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Late Life Anxiety and Depression Symptoms, and Suicidal Behaviors in Racial/Ethnic Minority Older Adults in Community-Based Organizations and Community Clinics in the US

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Abstract

Objective: Late life anxiety and depression represent a significant source of disability, with racial/ethnic minority older adults in the US showing marked disparities in healthy aging. Community-based organizations (CBOs) and community clinics serve these populations for preventive care, yet few identify their mental health service needs. We examine the association between race/ethnicity and risk of mild to severe symptoms of anxiety and depression, and suicidal behaviors in minority older adults.

Methods: Data comes from the multisite randomized controlled trial *Building Community Capacity for Disability Prevention for Minority Elders*, which screened 1,057 adults (45.5% Asian, 26.8% Latinx, 15.0% non-Latinx Black, 8.5% non-Latinx White, and 4.2% American Indian) aged 60+ years at CBOs and clinics in Massachusetts, New York, Florida, and Puerto Rico. Screened participants completed the Generalized Anxiety Disorder-7 for anxiety symptoms, the Geriatric Depression Scale-15 for depression symptoms, and the Paykel Suicide Risk Questionnaire for suicidal behaviors.

Results: 28.1% of older adults reported mild to severe anxiety symptoms, 30.1% reported mild to severe depression symptoms, and 4.3% reported at least one suicidal behavior. Compared to non-Latinx Whites, Latinxs had higher odds of mild to severe anxiety and depression symptoms and one or more suicidal behaviors, and Asians had higher odds of mild to severe depression symptoms only.

Conclusions: There is an urgent need to improve outreach for screening and preventive mental health care for minority older adults. Expanding outreach and community-based capacity to identify and treat minority older adults with mental health conditions represents an opportunity to prevent disability.

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Keywords

racial/ethnic minority older adults; anxiety; depression; suicidal behaviors

The US Census Bureau projects that by 2060 nearly one in four people in the US will be ages 65+ (Medina, 2020). Many US older adults have low-income or belong to diverse racial/ethnic groups (23%), and experience higher and earlier morbidity and mortality than non-Latinx Whites (Davison et al., 2019; Gerst et al., 2010). These changing demographics will result in a disproportionate rise in age-related health conditions associated with disability, such as elevated anxiety and depression symptoms, leading to substantial morbidity (Jones, 2012; Morin et al., 2020; Yang & Levkoff, 2005).

About 12.6% of US community-dwelling adults ages 65+ suffer from anxiety disorders (Patel et al., 2019), and 13.7% of adults ages 55+ meet criteria for major depressive disorder (Laborde-Lahoz et al., 2015). Although prevalence of these disorders declines with age (Byers et al., 2010; Hybels & Blazer, 2003), late life mental health symptoms remain common, particularly in women. Despite effective diagnostic tools and therapies for late life anxiety and depression, these disorders remain undiagnosed and untreated (Grenier et al., 2019; Knight, 2019) which is associated with increased morbidity and mortality, decreased quality of life, increased cost of care, and higher risk of suicide (Cullen, 2019; Feng et al., 2013; Ho et al., 2014). Older adults are also at higher risk of suicide than middle aged adults due to physical and cognitive decline and cumulative stressors (Almeida et al., 2012; Bennardi et al., 2019; Chang et al., 2017; Fässberg et al., 2016; Lutz & Fiske, 2018). Late life suicidal behaviors are often confounded with other health conditions, psychological distress, or dementia, making it difficult to detect (Hegeman et al., 2012; Van Orden & Conwell, 2016).

Late life anxiety and depression can be undetected and untreated due to a misperception that mental health decline is a normal part of aging (Balsamo et al., 2018; Kiosses & Marino, 2019; Knight, 2019;). Additionally, racial/ethnic minority older adults encounter increased stigma around mental health-care (Jimenez et al., 2013) and are exposed to cumulative stressors associated with higher risk of poor mental health (Casado & Leung, 2002; Kang et al., 2013; Sadavoy et al., 2004). Evidence suggests that minority older adults may be at higher risk of poor mental health because of cumulative stressors such as economic inequity, differences in cultural values, immigration status and acculturation (Aranda et al., 2001), language barriers (Chen et al., 2009; Derr, 2016; Kim et al., 2015; Mui & Kang, 2006), and lack of access to healthcare (Aranda et al., 2001).

Social Determinants of Health Framework

According to the World Health Organization (WHO, 2014), mental health is shaped by social, cultural, and economic factors, and physical environments. Social determinants of health (SDH) such as income, education, employment, gender, age, environment, cultural and social values have been associated with mental disorders (Lund et al., 2018; Solar & Irwin, 2010; WHO, 2021). We draw from the SDH framework to understand factors associated with anxiety, depression, and suicidal behaviors in minority older adults.

Economic inequity

Prior work has shown that poverty and financial strain, as SDH, may contribute to increased risk of depression in racial/ethnic minority older adults compared to non-Latinx Whites (Angel et al., 2003; García et al., 2019; Kahn & Fazio, 2005). Economic difficulties can expose these minorities to additional stressors (e.g., lack of food, medicine, utilities), further increasing their vulnerability to depressive symptoms (Chiriboga et al., 2002; Krause, 1987; Krause et al., 1991). Older Latinx are more likely to live below the federal poverty level (Administration for Community Living, 2018), and to experience financial stress associated with greater depressive symptoms (Chiriboga et al., 2002). Low socioeconomic status among African Americans is also associated with increased risk of depressive symptoms (Bailey et al., 2019; Holden et al., 2013).

