Yoga Interventions for Black Female Low-Income Youth

A Thesis

Presented to

the Faculty of the Department of Psychology at

University of the West

In Partial Fulfillment

of the Requirements for the Degree of

Master of Arts

in

Psychology

by

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Spring 2023

Approval Page for Graduate

Approved and recommended for acceptance as a thesis in partial fulfillment of the requirements for the degree of Master of Arts in Psychology.

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June 8, 2023

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June 12, 2023

I hereby declare that this thesis has not been submitted

as an exercise for a degree at any other institution,

and that it is entirely my own work.

Acknowledgements

Words cannot express the deep gratitude I feel and hope to embody for the giants whose shoulders I stand on. Honor to my ancestors who through sacrifice, love and care have made it possible for me to not only survive but to thrive in my Blackness and womanhood. Gratitude to Dr. Elizabeth Burke and Dr. Ashley Coleman who believed in me from the beginning of this endeavor. My heartfelt thanks go to Dr. Jemma Powell for all your support and encouragement throughout this journey. Tahyuri in lak’ech.

Abstract

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Interest in mindfulness-based yoga interventions has significantly increased over the last thirty years. Researchers have studied the practice of yoga for a range of psychological, physiological, and behavioral conditions including trauma, stress, depression, anxiety, chronic pain, medical conditions, substance use and emotional regulation. More recently, yoga research has been adopted to child and adolescent populations. However, many of the yoga studies pertaining to minors within the context of the United States have focused primarily on White youth. As such, current research on yoga interventions for American youth does not accurately reflect the racial and cultural demographics within the county. The purpose of this literature review is to examine randomized controlled trials of yoga-based interventions that include Black American female youth from low-income backgrounds. Findings suggest a racial and cultural gap in yoga research as it applies to Black American adolescents and especially females.

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Introduction

Black youth are at a disproportionate risk of adverse health conditions including but not limited to psychologically, physiologically, and academically due to the historical and current context of race and racism within the United States. This thesis explores the evidence-based body of literature relative to yoga interventions for youth with the targeted population being Black females from low-income backgrounds. The current data on Black girls' mental health is alarming. Black female youths' death by suicide exponentially increased by 182% from the years 2001-2017 (Price & Khubchandani, 2019). For every 100 Black teenage girls 15 of them report attempting suicide at least once (Ivey-Stephenson, 2020). The research is clear, Black youth are in dire need of mental health support across this country. Though half of all American children with a diagnosable mental health condition do not actually receive treatment (Whitney & Peterson, 2019).

The circumstances of the Covid-19 pandemic have only exacerbated such conditions. In addition to the inequities caused by structural racism, youth of color are disproportionately impacted in almost every aspect of health and development. In fact, 3 national health agencies, the American Academy of Pediatrics, American Academy of Child & Adolescent Psychiatry and Children Hospital Association declared that the United States is currently experiencing a state of national emergency in regard to youth mental health (American Academy of Pediatrics, 2021). The psychosocial developmental stage of youth in adolescence coupled with being from a low-income background means greater susceptibility to poor mental health outcomes and quality of life (Gariepy et al.,

2017). Correlations have been made between lower SES and higher rates of anxiety, depression, suicidality, and substance use and dependence (Newacheck et al., 2003). The practice of yoga has been linked to stress reduction, increased emotional regulation (Janjhua et al., 2020; Park & Slattery, 2021). Considering the racial and socio-economic conditions of Black American female youth, yoga interventions present an opportunity to counteract the adverse environmental influence and health determinants that such a population is subject to.

