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Antiracist Symptom Science: A Call to Action And Path Forward

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Introduction

Nurse scientists are increasingly recognizing the experience of racism as a substantial driving force behind health and wellbeing among individuals and communities (American Academy of Nursing, 2021; National Academies of Sciences, Engineering, and Medicine, 2021). However, symptom science, a pillar of nursing science, has not explicitly highlighted racism as an area of importance. Racism, as conceptualized in Critical Race Theory, is the racially-based oppression of a group by a different group in power (dRworks, 2021) and is a key social determinant of health in the United States (Paradies et al., 2015). Antiracism moves beyond being non-racist and necessitates an active stance against racism by intentionally dismantling racism at multiple levels (National Museum of African American History and Culture, n.d.). The active stance called for by antiracism is not yet readily apparent within the symptom science literature. At the time of writing, there are no data-based articles that employ a symptom science framework to explore potential associations with experiences of “racism” or “discrimination.” We found twenty-four data-based articles that at least briefly discuss symptoms and racism or discrimination but do not reference a symptom science framework or theoretical background (Alcántara et al., 2017; Bethea et al., 2020; Bickhard, 1992; Canady et al., 2008; Cooke et al., 2014; Ertel et al., 2012; Facione et al., 1997; Giurgescu et al., 2016, 2020; Harris et al., 2022; Hill et al., 2019; Jackson et al., 2017; Kinlock et al., 2017; Klonoff et al., 1999; Letzen et al., 2021; Marlow et al., 2014; McKnight-Eily et al., 2021; Mullins et al., 2019; Noroña-Zhou et al., 2021; Ponting et al., 2020; Santos et al., 2021; Slaughter-Acey et al., 2016; Sluiter et al., 2020; Walker Taylor et al., 2018). Similarly, we found three literature reviews that included at least some discussion of symptoms and experiences of racism and/or discrimination (Kim et al., 2017; Nadimpalli & Hutchinson, 2012; Perry et al., 2019). Finally, a few conceptual and

editorial papers also at least briefly consider racism and/or discrimination in the context of symptom science (Corwin et al., 2019; Pickler, 2021; Redeker, 2021; Zanville et al., 2021). This limited attention to the effects of racism on the symptom experience may reflect gaps in the predominant models that guide symptom science research, which tend to be heavily focused on individual level factors rather than the political, structural, and contextual conditions that drive symptom experience and management. As symptom science researchers, we join the call for nursing theories, models, and frameworks to explicitly reflect antiracism and social determinants of health and for increased anti-racist, socially critical nursing research practice and praxis (Emami & de Castro, 2021; Koschmann et al., 2020; Moorley et al., 2020; Waite & Nardi, 2021).

The State of Symptom Science in Nursing

A symptom can be defined as an “experience reflecting changes in the biopsychosocial functioning, sensations, or cognition of an individual” (Dodd et al., 2001, p. 699). The study of symptoms in nursing research, termed *symptom science*, integrates scientific knowledge about symptom experiences, outcomes, and management with biomarkers and social determinants of health (Dodd et al., 2001). The UCSF Symptom Management Theory (SMT) was developed to guide the generation of hypotheses for nursing research as well as the translation of nursing science into practice (Bender et al., 2018). SMT is a middle range theory derived from the symptom management model and was first presented in the mid 1990’s (Dodd et al., 2001; Larson et al., 1994). The foundation of SMT can be located in theories focused on individualism, particularly Orem’s Self-Care Model (Orem, 1985; Queirós et al., 2014) and the Model of Symptoms of Self-Care (Sorofman et al., 1990). This emphasis on self-management and the role of the individual in symptom management and outcomes continues to be ingrained in the SMT

(Dodd et al., 2001). The three key dimensions of SMT are symptom experience, symptom management strategies, and symptom status or outcomes, though this model and theoretical premises continue to be developed, tested, and refined. The SMT also includes domains that contextualize the symptom experience, displayed as person, health/illness, and environment.