Differences in cultural values

Culture, as a broad construct including shared attitudes, beliefs, and norms, might relate to how diverse groups define what is “normal” and shape how they explain, experience, and respond to mental distress, including help-seeking behaviors (Torres et al., 2020). Similarly, “ethnicity”, defined as common ancestry and shared cultural traditions specific to social context and heritage (Cokley & Moore, 2007), can influence interpretation of mental health symptoms.

Immigration status and acculturation

Immigration status and low levels of acculturation are also associated with increased risk of depression in the US (Aranda et al., 2001). Low acculturation can be a stressor among Latinx immigrants (Caplan 2007), with longer duration in the US correlating with worse mental health (Perreira et al., 2015). Immigrant older adults often face a lifetime of adjustment, which can contribute to poor mental health (Lum & Vanderaa, 2010). Gerst et al. (2010) found that older Mexican American immigrants were at higher risk for depressive symptoms compared to US-born Mexican Americans, a finding that has been replicated in Asian older adults (Mui & Kang, 2006). Low levels of acculturation might also lead to family conflict due to dissonance among family members of different generations (Lau et al., 2005). Older Latinx may also expect their children to care for them and follow their cultural values of “familismo” and respect (Jimenez et al., 2019). Limited English proficiency and language preference, often used as proxies of acculturation, are also linked with less access to medical care and poor health status and mental health among ethnic minorities including Latinx, Asians, and African Americans (Dubard & Gizlice, 2008; Sentell et al., 2007; Kim et al., 2011; Wisnivesky et al., 2012).

Access to healthcare

Mental health treatment for underserved racial/ethnic minority older adults is mostly centered in primary care (Jimenez et al., 2012; Snowden & Pingitore, 2002). Yet, primary care providers (physicians, nurse practitioners, physician assistants) and behavioral health care providers (psychiatrists, psychologists, social workers) often do not detect or treat

mental disorders among ethnic minorities (Jones et al., 2018; Tai-Seale et al., 2007; Ward et al., 2016) given their lack of training in cultural differences and unawareness of how anxiety and depression symptoms might manifest (Bailey et al., 2019).

Current gap in knowledge

Research done in primary care elucidates intervention trends and targets for anxiety, depression, and suicidal behaviors among older adults (Kroenke et al., 2007; Luoma et al., 2002; Park & Unützer, 2011). However, many racial/ethnic minority older adults may not seek services due to lack of trust and prior negative experiences, as well as linguistic barriers (Balakrishnan & Jordan, 2019; Glover et al., 2017; Hansen et al., 2016; Musa et al., 2009). Community-based organizations (CBOs), where these adults congregate, offer a unique opportunity to identify those with unmet need and serve them. CBOs are important health system stakeholders providing services to the most marginalized members of their community (Blas et al., 2008; Chillag et al., 2002) encompassing a range of organizations including councils on aging, senior and day centers, faith-based organizations, and community health centers (Ramanadhan et al., 2012). Most CBOs offer services to maintain patients' health and well-being such as educational programs, legal assistance, nutritional support, transportation, housing, and financial services (Siegler et al., 2015; Turner et al., 2019; Wu et al., 2019). In contrast, community clinics provide affordable medical care. CBOs and clinics can aid in promoting mental health literacy, social inclusion, mental health awareness, and reducing stigma around receipt of mental health services (Evans-Lacko et al., 2014; Jorm, 2012; Turner et al., 2019; Wu et al., 2019). However, little is known about the prevalence and correlates of mental health symptoms among racial/ethnic minority older adults who receive services through CBOs and clinics.

The present study

Our study addresses the current gap in knowledge regarding rates of clinically significant anxiety and depression symptoms and suicidal behaviors in racial/ethnic minority older adults receiving services in CBOs and clinics across 4 US states (Massachusetts, New York, Florida, and Puerto Rico). Since poor mental health for racial/ethnic minority older adults is associated with barriers including economic inequity (Chiriboga et al., 2002; Krause, 1987; Krause et al., 1991; Bailey et al., 2019; Holden et al., 2013), immigrant status (Aranda et al., 2001), and English language proficiency (Kim et al., 2011), we sought to examine racial/ethnic differences in mental health outcomes in a community-based sample of low-income mostly immigrant minority older adults. This contextual approach provides an opportunity to disentangle overlapping contributing factors to poor mental health in these minorities and highlights the importance of mental health screening within the CBOs and clinics where they seek care. Specifically, we (1) describe demographic and mental health outcomes of minority older adults screened as part of a larger randomized controlled trial; (2) explore the distribution of these outcomes by place of recruitment (CBOs versus clinics); (3) evaluate the association between race/ethnicity and mild to severe anxiety and depression symptoms and any suicidal behavior; and (4) examine the association between preferred language and mental health outcomes. We hypothesized that racial/ethnic minority older adults would have increased odds of mild to severe anxiety and depression symptoms and any suicidal

behavior compared to non-Latinx Whites (Alegría et al., 2019). Secondary hypotheses were that we would observe higher prevalence of depression among older adults recruited at clinics compared to CBOs (Ell, 2006); that adults ages 75+ across racial/ethnic groups would report better mental health outcomes than adults ages 60–74 (Hybels & Blazer, 2003); and that non-English speakers would be at increased risk of poor mental health than English-speakers (Kim et al., 2019).