Literature Review

Mental Health of Black Americans

In a 2022 report submitted to the United Nations, the Community Healing Network Incorporated and the Association of Black Psychologists acknowledge that the greatest threat to the basic human rights of children of African ancestry is the lie of White superiority and Black inferiority (Aird & Grills, 2022). They expound, “it paved the way for multigenerational degradation and dehumanization of African people. And it is still with us today, quietly undermining the health, wellbeing, and fundamental dignity and human rights of children of African descent” (2022, p. 2). As people of African descent, Black Americans experience a notable breadth of circumstances and conditions. Black and African American is a federally standardized classification of persons that self-identify as the race and or ethnicity (Office of Management and Budget, 1997). In the context of the United States the term Black or African American classifies people of African origin, but not all Black people identify as African American (American Psychological Association, 2022).

The historical circumstances of race for Black people in America is plagued by systemic racism, structural inequality that reinforces unequal treatment and distribution of resources which adversely influences social mobility and life outcomes (Roediger, 2019; Braveman et al., 2022). In addition to racism, Black persons must navigate inequity in healthcare, cultural stigma and medical distrust rooted in historical maltreatment of Black bodies which is well documented (Vonderlehr, 1936; Washington, 2006; Khan, 2011; Owens, 2017; Owens & Fett, 2019; Center for Disease Control, 2022; Cummings,

2022). We also see disparity in access to quality health care, with almost 11% of Black citizens without health insurance compared to 7% of white citizens (Barnett & Vornovitsky, 2016).

Black and African Americans are disproportionately represented in social disparities including homelessness and incarceration (Chin et al., 2021). For instance, Black and Black American people make up 13.6% of the U.S. population; yet they account for 40% of citizens experiencing homelessness (U.S. Census, 2020; DuBois, 2022). The median age of Black Americans is 33, that's five years younger than the national average age of 38 (Lopez & Moslimani, 2023; U.S. Census Bureau, 2022). Over nine million Black people in the United States live in poverty (U.S. Census Bureau, 2020, 2022; US Department of Health and Human Services Office of Minority Health, 2023). Black Americans make up over 38% of the total number of people incarcerated in the United States (Initiative, n.d.). These figures are important because they indicate that Black young people are at the margins of society with limited resources. These figures also depict just how structural racism produces social determinants of health that act on Black bodies (Bailey et al., 2017).

Further, Black people report having comparable rates of need for mental healthcare as the general population, but only 1 in 3 receives mental healthcare (Dalencour et al., 2017). In a report to Congress, the Congressional Black Caucus Task Force on Black Youth Suicide and Mental Illness, found that Black adolescents were more likely to attempt suicide than any other racial demographic (Watson Coleman, 2019). Black adults report experiencing constant feelings of sadness and hopelessness at higher rates than white adults (Office of Minority Mental Health, 2023). In 2020, suicide

was amongst the top 3 leading causes of death for Blacks within the 15- to 24-year-old age demographic (Centers for Disease Control and Prevention, 2021). Blacks and African Americans have the highest likelihood of experiencing Post Traumatic Stress Disorder than White, Latino and Asian people across their lifetime (Pumariega et al., 2022). Current trends in mental health for Black Americans highlights a prevalence of depression, suicidality, and PTSD (Watson Coleman, 2019; Centers for Disease Control and Prevention, 2021; Pumariega et al., 2022). Despite the need for care, Black or African American people are less likely to receive standardized care and less likely to be included in research (General, 2001; Melendez et al., 2020). Both systemic racism and interpersonal racism negatively impact every aspect of health for almost all minorities, including Black people (Paradies et al., 2015). Interpersonal instances of racism are the microaggressions that occur on an individual level which overtime led to increased stress and impair one's health (Williams et al., 2020).

Approaches to treatment for depression, suicidality and post-traumatic stress disorder consist of psychotherapy and pharmacotherapy (American Psychological Association, 2019). Cognitive behavioral therapy is a proven evidence-based treatment modality for depressive and suicidal symptomatology across age groups (2019). Pharmacotherapy includes a regime of antidepressant medication alongside talk therapies (Barber et al., 2012; Baldessarini et al., 2015). Yoga is also recommended as a complementary or alternative approach to treatment of both depression and PTSD when frontline treatment is either inaccessible or not acceptable (2019).