Nursing science is replete with research on symptoms, symptom experience, and/or symptom management. And while race is often included as a demographic variable to characterize participants within this science, it is rarely explored within the broader context of sociopolitical structures that lead to disparities in health outcomes. When conceptualized as a demographic characteristic, differences between racial and ethnic groups are revealed, but the upstream factors leading to these differences receive relatively little attention (Braveman, 2014). This sole focus on racial group disparities, to the exclusion of fundamental causes and inequities, reduces the issues of racialization and discrimination to ones of representationalism-- that which is being represented is held to be independent of all practices of representing (Egan, 2012). In other words, as a nursing community, we perpetuate our own definitions, concepts, and ideas we deem as correct and useful. In order to interrogate symptom science through the lens of anti-racism, this philosophical principle of nursing science must be taken into consideration.

Race is a social construct that, when taken outside of the social context, does not have biological or scientific meaning (Flanagin et al., 2021). One important social context to consider is that differences in socioeconomic position determine peoples' relative place within social hierarchies which in turn perpetuate health disparities and inequalities (Marmot, 2007). Socioeconomic position is based on multiple factors such as racial group but also wealth and income, education, occupation, and gender (Marmot, 2007). Including the social context as a

crucial component of race opens the door to the development of mechanistically targeted interventions with a social justice lens (Braveman, 2014).

In symptom science, we can advance our research with the explicit consideration of individual, institutional, and structural racism. Antiracist research in nursing involves a multifaceted approach to critically conceptualizing our guiding theories, frameworks, research questions, methodologies, and foundational epistemologies. As Koschmann et al (2020) suggest, antiracist research involves partnering with underrepresented communities to reduce health disparities and examining the role of *racism* rather than race in health outcomes. It may also involve the incorporation of the concept of intersectionality into our research questions, designs, methods, and interventions (Crenshaw, 2006). Or it may take the form of more closely considering the impact of social determinants of health on symptoms.

In this integrative review, our objective is to describe the current state of symptom science research that describes and discusses race and to call for an explicitly antiracist stance in symptom science research. We have centered the following discussion on key areas of symptom science research in nursing— oncology, mental health, and perinatal health— as exemplars with the hope that our findings will serve as a foundation to move antiracist symptom science forward. Within each section, we focus on one of the three areas of symptom science to examine the current state of the literature regarding racism and racial discrimination, identify any specific methodological issues that perpetuate racism and racial discrimination, and propose the next steps for antiracist research within that area.

Oncology

Symptom science emerged in the 1990s from the work of oncology nurse researchers seeking to improve the symptom experience and health outcomes of patients with cancer (Larson

et al., 1994). Today, symptom science remains central to oncology nursing research and has grown to encompass research on the mechanisms of symptom development (Kelly et al., 2016; Mandrell & Withycombe, 2019) and interventions for symptom management (Kwekkeboom, 2016; Vance et al., 2017) in single or clusters of symptoms (Miaskowski et al., 2017).

Studies in oncology research are ubiquitous in documenting the prevalence of different cancer diagnoses and disparities in symptoms and quality of life when comparing Black or Hispanic patients to White patients (Luckett et al., 2011; McCall et al., 2020; Reeder-Hayes et al., 2015; Samuel et al., 2020). Using pain as a symptom exemplar, Latina patients with breast cancer are 3.6 times more likely to report pain compared to White women (McFarland et al., 2018). Among patients with lung (Reyes-Gibby et al., 2012) and/or colorectal cancer (Martinez et al., 2014), pain severity is higher among non-Hispanic Black and Hispanic patients compared to White patients. Similar trends for pain have also been documented in cancer survivors following the completion of cancer therapies (Eversley et al., 2005; Gallaway et al., 2020).

