Original Paper

Chronic Respiratory Disease

Chronic Respiratory Disease
Volume 21: 1–10

DOI: 10.1177/14799731241268338
journals.sagepub.com/home/crd
Sage

Factors influencing patient-provider communication about subjective cognitive decline in people with COPD: Insights from a national survey

Michael Stellefson[1], **Min Qi Wang**[2] **and Olivia Campbell**[3]

Abstract

Objective: While there is a growing body of evidence indicating a relationship between COPD and cognitive impairment, there is a gap in evidence regarding discussions of cognitive symptoms in healthcare settings. This study investigated the extent to which individuals with Chronic Obstructive Pulmonary Disease (COPD) and Subjective Cognitive Decline (SCD) self-reported confusion or memory loss with healthcare professionals. **Methods:** A secondary analysis of 2019 BRFSS data of US adults aged 45+ with COPD (N = 107,204), using logistic regression to explore associations between socio-demographic and health-related indicators with discussion of cognitive symptoms with healthcare professionals. **Results:** Less than half (45.88%) of individuals reporting SCD discussed their cognitive symptoms with their healthcare provider. In the adjusted model, unemployed (AOR = 2.92, 95% CI: 1.70-5.02, $p < .005$), retired (AOR = 3.16, 95% CI: 1.37-7.30, $p < .01$), and current smokers (AOR = 1.73, 95% CI: 1.02-2.93, $p < .05$) were more likely to discuss cognitive decline with a healthcare professional than their counterparts. In contrast, males (AOR = 0.53, 95% CI: 0.32-0.86, $p < .05$) and binge drinkers (AOR = 0.49, 95% CI: 0.30-0.79, $p < .01$) were significantly less likely to do so when compared to their counterparts. **Discussion:** The study highlighted significant disparities in the likelihood of individuals with COPD discussing cognitive symptoms based on socio-demographic and health risk behaviors. **Conclusion:** Addressing gender disparities, occupational status, and personal health risks is crucial for improving patient-provider communication about SCD among adults with COPD.

Keywords

COPD, Subjective cognitive decline, patient-provider communication, confusion, memory loss

Date received: 14 February 2024; revised: 13 June 2024; accepted: 5 July 2024

Introduction

Chronic Obstructive Pulmonary Disease (COPD) is a prevalent and severe respiratory condition characterized by persistent respiratory symptoms and airflow limitation.[1] Nearly 80% of patients with COPD have at least one additional comorbidity, exacerbating the severity of their condition.[2–4] Among these comorbidities, cognitive impairment significantly affects the quality of life and self-management abilities of individuals with COPD.[5,6] Subjective cognitive decline (SCD) is characterized by self-

---

[1] Endowed Academic Chair in Human Environmental Sciences, Department of Health Science, The University of Alabama, Tuscaloosa, AL, USA
[2] Department of Behavioral and Community Health, School of Public Health, University of Maryland, College Park, MD, USA
[3] Department of Health Science, The University of Alabama, Tuscaloosa, AL, USA

Corresponding author:
Michael Stellefson, Endowed Academic Chair in Human Environmental Sciences, Department of Health Science, The University of Alabama, Box 870313, 103 Russell Hall, Tuscaloosa, AL 35487, USA.
Email: stell001@ches.ua.edu

perceived cognitive deterioration (i.e., increased confusion or memory loss) without objective evidence of impairment on neuropsychological tests.[7] SCD is a valuable concept for research on cognitive aging as it may encompass a range of cognitive decline experiences and serves as a marker for potential future cognitive impairment and dementia.[8] Recognized as a potential early indicator of non-normative cognitive decline and a precursor to dementia,[9] SCD typically falls between healthy aging and conditions like Mild Cognitive Impairment (MCI) and Alzheimer's Disease. Research indicates that individuals with SCD, even when performing well on cognitive tests, may be manifesting early signs of Alzheimer's Disease.[10] However, SCD is often misdiagnosed or underdiagnosed, leading to missed opportunities for early intervention and management of impending cognitive decline diseases.[9,11]

In contrast, objective cognitive decline, such as MCI, involves measurable deficits in cognitive assessments beyond what would be expected for age but does not significantly impair daily functioning.[12] While SCD is self-reported and lacks objective evidence, MCI can be defined as observable cognitive deficits that do not meet the criteria for dementia.[12] People with MCI have a higher risk of eventually being diagnosed with dementia compared to those with SCD.[13] While SCD is distinct from healthy cognitive aging as it involves subjective reports of cognitive decline, which may or may not be corroborated by objective testing,[14] it serves as a valuable concept for studying cognitive aging, MCI, and AD, providing insights into the early stages of cognitive impairment.[15]

Most people, including those with COPD, are diagnosed with SCD at age 45 and older.[16] SCD has been associated with various health conditions and multimorbidity patterns, including respiratory/depression.[17,18] Studies have shown that SCD is quite prevalent among adults aged 45 years and older, with rates varying between age groups, such as 10.8% among those aged 45-64 years and 11.7% among individuals aged 65 years or older.[17] Moreover, for adults in these age groups, the percentage of adults with SCD was found to be two to three times greater in people with COPD.[17] Another population-based study demonstrated that 11% of adults with COPD aged 45 years or older self-report SCD.[19] These prevalence estimates suggest a clear link between COPD and the potential for cognitive decline.