Methods

Sampling and Procedures

We used data from the multisite randomized controlled trial *Building Community Capacity for Disability Prevention for Minority Elders* (Alegría et al., 2019), which combined mental health and physical disability prevention interventions in 9 CBOs and 2 community-based clinics in 4 US states: Massachusetts (2 clinics and 5 CBOs), New York (2 CBOs), Florida (1 CBO), and Puerto Rico (1 CBO). Data were collected between May 2015 and March 2019, with 1,057 participants screened for eligibility. Screening was administered only if participants were 60+ years old and fluent in English, Spanish, Mandarin, or Cantonese. Research assistants (RAs) approached potential participants at the collaborating CBOs and clinics to describe the screening process or conducted outreach events at participating sites. If the participant showed interested, the RA arranged an in-person meeting for informed consent using the UCSD Brief Assessment of Capacity to Consent (Jeste et al., 2007). Participants who passed capacity to consent were screened for eligibility through an in-person interview in their preferred language.

In the present study, we used data from the 1,057 participants screened for eligibility, from whom 307 were eligible and agreed to participate in the trial (Alegría et al., 2019). These 1,057 participants were compensated with a \$10 gift card after completing the screening. Screening data included demographic information and an assessment of mental and physical health symptoms described below. The protocol was approved by the Institutional Review Boards of Massachusetts General Hospital/Mass General Brigham (protocol number 2015P001505) and New York University (protocol i14–01903), with ceded reviews for CBOs and clinics conducting human subject's research.

Outcome Measures

Mild to severe anxiety symptoms.—Anxiety symptoms were assessed via the Generalized Anxiety Disorder-7 (GAD-7), a 7-item self-report screening of symptom severity of generalized anxiety disorder (GAD; Spitzer et al., 2006). Respondents are asked how often, in the last two weeks, they have been bothered by each of the core GAD symptoms (0 = (not at all) and 3 = (nearly every day)). The scale ranges from 0 to 21, with higher scores reflecting worse anxiety symptoms. Using a threshold score of 10, the GAD-7 has a sensitivity of 89% and a specificity of 82% for GAD. Scores of five and above indicate *mild to severe anxiety symptoms* (Spitzer et al., 2006); thus, our outcome variable was an indicator equal to one if the GAD-7 ≥ 5 and equal to zero otherwise. Internal consistency (Cronbach's α) was .89 in the overall sample, and .86, .86, .92, and .93 in English, Spanish, Mandarin, and Cantonese, respectively.

Mild to severe depression symptoms.—Depression symptoms were assessed using the Geriatric Depression Scale-15 (GDS-15), a 15-item self-report screening of clinical depression among older adults (Sheikh & Yesavage, 1986). Participants are asked *yes* or *no* questions on how they felt the previous week. The scale ranges from 0 to 15, with higher scores reflecting more depression symptoms. A score of five and above is indicative of *mild to severe depression symptoms* (Sheikh & Yesavage, 1986); thus, our outcome variable was an indicator equal to one if the GDS-15 ≥ 5 and equal to zero otherwise ($\alpha = .84$ in the overall sample, and .79, .84, .86, and .87 in English, Spanish, Mandarin, and Cantonese, respectively).

Suicidal behaviors.—Suicidal behaviors were assessed using the Paykel Suicide Risk Questionnaire, a 5-item self-report screening (*yes/no* questions) for assessing passive and active suicidal ideation and behaviors within the past month (Paykel et al., 1974). Our outcome variable was an indicator equal to one if the participant endorsed any of the Paykel items (*yes* to either question) and equal to zero otherwise. We refer to this indicator as *any suicidal behavior*.

Independent variables

Race/ethnicity.—Race and ethnicity were assessed using self-reported information. Participants were first classified as Latinx if they self-identified as of Spanish, Hispanic, or Afro-Caribbean descent ($N = 283$). The remaining participants were classified as Asian if they self-identified as Asian/Pacific Islander ($N = 481$); as American Indian ($N = 44$); as non-Latinx Black if they self-identified as Black/African/African American ($N = 159$); and as non-Latinx White if they self-identified as White but not as of Latinx descent ($N = 90$).

Interview language.—Preferred interview language was used as a proxy for acculturation, and was assessed through the question *Would you be comfortable participating in a program in any of the following languages? If so, which one?* Participants could select more than one language. Response options included *English, Spanish, Mandarin, Cantonese*, and *none of these*. These language options were provided because participants were eligible for the trial only if they spoke at least one of them. When participants selected more than one language ($N = 119$), they indicated the one they preferred to be interviewed.

Previous literature has documented measurement invariance by race/ethnicity and language for the GAD-7, which has been found to have the same factor structure and equivalent response patterns among Latinx Americans with English or Spanish language preferences (Mills et al., 2014). No studies assessing the measurement properties of the GDS-15 or the Paykel Suicide Risk Questionnaire were identified (Cassidy et al., 2018). We conducted our analyses with the potential limitation that observed outcome differences might reflect differences in interpretation for some of our outcome measures.

Additional covariates

Known correlates of our three outcomes were included as covariates (Aranda et al., 2001; Byers et al., 2010; Chiriboga et al., 2002; Hong et al., 2014; Richardson et al., 2011).

Socio-demographics.—We included age (60–64, 65–74, 75+ years old), gender (male, female), and education (less than high school, high school diploma or more).