These disparities in terms of the prevalence and severity of pain may be related to differences in symptom management across racial and ethnic groups (Anderson et al., 2009). For example, one study reported that Black and Hispanic patients' pain was more likely to be undertreated depending on the medical institution where they received their care (Cleeland, 1997). In two other studies, Black and Spanish-speaking women with breast, colorectal, or lung cancer were more likely to report an unmet symptom management need than their White counterparts (Walling et al., 2016; Yoon et al., 2008). In an attempt to better understand racial differences in the symptom management experience, Samuel and colleagues (2018) conducted focus groups of Black and White breast cancer survivors. The authors reported key differences in the two groups' symptom management experiences, including a need to self-advocate to receive

information on treatment-related symptoms by Black women. Broadly speaking, while many studies discuss systems level factors related to disparities in the symptom experience and management in patients with cancer, the role of the experience of systemic racism and discrimination are rarely discussed.

Indeed, little is known about how experiences of racism or racial discrimination impact the symptom experience and health outcomes among patients with cancer. Only four studies were identified that address the concepts of racism or racial discrimination and symptom(s) in patients with cancer (Facione et al., 1997; Kinlock et al., 2017; Marlow et al., 2014; Mullins et al., 2019). Across these studies, researchers found that various racial and ethnic minority groups perceived that racism was present in their healthcare systems (Facione et al., 1997; Kinlock et al., 2017; Marlow et al., 2014) and that racial discrimination was associated with extended symptom duration prior to diagnosis, resulting in diagnostic delays (Mullins et al., 2019). Furthermore, a recent scoping review provided evidence to suggest that in addition to structural racism, decision-making biases (e.g., implicit) on the part of the oncologist and oncology healthcare provider play a central role in contributing to treatment-related adverse effects (e.g., pain) among Black cancer survivors (Vo et al., 2021).

As a major leader in oncology nursing, the Oncology Nursing Society (ONS) recently expanded the 2019-2022 ONS Research Agenda (Von Ah et al., 2019) to address numerous gaps in oncology nursing research related to racism, inclusivity, and health equity (Jones et al., 2021). Informed by critical race theory, nurse researchers and equity scholars identified specific research priorities to move oncology nursing scholarship forward and address the lack of research on structural racism. This consensus building activity identified a need to clarify terms used and identified priority areas for research that include designing and testing studies that: (1)

“restore trust and promote inclusiveness in cancer research” (Jones et al., 2021, p.593); (2) “focus on the impact of social determinants of health on cancer disparities” (Jones et al., 2021, p.594); and (3) “incorporate community-based cancer prevention and control interventions” (Jones et al., 2021, p.596). This “blueprint” can be used as a guideline for oncology nurse researchers and clinicians in dismantling structures of racism within oncology symptom science and addressing health and symptom disparities in patients with cancer.

Mental Health

The study of symptoms is a primary component of psychiatric research. Although much of psychiatric and mental health nursing literature is not explicitly aligned with symptom science, this is an important area of development and future work. The concepts of race, racialization, discrimination, and marginalization are uniquely relevant to mental health and psychiatric areas of inquiry. Racial health disparities are well documented in nearly all psychiatric diagnoses, symptoms, and domains of psychosocial wellbeing (Allen et al., 2014). For example, there is a consistent disparity in the incidence of cognitive impairment and dementias among Black compared to White Americans. Upon further investigation, much of this variability can be attributable to educational attainment, which is a well-established SDOH with substantial racial inequities in American society (Glymour & Manly, 2008; Weuve et al., 2018). The singular focus on research of symptoms, without considering the role of SDOH, overlooks critical risk factors for cognitive impairment and obfuscates the role of racism and racial inequities in population patterns of health.

