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Understanding Veterans' Experiences With Lung Cancer and Psychological Distress: A Multimethod Approach

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Psychological distress while coping with cancer is a highly prevalent and yet underrecognized and burdensome adverse effect of cancer diagnosis and treatment. Left unaddressed, psychological distress can further exacerbate poor mental health, negatively influence health management behaviors, and lead to a worsening quality of life. This multimethod study primarily focused on understanding veterans' psychological distress and personal experiences living with lung cancer (an underrepresented patient population). In a sample of 60 veterans diagnosed with either nonsmall cell lung cancer (NSCLC) or small cell lung cancer (SCLC), we found that distress is common across clinical psychology measures of depression (37% [using the Patient Health Questionnaire, PHQ-9 measure]), anxiety (35% [using the Generalized Anxiety Disorder, GAD-7 measure]), and cancer-related posttraumatic stress (13% [using the Posttraumatic Stress Symptom Checklist measure]). A total of 23% of the sample endorsed distress scores on two or more mental health screeners. Using a broader cancer-specific distress measure (National Comprehensive Cancer Network), 67% of our sample scored above the clinical cutoff (i.e., ≥ 3), and in the follow-up symptom checklist of the National Comprehensive Cancer Network measure, a majority endorsed feeling sadness (75%), worry (73%), and depression (60%). Qualitative analysis with a subset of 25 veterans highlighted that psychological distress is common, variable in nature, and quite bothersome. Future research should (a) identify veterans at risk for distress while living with lung cancer and (b) test supportive mental health interventions to target psychological distress among this vulnerable veteran population.

Impact Statement

To address a lack of knowledge about psychological distress in veterans with lung cancer, a multimethod approach was used to examine their distress symptoms, cognition, and personal experiences with cancer. Results indicated that distress is quite common as assessed by mental health screeners (e.g., depression, anxiety) and cancer-specific screeners measuring distress more broadly. These findings emphasize the important need for mental health support programs to support vulnerable veteran populations.

Keywords: lung cancer, psychological distress, cognitive impairment, mental health

In the United States, lung cancer deaths exceed the next four major cancers combined. Lung cancer is the second most frequently diagnosed cancer and the leading cause of cancer death among U.S.

veterans (Siegel et al., 2019; Zullig et al., 2017). Annually, in the Department of Veterans Affairs (VA), 7,500–8,000 veterans are newly diagnosed with lung cancer, with upward of 50% having

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advanced cancer at the time of diagnosis (e.g., Stage III or IV lung cancer; Sanchez et al., 2020; Williams et al., 2014). Many veterans with lung cancer present with significant physical, psychological, and social vulnerabilities that may place them at high risk for deteriorating mental health. For example, compared to civilian populations, veterans with lung cancer are older, experience greater medical complexity, have higher rates of combat-related environmental exposures (e.g., Agent Orange, asbestos, radon, or other herbicides), tobacco use, pain, and poorer mental health (Berchuck et al., 2020; Grier et al., 2022; Oishi et al., 2014; Wang et al., 2012). They also have higher rates of cancer diagnosis compared to civilians (11.4% vs. 10%; Zullig et al., 2012). The health disparities experienced by veterans with lung cancer are also often intertwined with their vulnerability to distressing health care challenges. For example, Black veterans have 34% lower odds for lung cancer screening compared to White veterans impacting the timing of diagnosis, treatment, and care (Navuluri et al., 2023). Overall, and of concern, the additive and interactive effects of continued tobacco use, psychosocial stressors, disparities, and perceived stigma about lung cancer all raise the risk for persistent psychological distress among lung cancer patients (Berchuck et al., 2020).

Psychological distress refers to a condition of emotional anguish marked by symptoms of depression, such as feelings of sadness and hopelessness, as well as symptoms of anxiety, such as restlessness and heightened tension (Holland & Alici, 2010; Holland et al., 2015). Psychological distress is an indicator of impaired mental health as it encompasses a range of emotional, functional, and physical factors that collectively reflect a disruption to a person's mental health and emotional well-being (Carlson et al., 2013; Cooley et al., 2003; Holland & Alici, 2010; Holland et al., 2015; Salmon et al., 2015). Recognizing and addressing psychological distress early on, particularly in cancer, is essential to potentially prevent the development of more severe mental health issues and to promote overall well-being.

In the context of cancer, distress is an underrecognized and highly burdensome adverse effect of cancer diagnosis and treatment (Holland et al., 2015; Zabora et al., 2001). Cancer patients experience multiple psychological distress symptoms, including mild cognitive impairment (MCI; whether age- or cancer treatment-related), in addition to cancer-related physical symptoms such as pain, fatigue, and breathlessness (Carnio et al., 2016; Cleeland, 2000; Henson et al., 2020; Iconomou et al., 2004).

