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Facets of Stigma, Self-Compassion, and Health-Related Adjustment to Lung Cancer: A Longitudinal Study

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Abstract

Objective: The aim of this study was to investigate whether three facets of lung cancer stigma (internalized stigma, constrained disclosure, and perceived subtle discrimination) uniquely predicted psychological and physical health-related adjustment to lung cancer across 12 weeks. Additionally, self-compassion was tested as a moderator of the stigma-health relationship.

Method: Adults receiving oncologic treatment for lung cancer ($N = 108$) completed measures of lung cancer stigma, self-compassion, depressive symptoms, cancer-related stress, and physical symptom bother. Multivariable linear regression models were used to investigate cross-sectional and longitudinal relationships (at 6- and 12-week follow-up) between indicators of stigma and health-related outcomes, controlling for covariates. Self-compassion was tested as a moderator of these relationships.

Results: At study entry, higher internalized stigma, constrained disclosure, and perceived subtle discrimination were associated significantly and uniquely with higher depressive symptoms (all $p < .05$). Constrained disclosure and perceived subtle discrimination were also associated significantly with higher cancer-related stress and higher physical symptom bother at study entry (all $p < .05$). Furthermore, higher internalized stigma predicted significant increases in depressive

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symptoms across 12 weeks and in cancer-related stress across 6 and 12 weeks (all $p < .05$). Higher self-compassion significantly moderated relationships between perceived discrimination and psychological health outcomes at study entry as well as between internalized stigma and increasing depressive symptoms across 12 weeks (all $p < .05$).

Conclusions: Results indicated robust relationships between distinct facets of stigma and health-related adjustment to lung cancer. Supportive care programs that bolster self-compassion may be useful for reducing lung cancer stigma.

Keywords

lung cancer; stigma; disclosure; discrimination; self-compassion

People with chronic diseases can be targets of stigma, which is theorized as a fundamental cause of morbidity and mortality (Hatzenbuehler et al., 2013; Nelson, 2002). Stigma is a multifaceted process involving the recognition and devaluation of a person based on a distinguishing characteristic (Dovidio et al., 2000), which results in several intrapersonal and interpersonal processes that confer risk for poor mental and physical health (Chaudoir et al., 2013; Lick et al., 2013). For example, people who are stigmatized may experience internalized stigma (indicated by feelings of shame, guilt, or self-blame; Stuber et al., 2008), anticipated stigma (the degree to which people expect to be stigmatized by others; Quinn & Chaudoir, 2009), and/or enacted stigma—also known as perceived discrimination (experiences of prejudice or unfair treatment reported by the target of stigma; Taylor et al., 1994). Across an array of populations, poor health outcomes are reliably associated with internalized stigma, anticipated, and/or enacted stigma (Earnshaw & Quinn, 2012; Mak et al., 2007; Pascoe & Smart Richman, 2009; Schmitt et al., 2014). The harmful effects of these processes have been examined largely in separate studies, prompting calls to investigate multiple facets of stigma simultaneously with regard to their nonoverlapping and deleterious effects on health (Phelan et al., 2008; Stuber et al., 2008). Such investigation is important for understanding the complex relationships between facets of stigma and health and for informing approaches to reduce stigma.

The lung cancer context provides an opportunity to understand the multifaceted impact of stigma on important, clinically relevant psychological and physical health outcomes. Lung cancer patients report high levels of physical symptom bother (i.e., the extent to which patients are distressed or bothered by their physical symptoms), depressive symptoms, and cancer-related distress (Aass et al., 1997; Cooley, 2000; Hopwood & Stephens, 2000; Tishelman et al., 2007). In more than 10,000 cancer patients, distress was highest among adults with lung cancer, compared with other cancer types (e.g., breast, prostate); furthermore, 26% of lung cancer patients reported clinical levels of anxiety and 18% reported clinical levels of depression (Linden et al., 2012). Lung cancer patients also have bothersome physical symptoms such as pain and low energy (Cooley, 2000; Mosher et al., 2019). The disease also can confer stigma, owing in large part to its link with smoking and the view of lung cancer as self-inflicted (Chambers et al., 2012). Lung cancer patients report experiences of stigma (Chapple et al., 2004; Hamann et al., 2014), regardless of smoking history (Williamson, Kwon, et al., 2020). The Conceptual Model of Lung Cancer Stigma posits that stigma contributes to the burden of illness (Hamann et al., 2014).