Despite the noteworthy prevalence of SCD in COPD, many individuals in this age group report infrequent discussions about dementia and cognitive impairment risks with their healthcare providers, often influenced by fears of losing independence, unemployment, and reliance on others for daily assistance [2. Consequently, people with COPD are often not assessed for cognitive impairments and do not receive a formal diagnosis, leading to potential undermanagement of their cognitive health.[21] Moreover, the likelihood of people with COPD discussing cognitive impairments with healthcare providers is low, as older adults, in general, often have a disconnect between perceptions of symptoms and willingness to seek care.[20]

Previous healthcare experiences have also been identified as influential factors in the likelihood of people with COPD discussing memory-related problems with their healthcare providers.[22,23] Additionally, patients who report discussing memory loss with healthcare providers often express dissatisfaction with their experiences, citing suboptimal interactions, fear of judgment, and stigmatization as contributing factors.[22] Many people with COPD feel as though their perspectives are not being "heard" when they attempt to speak with their providers,[22] as providers may underestimate patient knowledge about their health conditions and experiences.[23] Among patients with COPD who continue to smoke, stigma seems to be a significant barrier to seeking care, leading to feelings of unworthiness, guilt, and shame.[24] Furthermore, trust and validation from healthcare providers have been highlighted as crucial but often overlooked aspects of patient care, impacting decision-making, communication, and continuity of care.[22] However, individuals with cognitive impairment, including those with COPD, may encounter barriers that hinder their ability to access appropriate care.[25]

Given the knowledge gaps mentioned above in understanding and addressing cognitive impairment in people with COPD, this study conducted a secondary analysis of national US population-based data to investigate the factors influencing the diagnosis and discussion of cognitive impairment in individuals with COPD aged 45 and older. By exploring various socio-demographic and health-related variables, in addition to health risk behaviors such as smoking and alcohol misuse, this research sought to provide valuable insights to improve SCD disclosure rates among adults living with COPD.

Methods

Participants

The study conducted a secondary analysis of the 2019 Behavioral Risk Factor Surveillance System (BRFSS) data, an annual cross-sectional survey administered by the Centers for Disease Control and Prevention (CDC), to gather health-related data from noninstitutionalized adults 18 years or older across the US. Accessing publicly held BRFSS data sets is facilitated through the official BRFSS Web site maintained by the CDC. Public access data collected from the BRFSS are freely available to the public, enabling researchers to analyze and utilize the information for public health research. The BRFSS operates under strict ethical guidelines to ensure participant confidentiality and data protection, following established protocols to safeguard participant privacy.[26] The BRFSS includes a core component distributed across all US states with optional modules, one of which is the Cognitive Decline module, designed to measure subjective cognitive decline among individuals aged 45 years or older. In 2019, the Cognitive Decline module was administered in 25 states (i.e., Alabama, Connecticut, District of Columbia, Florida, Georgia, Indiana, Iowa, Louisiana, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Mexico, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Virginia, West Virginia, Wisconsin), and this study included participants aged 45 years and older from these states who answered affirmatively to two questions: (1) "Have you ever been told that you have COPD?" within the BRFSS core component; and (2) "During the past 12 months, have you experienced confusion or memory loss that is happening more often or is getting worse?" within the Cognitive Decline module. The study was exempt from Institutional Review Board review because it involved a secondary analysis of national data obtained from BRFSS, which was provided in a deidentified format for public use.

Measures

The demographic variables analyzed in the study included biological sex (0 = female, 1 = male), age group (45-54 years old, 55-64 years old, and ≥65 years old), race (White, Black or African American, American Indian/Alaskan Native, Asian, Multiracial, and Other Race), ethnicity (Not Hispanic, Hispanic), educational attainment (less than high school, high school, attended college or technical school), annual income ($0-$24,999, $25,000-$49,999, $50,000-$74,999, $75,000 and above), and employment status (employed, unemployed, and retired). These factors are well-documented to influence health outcomes and access to healthcare services among older adults, including those with COPD.[27]

Additionally, health-related factors such as self-rated health (SRH) dichotomized as fair/poor vs. good/better, current smoking status, and binge drinking, defined as men consuming five or more drinks in a two-hour period or women consuming four or more drinks in a two-hour period at least once in the past 30 days,[28] were considered. The study dichotomized the SRH variable to examine its associations with relevant health risk behaviors. SRH, smoking, and binge drinking are recognized risk factors for SCD.[10,29]

Participants classified with SCD were asked if they had discussed their confusion or memory loss with a healthcare professional (yes/no). Discussing SCD with a healthcare professional signifies help-seeking behavior, which is crucial for early identification and intervention.[26] Ethically, the study was deemed exempt by the university's institutional review board as it involved a secondary analysis of deidentified BRFSS data collected by the CDC.

Data analysis

Given the complex sampling procedure of the BRFSS, appropriate weight, cluster, and stratification variables were used in the model to account for population-weighted estimates and confidence intervals.[30] Because the missing data was not extensive, the complete data was used for the analysis. Descriptive statistics were computed by calculating frequencies and 95% confidence intervals (CIs) for all socio-demographic, health-related, and SCD-related variables. Initially, univariate (unadjusted) logistic regression was used to assess individual associations between socio-demographic and health-related factors with the outcome variable of discussing SCD with a healthcare professional. This initial analysis helped to identify potential predictors while evaluating the statistical significance of each variable and the overall model fit.[31] Statistically significant predictors ($p < .005$) identified through univariate analysis with Bonferroni correction were retained for the subsequent multivariate analysis.[32] Adjusting for the retained predictors from the univariate logistic regression models, we conducted multivariate (adjusted) logistic regression to identify independent predictors of discussing SCD while accounting for potential multicollinearity among variables.[33,34] The final model was selected based on robust model fit statistics and adjusted odds ratios with 95% confidence intervals.[35] The data were analyzed using SAS for Windows, including procedures for complex sampling analysis and weighted data.