Left unaddressed, psychological distress not only exacts a toll on mental health; it also perpetuates a cycle of dysfunctional psychological responses and health-management behaviors (e.g., chemotherapy treatment nonadherence, reduced visits for follow-up care, smoking) that lead to worse outcomes in overall health and increase utilization of emergency and health care visits (Berry et al., 2015; Jacobs et al., 2019; Theofilou & Panagiotaki, 2012). For those experiencing MCI in addition to coping with cancer, their ability to regulate and manage distress can be quite difficult (Hutchinson et al., 2012). Distress may also be linked to mortality and suicidality (American Thoracic Society, 2017; Munson et al., 2020; Senf et al., 2022—the highest clinical priority to the U.S. Department of Veterans Affairs) among veterans with lung cancer.

Although distress symptoms and their impacts have been described in the general population and veterans with other cancer types (e.g., head and neck, colorectal, prostate; Jahn et al., 2012), little is known about the distress experiences of veterans with lung

cancer (Azizoddin et al., 2020; Munson et al., 2020). Further, it is unknown whether veterans with lung cancer who experience psychological distress (regardless of having a mental health diagnosis on their electronic health record problem list) receive needed mental health support. Given the negative impacts of distress, research aimed at understanding the experiences of veterans with lung cancer using multimethod approaches (i.e., drawing on data from more than one source, like self-report, and employing more than one type of analysis without analyzing the data in tandem or integrating the data at the point of results) may yield independent yet clarifying information about distress to improve the well-being and quality of life of veterans.

Purpose of the Present Study

The main goal of this research study was to advance the current understanding of distress among veterans with lung cancer to help inform the development of appropriate and needed psychological services. Our key research questions guiding this study include: What is the nature of psychological distress among veterans with lung cancer? And, what are possible intervention targets to address psychological distress in this population? We purposely utilized quantitative and qualitative approaches (i.e., multiple methods) to distinctly study and explore distress across two main areas. As such we (a) examined psychologically distressing and cognitive impairment symptoms among veterans diagnosed with lung cancer using self-report measures; and for veterans who did endorse distress, we (b) explored veteran's experiences about their psychological distress using semistructured interviews.

Method

Participants and Procedure

This study was approved by the local Veterans Health Administration (VHA) institutional review board and Research and Development Committees. Study inclusion criteria were: (a) veteran with a confirmed diagnosis of nonsmall cell lung cancer (NSCLC) or small cell lung cancer (SCLC); (b) age 18 and older; (c) ability to speak, read, and write English; and (d) self-reported ability to complete the screening measures (20 min to complete) and interview (up to 45 min to complete if the veteran screened positive on any one of the self-report distress screening measures) and willing and able to provide informed consent. Exclusion criteria were: (a) documented history of severe cognitive impairment or (b) documented unmanaged/untreated severe mental illness or symptoms (e.g., schizophrenia, bipolar disorder, or any evidence of psychosis that would preclude consent) assessed via medical chart review.

An initial data pull from the Veterans Affairs Computerized Patient Record System (between July 1, 2018, and August 1, 2019) was completed to secure a list of veterans with lung cancer seen by oncology using *International Statistical Classification of Diseases and Related Health Problems* 9/10 codes. Upon initial review of records to assess inclusion and exclusion requirements, potentially eligible participants were sent a recruitment letter signed by the primary author (Katherine Ramos). The recruitment letter provided a brief description of the study and ensured the confidential and voluntary nature of this study, along with compensation details for participation (\$25 for each veteran) and interviews (\$55 additional

dollars for those who completed interviews). The letter also informed participants that a study team member would be contacting them regarding participation in the study. The letter included contact information should the veteran desire to opt-out of being contacted. For those who did not opt-out, veterans were contacted by the research coordinator via telephone approximately 1 week following the mailed letter.

The informed consent process was conducted verbally via telephone. Following the informed consent, trained research staff administered screening measures for depression, anxiety, posttraumatic stress, and overall distress in the context of living with lung cancer. Our team also instituted a safety plan if participants endorsed any suicidal ideation or severe distress. Specifically, participants were offered resources, emergency contact information to the VA Suicide Prevention Hotline, a contact number to a mental health coordinator associated with their care in the VA, as well as procedures from our study staff to follow up for additional support as needed. If a veteran met a clinical cutoff score for one or more of the distress measures, they were invited to participate in an interview discussing their symptoms further (see Figure 1, for participant flow). The 45-min interview took place immediately following the screening assessment portion of the call. If the veteran was unavailable to complete the interview, it was scheduled for a later date. Following participation, participants were mailed their compensation.

Measures

Psychological distress was examined using the following well-validated and widely used mental health measures.