In cross-sectional research, higher internalized lung cancer stigma—most commonly indicated by feelings of shame, guilt, or self-blame about the disease—is consistently associated with higher depressive symptoms (Cataldo et al., 2012; Criswell et al., 2016; Gonzalez & Jacobsen, 2012; Ostroff et al., 2019), higher anxiety (Brown Johnson et al., 2014; Williamson, Ostroff, et al., 2020), and higher physical symptom bother (Cataldo & Brodsky, 2013). Most research on lung cancer stigma has focused on internalized stigma, and a goal of this study was to test the nonoverlapping contributions of multiple facets of stigma to health outcomes.

Recently, researchers have highlighted the role of constrained disclosure (i.e., discomfort or avoidance in sharing information about one's lung cancer with others) as an important facet of stigma for lung cancer patients (Hamann, Shen, et al., 2018). Constrained disclosure is conceptualized as a consequence of anticipated stigma (Earnshaw & Quinn, 2012). Specifically, lung cancer patients may be less likely to disclose information about their cancer if they expect others to respond with stigmatizing responses (e.g., when friends ask "Did you smoke?" immediately when learning of one's lung cancer diagnosis). Higher constrained disclosure among lung cancer patients has been associated cross-sectionally with higher depressive symptoms (Ostroff et al., 2019) and anxiety (Williamson et al., 2021). However, less is known about the relationship between constrained disclosure and physical symptom bother as well as the unique contributions of constrained disclosure to health-related adjustment, independent of other facets of lung cancer stigma. Perhaps constrained disclosure of physical symptoms to the medical team and others due to perceived or anticipated stigma hinders lung cancer patients from receiving aid to alleviate such symptoms, which may result in distress.

In addition to internalized and anticipated stigma, the role of enacted stigma warrants study, given the robust evidence that it is deleterious for psychological and physical health across several populations (Pascoe & Smart Richman, 2009; Schmitt et al., 2014). To stay consistent with the terminology used in most theories and research (Stuber et al., 2008), the synonymous label *perceived discrimination* is used in place of *enacted stigma* from this point forward. Discrimination takes both overt and subtle forms (Dovidio et al., 2000; Hebl et al., 2002). Overt discrimination refers to blatant acts of prejudice (Jones et al., 2016), whereas subtle discrimination entails prejudicial nonverbal, paraverbal, and sometimes verbal behaviors that are "ambiguous in intent to harm, difficult to detect, low in intensity, and often unintentional but are nevertheless deleterious" (Jones et al., 2016, p. 1589). Perceived subtle discrimination is more frequently experienced than overt discrimination (Utsey et al., 2002; Van Laer & Janssens, 2011), and meta-analytic findings indicate that the health impacts of subtle and overt discrimination are equally consequential for health (Jones et al., 2016). In the context of lung cancer, perceived discrimination is understudied. One cross-sectional study showed that although lung cancer patients perceived very low levels of overt discrimination from the medical team, it was nevertheless associated significantly with higher depressive symptoms and higher physical symptom bother (Criswell et al., 2016). No study to our knowledge has tested relationships between perceived discrimination and health-related adjustment to lung cancer over time. Longitudinal research is needed to test whether lung cancer stigma predicts change in health-related outcomes over time, which

would inform theoretical models with regard to the temporality of stigma as a predictor of poor outcomes.

The health consequences of stigma are not ubiquitous, in that protective psychosocial factors can moderate the relationship between stigma and health (Pascoe & Smart Richman, 2009), consistent with transactional models of stress and coping (Lazarus & Folkman, 1984). Identifying psychosocial moderators of the stigma-health relationship is important for characterizing for whom and under what conditions stigma is most harmful and for identifying malleable factors that can be harnessed to reduce the impact of stigma on health. Self-compassion (compassion directed toward oneself when confronting distress or painful circumstances; Neff, 2003) is a protective psychosocial factor that may be especially relevant for ameliorating the health impacts of lung cancer stigma. In noncancer samples, self-compassion interventions significantly reduce shame, distress, and depressive symptoms, particularly for those high in shame and self-criticism (Albertson et al., 2015; Germer & Neff, 2013; Gilbert & Procter, 2006; Johnson & O'Brien, 2013). Furthermore, one study in lung cancer patients has shown that higher self-compassion is associated with lower distress (Schellekens et al., 2017). Research is needed to test whether high self-compassion can mitigate relationships between lung cancer stigma and poorer health outcomes.

In the current study, internalized stigma, constrained disclosure, perceived subtle discrimination, self-compassion, and health-related adjustment were assessed in a sample of 108 lung cancer patients at study entry and 6- and 12-week follow-up. We hypothesized that (a) higher internalized stigma, constrained disclosure, and perceived subtle discrimination would be associated at study entry with higher depressive symptoms, higher cancer-related stress, and higher physical symptom bother; (b) facets of lung cancer stigma at study entry would predict declining psychological and physical health outcomes across 6 and 12 weeks; and (c) higher levels of self-compassion would significantly attenuate the relationships between lung cancer stigma and poorer health-related outcomes.