Physical health.—Physical health was measured using the Short Physical Performance Battery (SPPB), an objective tool from the National Institute of Aging to evaluate lower extremity functioning in older persons (Guralnik et al., 1994). It includes three tests of functional relevance: standing balance, 4-meter gait speed, and five-repetition sit-to-stand motion. Each test is scored on a 5-point scale from 0 (unable to perform/low performance) to 4 (high performance) and summed for a score range between 0 and 12, with higher scores representing better physical functioning. SPPB scores were used as a continuous measure.

Site of recruitment.—A binary variable equal to one if participants were recruited in CBOs and equal to zero if they were recruited in clinics was also included, because place of recruitment could be associated with the outcomes.

Data Analysis

Descriptive statistics.—We described the outcome measures and covariates in the total sample and by race/ethnicity, comparing non-Latinx Whites and racial/ethnic minority groups (Table 1). Statistical comparisons used cluster-robust standard errors to account for nonindependence of observations within our 11 sites (CBOs + clinics). Thus, the joint test of equality across racial/ethnic groups had an $F(h, G - 1)$ distribution, where h is the number of (linearly independent) restrictions, and G is the number of clusters (CBOs + clinics). We also compared the distribution of the outcomes by site of recruitment (clinics versus CBOs; Table 2). Statistical comparisons between clinics and CBOs also used cluster-robust standard errors so the joint test of equality across clinics and CBOs had the same $F(h, G - 1)$ distribution.

Association between race/ethnicity and outcome measures.—We used logistic regression models to estimate the association between race/ethnicity and *mild to severe anxiety symptoms* (GAD-7 = 5), *mild to severe depression symptoms* (GDS-15 = 5), and *any suicidal behavior* (endorsing any Paykel item), controlling for the covariates of gender, education, age, place of recruitment, and physical health (Table 3). To account for nonindependence among participants from the same CBOs or clinics, our models used cluster-robust standard errors. Although we could have modeled nonindependence using multilevel models with a site-level random intercept, we did not because the intraclass correlation coefficients were very low in our sample (between .006, and .055), and a likelihood ratio test versus a (single-level) logistic model could not reject the null hypothesis that the random intercepts were zero. Individual coefficients for categorical variables (i.e., race/ethnicity and age) were interpreted if the omnibus tests were significant at the .05 level. Odds ratios (OR) and their 95% Confidence Intervals (95% CI) were estimated using Stata 15 (Stata Corp, 2017).

Association between interview language and outcome measures.—Since interview language was highly correlated with race/ethnicity, our logistic models examining the association between race/ethnicity and the outcomes did not control for interview

language. We applied this exclusion because the effect of race/ethnicity could not be estimated independently from interview language (for example, 99.5% and 100% of participants interviewed in Mandarin and Cantonese, respectively, self-identified as Asian; see Table 1). As a sensitivity analysis, we computed the same logistic models but replaced race/ethnicity with interview language; that is, we estimated the association between interview language and the outcomes while controlling for gender, education, age, place of recruitment, and physical health (Table 4). These models also used cluster-robust standard errors, and we interpreted the significance of individual coefficients for interview language if the omnibus test was significant at the .05 level.

Results

Table 1 presents descriptive statistics for the total sample (N = 1,057). *Mild to severe anxiety* (GAD-7 = 5) was reported by 28.1% of older adults, *mild to severe depression* (GDS-15 = 5) by 30.1%, and *any suicidal behavior* per any Paykel item by 4.3%. Most respondents were female, had a high school diploma or higher degree, and ages 75+. Most participants were Asian, followed by Latinx, non-Latinx Blacks, non-Latinx Whites, and American Indians. Most respondents (63.0%) were recruited at CBOs, with the remainder recruited at clinics. Since the two clinics and five of the nine CBOs were in Massachusetts, most respondents were recruited in this state, followed by New York, Puerto Rico, and Florida.

Table 1 also presents descriptive statistics by race/ethnicity. More Latinx met criteria for *mild to severe anxiety* compared to non-Latinx Whites, while fewer Asians met this criteria. *Mild to severe depression* was more prevalent for both Latinx and Asians compared to non-Latinx Whites, although differences across racial/ethnic groups were not significant ($p = .08$). More Latinx endorsed *any suicidal behavior* than non-Latinx Whites. Ninety three percent of non-Latinx White and 79.2% of non-Latinx Black respondents were interviewed in English, while 97.5% of Asians responded either in Mandarin (41.2%) or Cantonese (56.3%), and 96.5% of Latinx responded in Spanish. Most non-Latinx Blacks (76.7%), Asians (59.1%), and Latinx (66.9%) were recruited at CBOs, while more than 83% of non-Latinx Whites were recruited at clinics. Across racial/ethnic groups, most participants were recruited in Massachusetts except for non-Latinx Blacks, most of whom were recruited in New York. Table 1 also indicated that Asians had better physical health per the SPPB than non-Latinx Whites.

Table 2 shows the distribution of the outcome measures by place of recruitment. No significant differences were observed for either outcome.

Table 3 presents the results of logistic regression models for the association between race/ethnicity and our three outcomes. After controlling for covariates, significant differences across racial/ethnic groups were observed for all outcomes ($p < .05$ for all omnibus tests). Compared to non-Latinx Whites, Latinx had almost 1.6 higher odds of reporting *mild to severe anxiety symptoms* (OR [95% CI] = 1.57 [1.13, 2.18]), almost twice the odds of reporting *mild to severe depression symptoms* (OR [95% CI] = 1.85 [1.39, 2.46]), and more than three times the odds of reporting *any suicidal behavior* (OR [95% CI] = 3.59 [1.43, 8.99]). Asians had higher odds of *mild to severe depression symptoms* than

non-Latinx Whites, but no differences were observed for *mild to severe anxiety symptoms* or *any suicidal behavior*. There were also no differences in the odds of any mental health condition between non-Latinx Whites and non-Latinx Blacks or American Indians, although this could be due to limited power to detect these differences in small samples. In all cases, better physical health (higher SPPB scores) was associated with decreased odds of any mental health condition. Compared to the 60–64 age group, participants ages 75+ had decreased odds of mental health symptoms and suicidal behavior (omnibus tests with $p < .05$). Participants recruited at CBOs had lower odds of *mild to severe anxiety* and *depression symptoms* than participants recruited at clinics.