National Comprehensive Cancer Network Distress Thermometer (DT) and Problem List (National Comprehensive Cancer Network, 2016 v.2)

The DT is a single-item, self-report measure of cancer-related psychological distress. The DT has an 11-point range with endpoints labeled *no distress* (0) and *extreme distress* (10) (National Comprehensive Cancer Network [NCCN], 2016 v.2). We followed the recommended cutoff score of 3 or greater (Cuttillo et al., 2017). For those that meet the cutoff, the second step of the screener is to give respondents a 34-item problem list to further examine sources of distress. The problem list contains problems commonly experienced by cancer patients that are grouped into five categories (practical problems, family problems, emotional problems, spiritual/religious concerns, and physical problems; NCCN, 2016 v.2). The DT and problem list are common rapid screening instruments used in oncology clinics that can capture multifactorial distress symptoms due to psychological, social, and spiritual concerns while coping with cancer (Ownby, 2019). Following clinical practice guidelines in the administration of the DT and problem list, participants were asked to give a number that best described how distressed they have been in the past week (NCCN, 2016 v.2). Following this one item, with recommended cutoff score of 3, respondents were instructed to indicate whether (i.e., yes or no) any of the items listed have been a problem in the past week. The DT and problem list have been validated using receiver operating characteristics analysis, across large heterogeneous samples of cancer patients (Cuttillo et al., 2017). This measure is a widely used screening measure with a high sensitivity rate for capturing distress but does have low specificity in

capturing mood-related symptoms. As such, we also selected additional measures that can elucidate distress symptoms in our veteran population.

Patient Health Questionnaire (Kroenke et al., 2001)

The Patient Health Questionnaire (PHQ-9) is a multipurpose measure used for screening, diagnosing, and measuring depression. The measure consists of nine items on a Likert scale from 0 (*not at all*) to 3 (*nearly every day*). A PHQ-9 score is calculated by adding together the scores for all nine questions (total range for this measure is 0–27; Kroenke et al., 2001). A score of 10 or higher had a sensitivity of 88% and a specificity of 88% for detecting major depressive disorders across racial and ethnic groups. PHQ-9 scores of 5, 10, 15, and 20+ represent mild, moderate, moderately severe, and severe depression (Kroenke & Spitzer, 2002; Kroenke et al., 2001). We used a cutoff score of 10. The PHQ-9 has been used with cancer patients and is believed to be practically feasible and sustainable in real-world oncology clinics (Hartung et al., 2017; Hinz et al., 2016).

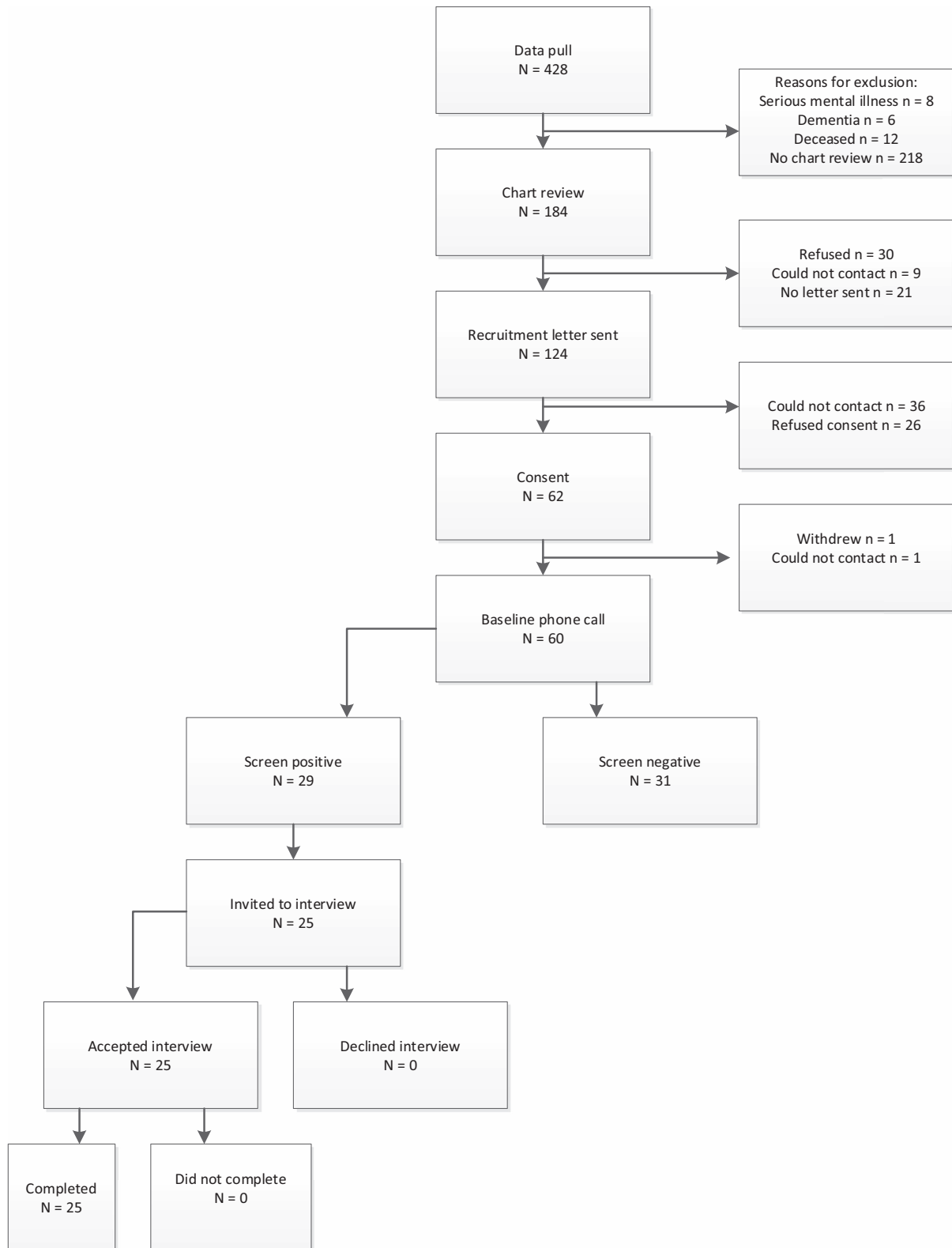
Generalized Anxiety Disorder (Spitzer et al., 2006)