Method

Participants

Lung cancer patients were recruited through university-affiliated oncology clinics from June 2015 to April 2019. Eligible patients were: (a) diagnosed with lung cancer (any type, any diagnosis duration); (b) receiving oncologic treatment; (c) at least 18 years old; and (d) comfortable reading and responding to questions in English. An a priori power analysis revealed that a sample size of 107 participants would provide 80% power to detect a significant effect at $p < .05$ with a moderate effect size in a multivariable regression with 10 predictors. This estimate was selected based on research in lung cancer patients recruited from the same clinic (Kurita et al., 2013). All participants provided written informed consent, and procedures were approved by the Institutional Review Board at the University of California, Los Angeles (UCLA).

Procedure

Consecutive patients at the UCLA oncology clinic were screened and approached for recruitment by study staff, within scheduling constraints (Fares et al., 2018; Williamson et al., 2018). At study entry and 6 weeks and 12 weeks later, participants completed questionnaires in the clinic or at home on paper or online. They returned completed questionnaires in preaddressed stamped envelopes or used a secure digital link for online completion.

Measures

Medical (e.g., cancer type and stage, diagnosis duration, and oncologic treatments) and demographic characteristics (e.g., age, sex, race/ethnicity, education, and marital/partner status) were assessed via self-report and medical chart review.

Lung Cancer Stigma—At study entry, an adapted version of the Cancer Responsibility and Regret Scale (Criswell et al., 2016) was used to measure internalized stigma with eight items rated on a 7-point Likert scale that capture feelings of shame, guilt, regret, and self-blame (e.g., “I feel guilty that I have lung cancer.”). Constrained disclosure was assessed using two items (e.g., “It is difficult for me to tell people about my lung cancer.”) adapted from an HIV stigma scale (Kalichman et al., 2009). Items were rated on 7-point Likert scales, and averaged subscale scores were used for analysis. Internal consistency reliabilities for internalized stigma (α = .75) and constrained disclosure (Spearman-Brown coefficient = .74) were adequate.

A 50-item author-constructed measure was used to assess perceived subtle experiences of discrimination that are attributed to one’s lung cancer status (e.g., “Because of your lung cancer, how often do you experience any situations in which your friends avoid making eye contact with you?”), because no published measure was available (Criswell et al., 2016; Hamann, Shen, et al., 2018). Participants responded to 10 items for each of five social contexts: friends, partner (if applicable), family (other than partner), medical team, and acquaintances/coworkers. They were asked to rate how often they experienced each situation since being diagnosed with lung cancer. Eight items were generated using concepts described in a measure of HIV-stigma (Berger et al., 2001) and two measures of racial discrimination (Nadal, 2011; Torres-Harding et al., 2012), and two items were developed and agreed upon unanimously for inclusion by the study team. An average score across social contexts was used, and exploratory analyses tested whether relationships between discrimination and outcomes varied by social source. Internal consistency reliability was excellent (α = .95). The full measure, zero-order correlations with study variables, and results from exploratory analyses are included in the online supplemental materials.

Health-Related Outcomes—Outcomes were assessed at study entry, 6-week, and 12-week follow up. The 20-item Center for Epidemiologic Studies-Depression scale (Radloff, 1977) assessed depressive symptoms during the previous week (all current α > .83). Widely used in cancer patient samples, the scale has good reliability and validity (Stanton et al., 2005). A total score of 16 or above suggests clinically significant levels of depression (Andresen et al., 1994).

Cancer-related stress was assessed using the 20-item Posttraumatic Stress Disorder Checklist (PCL) for the *Diagnostic and Statistical Manual–Fifth Edition* (*DSM–5*), which demonstrates excellent reliability and validity (Blevins et al., 2015). Symptoms of posttraumatic stress disorder (PTSD) have been measured reliably in cancer patients to indicate levels of cancer-related stress (DuHamel et al., 2004). Participants rated on 4-point Likert scales how bothered they were by problems related to the lung cancer experience (e.g., "In the past month, how much were you bothered by repeated, disturbing dreams of the lung cancer experience?"). The total score was used (all $\alpha > .90$); a score of 33 or above suggests clinically significant symptoms (Blevins et al., 2015).