Results from Table 4 indicated significant differences across language groups for *mild to severe anxiety* and *depression symptoms* (omnibus test with $p < .05$), but not for *any suicidal behavior*. Individual language coefficients followed similar patterns to race/ethnicity. Compared to those who indicated English as their preferred language, the Spanish language group had higher odds of *mild to severe anxiety symptoms* (OR [95% CI] = 1.54 [1.02, 2.34]), while Spanish, Mandarin, and Cantonese language groups all had higher odds of *mild to severe depression symptoms* (OR [95% CI] = 1.86 [1.20, 2.88]; OR [95% CI] = 2.66 [1.79, 3.96]; and OR [95% CI] = 2.46 [1.71, 3.54], respectively). We also observed lower odds of *mild to severe anxiety symptoms* for the Mandarin language group (OR [95% CI] = .58 [.42, .80]).

Discussion

Consistent with previous studies reporting higher rates of depressive symptoms among Latinx and Asian older adults compared to the US general population (Glymour et al., 2012; González et al., 2010; Kim et al., 2009; Rote et al., 2015), we found evidence that Latinx and Asian older adults had increased odds of mild to severe depression symptoms than non-Latinx Whites. Also consistent with previous studies (Falcón & Tucker, 2000; Shetterly et al., 1998), we found that older Latinx had higher odds of any suicidal behavior than non-Latinx Whites. Higher rates of depressive symptoms and increased risk of suicide in older Latinx have been associated with more medical illness (Briones et al., 2011; Juurlink et al., 2004; Kemp et al., 1987). Consistent with this finding, we found that worse physical health, as measured by lower SPPB scores, was associated with increased odds of mild to severe anxiety and depressive symptoms and any suicidal behavior (Patel et al., 2019; Song et al., 2014). The association between physical illnesses and suicide in late life has been partially explained by the mediating effect of depression (Conwell & Thompson, 2008). Older adults who report suicidal behaviors have more depressive illness, physical illness burden, and functional limitations than adults who did not complete suicide (Turvey et al., 2002).

We found that Asians had higher odds of mild to severe depressive symptoms than non-Latinx Whites but not of mild to severe anxiety symptoms or any suicidal behavior. Higher prevalence of depressive symptoms among Asians has been associated with acculturation stress caused by perceptions of a cultural gap between themselves and their adult children. This cultural gap has been associated with increased concerns about caretaking responsibilities, social isolation, and depression (Mui & Kang, 2006), and worries about

access to services (Koehn & Kobayashi, 2011; Nguyen, 2012). This intergenerational tension might explain the high prevalence of depressive symptoms in our sample of Asian older adults.

We hypothesized that adults ages 75+ in all racial/ethnic groups would report less anxiety and depressive symptoms and suicidal behaviors than adults ages 60–74. We found less anxiety and depressive symptoms with increasing age, consistent with US epidemiological evidence (Byers et al., 2010; Hybels & Blazer, 2003). A possible explanation is that adults ages 75+ attending CBOs are likely to be healthier. Our results showed that depression and anxiety symptoms were more prevalent in participants recruited in clinics compared to CBOs. Some studies have also found that older adults are less likely than younger adults to acknowledge symptoms of anxiety and depression (Fisher & Goldney, 2003; Wetherell et al., 2003).

We posited that non-English speakers would report higher levels of mental health symptoms than English-speakers. Indeed, we found that non-English language preference was related to increased anxiety and depression symptoms. Prior research indicates that non-English speaking minority older adults are at a higher risk of social isolation and family disruption (Casado & Leung, 2002; Mui & Kang, 2006). Language preference, a proxy for acculturation, has been linked to symptoms of depression and anxiety (Casado & Leung, 2002; Chiriboga et al., 2002). Latinx who prefer Spanish may have more traditional value structures than bilingual Latinx or who prefer English and may experience social isolation because of language barriers (Santiago-Rivera et al., 2002). Less acculturation and limited English proficiency might limit older Latinx to seek mental health care (Cabassa et al., 2006; González et al., 2001).

Mandarin and Cantonese speaking older adults, all but one who self-identified as Asian, reported significantly more depressive symptoms than English-speakers. However, Mandarin speakers reported less anxiety than English-speaking older adults. Asians are not a homogenous group (Gordon et al., 2019; Mui & Kang, 2006); thus, it is possible that in our sample, Mandarin language preference served as a proxy for less acculturation and was associated with protective family factors which may differ from other older adults with different Asian languages. Prior studies have demonstrated lower rates of anxiety among China-born immigrants who arrived in the US at ages 18 or older compared to those who immigrated prior to age 18 (Zhang et al., 2013). Studies have shown lower rates of anxiety and depression in US Asian older adults than Latinx (Park et al., 2014) and non-Latinx Whites (Kim & López, 2014). This might be related to opportunities to socialize and maintain friendships in their neighborhoods. Family caretaking has a protective effect on depression in foreign-born Asian immigrants, as their children are more likely to assume a caretaker role than children of their American-born counterparts.