Foucault’s post-modern analyses of power, medicine, and biopolitics highlight how mental health symptoms, and the application of those symptoms, are embedded into the history of nursing and health science praxis and practice (Foucault et al., 2008; Hall, 2001). In this post-

modern view, the language of symptoms can be used to maintain dominant power structures and hierarchies. This is illustrated in the example of academic research from the 1960's, which produced the belief that hallucinations, delusions, and violent projections were specifically “Negro symptoms” of mental illness (De Hoyos & De Hoyos, 1965; Liss et al., 1973; Schermerhorn, 1956). Here, the interpretive structures surrounding psychiatry at the time—particularly medicine, criminology, and politics—led to the racialization of civil right protest (Foucault et al., 2008; Metzl, 2009). A literature review spanning 24 years of research demonstrated an “unquestionable pattern” of Black/White and Latinx/White disparities in diagnosis of schizophrenia and psychosis, with rates of diagnosis 3 to 4 times higher than their White/European counterparts (Schwartz & Blankenship, 2014). In this review, we see the evidence of how disparities in mental health diagnoses are manifested as the representational products of racism in medical and scientific research and carried forward through time.

Another important area of work in antiracist symptom science is understanding the effects of racial discrimination on mental health symptoms. When more broadly, researchers have demonstrated links between experiences of racial discrimination and psychiatric symptoms among Blacks (Klonoff et al., 1999). More specifically, suicidal ideation (SI) and sleep disturbance are two areas of mental health symptom science with emerging evidence about racial disparities and discrimination. Among US adults, SI is typically reported in about 4% of the population (Center for Behavioral Health Statistics and Quality, 2019). During the COVID-19 pandemic, rates of SI in adults have more than doubled to 11% (Czeisler et al., 2020), but these sharp increases have not occurred in parity across racial and ethnic groups. In May of 2020, the prevalence of SI was four times higher among Latinx groups (22.9%) than White (5.3%) and Black/African American groups (5.2%) (McKnight-Eily et al., 2021). The substantial shift in SI

rates among Latinx groups in the US has been tied to the disproportionate financial and resource burden that the pandemic had on this population (McKnight-Eily et al., 2021). These findings further emphasize the importance of systemic racism and discrimination in this emerging area of SI symptom research. Similarly, studies show racial and ethnic disparities of insomnia symptoms among minority groups, particularly Latinx and African Americans in comparison to White groups. Sleep disturbance associated with multiple chronic conditions including depression, cardiovascular disease, stroke, and diabetes (Centers for Disease Control and Prevention, 2019). Among adult US women, White females have better sleep quality and quantity compared to US African American, Latinx, Chinese, and Japanese women (Matthews et al., 2019). Some studies have examined the associations between racial and/or ethnic groups and found significant associations between discrimination and poor sleep quality among minority groups. For example, the odds of both subthreshold and clinical insomnia among middle aged and elderly African American women is 1.68 times the odds of other racial groups (Bethea et al., 2020). In another study, ethnic discrimination was associated with a 15% increase in self-reported sleep duration of less than 7 hours (Alcántara et al., 2017).

The lens of discrimination facilitates nurse scientists to move past a health disparities-focused epistemology toward frameworks that also interrogate health inequalities. As we continue to conceptualize symptomology in psychiatric and mental health nursing research, the anti-racist perspective is critical to develop representations of mental health symptoms. Taking an anti-racist perspective on mental health symptom science may require nurse scientists to examine our assumptions of scientific truth and interrogate the boundaries of current interpretive structures by questioning our own knowledge, legitimation, and the power structures of psychiatry.

Perinatal Health

Symptom science research in perinatal health is often focused on maternal symptoms of psychological distress, such as depressive symptoms, anxiety, and perceived stress (Beeber et al., 2004; Brooks et al., 2015; Howland et al., 2017; Santos et al., 2021; Sluiter et al., 2020; Weiss & Leung, 2021), with researchers also considering pain, a somatic symptom (Badreldin et al., 2019; Glance et al., 2007; Johnson et al., 2019). When compared with other areas discussed in this paper, researchers in perinatal symptom science do regularly consider experiences of racism as a salient risk factor for poor health outcomes. This difference in attention may be due to evidence that increased risk of perinatal mortality and morbidity among African American birthing people and their children in the US cannot be explained by indicators of socioeconomic status, such as education or income, raising the question of the effects of racism on perinatal outcomes (Braveman et al., 2021; Corwin, 2021; Johnson et al., 2020; Mehra et al., 2022; Ross et al., 2019; Schaaf et al., 2012).