Results

The sample comprised 107,204 US adults with COPD and SCD. Table 1 describes the characteristics of US respondents with COPD ≥45 years. The largest proportion of respondents with COPD ≥45 years old was female (54.7%, 95% CI: 54.2% – 55.3%), non-Hispanic (92.3%, 95% CI: 91.9% – 92.7%), 65 or older (45.0%, 95% CI: 44.4% – 45.2%), with a college degree (39.0%, 95% CI: 38.5% – 39.6%), had an annual income of $75K+ (36.2%, 95% CI: 35.6% – 36.8%), employed (44.3%, 95% CI: 43.7% – 44.8%), reported being in good or better health (76.6%, 95% CI: 76.1% – 77.1%), did not binge drink (50.3%, 95% CI: 49.7% – 50.9%), and not current smokers (85.6%, 95% CI: 85.2% – 86.0%).

Over 10% of the sample self-reported SCD (11.2%, 95% CI: 10.8% - 11.5%). Of these, less than half discussed their confusion or memory loss with their provider (45.88%, 95% CI: 44.21% - 47.54%). Table 2 presents the univariate (unadjusted) and multivariate (adjusted) analyses examining the influence of socio-demographics and health risk

Table 1. Cohort characteristics, 2019 Behavioral Risk Factor Surveillance System, respondents with COPD ≥45 years (*N* = 107,204).

	N	%	95(%)CI
Age			
45 to 54	21,114	23.9	23.4% – 24.4
55 to 64	30,357	31.2	30.7% – 31.7
65 or older	55,733	45.0	44.4% – 45.2
Sex			
Female	60,902	54.7	54.2% – 55.3
Male	46,302	45.3	44.7% – 45.9
Race			
White	89,509	82.3	81.8% – 82.8
Black or african american	9496	9.3	9.0% – 9.6
American indian/Alaskan native	1950	1.3	1.1% – 1.4
Asian	676	0.9	0.7% – 1.00
Native Hawaiian or other pacific islander	96	0.1	0.1% – 0.2
Multiracial	1541	1.5	1.3% – 1.6
Other race	1729	2.3	2.1% – 2.6
Ethnicity			
Not hispanic	101,000	92.3	91.9% – 92.7
Hispanic	5028	7.7	7.4% – 8.1
Income			
$0 to $24,999K	23,028	25.6	25.0% – 26.1
$25K to $49,999K	21,833	22.7	22.2% – 23.2
$50K to 74,999K	13,987	15.5	15.1% – 15.9
$75K+	29,232	36.2	35.6% – 36.8
Education			
Did not graduate from HS	8268	8.1	7.8% – 8.4
HS Graduate	29,444	26.3	25.9% – 26.8
Attended college or tech school	29,350	26.5	26.0% – 27.0
Grad from college or tech school	39,799	39.0	38.5% – 39.6
Employment			
Employed	41,863	44.3	43.7% – 44.8
Unemployed	17,830	17.3	16.9% – 17.7
Retired	46,877	38.4	37.9% – 39.0
Self-reported health			
Fair or poor health	25,019	23.4	22.9% – 23.9
Good or better health	81,907	76.6	76.1% – 77.1
Binge drinking			
No	55,802	50.3	49.7% – 50.9
Yes	50,237	49.7	49.1% – 50.3
Current smoker			
No	91,901	85.6	85.2% – 86.0
Yes	14,563	14.5	14.0% – 14.9
SCD			
No	94,613	88.8	88.5% – 89.2
Yes	11,847	11.2	10.8% – 11.5

CI: confidence interval

behaviors on discussing confusion or memory loss with a healthcare professional. Several factors emerged in the unadjusted analysis as respondents were less likely to discuss confusion or memory loss with a healthcare professional. Males (OR = 0.69; 95% CI: 0.61-0.79; $p < .005$) were less likely to engage in these conversations than females. Similarly, older respondents (aged 65 or older; OR = 0.69; 95% CI: 0.58-0.83; $p < .005$) and those identifying their race as "other" (OR = 0.27; 95% CI: 0.11-0.62; $p < .005$) were less likely to broach these topics compared to their counterparts. Hispanic ethnicity was not a significant predictor in the univariate analysis.

Table 2. Univariate (unadjusted) odds ratios (ORs) for discussing SCD with a health care professional in adults with COPD (n = 11,847) by socio-demographic and health risk factors with multivariate (adjusted) odds ratios (AOR) for discussing cognitive decline with a provider by sex, age, race, education level, annual income, employment status, self-reported health, binge drinking, and smoking status, BRFSS, 2019.