Female Mental Health

For the interest of this thesis, Female refers to individuals that self-identify as the gender (National Academies of Sciences, Engineering, and Medicine, 2022). Prior to the last 4 decades health research subjects were exclusively male, little to no gender inclusivity existed. And until the last two decades almost all medical related research has existed within the gender binary of male or female biological sex assigned at birth (Chan, 2019). Current discourse states that gender identity is determined by how oneself identifies and expresses themselves that may or may not adhere to societal norms or biological sex per National Academies of Sciences, Engineering, and Medicine (2022). For many of the studies referenced in this article, the term female refers to one's gender identity and is a demographic group that participants assign to themselves (Kira 2019). Gender is important to consider in research because health inequalities amongst different gender identities often determine one's susceptibility and exposure to physiological and mental health conditions, which contributes to one's life outcomes (Hiese et al., 2019) and overall quality of life. Health related quality of life speaks to the perceived physical and mental health across time (Post et al., 2014). For instance, adult females, women are more likely to experience depressive symptoms than men (Yu, 2018; Vigod & Rochon, 2020), women are also twice as likely to experience anxiety and posttraumatic stress disorders (American Psychiatric Association, 2013).

The most common mental health disorders women in general experience are depression and anxiety (U.S. Department of Health and Human Services, 2020). Heart disease is amongst the leading causes of death for adult female individuals (Bybee & Stevens, 2013; Cushman et al., 2021). The most common clinical diagnoses for adult

females with heart disease in particular are mood, anxiety and post-traumatic stress disorders (Abed et al., 2014; Chaddha et al., 2016). Depressive symptomatology appears in adolescent females as well. In the Youth Risk Behavior Survey, 57% of female youth reported feeling persistently sad or hopeless, and 3 out of 10 [female youth] contemplated suicide (Center for Disease Control, 2021). Young women are at greater risk of developing mental illness, as seventy five percent of all mental illnesses develop by age 24 (Kessler et al., 2005; Solmi et al., 2022). Current research recognizes the link between physiological health and mental health (Sowden & Huffman, 2009; Bremner et al., 2018). Depression often presents as physical symptoms through aches, pains, and gastrointestinal discomfort (Trevidi, 2004; Evrensel & Ceylan, 2015; Pinheiro et al., 2016; Shend et al., 2017). Sometimes clients will go undiagnosed because their depressive symptoms are largely a physical experience of discomfort (U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Mental Health, 2020). The physiological aspect of depression is important to acknowledge because it helps one to understand the somatic nature of the psychological condition.

Female individuals are disproportionately afflicted by depressive, anxious and traumatic symptomatology as evident by the figures. However, barriers to mental health treatment for females young and older still exist. A relatively recent study found that 25% percent of women could not get the support they needed because they could not afford to take time off work (Ranji & Salganicoff, 2018). That same study found that one in four women postponed care because they could not afford the expense for mental health services (2018). This highlights that a significant amount of female self-identified persons are not receiving much needed care from helping professionals.

Low-Income Mental Health

The World Health Organization's report on Social Determinants of Mental Health (2014), purports that the connection between social status and mental health is determined by one's experience of stressful events and the resources they have to recover and cope from such events. According to an article published in 2020, the poorer someone is the greater the likelihood that they will experience mental disorders and suffer prolonged consequences without adequate support (Knifton & Inglis, 2020). It is also important to note, this study found that individual resilience can act as a buffer to negative mental health outcomes related to one's socioeconomic status (2014). In regards to the psychological impact of poverty, there have been correlations made between low SES and higher rates of anxiety, depression, suicidality, and substance use (Newacheck et al., 2003; Bøe et al., 2012).