The GAD-7 is a seven-item “gold-standard” measurement tool to assess the severity of generalized anxiety disorder (GAD). Each item asks the individual to rate the severity of his or her symptoms over the past 2 weeks. Response options range from 0 (*not at all*) to 3 (*nearly every day*; Spitzer et al., 2006). The GAD-7 score is calculated by assigning scores of 0, 1, 2, and 3 to the response categories of “not at all,” “several days,” “more than half the days,” and “nearly every day,” respectively, and then adding together the scores for the seven questions (Spitzer et al., 2006). A GAD-7 total score for the seven items ranges from 0 to 21 (Spitzer et al., 2006). The GAD-7 has shown adequate diagnostic accuracy and hence is applicable for GAD screening in cancer patients (Plummer et al., 2016). We used a cutoff score of 8 as an established diagnostic threshold for moderate anxiety symptoms, following a systematic review and diagnostic meta-analysis by Plummer et al. (2016). This cutoff is consistent with recent GAD-7 cutoff evaluations among cancer populations (Esser et al., 2018).

Posttraumatic Stress Symptom Checklist (PCL-5; Blevins et al., 2015; Weathers et al., 1993, 2013)

The PCL-5 is a 20-item measure that assesses the *Diagnostic and Statistical Manual of Mental Disorders* symptoms of posttraumatic stress disorder (PTSD; Blevins et al., 2015; Weathers et al., 2013). The PCL-5 can be used for screening individuals for posttraumatic stress, monitoring symptom change during and after treatment, and making a provisional PTSD diagnosis. The Likert rating scale is 0–4 for each symptom, with scale descriptors labeled as: “not at all,” “a little bit,” “moderately,” “quite a bit,” and “extremely” (Blevins et al., 2015; Weathers et al., 2013). A total symptom severity score (range: 0–80) can be obtained by summing the scores for each of the 20 items (Blevins et al., 2015; Weathers et al., 2013). A provisional PTSD diagnosis can be made by either treating each item rated as 2 = “moderately” or higher as a symptom endorsed or by calculating a total symptom score of 31 (cut point) or higher (Blevins et al., 2015; Weathers et al., 2013). For purposes of this study, the PCL-5 cut-point score of 36 was used to assess posttraumatic stress

Figure 1
STROBE Flow Diagram of the Study



Note. STROBE = Strengthening the Reporting of Observational Studies in Epidemiology.

symptomatology or generalized cancer-related distress. We chose a higher cutoff score to make the inclusion criteria more stringent and reduce the number of false positives, given our interest in identifying symptoms that would indicate PTSD and not milder symptoms that would otherwise suggest that PTSD is probable (i.e., scores falling between 31 and 33).

The Semistructured Interview

The semistructured interview was developed by the principal investigator and the study team. The interview was informed by the existing mental health and lung cancer research literature (e.g., research articles describing distress concerns in lung cancer populations and evidence-based treatments adapted for cancer populations) and was vetted by a Veteran Research Engagement Panel (VetREP) consisting of veterans and veteran caregivers/family members at the Durham VA Health Care System. The mission of the Veteran Research Engagement Panel is to “promote patient-centered research and to translate VHA research into practice and community settings.” The VetREP collaborates with researchers on providing feedback on research studies as well as reviewing and providing feedback on research materials (e.g., interview guide for the semistructured interview). The interview consisted of open-ended questions regarding specific experiences with distress. For each question prompt, the research coordinator asked the participant to describe their experiences by asking each question followed by the statement “Tell me more about that?” Specifically, veterans were asked the following: “In the screening assessments, you endorsed that (depression/anxiety/PTSD) were symptoms that you have experienced.”