	Univariate	Multivariate
Predictor	OR (95% CI)	AOR (95% CI)
Sex		
Female	1.00	1.00
Male	0.69 (0.61-0.79)***	0.53 (0.32-0.86)*
Age		
45 to 54^{Ref}	1.00	1.00
55 to 64	0.97 (0.80-1.18)	0.89 (0.49-1.60)
65 or older	0.69 (0.58-0.83)***	0.53 (0.22-1.30)
Race		
White ^{Ref}	1.00	1.00
Black or african american	1.32 (0.75-2.34)	0.84 (0.47-1.52)
American indian/Alaskan native	0.55 (0.13-2.23)	0.31 (0.08-1.18)
Asian	0.82 (0.24-2.76)	1.18 (0.23-5.92)
Multiracial	1.59 (0.61-4.11)	1.84 (0.87-3.87)
Other race	0.27 (0.11-0.62)***	0.28 (0.11-0.74)*
Ethnicity		
Not hispanic^{Ref}	1.00	1.00
Hispanic	0.79 (0.58-1.08)	
Education		
Did not graduate from HS^{Ref}	1.00	1.00
HS Graduate	1.14 (0.91-1.43)	1.70 (0.73-3.97)
Attended college or tech school	1.58 (1.27-1.96)***	2.44 (1.15-5.19)*
Grad from college or tech school	1.40 (1.11-1.76)***	2.52 (1.15-5.54)*
Income		
$0 to $24,999K^{Ref}	1.00	1.00
$25 to $49,999K	0.75 (0.62-0.91)***	0.74 (0.40-1.36)
$50K to 74,999K	0.81 (0.65-1.02)	0.79 (0.35-1.77)
$75K+	0.75 (0.61-0.91)***	1.15 (0.59-2.26)
Employment		
Employed^{Ref}	1.00	1.00
Unemployed	2.30 (1.92-2.77)***	2.92 (1.70-5.02)***
Retired	1.27 (1.07-1.51)**	3.16 (1.37-7.30)**
Self-reported health		
Fair or poor health^{Ref}	1.00	1.00
Good or better health	0.56 (0.49-0.64)***	0.78 (0.47-1.27)
Binge drinking		
No^{Ref}	1.00	1.00
Yes	0.78 (0.68-0.90)***	0.49 (0.30-0.79)**
Current smoker		
No^{Ref}	1.00	1.00
Yes	1.34 (1.14-1.58)***	1.73 (1.02-2.93)*

*$p < 0.05$; **$p < 0.01$; ***$p < 0.005$; ^{Ref} = reference values; CI = confidence interval.

Conversely, factors associated with increased likelihood of discussing these concerns included educational attainment, with both attending (OR = 1.58; 95% CI: 1.27-1.96; $p < .005$) and graduating (OR = 1.40; 95% CI: 1.11-1.76; $p < .005$) from college or technical school being associated with greater openness compared to those who did not graduate from high school. Additionally, unemployed (OR = 2.30; 95% CI: 1.92-2.77; $p < .005$) and retired individuals (OR = 1.27; 95% CI: 1.07-1.51; $p < .01$), as well as current smokers (OR = 1.34; 95% CI: 1.14-1.58;

p < .005), were more likely than their counterparts to bring up these issues with a healthcare professional. However, income and health characteristics presented a more nuanced picture. Respondents with mid-range to high incomes ($25,000-$75,000+) and those reporting good or better health (OR, 0.56; 95% CI, 0.49-0.64; *p* < .005), along with those who engaged in binge drinking at least once in the past 30 days (OR, 0.78; 95% CI, 0.68-0.90; *p* < .005), were less likely to discuss confusion or memory loss than their counterparts.

Figure 1 plots variables with statistically significant multivariate (adjusted) odds ratios (AORs) for discussing cognitive decline by sex, race, education level, employment status, binge drinking, and smoking status. In the adjusted multivariate logistic regression analysis, several key factors remained significantly associated with discussing confusion or memory loss with a healthcare professional. Similar to the unadjusted analysis, males were less likely to engage in these conversations than females (AOR = 0.53, 95% CI: 0.32-0.86, *p* < .05). Additionally, respondents identifying their race as "other" continued to be less likely to broach these topics with a healthcare professional compared to their white counterparts (AOR = 0.28, 95% CI: 0.11-0.74, *p* < .05). Furthermore, the analysis indicated that binge drinkers were less likely to engage in discussions about confusion or memory loss with a healthcare professional compared to non-binge drinkers (AOR = 0.49, 95% CI: 0.30-0.79, *p* < .01).

Educational attainment persisted as a significant predictor, with both attending (AOR = 2.44, 95% CI: 1.15-5.19, *p* < .05) and graduating (AOR = 2.52, 95% CI: 1.15-5.54, *p* < .05) from college or technical school demonstrating more than a two-fold increased likelihood of having these discussions compared to those without a high school diploma. Employment status also retained its influence in the adjusted model, with the magnitude of the effect even more robust. Unemployed individuals were nearly three times more likely (AOR = 2.92, 95% CI: 1.70-5.02, *p* < .005) to engage in these conversations, and retired individuals exhibited an even greater likelihood (AOR = 3.16, 95% CI: 1.37-7.30, *p* < .01) compared to those who were employed. Current smoking also remained a significant predictor, with smokers almost twice as likely to discuss memory or confusion concerns with a healthcare professional compared to non-smokers (AOR = 1.73, 95% CI: 1.02-2.93, *p* < .05).