The 12-item short form of the Memorial Symptom Assessment-Physical Symptom subscale (Portenoy et al., 1994) assesses physical symptom bother in cancer patients, and the items reflect symptoms commonly reported by lung cancer patients (e.g., pain, lack of energy, and lack of appetite). Participants responded on 5-point Likert scales, with higher scores indicating how distressed or bothered patients were by physical symptoms during the previous week. The scale has good reliability and validity when completed by lung cancer patients (Sanders et al., 2010). A mean score of physical symptom bother was used (all $\alpha >$ .80).

Self-Compassion—The 12-item version of the Self-Compassion Scale (Neff, 2003; Raes et al., 2011) was administered at study entry. Used in health-related research, including cancer patient samples (Birnie et al., 2010), the scale has good reliability and validity (Raes et al., 2011). Participants responded to items on 5-point Likert scales, with higher scores indicating higher self-compassion (e.g., "When I'm going through a very hard time, I give myself the caring and tenderness I need."). A total summed score was used ($\alpha = .75$).

Analytic Strategy

Descriptive statistics were computed for all variables. Pearson's correlations assessed the relationships between predictors and outcomes. Age, sex, race/ethnicity, and smoking history were selected as a priori covariates. Additionally, any demographic or medical characteristic related to the outcome at $p < .05$ was added as a covariate.

Multivariable regression analyses of cross-sectional data at study entry were conducted to investigate internalized stigma, constrained disclosure, and perceived subtle discrimination simultaneously as correlates of each outcome, controlling for covariates. To test whether distinct facets of lung cancer stigma predicted declining health-related adjustment over time, the value of the dependent variable at study entry was entered as a covariate in separate analyses of the 6-week and 12-week outcomes. Variables were entered into the regression model(s) in the following blocks: (a) baseline value of dependent variable (for longitudinal analyses), (b) covariates, and (c) facets of lung cancer stigma.

To test whether self-compassion attenuated statistically significant relationships between lung cancer stigma and the outcomes, self-compassion was entered along with the two-way interaction term between self-compassion and internalized stigma, constrained disclosure, or perceived subtle discrimination, respectively, as predictors in separate multivariate regression models. Significant interactions were probed by testing the relationship between

the stigma variable and the outcome at the mean and 1 *SD* above and below the mean of self-compassion (Aiken & West, 1991; Holmbeck, 2002). Two-tailed tests were used for all analyses, and $p < .05$ was considered statistically significant.

Results

Of 240 patients screened, 32 were ineligible, 47 declined to participate, and 23 passively refused (e.g., indicated interest in being reapproached but attempts to do so were unsuccessful). Of 208 eligible patients, 138 (66%) provided informed consent and the 108 (52%) participants (56 men, 52 women) who completed the first survey were included in subsequent analyses. Of the 108 participants, 87 (81%) and 79 (73%) participants completed the 6- and 12-week follow-up assessments, respectively. Participants who dropped out did not differ significantly from those who completed all three assessments on any variable.

As shown in Table 1, on average, participants were 64.8 years old and had 15.8 years of education. Most participants were married or living as married, non-Hispanic White, diagnosed with nonsmall cell lung cancer and Stage IV disease, and currently or formerly smoked. On average, participants had been diagnosed for more than 9 months but within the prior month had begun the following therapies: immunotherapy ($n = 51$), chemotherapy ($n = 27$), targeted therapy ($n = 9$; i.e., a family of anticancer treatments used for patients who have particular genetic or molecular abnormalities within the cells of their lung cancer tumors), and combinations of two or more of these agents ($n = 21$). Because too few participants received targeted therapy for reliable analysis, they were combined with those receiving immunotherapy for analysis; these groups did not differ significantly on any variable.

On average, patients reported slight disagreement with stigma items, although scores spanned the range of the scales and some patients endorsed moderate or strong agreement. Overall, about half of the sample ($n = 52$ of 106) reported at least one experience of subtle discrimination. Depressive symptoms and cancer-related stress was elevated, in that 30.2% ($n = 32/106$) and 28.6% ($n = 30/105$) of participants reported symptoms suggestive of clinical depression and cancer-related stress, respectively. On average, physical symptom bother was low, although average scores ranged from “no bother” to “quite a bit.”

Health Outcomes Regressed on Facets of Lung Cancer Stigma

Lower yearly family income was related significantly to higher cancer-related stress ($t(101) = 3.11$, $p = .002$), and women reported higher physical symptom bother than men ($t(106) = -2.65$, $p = .009$). All other relationships between potential covariates and outcomes were not statistically significant (all $p > .08$). As such, income was entered along with a priori covariates (i.e., age, sex, race/ethnicity, or smoking history) in all subsequent analyses.

