



Review Article

Addressing Chronic Stress and Opioid Use Disorder in Black Mothers with Small Children using Mindfulness-Based Stress Reduction: A Review

Alexis Budhi Suarez^{1#}, Melanie De Jesus^{2#} and Suchismita Ray^{2*}

¹School of Medicine, St. George's University, Grenada, West Indies

²Department of Health Informatics, Rutgers School of Health Professions, Rutgers University, Newark, New Jersey, USA

[#]These authors contributed equally to this work

Abstract

The opioid epidemic continues to be a growing public health concern in the United States, with Black mothers who have young children being a particularly vulnerable population. In this review, the authors first summarize the mental and physical health disparities faced by this population from the perspective of minority stress theory, considering the role of racial discrimination, gender stigma, trauma, parenting and other life stressors. We then report how chronic stress exposure results in increased susceptibility to poor physical and mental health outcomes, and subsequent development of Opioid Use Disorder (OUD). Opioid addiction itself creates additional disparities, further perpetuating this population's stress reactivity, emotional dysregulation and OUD. Next, we identify the overlapping neuroadaptations implicated in both chronic stress and OUD, notably the reward pathway. We propose the use of a brief Mindfulness-Based Stress Reduction (MBSR) as a supplement to gold standard treatments for OUD today, highlighting its efficacy in improving emotional regulation, stress, physical and mental health, and substance abuse outcomes for Black mothers with OUD who have small children. If MBSR is found to be efficacious for this vulnerable population, this intervention can be added to existing treatment protocols with modifications to better support opioid-addicted Black American mothers with small children. We propose that future studies adapt existing treatments for OUD to include a brief MBSR, and address potential barriers in implementing this intervention within community addiction treatment settings (e.g., education level, need for childcare) to improve accessibility, compliance, and treatment outcomes for Black American mothers with OUD.

Keywords: Black mothers; Mindfulness; Minority; Neuroadaptations; Opioid Use Disorder; Racial disparities; Stress

Introduction

The opioid epidemic continues to be a growing public health concern in the United States with its trend of increasing morbidity and mortality. According to the CDC [1], drug overdose deaths have quadrupled between 1999-2019 with 70% of drug overdose-related deaths in 2019 involving an opioid. In an effort to combat the opioid crisis, stricter prescribing practices, increased availability of pharmacologic and non-pharmacologic treatment alternatives, prescription monitoring programs and abuse-deterrent strategies among other interventions have been put into place [2]. Despite these efforts, rates of Opioid Use Disorder (OUD) continue to rise, especially within marginalized populations [3].

The majority of OUD research today is focused on the biological, social, and political effects of opioids on White middle-class American men; however, the impact of the opioid epidemic on the Black community has largely been neglected despite their rising rates in opioid-related deaths [4]. Similarly, women have been understudied despite evidence suggesting that women progress more rapidly from intended, appropriate opioid use to OUD and suffer from greater emotional and physical consequences of drug use, when compared to men [5].

Research by Sinha [6] highlights the important role that stress plays in the development and perpetuation of drug abuse and relapse. Black women are a population at risk for chronic stress due to their minority and gender status [7]. For those who suffer with substance addiction

*Corresponding author: Suchismita Ray, Department of Health Informatics, Rutgers School of Health Professions, Rutgers University, 65 Bergen Street, Office 359D, Newark, NJ 07107-1709, New Jersey, USA, Tel: +1 9739723571; E-mail: shmita@rutgers.edu

Citation: Suarez AB, De Jesus M, Ray S (2022) Addressing Chronic Stress and Opioid Use Disorder in Black Mothers with Small Children using Mindfulness-Based Stress Reduction: A Review. J Addict Addictv Disord 9: 106.

Received: November 07, 2022; **Accepted:** November 17, 2022; **Published:** November 24, 2022

Copyright: © 2022 Suarez AB, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

within marginalized communities, drug use is often stigmatized, which contributes to chronic stress due to fear of being judged [8]. In addition, mothers experience chronic stress related to difficulties raising children [9,10]. Based on this existing research, we propose that Black women with small children experience heightened levels of chronic stress, which puts them at an increased risk of OUD. To the best of our knowledge, there is no existing literature studying OUD in Black American mothers with young children.

This review aims to summarize the role of life-long disparities faced by Black American mothers of small children in their development and perpetuation of OUD, implicate neurological alterations due to chronic stress and opioid addiction, and propose the use of additional interventions with current OUD treatment to target these mechanisms and improve treatment outcomes.

Methods of Literature Search

A web-based literature search using various databases such as Google Scholar, PubMed and PsycInfo electronic databases was carried out. The keywords “mindfulness,” “mindfulness-based stress reduction,” “MBSR,” “opioid use disorder,” “OUD,” “opioid addiction,” “minority,” “racial discrimination,” “African American,” “Black American,” “Black mothers,” “Black women,” “racial disparities,” “chronic stress” and “neuroadaptations” were used to search the databases. The search encompassed articles published from March 1989 to February 2022, and the search was limited to articles published in the English language. After examining titles, abstracts, and full articles, 66 articles were included in this review.