- Question 1: “Of those symptoms, which ones bother you the most?”
- Question 2: “Which ones bother you the least?”
- Question 3: “Any other symptoms that you have not already mentioned that affect how you feel?”

Analytic Approaches

Self-Report Distress Measures

If a veteran met a clinical cutoff score for one or more of the distress measures, they were invited to interview. We descriptively examined (a) distress percentages for the overall sample and the sample invited for interviews; (b) percentage of participants indicating distress on one or more mental health screeners (e.g., PHQ-9, GAD-7, and PCL-5); and (c) mean level of overall distress and endorsement of problem categories from the NCCN measure.

Semistructured Interview

Our data source for participant interviews was structured notes. Upon gathering all participant responses from the interviews, we reorganized the data in a table by creating a qualitative research map consisting of prespecified domain names that corresponded with each interview question.

Our analysis was guided by rapid qualitative analytic methods (Gale et al., 2019; Nevedal et al., 2021; Vindrola-Padros & Johnson,

2020), informed by the first author’s clinical expertise in mental health, research literature in lung cancer, and an analysis framework derived from the semistructured interview. Further analysis was conducted within each question with a focus on content for each domain of most, least, and additional symptoms. This process was followed by summarizing distress symptom domains (that was overread by qualitative researcher and coauthor [Heather A. King]), and overall response themes that were organized and later summarized. We followed five steps with our analysis. During the first steps, the authors (Katherine Ramos and Heather A. King) reviewed the detailed notes. The primary author (Katherine Ramos) then summarized each individual interview question by respondent and any content that was outside the prespecified domain names written out in memos. For the second step, the summaries of each domain were then transferred into an Excel data sheet, sorted, and summarized (as a second cycle of coding) across rows (e.g., Respondent × Domain). We subsequently used matrix techniques to facilitate data analysis and presentation (Miles et al., 2020). The third step consisted of an additional review of the data to determine whether secondary codes were needed to further summarize the data. During the fourth step, our coauthor (Heather A. King) overread the coded data, and for the fifth and final steps, we (Katherine Ramos and Heather A. King) analyzed the data within the framework matrix to identify themes. The primary author (Katherine Ramos) created additional memos, and all data were reviewed with the larger study team.

Results

The full study sample consisted of 60 veterans following a chart review of 184 potential participants, see Figure 1, Strengthening the Reporting of Observational Studies in Epidemiology flow diagram (Vandenbroucke et al., 2007; von Elm et al., 2014). Of the 60 veterans who participated in the study, a total of 25 veterans who screened positive for experiencing symptoms of psychological distress were invited to participate in a qualitative interview in addition to completing self-report measures of distress. Of note, in the figure, once the research coordinator reached the targeted sample size, the coordinator did not contact any more veterans. The majority of participants (93%) were males with a mean age of 68 years (range: 51–83). 42% identified as Black or African American, and 3% were Hispanic. Close to half the sample had some high school education (45%) and were married (53%); most reported having their basic needs met based on income level (87%). A total of 35 (58%) participants had Stages I and II lung cancer, and 25 (42%) participants had Stages III and IV lung cancer. Because cancer treatment can impair cognition, our study also considered the percentage of veterans who would meet the criteria for MCI. 62% of the full sample met the criteria for MCI using the modified Telephone Interview for Cognitive Status (Knopman et al., 2010).

Distress Screeners Results ($N = 60$)

Among the mental health screeners completed, the full sample of participants endorsed (from most to least) depression (37% [using the PHQ-9 measure]), anxiety (35% [using the GAD-7 measure]), and cancer-related posttraumatic stress (13% [using the PCL measure]). A total of 23% of the sample endorsed distress scores on two or more mental health screeners. Specifically, the comorbidity

of PTSD, depression, and anxiety was as follows: 13% endorsed PTSD, depression, and anxiety, and 10% endorsed both depression and anxiety. For the NCCN cancer distress measure, 67% of our sample scored above the clinical cutoff (i.e., ≥ 3). The mean level of cancer-related distress was 4.43 ($SD = 3.34$). From the NCCN problem list, most endorsed emotional problems such as feeling sadness (75%), worry (73%), and depression (60%).

Semistructured Interview Results ($N = 25$)

A total of 29 (48%) veterans screened positive on at least one distress measure (e.g., anxiety, depression, and PTSD) and were eligible and invited to complete qualitative interviews; of these 29, a total of 25 agreed to be interviewed. For our qualitative results, we followed the consolidated criteria for reporting qualitative studies: a 32-item checklist (Tong et al., 2007). This group was similar across demographic characteristics to the larger group (see Table 1). There were discernable differences regarding the experience of distress from the qualitative sample compared to the large sample (see Table 2). In the qualitative sample, the levels of distress in this group were 88% on the cancer distress measure (NCCN), 80% on the depression measure, and 72% on the anxiety measure.