Study Entry—The three facets of lung cancer stigma collectively accounted for 17% of the variance in depressive symptoms (F-change = 6.84, $p < .001$), 20% of the variance in cancer-related stress (F-change = 9.12, $p < .001$), and 17% of the variance in physical symptom bother (F-change = 7.08, $p < .001$; see online supplemental materials for full regression tables). Specifically, higher constrained disclosure was associated significantly and uniquely

with higher depressive symptoms (b = 1.09, SE = 0.50, 95% confidence interval, CI [0.10, 2.08]), higher cancer-related stress (b = 1.20, SE = 0.46, 95% CI [0.28, 2.13]), and higher physical symptom bother (b = 0.13, SE = 0.04, 95% CI [0.05, 0.20]). Higher perceived subtle discrimination also was associated significantly with the three outcomes: depressive symptoms (b = 8.09, SE = 3.59, 95% CI [0.97, 15.22]), cancer-related stress (b = 10.49, SE = 3.34, 95% CI [3.85, 17.13]), physical symptom bother (b = 0.60, SE = 0.26, 95% CI [0.08, 1.12]). Finally, higher internalized stigma was associated significantly with higher depressive symptoms (b = 1.90, SE = 0.90, 95% CI [0.12, 3.69]). Regarding covariates, women reported significantly higher cancer-related stress (b = 3.44, SE = 1.71, 95% CI [0.04, 6.83]) and physical symptom bother (b = 0.39, SE = 0.13, 95% CI [0.12, 0.65]) than did men. Other covariates were not related significantly to any outcome (all p > .16).

Changes in Health-Related Outcomes Across 6 and 12 Weeks—For each outcome, the study entry value significantly predicted the 6-week and 12-week score, accounting for 22–58% of the variance (see online supplemental materials for full regression tables). Higher internalized stigma significantly predicted increasing cancer-related stress across 6 weeks (b = 2.01, SE = 0.83, 95% CI [0.36, 3.67]) and 12 weeks (b = 2.30, SE = 0.75, 95% CI [0.79, 3.81]), as well as increasing depressive symptoms across 12 weeks (b = 2.24, SE = 0.89, 95% CI [0.46, 4.03]). No other relationships between the three stigma measures and changes in outcomes were statistically significant over 6 or 12 weeks (all p > .11).

Regarding covariates, non-Hispanic White race/ethnicity was associated significantly with reductions in physical symptom bother across 6 weeks (b = −0.31, SE = 0.14, 95% CI [−0.58, −0.04]). Also, older age was associated significantly with increasing cancer-related stress over 12 weeks (b = 0.17, SE = 0.07, 95% CI [0.03, 0.32]) and participants who never smoked (n = 38; compared with those who formerly or currently smoked) evidenced significant increases in stress over 12 weeks (b = −4.11, SE = 1.81, 95% CI [−7.72, −0.50]).

Self-Compassion as a Moderator of the Relationship Between Stigma and Outcomes

At study entry, greater use of self-compassion significantly attenuated the relationship between higher perceived subtle discrimination and depressive symptoms (b = −1.13, SE = 0.36, p = .002, 95% CI [−1.85, −0.42]) as well as cancer-related stress (b = −0.76, SE = 0.37, p = .043, 95% CI [−1.49, −0.03]). Additionally, greater use of self-compassion significantly attenuated the relationship between higher internalized stigma and increasing cancer-related stress across 12 weeks (b = −0.19, SE = 0.09, p = .039, 95% CI [−0.38, −0.01]). These significant interactions are displayed in Figure 1.

Higher perceived subtle discrimination was associated significantly with higher depressive symptoms at the mean (b = 10.62, SE = 3.25, p = .002, 95% CI [4.18, 17.08]) and 1 SD below the mean of self-compassion (b = 20.24, SE = 4.79, p < .001, 95% CI [10.71, 29.76]), but not at 1 SD above the mean of self-compassion (b = 1.02, SE = 4.08, p = .804, 95% CI [−7.10, 9.13]). Similarly, higher perceived subtle discrimination was associated significantly with higher cancer-related stress at the mean (b = 11.88, SE = 3.32, p = .001, 95% CI [5.29, 18.48]) and 1 SD below the mean of self-compassion (b = 18.29, SE = 4.90, p < .001,

95% CI [8.55, 28.03]), but not at 1 *SD* above the mean of self-compassion ($b = 5.48$, $SE = 4.18$, $p = .193$, 95% CI [−2.82, 13.77]). Finally, higher internalized stigma was associated significantly with increasing cancer-related stress across 12 weeks at the mean ($b = 1.90$, $SE = 0.77$, $p = .016$, 95% CI [0.37, 3.43]) and 1 *SD* below the mean of self-compassion ($b = 3.54$, $SE = 1.04$, $p = .001$, 95% CI [1.47, 5.61]), but not at 1 *SD* above the mean of self-compassion ($b = 0.26$, $SE = 1.14$, $p = .822$, 95% CI [−2.03, 2.55]). There were no other significant interactions between self-compassion and facets of lung cancer stigma on outcomes (all $p > .06$).