Within perinatal symptom science research, some racial disparities in perinatal symptom prevalence have been identified. For example, multiple studies have shown that antenatal and postpartum depressive symptoms, as well as pain after cesarean birth, are higher among Blacks and Hispanics when compared to non-Hispanic Whites (Canady et al., 2008; Howell et al., 2005; Noroña-Zhou et al., 2021; Pao et al., 2019), including a systematic review on antenatal depressive symptoms (Mukherjee et al., 2016). Still, only some researchers highlight the role of racism and/or discrimination as a possible driver of these disparities (Canady et al., 2008; Noroña-Zhou et al., 2021; Pao et al., 2019).

Researchers in perinatal symptom science have explored associations of maternal psychological symptoms with police violence and racial discrimination. Increased levels of

depressive symptoms in pregnant women have been associated with an anticipation of negative interactions between police and African American youth (Jackson et al., 2017) as well as experiences of racial discrimination (Bickhard, 1992; Canady et al., 2008; Ertel et al., 2012; Giurgescu et al., 2016; Hill et al., 2019; Noroña-Zhou et al., 2021; Ponting et al., 2020). Further, experiences of racial discrimination in combination with mild to moderate depressive symptoms are associated with increased risk of preterm birth among Black women (Slaughter-Acey et al., 2016). Researchers are beginning to explore potential mechanisms that may link experiences of discrimination to psychological symptoms at both biological (Santos et al., 2021; Sluiter et al., 2020) and behavioral levels (Giurgescu et al., 2020).

Symptom science research also raises concerns around pain, a commonly measured somatic symptom, racism, and the perinatal period. Despite reporting similar levels of pain, Hispanic and non-Hispanic Black women receive less pain management than White women both during labor (Glance et al., 2007) and in the postpartum period (Badreldin et al., 2019; Johnson et al., 2019). Given that prior symptom science research has found associations between experiences of chronic stressors and increased somatic symptoms, such as pain, sleep disturbance, and fatigue, amongst mothers with young children (Doering et al., 2017; Salomon et al., 2021), an important next step for antiracist research in symptom science is to investigate potential associations between experiences of racial discrimination as the chronic stressor with somatic symptoms during the perinatal period.

Discussion

While we found evidence that symptom-related science is beginning to address racial inequities in health, the level of scholarship for the most part remains at the level of documenting racial disparities and there was a wide range of perspectives on how race, ethnicity, racism, and

discrimination were considered within symptom literature. While symptom science in oncology documents disparities in clinical outcomes, in symptom experience and in symptom management of people of color, the underlying and pervasive roots of these disparities remain poorly studied and understood. In the mental health literature, we found evidence that discrimination is associated with symptom disparities, with this body of literature demonstrating the impact of epistemologies on nursing research itself. Finally, in the perinatal health literature, authors document symptom disparities by race and by experiences of discrimination, with further investigation needed to elucidate the biological and behavioral links between experiences of racism and discrimination and symptom disparities.

Traditionally, researchers in symptom science have focused on individual level factors rather than broader contexts driving symptom experience and management. We urge symptom science researchers to explicitly reflect antiracism in their research by taking an active stance against racism and designing research with the specific intent of dismantling racism at multiple levels. In this manuscript, we have reviewed the symptom science literature to identify what steps have already been taken towards antiracist research within a predominant symptom science theory as well as within oncology, mental health, and perinatal health. We have found that, while there has been antiracist research conducted in some of these areas, such as in perinatal health, overall, large gaps remain that need to be addressed. Given these gaps, we have recommendations for closing the gaps in symptom science research through 1) prioritizing certain research topics, 2) altering recruitment methods, 3) improving study design, 4) updating our data analysis, and 5) strengthening dissemination of our findings.