To follow up on distress symptoms endorsed by participants, we prompted further exploration across the most, least bothersome, and additional distress symptoms. See Table 3 for exemplars of our qualitative results with participant quotes of distress symptoms.

Most Bothersome Symptoms

Veterans reported that the most bothersome symptoms included those impacting mood and affect. In particular, mood and affect seemed more predominant and occurred more than other symptoms (at a count of 15 instances out of a possible 25 responses). Symptoms related to physical functioning came second (at a count of 6/25 instances). We also assessed whether participants described symptoms similar to the questionnaire items they endorsed in the mental health screeners. We found that 12/25 (48%) provided responses that addressed depression, anxiety, and PTSD. Three participants also reported secondary concerns related to cancer recurrence, existentialism (death and dying), and how perceptions of medical staff influenced their own views about quality of life.

Among the most bothersome symptoms reported by veterans (and as highlighted in Table 3), we find that veterans perceive the impacts on their mood and affect as rooted in how they view themselves, their concerns about being overly dependent on their loved ones, and the ever-fluctuating and uncertain nature of their cancer experience. Results also suggest that veterans' most bothersome symptoms occur when not having relief over their low mood, feeling scared of dying, and experiencing significant physical pain. In addition, participants shared feeling overwhelmed by the continuous experience of feeling how much had been lost in their life (e.g., time, independence, dignity) and no longer being able to participate fully day to day. These responses were contextualized with their own military identity of being a head figure in their home either as a primary caretaker, community leader, or financial provider.

Table 1
Summary of Demographic, Cancer, and Cognitive Characteristics Among Lung Cancer Patients

Demographics	Sample of 60	Sample of 25 (qualitative)
	<i>M (SD) or n (%)</i>	<i>M (SD) or n (%)</i>
Age	68.73 (6.98)	65.68 (7.16)
Gender		
Female	4 (6.67)	1 (4.00)
Male	56 (93.33)	24 (96.00)
Race		
White	33 (55.00)	15 (60.00)
Black	25 (42.00)	10 (40.00)
Ethnicity		
Hispanic	2 (3.33)	0 (0.00)
Non-Hispanic	58 (96.67)	25 (100.00)
Education		
Some high school, high school or equivalent	27 (45.00)	13 (52.00)
Any trade or college	33 (55.00)	12 (48.00)
Marital status		
Married	32 (53.33)	13 (52.00)
Divorced	11 (18.33)	6 (24.00)
Single and or widowed	17 (28.33)	6 (24.00)
Income		
Meet basic needs	25 (41.67)	11 (44.00)
Live comfortably	27 (45.00)	9 (36.00)
Basic needs unmet	7 (11.67)	4 (16.00)
Lung cancer stage		
Stage I	28 (46.67)	9 (36.00)
Stage II	7 (11.67)	2 (8.00)
Stage III	13 (21.67)	5 (20.00)
Stage IV	12 (20.00)	9 (36.00)
Possible cognitive impairment with the TICS measure (mild)	37 (61.67)	16 (64.00)

Note. TICS = Telephone Interview for Cognitive Status.

Table 2
Frequency of Distress Symptoms Among Veterans With Lung Cancer

Screeners (% who screened positive)	Overall sample, <i>N</i> = 60	Subsample invited to participate in qualitative interview, <i>n</i> = 25
Depression	22 (36.67)	20 (80.00)
Anxiety	21 (35.00)	18 (72.00)
Trauma	8 (13.33)	8 (32.00)
Cancer distress thermometer	40 (66.67)	22 (88.00)

Note. Overall, 25% screened positive on one distress screener and 23% screened positive on more than one. Please note that participants invited to interview may have screened positive on more than one of the mental health screeners.

Least Bothersome Symptoms

Close to half of the participants (*N* = 13) were unable or did not identify their least bothersome symptoms. This is to be expected, as those who participated in the interview were endorsing at least a moderate amount of distress. Of those who did express their least bothersome symptoms, there was a wide array of participant responses ranging from feeling least bothered by momentary or short periods of sadness, limitations in physical functioning, and cancer treatment as well as impacts on sexual intimacy. Secondary symptoms (for two participants) that emerged related to symptoms reported as “least bothersome” were attributable to having a strong faith system.

Veterans’ experiences with least bothersome symptoms highlighted their own resolve and acceptance with the experience of cancer treatments largely in part due to having a medical team they trusted, engaging in perspective taking about what they can do in life, and finding acceptance of their illness. Additionally, participants shared their own preparations with caring for their family (e.g., financially) and having a strong connection to something greater than themselves.