Discussion

In this 12-week study of 108 men and women in treatment for lung cancer, higher internalized stigma, constrained disclosure, and perceived subtle discrimination were significantly and uniquely associated with poorer psychological and/or perceived physical health outcomes at study entry, beyond sociodemographic and smoking-related characteristics, as hypothesized. Additionally, higher internalized stigma (but not constrained disclosure or perceived discrimination) predicted significant increases in cancer-related stress across 6 and 12 weeks and significant increases in depressive symptoms across 12 weeks. Finally, higher self-compassion significantly attenuated relationships between internalized stigma, perceived discrimination, and poorer psychological health outcomes at study entry and across time, suggesting that high levels of self-compassion may protect against the harmful effects of internalized stigma and perceived subtle discrimination on psychological health outcomes.

Cross-Sectional Relationships of Internalized Stigma, Constrained Disclosure, and Perceived Subtle Discrimination With Outcomes at Study Entry

Average levels of internalized stigma and constrained disclosure were relatively low (compared with the possible range of scores), consistent with some previous findings (Criswell et al., 2016; Lebel et al., 2013). A substantial proportion (49.5%) of participants reported at least one experience of subtle discrimination, which is a novel finding. Despite relatively low endorsement of stigma items, significant and robust relationships between facets of lung cancer stigma and poorer outcomes are consistent with previous findings (Cataldo et al., 2012; Cataldo & Brodsky, 2013; Criswell et al., 2016; Gonzalez & Jacobsen, 2012; Williamson, Ostroff, et al., 2020). The present study demonstrated nonoverlapping relationships of internalized stigma, constrained disclosure, and perceived subtle discrimination with outcomes, which has not previously been reported in the literature and underscores the unique contributions of each of these facets of stigma to health-related outcomes.

This is the first study to show that higher perceived subtle discrimination is associated with poorer psychological and physical health outcomes in adults with lung cancer. Findings are consistent with the broader literature demonstrating that subtle discrimination is associated with depressive symptoms and poor quality of life in adults who do not have cancer (Jones et al., 2016). Notably, higher perceived discrimination and constrained disclosure

were cross-sectionally associated with higher cancer-related stress (i.e., negative cognitions, hypervigilance, and avoidance; Blevins et al., 2015), whereas internalized stigma was not.

Longitudinal Relationships of Internalized Stigma, Constrained Disclosure, and Perceived Subtle Discrimination With Outcomes Across 6 and 12 Weeks

Researchers have called for longitudinal study of lung cancer stigma and health-related outcomes (Criswell et al., 2016; Gonzalez & Jacobsen, 2012), and this is the first study to demonstrate that internalized lung cancer stigma is uniquely associated with increasing depressive symptoms and cancer-related stress over 3 months, beyond sociodemographic and smoking-related factors. These temporal relationships support theoretical models of lung cancer stigma (Hamann et al., 2014) and strengthen causal inference that internalized stigma predicts declining psychological health over time. An alternative interpretation is that a third variable—such as generalized negativity—is associated with higher perceptions of stigma and discrimination as well as poorer outcomes. However, this explanation is less likely, given that higher stigma at study entry predicted significant changes in outcomes. Internalized stigma was not associated with worsening physical symptoms, which is consistent with the theory that internalized stigma is particularly deleterious for psychological (vs. physical) health (Chaudoir et al., 2013).

Constrained disclosure and perceived discrimination were not associated significantly with changes across time in psychological or physical health. However, exploratory analyses indicated that relationships between perceived subtle discrimination and health outcomes varied by social source (see online supplemental materials). In brief, higher perceived subtle discrimination from one's partner or close friends was associated with multiple indicators of poor health at study entry and across 6 weeks; perceived discrimination from one's medical team was robustly associated with higher cancer-related stress at study entry and across 12 weeks; and higher perceived discrimination from acquaintances or coworkers was reliably associated with higher depressive symptoms at study entry and across 12 weeks.