As hypothesized, we found that participants from clinics had higher odds of anxiety and depression symptoms than participants from CBOs. This may be partially explained by healthier populations attending CBOs, or perhaps CBOs themselves offering a protective advantage through socialization, routine, and basic needs assistance (Alegría et al., 2019; Siegler et al., 2015).

Our study had several potential limitations. Because we used a convenience sample, the results may not be representative of the general population or generalizable outside the type of organizations examined. The uneven distribution of participants across study locations (most in Massachusetts) also impacts the generalizability of our results. Second, the prevalence obtained in this study reflects minority older adults from CBOs, which may be a healthier population than the average US minority older adult, particularly those who are homebound. Third, although gender was not significantly associated with the outcomes, we did not have a large enough sample to test differences by race/ethnicity and gender. We also lacked other indicators of socioeconomic status since the only indicator available was educational level. Given the short screener, we did not collect information about country of birth, years in the US, or variables measuring degree of acculturation, family contact frequency, or family arrangement. Language preference was used as a proxy for acculturation, but further research is needed to examine how acculturation may be related to anxiety, depression, and suicide in racial/ethnic older adults in CBOs and clinics. Language preference was also highly correlated with race/ethnicity, which made it impossible to test the association between race/ethnicity and our outcomes controlling for language. For example, 97% of Latinx participants responded to the interview in Spanish, although not all Spanish respondents were Latinx (77% of American Indian and 21% of non-Latinx Black also responded in Spanish). While we found that Latinx older adults had increased odds of any suicidal behavior, this same result did not hold in the Spanish language group. We believe this was mostly attributable to a very small number of non-Latinx Black and American Indian participants indicating any suicidal behavior. However, we could not disentangle how much of the increased odds in any suicidal behavior among Latinx was explained by ethnicity and how much by language. It is essential for future work to contain large diverse samples to fully evaluate the cultural aspects that contribute to distinct patterns of suicidal behaviors. Data limitations also did not allow us to examine if some study participants used two or more languages or shifted to a current dominant language. Caution should be taken not to generalize by ethnic group since we were not able to analyze sub-ethnicities. For example, Latinx and Asians are heterogeneous groups with many subethnicities with distinct cultural values and belief systems (Gordon et al., 2019; Jimenez et al., 2019). Finally, no studies assessing measurement invariance by language and race/ethnicity were identified for some of our outcomes; thus, it is possible that the observed differences reflect differences in interpretation rather than differences in mental health outcomes.

Our main finding was the high prevalence of anxiety and depression symptoms and suicidal behaviors in US racial/ethnic minority older adults. The lack of outreach for screening is a barrier to mental healthcare, which might exacerbate health outcome disparity. Undetected mental health symptoms in older minority groups (Aranda et al., 2001) could result in increased morbidity and mortality and negative public health consequences (Unützer, 1997), even in the presence of effective treatments to reduce symptoms of anxiety and depression in ethnic minority older adult populations (Alegría et al., 2019).

Conclusion

Our results underscore the importance of outreach and screening for mental health problems in racial/ethnic minority older adults in CBOs and clinics to provide early mental health care, a key measure for preventing the rising burden of mental disorders in older adults. CBOs offer an opportunity to engage racial/ethnic minorities in preventive care to increase awareness of symptoms of mental illness and referral systems for early treatment. CBOs and clinics may be crucial in promoting mental health literacy, engaging patients in care, and preventing mental disorders and greater disability (Jorm, 2012). Clinics can partner with CBOs to serve their patients to promote prevention and wellness. Similarly, CBOs can bridge to clinics, by activating participants to take charge of their health and facilitating the referral process and access to clinics.

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Public Significance Statement:

Our results underscore the importance of outreaching minority older adults participating in community-based organizations (CBOs) and clinics for mental health screening given the high prevalence of anxiety and depressive symptoms, and suicidal behaviors. CBOs and clinics may offer opportunities for early identification of their mental health problems and provide mental health literacy and connection to secondary prevention programs to mitigate their higher risk of disability.