Additional Symptoms

Concerns around physical functioning predominated (*n* = 11), followed by no additional symptoms (*n* = 5), and then symptoms related to mood and affect (*n* = 4). We found that when participants discussed additional symptoms, 6/20 (30%) provided responses that tied back to symptoms of depression, anxiety, and PTSD. Symptoms related to trauma emerged, though not as prominent as symptoms of mood and affect, particularly in those with a self-disclosed history of PTSD. Specific drivers of additional physical symptoms impacting functioning are related to having difficulty with digestion, managing scars following surgery, fatigue, breathlessness, and body soreness. Veterans shared that managing various types of physical symptoms at once also impairs their ability to be as independent as they like. Additional symptoms impacting mood and affect focused on feeling nervous, having difficulty concentrating, and feeling chronically irritable.

Discussion

In this study, our goal was to understand the experiences of psychological distress among veterans living with lung cancer. We found that over half of the veterans in the study endorsed cancer-related distress, and close to a third had additional symptoms specific to depression and anxiety. If a veteran met a clinical cutoff

score for one or more of the distress measures, they were invited to participate in an interview discussing their symptoms further. Among those who participated in the qualitative portion of our study, distress was highly prevalent, and veterans often shared feeling severely impacted by broad symptoms of sadness, depression, fears for their family if they were to die from cancer, and cancer progression. Our findings align with prior research demonstrating the psychological impacts of cancer (Morrison et al., 2017). However, unique to our study is the further expansion and exploration of veterans’ lived experiences with lung cancer using multimethod approaches. Veterans noted how their distress symptoms not only impacted their overall mental health but also made them question how they view themselves and how burdensome that may be to others. The discrepancy between how they saw themselves (based on the military culture of being in charge, being a leader, and provider) and where they saw themselves now with having cancer seemed to magnify feelings of low self-worth.

Lung cancer screening and treatments have advanced in recent years, and yet lung cancer remains among the top two leading causes of cancer-related mortality among VHA enrollees as well as the U.S. population (Siegel et al., 2019; Zullig et al., 2017). Distress and untreated psychological distress are not inconsequential. Recent studies report associations between psychological distress with mortality and suicidality in veterans with lung cancer. For example, in a recent retrospective population-based cohort study of over 50,000 veterans diagnosed with NSCLC (across Stages I and IV), psychological distress was associated with increased mortality, being diagnosed at later stages of cancer disease, and unaddressed housing and employment needs (Berchuck et al., 2020). In another study with a sample of breast, head, neck, and lung and prostate cancer patients, veterans who endorsed severe distress were significantly more likely to endorse suicidal ideation and have a history of suicide attempts when compared to veterans endorsing mild or moderate distress (Munson et al., 2020). Results from our study and those reported in the research literature about lung cancer and distress (Smith et al., 2017) suggest that there is a unique and clinically important opportunity to improve veteran mental health in the context of lung cancer.

Undoubtedly, successful navigation of psychological distress may play a significant role in the trajectory of lung cancer treatment and recovery among veterans. The VHA has and continues to prioritize resources to improve and assure optimal outcomes for veterans with lung cancer. Connecting veterans to mental health treatment programs early and consistently is one effort to support excellent lung cancer care. Additionally, knowing key mental

Table 3
Exemplar Quotes of Distress Symptoms by Distress Domains Experienced by Lung Cancer Participants (N = 25)

Distress symptom domains and definition	Mental health distress		Distressing symptoms not captured in mental screeners
	Based on symptoms flagged positive during participant mental health screening	Least bothersome distress symptoms	
Mood and affect: symptoms that affect a persons' emotional state including sadness, depression, and anxiety.	Most bothersome distress symptoms "[My] depression bothers [me] the most, not easy to take symptoms. No one likes to hear that word- 'cancer,' especially when discovered in X-ray when [I] thought it was a broken rib." "[My] PTSD bothers me the most, flashbacks, nightmares, taking a toll on my health. All [my] depression, anxiety, comes with PTSD. [I feel] nervousness, paranoid. I feel, I haven't been treated soon enough for PTSD."	Least bothersome distress symptoms "Sadness bothers me the least."	"Stress. I don't know where I got it from, [I] just think about things all the time. [And] it's really stressful for me."
Trauma: symptoms that affect emotional and behavioral problems including avoidance, hypervigilance, and flashbacks.		None Reported	"I don't feel comfortable around other people. Always on my guard [and I] can't relax."
Physical functioning: symptoms that affect the ability to perform both basic and instrumental activities of daily living.	a	a	"Not being able to do the physical things I used to do."
Other	a	a	"Not being able to take care of [my] family; trying to make sure lose ends are tied up to not leave behind financial burden."

Note. PTSD = posttraumatic stress disorder.

^a Symptoms assessed but not flagged in core mental health screeners for psychological distress.