Discussion

The findings of this study shed light on the communication dynamics between patients and healthcare providers regarding SCD in adults with COPD. It is noteworthy that less than half of the participants reporting SCD in this study discussed their confusion or memory loss with their healthcare provider, indicating a significant underreporting and potential lack of awareness of cognitive decline symptoms within this population. This finding aligns with the anticipated stigma associated with healthcare-seeking behaviors among individuals with COPD, as identified by Chin and Armstrong,[36] suggesting that adults with COPD

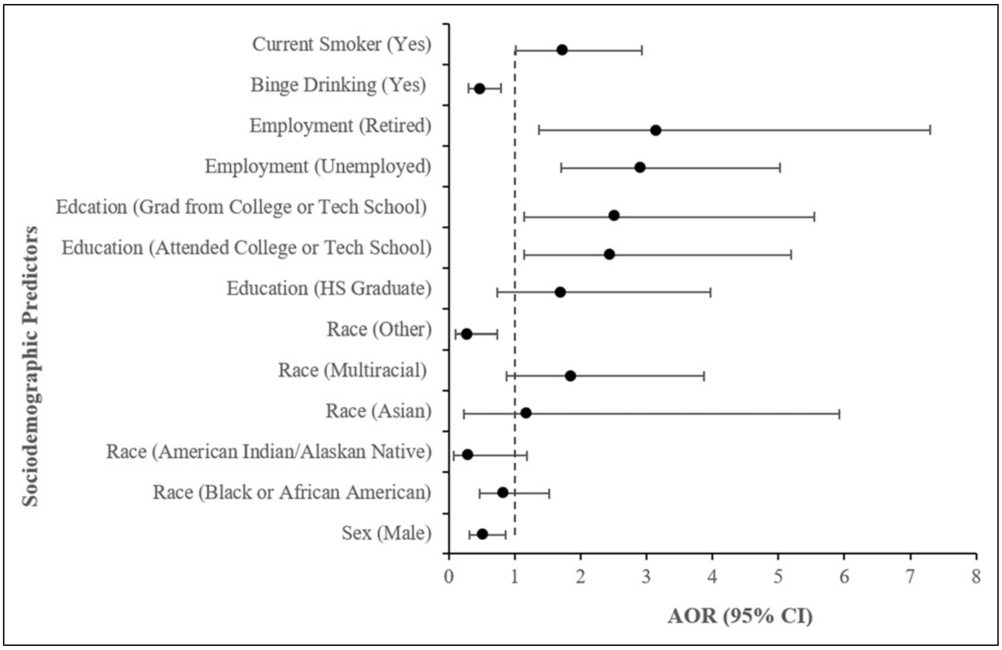

Figure 1. Multivariate (adjusted) odds ratios (AOR) for discussing cognitive decline with a provider by sex, race, education level, employment status, binge drinking, and smoking status, BRFSS, 2019.

may encounter barriers when seeking help for cognitive decline due to perceived stigma. Healthcare providers should address these barriers to enhance the likelihood of essential conversations about cognitive decline.[37] Additionally, raising awareness among healthcare providers about the prevalence of SCD in COPD and the potential impact on health outcomes is crucial for improving patient care.

Open communication between patients with COPD and their healthcare providers is crucial for preventing misunderstandings and fostering a shared responsibility for disease management.[38] Many smokers with COPD feel they are surrounded by a “blame culture,” which discourages them from discussing aspects of their disease with others.[38] This stigma and negative emotional response experienced by patients should be further explored to address dilemmas in patient-provider communication about COPD.[39] Healthcare providers can address stigma by creating a supportive environment where people with COPD feel comfortable sharing their cognitive symptoms.[40] Such an environment requires a multifaceted approach, including effective communication, opportunities for shared decision-making, and empathy regarding the impact of cognitive impairment on patients with COPD.[41]

In the context of gender differences, our study revealed that males with COPD were significantly less likely to discuss confusion or memory loss with a healthcare professional than females. Other research has also documented gender disparities in COPD management and symptoms, suggesting that physician attitudes and knowledge concerning COPD may contribute to this disparity.[42] National estimates in the general US population show that about half (50.5%) of women report discussing SCD with a healthcare professional, compared to only 39.2% of men.[43] This gender disparity highlights the need for targeted interventions to improve patient-centered communication and healthcare access for males with COPD, who may be less likely to seek help for cognitive symptoms. Healthcare providers should consider implementing routine cognitive screening to identify cognitive deficits as early as possible. Tools like the Everyday Cognition Scale,[44] which measures six domains of subjective cognition, could aid in identifying cognitive impairments that may otherwise go unnoticed, especially in males with COPD.

Furthermore, our study found that respondents with COPD who were unemployed or retired were more likely to discuss confusion or memory loss with a healthcare professional compared to those who were employed. This association may reflect the impact of occupational status on the prioritization of health concerns and the availability of time for healthcare interactions.[45,46] Additionally, the association between employment status and willingness to discuss cognitive symptoms may reflect the influence of socioeconomic factors on the need to maintain gainful employment, emphasizing the importance of addressing disparities in healthcare utilization among individuals with COPD.[47] Individuals with COPD may refrain from reporting symptoms associated with frailty or aging, such as cognitive decline, due to concerns about being perceived as unable to cope or losing their independence. This reluctance to disclose symptoms may stem from a desire to maintain a sense of autonomy and self-sufficiency, leading to underreporting of issues that could impact their overall health and well-being. Therefore, healthcare providers should create a supportive environment that encourages patients to share their experiences, including cognitive challenges, to ensure comprehensive care and management strategies for individuals with COPD.[38] By meeting this standard, healthcare personnel can improve patient satisfaction, which may improve understanding of cognitive diagnoses.[38]