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Table 1

Patient Descriptive Statistics in the Overall Sample and by Race/Ethnicity

	Total Screened (N=1057)		Non-Latino White (N=90)		Non-Latino Black (N=159)		American Indian (N=44)		Asian (N=481)		Latinx (N=283)		F(1, G-1); ^a p
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)		
Outcomes													
Anxiety symptoms ^b													
None or minimal	760 (71.9%)	61 (67.8%)	111 (69.8%)	29 (65.9%)	391 (81.3%)	168 (59.4%)	F(4, 10) = 4.06; p = .03						
Mild to severe	297 (28.1%)	29 (32.2%)	48 (30.2%)	15 (34.1%)	90 (18.7%)	115 (40.6%)							
Depression symptoms ^c													
None or minimal	671 (69.9%)	64 (77.1%)	105 (76.1%)	32 (76.2%)	293 (68.3%)	177 (66.0%)	F(4, 10) = 2.81; p = .08						
Mild to severe	289 (30.1%)	19 (22.9%)	33 (23.9%)	10 (23.8%)	136 (31.7%)	91 (34.0%)							
Any suicidal behavior ^d													
No	1012 (95.7%)	88 (97.8%)	153 (96.2%)	43 (97.7%)	465 (96.7%)	263 (92.9%)	F(4, 10) = 21.41; p < .01						
Yes	45 (4.3%)	2 (2.2%)	6 (3.8%)	1 (2.3%)	16 (3.3%)	20 (7.1%)							
Demographics													
Gender													
Male	257 (24.3%)	14 (15.6%)	39 (24.5%)	16 (36.4%)	131 (27.2%)	57 (20.1%)	F(4, 10) = 5.31; p = .01						
Female	800 (75.7%)	76 (84.4%)	120 (75.5%)	28 (63.6%)	350 (72.8%)	226 (79.9%)							
Education													
Less than high school	440 (41.7%)	14 (15.6%)	36 (22.8%)	23 (52.3%)	249 (51.8%)	118 (41.8%)	F(4, 10) = 12.72; p < .01						
High school or more	615 (58.3%)	76 (84.4%)	122 (77.2%)	21 (47.7%)	232 (48.2%)	164 (58.2%)							
Interview language													
English	240 (22.7%)	84 (93.3%)	126 (79.2%)	10 (22.7%)	10 (2.1%)	10 (3.5%)	F(7, 10) = 1902.44; p < .01						
Spanish	347 (32.8%)	5 (5.6%)	33 (20.8%)	34 (77.3%)	2 (.4%)	273 (96.5%)							
Mandarin	199 (18.8%)	1 (1.1%)	0 (.0%)	0 (.0%)	198 (41.2%)	0 (.0%)							
Cantonese	271 (25.6%)	0 (.0%)	0 (.0%)	0 (.0%)	271 (56.3%)	0 (.0%)							
Age													
60–64	60 (5.7%)	5 (5.6%)	5 (3.1%)	4 (9.1%)	10 (2.1%)	36 (12.7%)	F(8, 10) = 11.91; p < .01						
65–74	418 (39.5%)	40 (44.4%)	73 (45.9%)	20 (45.5%)	157 (32.6%)	128 (45.2%)							

	Total Screened (N=1057)		Non-Latino White (N=90)		Non-Latino Black (N=159)		American Indian (N=44)		Asian (N=481)		Latinx (N=283)		F(h, G-1); ^a p
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
75+	579 (54.8%)	45 (50.0%)	81 (50.9%)	20 (45.5%)	314 (65.3%)	119 (42.0%)							
Place of recruitment													
Clinic	391 (37.0%)	75 (83.3%)	37 (23.3%)	18 (40.9%)	159 (33.1%)	102 (36.0%)							F(4, 10) = 8.79; p < .01
CBO	666 (63.0%)	15 (16.7%)	122 (76.7%)	26 (59.1%)	322 (66.9%)	181 (64.0%)							
Geographic location													
Massachusetts	749 (70.9%)	85 (94.4%)	60 (37.7%)	26 (59.1%)	374 (77.8%)	204 (72.1%)							F(8, 10) = 4.64; p = .01
New York	198 (18.7%)	2 (2.2%)	83 (52.2%)	5 (11.4%)	107 (22.2%)	1 (.4%)							
Florida	11 (1.0%)	2 (2.2%)	0 (.0%)	0 (.0%)	0 (.0%)	9 (3.2%)							
Puerto Rico	99 (9.4%)	1 (1.1%)	16 (10.1%)	13 (29.5%)	0 (.0%)	69 (24.4%)							
Physical health (SPPB)													
Mean [SD]	7.88 [2.70]	7.15 [2.45]	7.17 [2.56]	7.27 [2.64]	8.65 [2.63]	7.32 [2.63]							F(4, 10) = 20.03; p < .01

Notes: SPPB = Short Physical Performance Battery.

^aStatistical comparison between non-Latinx Whites and racial/ethnic minority groups used cluster-robust standard errors to account for the potential nonindependence of observations within our 11 CBOs and clinics. With cluster-robust standard errors, the joint test of equality across racial/ethnic groups has an F(h, G-1) distribution, where h is the number of (linearly independent) restrictions, and G is the number of clusters (11 CBOs and clinics).

^bAnxiety symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7); scores of five and above are indicative of mild to severe anxiety symptoms (Spitzer et al., 2006).

^cDepressive symptoms were assessed using the Geriatric Depression Scale-15 (GDS-15); a score of five and above is indicative of mild to severe depressive symptoms (Sheikh & Yesavage, 1986). Ninety-seven patients were not administered the GDS-15.

^dAny suicidal behavior was assessed using the Paykel Suicide Risk Questionnaire.

Table 2

Distribution of Outcome Variables by Place of Recruitment

Outcome	Total Screened (N=1,057)		Recruited in Clinics (N=391)		Recruited in CBOs (N=666)		F(h, G-1); ^a p
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
Anxiety symptoms ^b							
None or minimal	760 (71.9%)	266 (68.0%)	494 (74.2%)				F(1, 10) = 2.50; p = .14
Mild to severe	297 (28.1%)	125 (32.0%)	172 (25.8%)				
Depression symptoms ^c							
None or minimal	671 (69.9%)	263 (67.3%)	408 (71.7%)				F(1, 10) = 1.98; p = .19
Mild to severe	289 (30.1%)	128 (32.7%)	161 (28.3%)				
Any suicidal behavior ^d							
No	1012 (95.7%)	375 (95.9%)	637 (95.6%)				F(1, 10) = .03; p = .86
Yes	45 (4.3%)	16 (4.1%)	29 (4.4%)				

Notes:

^aStatistical comparison between participants recruited in clinics and participants recruited in CBOs used cluster-robust standard errors to account for the potential nonindependence of observations within our 11 CBOs and clinics. With cluster-robust standard errors, the joint test of equality across clinics and CBOs has an F(h, G-1) distribution, where h is the number of (linearly independent) restrictions, and G is the number of clusters (11 CBOs and clinics).