Across symptom science, a first step towards antiracist research would be to conduct individual level research that consistently examines symptom experience and symptom

management through a social determinants of health lens (Koschmann et al., 2020; National Institute of Nursing Research, 2022). In particular, symptom science research would benefit from moving away from using racial groups to explain differentiating symptom experiences; instead, researchers should examine the links between racism and marginalization and different symptom outcomes. We also recommend prioritizing a re-evaluation of symptom science findings that documented differences between racial groups without considering underlying social and structural mechanisms for those disparities. By re-evaluating the findings, we may be able to identify social and structural mechanisms for those disparities and work towards developing multi-level interventions to disrupt the disparities. Additionally, we recommend that symptom scientists develop community partnerships from the very beginning of research project development in order to integrate the priorities of those communities (CTSA Task Force on the Principles of Community Engagement, 2011).

Second, symptom scientists must consider—and alter—their recruitment methods in order to address the underrepresentation of racial and ethnic minority groups in symptom science research. Mistrust in research participation stem from past research abuses, including the infamous Tuskegee syphilis study, as well as exploitation and mistreatment by the medical community that disproportionately impacts racial and ethnic minorities (McLemore et al., 2018; Schmotzer, 2012). In addition to general mistrust, other identified barriers to research participation among racial minority groups include work responsibilities (Fischer et al., 2017) and lack of transportation (Caldieraro-Bentley et al., 2018; Rooney et al., 2011), childcare (Rivers et al., 2013) and family support (Clark et al., 2019). Another recent study in Australia reported that members of minority groups have an equal willingness to join clinical trials but

linguistic barriers can significantly limit participation (Smith et al., 2018). Similar barriers may exist in symptom research and may be viewed as a form of structural racism.

These recruitment and retention challenges are not insurmountable with advanced planning. Methods to increase the enrollment of underrepresented patients in symptom science research may include the hiring of multilingual clinical research staff (Fischer et al., 2017; Ford et al., 2013), collaboration with community health clinics (Boden-Albala et al., 2015), developing accessible informed consent materials (Kraft & Doerr, 2018), and formation of community-based partnerships (Adams et al., 2015; Fischer et al., 2017). While the partnership with minority communities is key, this relationship must be formed prior to study design and patient recruitment to facilitate a dialogue of the community's concerns and needs regarding healthcare and research. For example, the Philadelphia Collaborative Preterm Prevention Project incorporated several successful strategies to promote recruitment and retention within an underserved community, including advanced database system tracking, cultural sensitivity training for staff, communication to the community about participation, financial incentives, assistance with transportation and childcare services, and reminder calls for appointments (Webb et al., 2010).

Third, we have room to improve our research designs in symptom science with an antiracist point of view. In our first recommendation, we have suggested altering our research questions to consider the social and structural mechanisms behind symptom outcome differences identified for racial groups. As research question and design are intricately linked, we will expand upon that recommendation here. Across quantitative, qualitative, and mixed methods research studies, inclusion of measures of racism and/or other marginalization at the individual level are needed. In some cases, we can push our research a step farther by including

measurements of racism across multiple levels, including the systems level (Adkins-Jackson et al., 2021).

Recruitment and research design are also closely linked. In alignment with our recommendations to be more inclusive in our sampling, we should also specifically design our studies to center the margins (Crenshaw, 2006; Griffith, 2018; Incollingo Rodriguez et al., 2021). Within research, centering the margins means intentionally focusing on the lives and experiences of people who might otherwise only be included as tokens of their group, such as enhancing the diversity of a general sample of mothers, transgender youth, or specific medical populations (Crenshaw, 2006; Lopez & Gadsden, 2016). For quantitative research, centering the margins might look like selecting samples to assess differences within racial groups rather than between groups in order to develop mechanistic targets (Corwin et al., 2017; Rowley et al., 1993). Qualitative research approaches provide a unique opportunity to center the experiences and voices of minoritized community members (Campbell et al., 2021). As such, we should ensure that we provide substantial funding opportunities for rigorously-designed qualitative research within symptom science.