Socio-economic status or SES is a combined valuation of one's income, educational attainment, and other markers of privilege (Moya & Fiske, 2017). Living on the lower end of the earning spectrum is oftentimes linked to poor psychological and physical health (Knifton & Inglis, 2020). One's socioeconomic status has lasting impacts on adolescents' educational experience, including lower literacy rates (Reardon et al., 2013) compared to counterparts of high SES (National Center for Education Statistics, 2002). Additionally, there is a large body of evidence that supports the understanding that low socio-economic status equates to higher levels of emotional and behavioral difficulties (Starfield, 1992; Hanson & Chen, 2007; Russell et al., 2016; Hodgkinson et al., 2017; Knifton & Inglis, 2020; Lee & Clancy, 2020). Families that earn low-income wages are at a disadvantage when accessing and retaining mental health support

(Starfield, 1992; Hanson & Chen, 2007; Russell et al., 2016; Hodgkinson et al., 2017; Knifton & Inglis, 2020; Lee & Clancy, 2020). To address the influence of poverty on mental health, helping professionals suggest “a 3-level approach to socially accountable care” with targeted investment on the individual, community, and policy levels (Simon et al., 2018).

Young individuals of low socioeconomic status are more likely to experience adverse physiological symptoms, such as obesity (Levine, 2011). Yoga has been proven to create a feedback loop of explaining and experiencing the body differently and is known to produce effective mind shifts amongst low-income minority individuals that experience chronic pain (Saper et al., 2013). Chronic pain and the consequences of prolonged exposure to stress both create conditions that prevent the nervous system from recovering or resting. The polyvagal theory teaches us how psychological stress is felt throughout the body and may manifest in many forms, including physical symptoms (Porges, 2021). Psychological stress may present as headaches, stomach pains and other physical discomfort (Levit, 2018). It is also well documented that individuals with a history of chronic stress can return to healthy regulation abilities with prolonged exposure to self-regulation practice and nurturing environments (Raine et al. 1997, Hawes et al. 2009, Del Giudice et al. 2011). However, the nervous system adapts toward resilience as explained in the Adaptive Calibration Model which is endorsed by rigorous study of the stress responsivity system (Kupper et al. 2021).

Although the need for mental health care amongst the low-income population is well researched, barriers to accessing treatment still exist (Kim & Cardemil, 2012). Having a low socioeconomic status often means that healthcare is frequently an

unaffordable investment of time and finances (Copeland & Snyder, 2011; Anxiety and Depression Association of America, 2022). Another barrier to treatment for low-income individuals and families is the stigma relative to their social status (Kim & Cardemil, 2012). In a study of depressed mothers from low-income backgrounds, participants revealed that they were avoiding the critical feedback of loved ones who are committed to stigmas that mental health care is unsafe and thereby to be avoided at all costs (DeCou & Vidair Hilary, 2017).

Current treatment modalities for stress include Mindfulness Based Stress Reduction (Goldin & Gross, 2010) and Cognitive Behavior Therapy (Sahranavard et al., 2018). Though the research for yoga exists and supports physiological and psychological health benefits, barriers to accessing yoga as a treatment modality still exist. The foremost barrier for low-income individuals to access the mental health support they need are inequities in healthcare (American Psychological Association, 2017). Individuals and families struggle with affording health insurance, not including the cost of mental health care. Additionally, the social stigma of having a mental illness acts as another barrier (DeCou & Vidair Hilary, 2017).

Youth Mental Health

Suicide is one of the top 3 leading causes of death among individuals aged 10-14 years and 15-24 years (Center for Disease Control, 2020). The developmental stage of adolescence as defined by psychologist and psychoanalyst Erik Erikson, is centered around a phenomenon known as identity crisis (Erikson, 1968; Orenstein, & Lewis, 2021). Fifty percent of all lifetime mental illnesses begin by age 14, and 75% by age 24 (Kessler et al., 2005; Solmi et al., 2022). Youth between the ages of 12 and 18 are