^bAnxiety symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7); scores of five and above are indicative of mild to severe anxiety symptoms (Spitzer et al., 2006).

^cDepressive symptoms were assessed using the Geriatric Depression Scale-15 (GDS-15); a score of five and above is indicative of mild to severe depressive symptoms (Sheikh & Yesavage, 1986). Ninety-seven patients were not administered the GDS-15.

^dAny suicidal behavior was assessed using the Paykel Suicide Risk Questionnaire.

Table 3
Logistic Regression Model for the Association between Race/Ethnicity and Mental Health Outcomes

Independent variables	Dependent variable					
	<u>Mild to severe anxiety symptoms (GAD-7 >=5)</u>	<u>Mild to severe depression symptoms (GDS >=5)</u>	<u>Any suicidal behavior (Any Paykel item)</u>	OR [95% CI] ^a	P> z	P> z
Gender (male reference)						
Female	1.41 [.94, 2.12]	1.36 [.77, 2.39]	1.40 [.79, 2.49]		.284	.253
Race/Ethnicity (non-Latinx White reference)						
Non-Latinx Black	1.07 [.76, 1.52]	1.35 [.84, 2.18]	1.82 [.50, 6.67]		.216	.363
American Indian	1.26 [.64, 2.45]	1.17 [.67, 2.07]	1.24 [.33, 4.66]		.576	.755
Asian	.73 [.43, 1.23]	2.62 [1.90, 3.61]	2.10 [.94, 4.68]		< .001	.069
Latinx	1.57 [1.13, 2.18]	1.85 [1.39, 2.46]	3.59 [1.43, 8.99]		< .001	.006
<i>Omnibus test</i>	$\chi^2(4) = 13.43$	$\chi^2(4) = 45.78$	$\chi^2(4) = 31.53$		< .001	< .001
Education (less than high school reference)						
High school or more	1.03 [.82, 1.29]	.96 [.79, 1.18]	1.60 [.90, 2.84]		.715	.106
Age (60–64 reference)						
65–74	.69 [.41, 1.16]	.56 [.35, .91]	.59 [.37, .93]		.020	.024
75+	.44 [.27, .74]	.35 [.24, .51]	.52 [.31, .86]		< .001	.010
<i>Omnibus test</i>	$\chi^2(2) = 16.94$	$\chi^2(2) = 84.51$	$\chi^2(2) = 8.09$		< .001	.017
Place of Recruitment (clinic reference)						
CBO	.78 [.67, .91]	.78 [.63, .97]	1.03 [.58, 1.82]		.025	.928
Physical health: SPPB Score	.89 [.82, .96]	.86 [.78, .96]	.93 [.89, .98]		.005	.004
Observations	1055	959	1055			

Notes: OR = Odds Ratio; CI = Confidence Interval; CBO = Community Based Organization; SPPB = Short Physical Performance Battery.

^a.95% confidence intervals were constructed using cluster-robust standard errors to account for the potential nonindependence of observations within our 11 CBOs and clinics.

Table 4
Logistic Regression Model for the Association between Interview Language and Mental Health Outcomes

Independent variables	Dependent variable				
	<u>Mild to severe anxiety symptoms (GAD-7 >=5)</u>	<u>Mild to severe depression symptoms (GDS >=5)</u>	<u>Any suicidal behavior (Any Paykel item)</u>	OR [95% CI] ^a	P> z
Gender (male reference)					
Female	1.43 [1.95, 2.15]	1.38 [1.78, 2.45]	1.46 [1.85, 2.51]		.172
Interview language (English reference)					
Spanish	1.54 [1.02, 2.34]	1.86 [1.20, 2.88]	1.90 [1.86, 4.18]		.111
Mandarin	.58 [1.42, .80]	2.66 [1.79, 3.96]	1.74 [1.50, 6.10]		.388
Cantonese	.79 [1.54, 1.16]	2.46 [1.71, 3.54]	1.05 [1.32, 3.42]		.940
<i>Omnibus test</i>	$\chi^2(3) = 16.01$	$\chi^2(3) = 39.63$	$\chi^2(3) = 8.27$.041
Education (less than high school reference)					
High school or more	1.10 [1.84, 1.43]	.99 [1.77, 1.27]	1.45 [1.83, 2.52]		.191
Age (60–64 reference)					
65–74	.67 [1.40, 1.14]	.59 [1.35, .97]	.56 [1.31, 1.04]		.065
75+	.44 [1.27, .74]	.36 [1.25, .53]	.46 [1.23, .91]		.026
<i>Omnibus test</i>	$\chi^2(2) = 16.28$	$\chi^2(2) = 66.75$	$\chi^2(2) = 5.33$.070
Place of Recruitment (clinic reference)					
CBO	.76 [1.67, .86]	.79 [1.61, 1.02]	1.17 [1.67, 2.06]		.578
Physical health: SPPB Score	.89 [1.83, .96]	.86 [1.78, .96]	.93 [1.88, .98]		.005
Observations	1055	959	1055		

Notes: OR = Odds Ratio; CI = Confidence Interval; CBO = Community Based Organization; SPPB = Short Physical Performance Battery.

^a.95% confidence intervals were constructed using cluster-robust standard errors to account for the potential nonindependence of observations within our 11 CBOs and clinics.