Contrary to our expectations, current smokers with COPD in this study were more likely to discuss confusion or memory loss with a healthcare professional than those who did not currently smoke. The unique interaction between COPD, smoking, and cognitive function likely influences this finding. While smoking is a risk factor for cognitive decline and various health issues, the presence of COPD adds a layer of complexity due to the chronic disease’s impact on respiratory and cognitive functions. Smokers without COPD may not face the same level of cognitive decline as those with COPD, although smoking itself can still have detrimental effects on cognitive function.[48] The anticipated stigma associated with smoking-related COPD can hinder patients from seeking help and discussing their symptoms.[37,38] However, current smokers with COPD may have a heightened awareness and concern regarding the potential cognitive effects of COPD, as smoking is a well-established risk factor for the development and progression of the disease.[49] The influence of smoking cessation interventions and counseling in healthcare settings may also contribute to increased discussions about cognitive symptoms among current smokers with COPD,[50] highlighting the importance of targeted support for smokers with COPD. Patient-centered communication is crucial to ensuring that patients with chronic respiratory conditions understand their diagnoses and feel supported in self-managing their cognitive health.[38]

Concerning educational attainment, respondents who attended and graduated from a college or technical school were more likely to discuss confusion or memory loss with a healthcare provider than those who did not. This association may reflect the impact of educational attainment on the ability to participate in healthcare interactions.[51] Those with higher education levels demonstrate higher health-related knowledge, skills, and reasoning ability when communicating their symptoms.[52] Additionally, existing literature shows noteworthy correlations between low education attainment and health inequalities that lead to poor health outcomes, especially among those disproportionately impacted by systemic disadvantages.[53] Therefore, it is vital to understand how equitable COPD patient education opportunities can facilitate an enhanced understanding of cognitive health.[54] Particular attention should be paid to marginalized populations with COPD who have low educational attainment, as this patient sub-population would benefit from planned learning experiences that directly address cognitive health and well-being.[54] Creating opportunities to discuss memory limitations in a clinical encounter is essential to reduce treatment burden and improve health-related quality of life for people with COPD and those who care for them.

It is also important to note that age, income, and self-reported health were no longer statistically significant predictors in the adjusted logistic regression model. These non-significant findings in the adjusted model suggest that these factors may indirectly relate to discussing cognitive concerns through their association with other variables, such as education, employment, or health risk behaviors. Future research should delve deeper into designing and evaluating targeted interventions that encourage patient-centered communication and specifically address disparities in cognitive healthcare access.

Limitations

The study has several limitations. Its cross-sectional nature prohibits establishing cause-and-effect relationships. Additionally, relying on self-reported data introduces potential recall and social desirability biases. Denial, embarrassment, and shame could affect the willingness of people with COPD to self-report cognitive impairments.[55] Another limitation concerns missing data. While we employed weighting techniques to adjust for non-response, our results should be considered exploratory and potentially require further investigation. Also, the 2019 BRFSS data predates the COVID-19 pandemic. Given the potential impact of COVID-19 infection on cognitive function, our findings may not fully reflect current trends in discussions about SCD among people with COPD. Also, our sample may not fully capture individuals with lower socioeconomic status, a population segment disproportionately affected by COPD. The higher-than-average prevalence of higher-income ($75K+) and college graduates in our sample may limit the generalizability of our results to the entire COPD population with SCD. Finally, the BRFSS does not explicitly measure the severity of SCD, which may be an important factor in determining whether or not individuals discuss their symptoms with their healthcare providers. Individuals with more severe SCD may be more likely to disclose their symptoms, while those with milder SCD may be less likely to do so.[56] Future research exploring this association within COPD cohorts is warranted.

Conclusion

Despite these limitations, the study highlights the critical need to address gender, occupational status, and smoking status in patient-provider communication regarding SCD in people with COPD. Doing so can improve patient satisfaction, better self-management, and ultimately, better health outcomes. Healthcare providers should proactively address and dismantle barriers to disclosure, particularly among male, racially diverse, less educated, and employed patients with COPD. Achieving equitable and effective cognitive healthcare for all individuals with COPD necessitates utilizing clinical, social, and systemic community-level interventions. Future research should investigate the underlying mechanisms contributing to these disparities, considering cultural and healthcare system factors. Additionally, targeted interventions addressing barriers to seeking help for cognitive decline symptoms are crucial. Fostering supportive and non-judgmental clinical environments with clear guidelines for how to facilitate these critical and candid conversations will likely encourage more open communication about cognitive decline among adults with COPD.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Michael Stellefson https://orcid.org/0000-0003-1717-4114

References

1. 2021 Gold Reports. 2021 global strategy for prevention, diagnosis, and management of COPD. https://staging.goldcopd.org/2021-gold-reports
2. Mannino DM, Thorn D, Swensen A, et al. Prevalence and outcomes of diabetes, hypertension and cardiovascular disease in COPD. *Eur Respir J* 2008; 32: 962–969.
3. Echave-Sustaeta JM, Comeche Casanova L, Cosio BG, et al. Comorbidity in chronic obstructive pulmonary disease: related to disease severity? *Int J Chronic Obstr Pulm Dis* 2014; 9: 1307–1314.
4. Putcha N, Drummond MB, Wise RA, et al. Comorbidities and chronic obstructive pulmonary disease: prevalence, influence on outcomes, and management. *Semin Respir Crit Care Med* 2015; 36(4): 575–591.
5. Dodd JW, Getov SV and Jones PW. Cognitive function in COPD. *Eur Respir J* 2010; 35(4): 913–922.