struggling with virtues of fidelity, individuality, and repudiation (Erikson, 1968). In this stage youth are beginning to individuate from their parents by challenging belief systems and establishing personal values and goals (Davidow et al., 2018). One in six U.S. youth aged 6-17 experience a mental health related episode each year (Whitney & Peterson, 2019).This is important to understand because adolescence is a time when youth are choosing who they want to be in the world. Often marked by intense questioning and rebellion, adolescence presents a vulnerable time in one's life because they are just beginning to develop their identity. In a study of 659 adolescents living within an urban environment, researchers found that "exposure to negative adult behavior was associated with increasing externalizing, internalizing, and substance using behaviors," as well as negative attitudes toward school (Hurd et al., 2009). Whereas the opposite was also found to be true, positive adult role models contributed to a positive impact on adolescents' behaviors and attitudes toward school. Consequently, how adults and authority figures respond to and support adolescents or not, weighs heavily on how youth view themselves and the world at large (Hurd et al., 2009).

The psychosocial developmental stage of youth in adolescence coupled with being from a low-income background means higher susceptibility to poor mental health outcomes and quality of life (Gariepy et al., 2017). It is well documented that chronic stress alters brain chemistry and one's psychological, social, and emotional functioning (Kim et al., 2013). For youth growing up in the stress of poverty the consequences can be devastating to their brain, as one's prefrontal cortex doesn't complete development until the age of 25. This is relevant to neuroplasticity, one's ability to make synaptic connections and engage in psychological flexibility. Studies suggest youth resiliency is

psychology stunted by impoverished conditions (Noble et al., 2005; Hair et al, 2015), adversely impacting their ability to recover from acute or chronic stress.

Current trends in mental health amongst youth indicate that the population is experiencing self-harming behaviors, eating disorders, mood disorders and suicidality and ideation. From the years 2001 to 2017 death by suicide rates increased by 182% for Black girls between the ages of 13 to 19 (Ivey-Stephenson, 2020). In the year 2019, 15.2% of Black teenage girls between the ages of 14 and 18 reported attempting suicide (2020). In a 2019 Congressional Black Caucus report to congress Black adolescents were found to be more likely to attempt suicide than any other racial demographic (Watson Coleman, 2019). However, half of the 7.7 million children with a mental health disorder do not receive treatment from professionals (Whitney & Peterson, 2019). These figures depict an unmet need for mental health and wellness resources for all youth, but especially Black females.

According to recent studies, the recommended modalities for treating mood disorders, suicidality, and self-harming behaviors are trauma focused cognitive behavior therapy (Nardi et al., 2017; Weersing et al., 2017) and interpersonal psychotherapy for adolescents (O' Shea et al., 2015; Hussain et al., 2018). In most cases but not always, youth are prescribed fluoxetine, a selective serotonin reuptake inhibitor in addition to talk therapy. However, pharmaceutical intervention is often the last resort when treating severely depressed adolescents because some individuals are found to be resistant to medication with the adverse effect of increased suicidality (Cipriani et al., 2016). While CBT is a present focused approach designed to help clients recognize patterns in their thoughts, feelings and behaviors that create impairment. Interpersonal Psychotherapy for

Adolescents directs the client's attention to increasing effective communication and problem solving within their most significant relationships, especially those relevant to their most current depressive episode (reference).

Though there is a growing body of literature that supports yoga as a feasible intervention for youth experiencing adverse psychological symptoms (Mendelson et al., 2010; Noggle, 2012; Siervedes et al., 2014). In a 2010 study (Mendelson et al.) on mindfulness-based yoga amongst youth, researchers found the intervention group to be effective in "reducing problematic involuntary engagement responses to social stress" as such "mindfulness-based practices were effective in enhancing self-regulatory capacities and in reducing activation and persistent or worrying thoughts." Two years later, the *Journal of Developmental and Behavioral Pediatrics* published a report on the benefits of yoga for psychosocial well-being amongst high school aged youth (Noggle, 2012). Results suggest decreased mood disturbance, anxiety and negative affect in participants who participated in the yoga group (2012). A 2014 randomized controlled trial explored the impact of Hatha yoga in stress reduction amongst youth (Sieverdes et al., 2014). Researchers found that the yoga group members had a reduction in blood pressure as opposed to the control group (2014). This data would indicate increased physical and mental wellbeing associated with the use of yoga in adolescents (Noggle, 2012; Sierverdes et al., 2014).