The Buffering Role of Self-Compassion

As hypothesized, higher than average levels of self-compassion buffered the relationship of internalized stigma and perceived subtle discrimination with poorer psychological health. These results build upon previous findings that self-compassion can reduce feelings of shame (Albertson et al., 2015), which is a central component of internalized lung cancer stigma (Hamann et al., 2014). Higher self-compassion and the accompanying lower levels of self-judgment (Neff, 2016) may protect lung cancer patients from making internal attributions in response to perceived discrimination. An important next step is to test whether experimental manipulation of self-compassion (e.g., Mindful Self-Compassion psychosocial intervention; Neff & Germer, 2013) reduces internalized stigma and depressive symptoms in lung cancer patients.

To our knowledge, this is the first study to demonstrate that a psychological resource such as self-compassion can moderate relationships between lung cancer stigma and health outcomes. These findings inform theoretical perspectives about for whom and under what conditions lung cancer stigma is particularly harmful (Hamann et al., 2014). Specifically,

self-compassion should be considered as a moderator of the stigma process in addition to other proposed psychosocial moderators such as social support (Hamann et al., 2014). Comprehensive theoretical frameworks of health-related stigma are needed (Deacon, 2006), and the present findings can contribute to the development of broader theories of health-related stigma.

Study Limitations

Although this study's longitudinal design strengthens causal inference, intervention trials that reduce stigma and improve other outcomes would provide more definitive evidence. Experiences of constrained disclosure were assessed globally; future studies should assess the specific sources (e.g., medical team, family) with whom lung cancer patients avoid sharing their experience. The study's discrimination measure was adapted from measures developed in noncancer samples, and research is needed to establish its psychometric properties. Correction for multiple tests was not applied; some strategies (e.g., Bonferroni) can reduce statistical power at the expense of a Type II error (Fiedler et al., 2012 which is of concern given this study's relatively small sample. Future research with larger samples is necessary.

Conclusions and Implications

Traditionally, the harmful effects of stigma and discrimination have been investigated in separate research disciplines and studies, prompting calls for researchers to study stigma and discrimination simultaneously with regard to their potentially independent and deleterious effects on health (Stuber et al., 2008). To this end, the present findings demonstrate that internalized stigma, constrained disclosure, and perceived discrimination all are independently associated with poorer psychological and physical health.

The inclusion of additional psychosocial moderators in theoretical models of health-related stigma may help to identify modifiable processes that can be harnessed through psychosocial interventions to reduce stigma. Specifically, evidence-based interventions that focus on cultivating mindfulness and bolstering self-compassion can be tailored specifically to address disease-relevant issues. For example, lung cancer patients who have high internalized stigma may benefit from learning how to notice and label self-judgmental cognitions (e.g., "I feel like I did this to myself.") and replace them with a more compassionate way of relating to oneself (e.g., "I'm doing the best I can to help myself get through this difficult time.") Additionally, strategies from cognitive–behavioral therapy (e.g., cognitive restructuring; Butler et al., 2006) may be helpful for patients in generating cognitions to reduce stigma about lung cancer. Finally, clinician-focused (e.g., empathic communication skills training) and couple-based interventions (e.g., bolstering socially supportive exchanges) may aid in reducing stigma and, in turn, promoting well-being for cancer patients in ways that embrace interpersonal pathways of intervention (Hamann, Ver Hoeve, et al., 2018). An essential next step is to develop and test supportive care efforts reduce stigma and improve health for this population.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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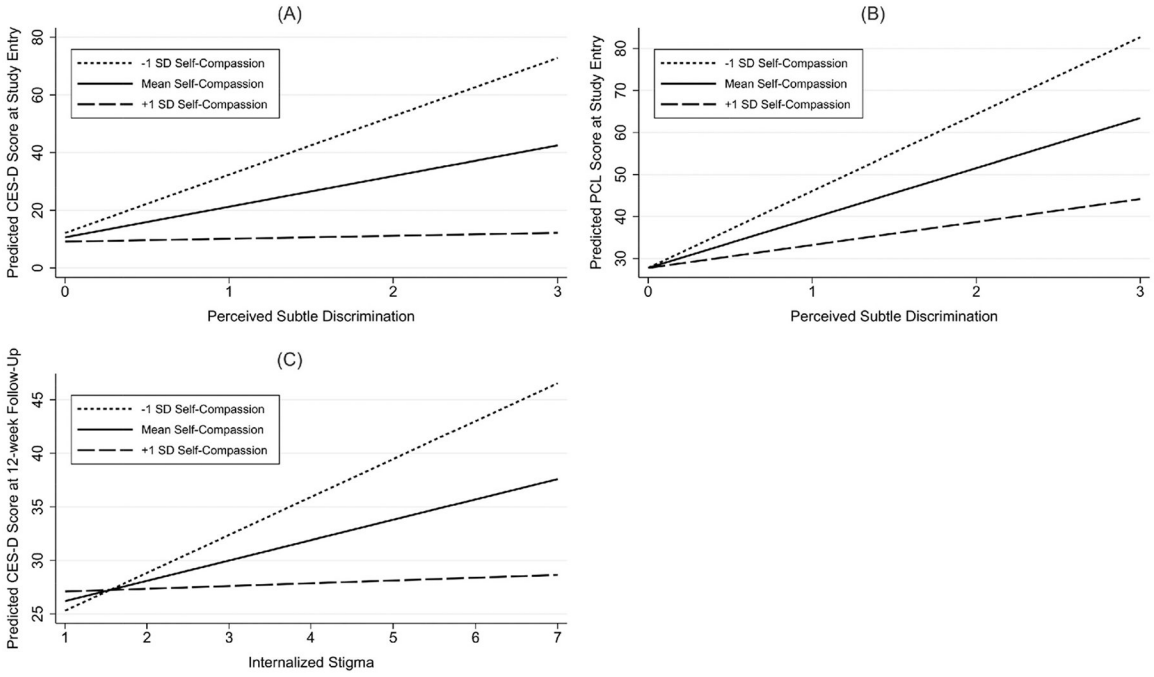