6. Richey LN and Peters ME. Cognitive impairment: ohns hopkins psychiatry guide. In: *Cognitive impairment | ohns hopkins psychiatry guide*, 2022. https://www.hopkinsguides.com/hopkins/view/Johns_Hopkins_Psychiatry_Guide/787027/all/Cognitive_Impairment
7. Li W, Yue L and Xiao S. Subjective cognitive decline is associated with a higher risk of objective cognitive decline: a cross-sectional and longitudinal study. *Front Psychiatr* 2022; 13: 950270.
8. Vogel A, Salem L, Andersen B, et al. Differences in quantitative methods for measuring subjective cognitive decline – results from a prospective memory clinic study. *Int Psychogeriatr* 2016; 28(9): 1513–1520.
9. Rabin L, Smart C, Crane PK, et al. Subjective cognitive decline in older adults: an overview of self-report measures used across 19 international research studies. *J Alzheim Dis* 2015; 48 Suppl 1(s1): S63–S86.
10. Jessen F, Amariglio R, van Boxtel M, et al. and Subjective Cognitive Decline Initiative SCD-I Working Group. A conceptual framework for research on subjective cognitive decline in preclinical alzheimer's disease. *Alzheimers Dement* 2014; 10(6): 844–852.
11. Rabin A, Keyes C, Oberg C, et al. Emerging interventional pulmonary therapies for chronic obstructive pulmonary disease. *J Thorac Imag* 2019; 34(4): 248–257.
12. Jessen F. Subjective and objective cognitive decline at the predementia stage of alzheimer's disease. *Eur Arch Psychiatr Clin Neurosci* 2014; 264 Suppl 1(S1): 3–7.
13. Bell T, Elman J, Beck A, et al. Rostral-middle locus coeruleus integrity and subjective cognitive decline in early old age. *J Int Neuropsychol Soc* 2023; 29(8): 763–774.
14. Neto A and Nitrini R. Subjective cognitive decline: the first clinical manifestation of alzheimer's disease? *Dement Neuropsychol* 2016; 10(3): 170–177.
15. Schütz H, Caspers S, Moebus S, et al. Prevalence and psychosocial correlates of subjectively perceived decline in five cognitive domains: results from a population-based cohort study in Germany. *Int J Geriatr Psychiatr* 2020; 35(10): 1219–1227.
16. Centers for Disease Control and Prevention (CDC). Chronic diseases and cognitive decline: a public health issue. https://www.cdc.gov/aging/publications/chronic-diseases-brief.html
17. Taylor CA, Bouldin ED, Greenlund KJ, et al. Comorbid chronic conditions among older adults with subjective cognitive decline, United States, 2015-2017. *Innov Aging* 2020; 4(1): igz045.
18. Liu Y and Jiang D. Multimorbitiy patterns in US adults with subjective cognitive decline and their relationship with functional difficulties. *J Aging Health* 2022; 34: 6–8.
19. Stellefson M, Wang MQ, Flora S, et al. Demographic and behavioral risk factors predict functional limitations associated with subjective cognitive decline in Americans with chronic obstructive pulmonary disease: a secondary analysis. *Int J Environ Res* 2024; 21(3): 278.
20. Jacobson M, Joe E and Zissimopoulos J. Barriers to seeking care for memory problems: a vignette study. *Alzheimers Dement* 2022; 8(1): e12238.
21. Andrianopoulos V, Gloeckl R, Vogiatzis I, et al. Cognitive impairment in COPD: should cognitive evaluation be part of respiratory assessment. *Breathe* 2017; 13: e1–e9.
22. Madawala S, Osadnik C, Warren N, et al. Healthcare experiences of adults with COPD across community care settings: a meta-ethnography. *ERJ Open Res* 2023; 9: 00581–2022. DOI: 10.1183/23120541.00581-2022.
23. Natafgi N, Ladeji O, Blackwell S, et al. Similar values, different expectations: how do patients and providers view 'health' and percieve the healthcare experience? *Health Expect* 2022; 25(4): 1517–1528.
24. Stolz D, Mkorombindo T, Schumann D, et al. Towards the elimination of chronic obstructive pulmonary disease: a Lancet Commission. *Lancet* 2022; 400(10356): 921–972.
25. Lovett RM, Benavente JY, Opsasnick L, et al. Associations between cognitive impairment severity and barriers to healthcare engagement among older adults. *J Appl Gerontol* 2023; 42(7): 1387–1396.
26. Centers for Disease Control and Prevention (CDC). 2019 BRFSS survey data and documentation. https://www.cdc.gov/brfss/annual_data/annual_2019.html
27. Bastani P, Mohammadpour M, Samadbeik M, et al. Factors influencing access and utilization of health services among older people during the COVID-19 pandemic: a scoping review. *Arch Publ Health* 2021; 79(190): 190.
28. National Institute on Alcohol Abuse and Alcoholism. Alcohol's effect on health: research-based information on drinking and its impact. https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/moderate-binge-drinking=NIAAAdefinesbingedrinkingas,Cinabout2hours
29. Harten ACV, Mielke MM, Swenson-Dravis D, et al. Subjective cognitive decline and risk of mci. *Neurology* 2018; 91(4): e300–e312.
30. Centers for Disease Control and Prevention (CDC). *Complex sampling weights and preparing 2019 BRFSS module data for analysis*, 2019. https://www.cdc.gov/brfss/annual_data/2019/pdf/Complex-Smple-Weights-Prep-Module-Data-Analysis-2018-508.pdf
31. Tripepi G, Jager KJ, Stel VS, et al. How to deal with continuous and dichotomic outcomes in epidemiological research: linear and logistic regression analyses. *Nephron Clin Pract* 2011; 118(4): c399–c406.
32. Armstrong RA. When to use the bonferroni correction. *Ophthalmic Physiol Opt* 2014; 34(5): 502–508.
33. Bayman EO and Dexter F. Multicollinearity in logistic regression models. *Anesth Analg* 2021; 133(2): 362–365.
34. Senaviratna NAMR and A Cooray TMJ. Diagnosing multicollinearity of logistic regression model. *Asian J Probab Stat* 2019; 5(2): 1–9.
35. Merlo J, Chaix B, Ohlsson H, et al. A brief conceptual tutorial of multilevel analysis in social epidemiology: using measures of