Within quantitative research designs, we must also pay close attention to the symptom measures we select to conduct antiracist research. We often employ patient-reported outcomes for outcome measurement in symptom science research, which have even been recommended as common data elements (Redeker et al., 2015). However, due to limited English proficiency, literacy, and/or a lack of culturally sensitive measurements, reliance on these types of measures can limit the inclusion of culturally, linguistically, and educationally diverse research participants (Smith et al., 2018). Another measurement consideration to attend to is how we norm our symptom measures. Since evidence suggests certain symptoms, such as pain, are

undertreated depending on an individual's race (Badreldin et al., 2019; Glance et al., 2007; Johnson et al., 2019), it appears that, at least clinically, we have different expectations for what is an acceptable levels of symptoms for different groups of people. As another example, in the process of standardizing neurocognitive test measures to a relatively white and educated population, as is the current practice, the cognitive impairment of socially marginalized groups is exaggerated (Dobbins et al., 2021). Clinically, this could conceivably result in a variety of unintended consequences for patients and communities. Understanding potential differences in what we consider to be normal experience across racial groups and how those differences are applied clinically are topics that would benefit from further inquiry within symptom science.

For our fourth recommendation, when updating our data analysis, we recommend that symptom science researchers reconsider the meaning of variables such as “race” and “ethnicity” within their datasets. These concepts have been socially constructed and have no biological or scientific meaning (Flanagin et al., 2021). Thus any difference in symptoms found due to “race” should provoke a re-examination of the data to determine the social causes of any racial and/or ethnic inequities in symptom experiences, management, or outcomes (Krieger, 2021). Still, researchers are frequently required—both by funders and by journals' reporting guidelines—to identify participants by race. Whenever possible, symptom science researchers should include measures of participants' experiences of racism, discrimination, or marginalization in addition to reporting their race. When not possible to include such measures, such as when conducting a secondary analysis of a preexisting dataset that only includes race and no measure of racism, we should carefully consider the use of stratification of the sample by race, as this approach does not easily allow for the inclusion of people with multiethnic identities (Incollingo Rodriguez et al., 2021). Subset analyses can be used to allow a multiethnic individual to exist in multiple

analyses; these subset analyses can then be used to delineate the experiences within the group, but should not be used to infer differences across racial groups (Incollingo Rodriguez et al., 2021). We can also quantitatively account for intersectionality (Crenshaw, 2006; Rouhani, 2014) by considering multiplicative or additive interaction terms in our analyses (Incollingo Rodriguez et al., 2021). Admittedly, these statistical approaches require a large enough sample to provide a representative number of individuals within each subgroup in order to achieve adequate precision in the effect estimates to conduct the analyses, making it imperative that we improve our recruitment capabilities.

Finally, the process of research dissemination should be actively antiracist as well. All findings should be communicated back to the community in a timely manner with an open invitation for engaged dialogue (Chen et al., 2010). Additionally, antiracism is an active stance, and all antiracist symptom research that demonstrates racial and/or ethnic inequities should clearly express implications for policy in order to dismantle racism at the institutional and structural levels.

The main limitation of this work is that we have compiled an integrative review intended to portray the general trends in the literature and we acknowledge we may have missed other relevant research studies. While we considered conducting a systematic review, we determined that it would be a stronger contribution to our understanding of the science if we broadened the conceptualization of symptom science to include research outside of nursing that may not even be referred to as "symptom science" in the literature. Thus, we were limited in our potential search terms and relied instead on expert knowledge of the areas and targeted searches of the literature.

Conclusion

Systemic racism threatens the integrity of nursing research. Racism is now broadly acknowledged in public health discourse as an important determinant of population health inequities (Gee et al., 2019). In order to disrupt racism, we need to learn how to see it in our past literature and current research methods. We have been taught—and we have accepted—that these methods are the norms, and it is our responsibility to do the hard work of unlearning these accepted norms. Particular and careful attention must be given to the domain of the environment and to the representation of symptoms, signs, and biological data in the SMT model. As a more relevant model for symptom management research is articulated, advances in nursing interventions can make their way to underserved and oppressed communities.

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