Figure 1.

Higher Self-Compassion at Study Entry Significantly Moderates the Relationship Between Facets of Lung Cancer Stigma and Depressive Symptoms at Study Entry (A), Cancer-Related Stress at Study Entry (B), and Depressive Symptoms at 12-Week Follow-Up (C)

Note. CES-D = Center for Epidemiologic Studies-Depression scale; PCL = Posttraumatic Stress Disorder Checklist for *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (*DSM–5*).

Table 1

Sample Characteristics and Demographics (N = 108)

Variable	*n*	*M*	*SD*
Age (in years)	108	64.81	11.49
Years of education	100	15.79	2.85
Internalized lung cancer stigma	105	2.41	1.15
Constrained disclosure	104	2.70	1.81
Perceived subtle discrimination	106	0.17	0.28
CES-D depressive symptoms at study entry	106	12.17	9.49
CES-D depressive symptoms at 6-week follow-up	85	12.61	8.20
CES-D depressive symptoms at 12-week follow-up	78	11.69	9.30
PCL cancer-related stress at study entry	105	29.52	9.59
PCL cancer-related stress at 6-week follow-up	85	28.29	10.04
PCL cancer-related stress at 12-week follow-up	75	29.24	10.54
MSAS physical symptom bother at study entry	108	0.75	0.71
MSAS physical symptom bother at 6-week follow-up	87	0.67	0.58
MSAS physical symptom bother at 12-week follow-up	78	0.70	0.66
SCS self-compassion	105	45.10	8.47
	n	**Median**	**Interquartile range**
Months since lung cancer diagnosis	108	9.68	23.46
Days since beginning current treatment	108	29.00	137.00

	n	%
Sex		
Male	56	51.9
Female	52	48.1
Race/ethnicity		
Non-Hispanic White	77	71.3
Other race/ethnicity	31	28.7
Marital status		
Married/living as married	70	64.8
Not married	37	34.3
Did not report	1	0.9
Yearly family income		
>$100,000	57	52.8
$65,000-$99,999	20	18.5
<$65,000	28	25.9
Did not report	3	2.7
Smoking history		
Currently or formerly smoked	70	64.8
Never smoked	38	35.2
Cancer type		
Nonsmall cell lung cancer	96	88.9

	n	%
Other lung cancer type	12	11.1
Stage of disease		
Stages I-IIIB	28	25.9
Stage IV	80	74.1
Current oncologic treatment		
Immunotherapy only	51	47.2
Chemotherapy only	27	25.0
Targeted therapy only	9	8.3
Combination therapy	21	19.5
Line of current oncologic treatment		
First	52	48.1
Second	23	21.3
Third	18	16.7
Fourth or fifth	14	13.0
Missing	1	0.9
History of lung cancer-related surgery		
Yes	32	29.6
No	75	69.4
Missing	1	0.9
Past receipt of chemotherapy for lung cancer		
Yes	50	46.3
No	57	52.8
Missing	1	0.9

Note. CES-D = Center for Epidemiologic Studies-Depression scale; PCL = Posttraumatic Stress Disorder Checklist for *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (*DSM–5*); MSAS = Memorial Symptom Assessment Scale; SCS = Self-compassion Scale.