Yoga as an Intervention

In the traditional ancient Indian based conception of Yoga, the philosophy consists of several practices known as the 8 limbs of yoga (Nanthakumar, 2020). The eight limbs consist of ethics, conscious choices, physical postures, breathwork, self-

examination, focus, meditation, and wholeness (Freeman et al., 2017; Nanthakumar, 2020). However, since its adoption into mainstream western culture, the practice of yoga has primarily centered on just three of the eight limbs. Those being, the physical practice of asanas, the breathing practice of pranayama, and the meditative practice of dhyana (Domingues, 2018; Gard et al., 2014). Due to the long history of this practice, this section will specifically focus on applications within the field of psychology as it relates to the alleviation of suffering from mental health conditions and the promotion of wellbeing. According to the American Psychological Association, Yoga is defined as "a school or tradition of Hindu philosophy and practical teaching that ultimately seeks to achieve mystic union of the self …or of the human spirit with the universal spirit, through a prescribed mental discipline and physical exercises" (Dictionary of Psychology, n.d.). The APA's definition of yoga goes on to explain how the practice of yoga involves self-control, deep contemplation, as well as mental and physical relaxation (APA). Yoga has primarily been studied as a complementary and integrative approach to mental health treatment with promising results (Park & Slattery, 2021; Domingues, 2018).

A proposed framework to grasp the effectiveness of yoga is through Dr. Stephen Porges' polyvagal theory also known as PVT (Porges, 2021). The polyvagal theory is a way of understanding the interrelatedness of the brain, body, and subsequent behavioral patterns (Sullivan et al., 2018). Both PVT and yoga together provide a perspective to understand one's physical, psychological, and behavioral aspects are interconnected. Polyvagal theory provides insight into how underlying neural platforms are activated in response to perceived threat or safety. While yoga suggests that those same attributes emerge from and are influenced by the underlying interplay of one's attention, intention

and behaviors (2018). PVT posits that 3 neurological platforms; ventral vagal, sympathetic nervous system, and dorsal vagal complex help one to assess and respond to safety, danger, and life threats. Incorporating the top-down and bottom-up approaches with interoception, otherwise possessing vagal control helps one to engage in threat appraisal, emotional/ self-regulation, and greater psychological flexibility in response to challenges. The alternative is also true, lack of vagal control is associated with limited capacity for self-regulation. Through the neuroscience of PVT, the concept of neuroception emerged "to describe the subconscious detection of safety or danger" within one's environment (2018). Through these subconsciously perceived external stimuli, the brain transmits signals of safety or danger throughout the body from the limbic system to every major organ in one's body. Such transmission occurs through the vagal/ vagus nerve (Sullivan et al., 2018). Through this conceptualization we begin to understand the body's relationship to stressful events, and as evident in he Body Keeps the Score (Van der Kolk, 2014).

In 2016 the *Mind, Brain and Education* quarterly journal a report found that yoga improves academic performance in urban high school students (Hagins & Rundle; Frank et al, 2016), prevents substance use amongst high-risk youth (Butzer et al., 2017). Yoga also improves youths' school engagement, grade point average, and increases their ability to self-regulate and cope. Results from the Butzer et al., (2017) study demonstrated youth decreased willingness to engage in cigarette use after practicing yoga for several weeks. Continuous yoga practice has been found to reduce chronic pain, improve heart health, improve mood, and decrease suicidality (Nyer et al., 2018), pain management (Moody et al., 2017), decrease stress and improve breathing (2018). These are advantages that may

improve the quality of one's life and their longevity. In summary, there is a growing body of evidence for the psychological, physical, and general health benefits of yoga. Through systematic review of current research evidence, yoga was found to be an effective adjunctive treatment for mood related disorders including anxiety and depression (Park & Slattery, 2012). Through Dr. Bessel van der Kolk's work in The Body Keeps the Score one can conclude that yoga has been proven to be advantageous as an alternative treatment for Post-Traumatic Stress Disorder and other psychological conditions that cause impairment (2014).