Table 4*Linking Themes of Veteran Distress Experiences From Qualitative Analysis With Strategies to Address Them*

Key themes gathered from the data	Potential targets for intervention development
Managing mood and affect is important.	Offer distress management coping skills to target depression and anxiety: <ul style="list-style-type: none"> • Deep breathing • Behavioral activation • Meaning-making goal setting • Promotion and prevention-focused goal setting • Assess history of PTSD, and offer cognitive processing and/or exposure exercises
Multiple contributors to distress (e.g., health, functioning) beyond mood and affect are important to explore. Distress experiences negatively impact self-worth, dignity, and feelings of independence.	Use a Problem Checklist consisting of various physical symptoms, and other areas of concern to examine in treatment and link to coping strategies. Utilize value-focused goals/strategies to promote autonomy and enhance physical activity. Examples include teaching patients about promotion-focused and prevention-focused goal setting. Conduct a values-clarification exercise with patients and select activities that are both meaningful and behaviorally activating.

Note. PTSD = posttraumatic stress disorder.

health areas to target in treatment can further optimize veteran well-being and overall quality of life.

Our study findings offer a potential launching off point to inform future clinical work and mental health initiatives (see Table 4). For example, veterans with lung cancer might benefit from the receipt of behaviorally focused interventions such as learning distress coping skills (e.g., deep breathing, behavioral activation, and meaning making) to address bothersome symptoms impacting mood and affect (Caruso & Breitbart, 2020). For veterans managing multiple distressing symptoms like depression, anxiety, and PTSD, learning self-management skills and self-regulation strategies, and adopting goals with a prevention (goals that foster cancer safety and care) and promotion focus (goals that offer personal growth, resilience, and dignity) may be helpful.

Additional supportive care considerations include upstream behavioral health interventions early in the lung cancer disease trajectory to address the mental health and well-being of patients. For instance, integrating psychoeducation sessions upon diagnosis can help patients understand their condition and manage anxiety. Additionally, offering cognitive behavioral therapy workshops can equip individuals with specific coping strategies for the emotional challenges that often accompany diagnostic workups, finding out about a lung cancer diagnosis, and awaiting cancer treatment. Such proactive measures can improve patients' mental resilience, reduce distress, and enhance their overall quality of life throughout their cancer journey.

Of note, in the assessments completed by veterans, a large portion of the overall sample met the criteria for MCI. MCI is defined as problems with memory, thinking, and impaired judgment greater than normal age-related changes, yet not be as severe as moderate to severe symptoms of dementia; in cancer patients, cognitive difficulties are a common side effect of cancer treatment (Boykoff et al., 2009; Coomans et al., 2019; Mounier et al., 2020). For cancer patients with MCI, they are more likely to require assistance with daily functions, experience treatment-related toxicity, and mood fluctuations (Boykoff et al., 2009; Coomans et al., 2019; Mounier et al., 2020). In fact, MCI may preclude veteran's ability to self-regulate their emotions and behaviors and as such be highly vulnerable to manage their distress successfully or adaptively (Dryman & Heimberg, 2018; Sroykham & Wongsawat, 2019; Sturm et al., 2013).

Addressing cognitive difficulties and incorporating cognitive training strategies (e.g., rehearsal, setting reminders, taking notes) in parallel with coping skills may also be of help.

Limitations

We recruited only veterans from one VA Hospital; future research should examine the relative prevalence of distress associated with lung cancer in other geographic regions and treatment settings. Our study was cross-sectional, descriptive, with a small sample size (for the quantitative portion; $n = 60$), thus limiting the generalizability of our results. Future research will benefit from studying distress among a larger sample of veterans, and in doing so would be sufficiently powered to examine research questions informed by our preliminary investigation (e.g., does age, cancer type, relationship status, and cognitive impairment predictor levels distress among veterans with lung cancer?).

Another limitation to our study is the lack of data we had around the time since cancer diagnosis, the type of treatment received, and prior mental health history. This information may have impacted how veterans responded to self-report distress measures and the interview. Understanding more about distress during the trajectory of cancer survivorship is an important topic for future study (Mallet et al., 2018). Although veterans were assured of the confidentiality of their research data, social desirability and concerns about privacy may have potentially altered responding. Despite these limitations, our sample size was notably diverse (e.g., with half the sample identified as a person of color), representing a promising first step in understanding the nature of distress within the lung cancer community of veterans. This diversity allows us to capture a range of perspectives and experiences, setting the foundation for more inclusive research and potential targeted future interventions to support individuals facing this challenging diagnosis.

Conclusions

This multimethod study of understanding veteran experiences living with lung cancer highlights that psychological distress is common, variable in nature, and quite bothersome. Future research should (a) identify veterans at risk for distress while living with lung

cancer who may benefit from receiving mental health treatment and (b) test psychosocial interventions to address psychological distress among this vulnerable veteran population.

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