPD in the population will need to be changed for minority populations to recognize it to be as important as hypertension, diabetes and cancer, as COPD is the sixth leading cause of death in the US. Therefore, we still have work to do to encourage more churches to participate in respiratory health efforts.

Conclusion

Working collaboratively with partners in the FBS led to an increase in COPD awareness, knowledge and the identification of high-risk cases in the community. COPD knowledge should be prioritized among patients and caregivers, with a focus on COPD pharmacological treatments. This study reinforces the value of community-based approaches in minority populations and highlights the potential for supporting efforts to address poor diagnosis and inadequate COPD self-management knowledge, leading to improvements in respiratory health outcomes.

Abbreviations

COPD-PS, Chronic Obstructive Pulmonary Disease - Population Screener; BCKQ, Bristol COPD Knowledge Questionnaire; PCP, Primary Care Provider; CCP, COPD Community Project; CL, COPD Liaison; FBS, Faith-Based Setting; FBO, Faith-Based Organization; CEnR, Community Engaged Research; CBPR, Community-Based Participatory Research.

Data Sharing Statement

The data supporting this study's findings will be made available upon reasonable request to the corresponding author.

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Disclosure

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