Discussion

Summary

The study demonstrates how Black female youth are disproportionately impacted by healthcare inequities and experiencing unmet need in mental health treatment considering their susceptibility to depression, suicidality, and PTSD. The study demonstrates that yoga is an effective treatment intervention to improve Black female adolescents' quality of life and overall health outcomes. Importantly this study demonstrates how the psychological benefits of yoga has been proven to reduce stress levels (Siervedes et al., 2014), improve one's self-regulatory capacity (Mendelson et al., 2010), and help to alleviate symptoms of posttraumatic stress disorder (van der Kolk, 2014). This study provides evidence to suggest that the practice of yoga can be utilized to effectively address anxious, depressive, and traumatic symptomatology. The results indicate that yoga helps to improve mood and decrease suicidality (Nyer et al., 2018) and even improve academic engagement and performance (Hagins & Rundle, 2016; Frank et al, 2016; Butzer et al., 2017). The analysis supports the theory that yoga-based interventions can reduce adverse psychological symptomatology and improve the quality of life for Black adolescent female youth.

Interpretation

Several key themes emerged from the review of yoga as an intervention for Black or African American female youth from low-income backgrounds. Firstly, the correlation between adverse psychological symptomatology is apparent amongst Black, female, and low-income populations. Black or African Americans, females and individuals from low

socioeconomic status report symptoms that are consistent with depression, anxiety, and posttraumatic stress disorders. More alarming is the prevalence of suicidality amongst the aforementioned populations. Suicide is amongst the top 3 causes of death for Black persons 15 to 24 years old (Centers for Disease Control and Prevention, 2021). This stat encompasses female youth as well, being that 30% reported recently having seriously contemplated suicide. Black adolescent girls' death by suicide multiplied by 182% from the year 2001 to 2017 (Ivey-Stephenson, 2020). Physiologically, women are experiencing adverse cardiac events comorbidly with depression (Abed et al., 2014; Chaddha et al., 2016). Low socioeconomic status impacts a person's physical and mental health and overall quality of life.

Secondly, Black persons, females, youth, and persons from low socioeconomic backgrounds cannot afford mental health treatment. Black or African Americans make up roughly 14% of the U.S. population, but account for 40% of the homeless population within the country (U.S. Census, 2020; DuBois, 2022). 25% Women cannot afford to take off work to receive the mental healthcare they need (Ranji & Salganicoff, 2018). And low-income individuals and families frequently report not being able to afford healthcare altogether (Copeland & Snyder, 2011; Anxiety and Depression Association of America, 2022). A community-based approach to mental health through yoga can potentially work to mediate the financial barriers that Black, female and low-income individuals experience.

Lastly, while the body of research that supports yoga as a mental health intervention is established and growing, there wasn't much information regarding the targeted populations of Black, female individuals of low-income backgrounds. The yoga

research on youth lacked significant diversity in study participants. Yoga interventions for Black women were also limited. Individuals from low-income backgrounds were also scarce. So, the efficacy of yoga interventions regarding these populations is still in its infancy and may not be generalized to extend to aforementioned populations. This understanding is significant because it demonstrates a need for yoga based mental health intervention research amongst minority populations.

A developing body of research provides support regarding the effectiveness of yoga to treat psychological symptomatology to improve the wellbeing and quality of life of adolescent youth. Nyer and colleagues (2018) found that weekly practice of yoga improved participants' mood and decreased suicidality. Yoga has proven to be a positive intervention for the prevention of substance use amongst youth (Butzer et al., 2017). Yoga practice also increases participants' capacity to self-regulate (2017) and reduce stress related symptomatology (Nyer et al., 2018). These findings support existing theories that attest to the psychological advantages of yoga intervention amongst adolescent youth.