clustering in multilevel logistic regression to investigate contextual phenomena. *J Epidemiol Amp* 2006; 60(4): 290–297.

36. Chin ED and Armstrong D. Anticipated stigma and healthcare utilization in COPD and neurological disorders. *Appl Nurs Res* 2019; 45: 63–68.
37. Woo S, Zhou W and Larson JL. Stigma experiences in people with chronic obstructive pulmonary disease: an integrative review. *Int J Chronic Obstr Pulm Dis* 2021; 16: 1647–1659.
38. Booker R. Effective communication with the patient. *Eur Respir Rev* 2005; 14: 93–96.
39. Halding AG, Heggdal K and Wahl A. Experiences of self-blame and stigmatisation for self-infliction among individuals living with COPD. *Scand J Caring Sci* 2011; 25(1): 100–107.
40. Phelan SM, Salinas M, Pankey T, et al. Patient and health care professional perspectives on stigma in integrated behavioral health: barriers and recommendations. *Ann Fam Med* 2023; 21(2): S56–S60.
41. National Institute for Health and Care Excellence (NICE). Shared decision making. https://www.ncbi.nlm.nih.gov/books/NBK572428/
42. Isgrò V, Sultana J, Fontana A, et al. Gender differences in copd management in a Sicilian general practice setting: a cohort study evaluating the impact of educational interventions. *ERJ Open Res* 2020; 6(3): 00279–2020.
43. Centers for Disease Control and Prevention (CDC). *Alzheimer's disease and healthy aging: subjective cognitive decline*, 2019. https://www.cdc.gov/aging/data/subjective-cognitive-decline-brief.html
44. Farias ST, Weakley A, Harvey D, et al. The measurement of Everyday Cognition (ECog): revisions and updates. *Alzheimer Dis Assoc Disord* 2021; 35(3): 258–264.
45. Caselli RJ and Chen K. Locke Deet al. Subjective cognitive decline: self and informant comparisons. *Alzheimers Dement* 2013; 10(1): 93–98.
46. Werner P, Heinik J, Giveon S, et al. Help-seeking preferences in the area of mild cognitive impairment: comparing family physicians and the lay public. *Clin Interv Aging* 2014; 9(9): 613–619.
47. ur Rehman A, Hassali MA, Muhammad SA, et al. Economic burden of chronic obstructive pulmonary disease patients in Malaysia: a longitudinal study. *Pharmacoecon Open* 2020; 5(1): 35–44.
48. Eriksson Ström J, Pourazar J, Linder R, et al. Cytotoxic lymphocytes in COPD airways: increased NK cells associated with disease, iNKT and NKT-like cells with current smoking. *Respir Res* 2018; 19: 244.
49. Cunningham TJ, Eke PI, Ford ES, et al. Cigarette smoking, tooth loss, and chronic obstructive pulmonary disease: findings from the behavioral risk factor surveillance system. *J Periodontol* 2016; 87(4): 385–394.
50. Leving MT, Bosnic-Anticevich S, Cooten JV, et al. Clinical recommendations for dry powder inhaler use in the management of copd in primary care. *NPJ Prim Care Respir Med* 2022; 32(1): 59.
51. Azar M and Chapman S. Joyce Jet al. Education as a moderator of help seeking behavior in subjective cognitive decline. *Alzheimers Dis* 2023; 37(3): 184–188.
52. Mirowsky J and Ross CE. *Education, social status, and health*. Venice: Aldine de Gruyter, 2003.
53. Marmot MG and Bell R. Action on health disparities in the United States: commission on social determinants of health. *JAMA* 2009; 301: 1169–1171.
54. Zajacova A and Lawrence EM. The relationship between education and health: reducing disparities through a contextual approach. *Annu Rev Publ Health* 2018; 39: 273–289.
55. Torres-Sanchez I, Rodriguez-Alzueta E, Cabrera-Martos I, et al. Cognitive impairment in COPD: a systematic review. *J Bras Pneumol* 2015; 41: 182–190.
56. Poot B, Travers J, Weatherall M, et al. Cognitive function during exacerbations of chronic obstructive pulmonary disease. *Int Med J* 2019; 49(10): 1307–1312.