Much of the research regarding utilizing yoga as an intervention to improve the wellbeing amongst youth consists mostly of white participants from middle or higher socioeconomic statuses, while only three studies included a significant percentage of Black or African American youth (Culver et al., 2015; Daly et al., 2015; Fishbein et al., 2015). This exposes a gap in research and further demonstrates a significant barrier to mental health treatment for Black and African individuals which is that Blacks are less likely to be included in research (Melendez, 2020). Though the need for accessible and acceptable mental health care for Black communities is well studied (Watson Coleman,

2019; Williams et al., 2020; Centers for Disease Control and Prevention, 2021; Pumariega et al., 2022) Black youth are not proportionately represented in randomized controlled trials.

This study highlights a need to develop a standardized yoga intervention for adolescents in order to replicate the findings in future research. The length of the studies varies greatly, some are short-term transpiring over weeks, while others span more than a year. Consequently, the number of yoga sessions and the type of yoga administered fluctuates across the studies as well. Two of the trials adhered to the practice of Kripalu Yoga, a gentle version of hatha yoga that focuses on postures, breathing exercises, relaxation and meditation (Noggle et al., 2012; Butzer et al.,2017). Although all the studies did in fact administer treatment through combined methods of meditation and yogic postures (Miller et al., 2020). The control groups varied across studies as well, about 46% of the 13 trials utilized physical education, while 38% were school as usual (SAU), 8% was dance, and 8% used a yoga cd (Miller et al., 2020).

Additionally, many of the studies reviewed had only two points of assessment, which were pre and post measurements (Clance et al, 1980; Mendelssohn et al., 2010; Noggle et al., 2012; Hagins et al., 2013; Gard et al., 2014; Fishbein et al., 2015; Frank et al., 2016; Moody et al., 2017; Miller et al., 2020). Whereas the differing study included pre and post measurements, a 6-month and 12-month follow-up with participants (Butzer et al., 2017). Standardized care is significant to addressing the quality of mental health services for Black or African individuals, as they are less likely to receive standardized care (General, 2001; Melendez et al., 2020). These findings should be taken into account

when considering how to practice yoga as a mental health intervention and quantifiably measure treatment outcomes.

Limitations

There is a need for yoga research that is inclusive of Black persons. There is a need to diversify study participants across socio-economic statuses as well, considering that there were only a few studies that included Black or African female youth in yoga interventions. This study highlights a gap in research with the absence of a standardized version of yoga as a mental health intervention that can be readministered across diverse populations over time.

The generalizability of the results is limited by sample size and social desirability. Sample size is significant because the larger the sample size than the more reflective it is of the general population. Smaller sample sizes may be advantageous in pilot studies amongst target demographics (Andrade, 2020). Sample sizes varied greatly across the randomized controlled trials studied, with the smallest being 10 participants (Clance et al., 1980) to the biggest being 293 participants (Hagins & Rundle, 2016). Social desirability may have influenced yoga intervention results based on the subjective measurements utilized and the conditioning setting of school for many of the trials included in this study.

Recommendations

Future research may be enriched by changing the setting of the yoga intervention to a community-based location to make treatment more culturally and proximally accessible for Black female youth of low-income backgrounds. Many of the randomized controlled

trials included within this study occur in the school setting. Of the studies reviewed here pertaining to youth, all but two occurred within the context of a school setting (Miller et al., 2020). One study was facilitated at a hospital as one-on-one sessions to youth undergoing hospitalization related to a diagnosis of sickle cell disease (Moody et al., 2017). The other study that was facilitated outside of a school setting is an international study that was conducted in Haiti which occurred at 2 orphanages (Culver et al., 2015).

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