Literature Synthesis and Recommendations

Health disparities of Black women and chronic stress

Black American women face lifelong challenges linked to their minority status, including racial and gender discrimination [11,12], low socioeconomic status (SES; [11]) and trauma [13]. These daily experiences of multiple discriminations contribute to heightened levels of chronic stress in Black women [12,14]. As a result, Black women report high rates of psychiatric comorbidity (e.g., depression, anxiety) and poor life satisfaction [15], as well as employment issues [16]. In addition, physical health-related outcomes as a result of chronic stress in this population include increased risk of cardiovascular disease, hypertension, obesity and high blood pressure [15,17]. These stressors increase the likelihood of Black Americans turning to drug use to cope with negative affect [17], thus, may have greater risk of developing and perpetuating OUD.

Although Black American women are at high risk for OUD due to their chronic stress, they are frequently hindered from seeking and receiving appropriate care, which contributes to this population’s poor health outcome. This group experiences further disparities in healthcare access and utilization at a disproportionate rate to White and Black men and White women [3,18,19]. Black American opioid users also experience high rates of incarceration as a result of racial discrimination within the American justice system [20], further hindering them from seeking treatment.

Chronic stress in Black mothers with small children

Black American mothers experience additional difficulties raising children [12], which we propose amplifies the chronic stress Black women already experience due to their minority status and predisposes these individuals to developing and perpetuating OUD. Existing literature states that women experience greater chronic stress if they are Black, have a Black toddler, are single-parenting long-term and are working (compared to non-Black coparenting and unemployed women [21,22]). According to McCallum and colleagues [23], low-income African-American mothers revealed that they experienced child-related stressors associated with financial difficulties (e.g., losing child support, providing adequate housing and transportation), racism in the school system, lack of control with disciplining their children and their children’s health and safety.

Additionally, Black American mothers suffering with OUD are discriminated against because of the stigma that people of color, especially mothers, with addictions should be punished rather than treated [24], which we suggest serves as another contributor to chronic stress. Many drug-addicted Black American mothers are unable to care for their children adequately; thus, these children are often raised by their grandparents and great-grandparents [25]. In 1992, 1.2 million African-American children lived with their grandparents, which is three times the rate for these children’s White counterparts [23]. Since Black American mothers with young children experience multiple daily stressors related to their race, gender, and parental status among others, we propose that Black American mothers with young children are a vulnerable population with an increased risk for the development and perpetuation of OUD. More research is needed on this population to better understand how these multiple disparities work together to increase levels of chronic stress.

Chronic stress, functional brain networks, and Opioid Use Disorder

Exposure to chronic and repeated stressors results in changes to the neuroendocrine [Hypothalamic-Pituitary-Adrenal (HPA) axis], sympathetic/parasympathetic autonomic and immune systems [26]. These systems, collectively known as the stress response, work together to maintain homeostasis and adapt when an individual is in the presence of aversive or dangerous stimuli [16,27]. Dysregulation of the stress response system results in neuroadaptation and impairment to functional brain networks such as prefrontal cortex, hippocampus, amygdala, anterior cingulate cortex, and salience network, responsible for emotion and stress regulation [7,28]. These changes result in the development of allostatic overload and ultimately to poor physical and mental health outcomes [16,29].

Chronic activation of the stress response system is associated with an increased tendency towards practicing unhealthy behaviors, including drug use, which may temporarily act as a defense from the psychological effects of stress by reducing anxiety [30]. However, long-term use of these maladaptive coping strategies increases risk for developing and perpetuating addiction [30], including opioid addiction. Opioids, while beneficial for the treatment of moderate, severe, and persistent pain [31], also results in HPA axis dysregulation leading to allostatic overload and subsequent adverse physical health consequences [7]. Alterations to the HPA axis also causes neuroadaptation and impairment in the brain's functional network, such as the mesocorticolimbic striatal reward pathway (including the prefrontal cortex, anterior cingulate cortex and salience networks; [32]), which we expect to find in opioid-addicted Black mothers with small children who are undergoing chronic stress. As a result of these neuroadaptations, we propose that Black mothers with small children are hypervigilant to discrimination-related (e.g., race, gender, stigma associated with being an addicted mother) and opioid-related cues which result in increased susceptibility to stress, opioid craving and relapse and subsequent negative mental and physical health consequences. More research should be conducted to understand the brain mechanisms implicated in chronic stress and OUD in Black American mothers with small children.

Current OUD treatment and its limitations in Black American community

Gold-standard pharmacotherapy for detoxification and maintenance in OUD individuals is Opioid Agonist Treatment (OAT), primarily methadone and buprenorphine replacement therapy, which work by relieving narcotic craving, suppressing withdrawal symptoms and blocking the euphoric effects of concurrent illicit opioid use [33,34]. However, individuals with OUD, even after years of abstinence [35] or while on methadone-maintenance therapy [36], have heightened response to drug cues, increased craving, reduced response to natural rewards, and persistent physiological changes and thus, have high risk for relapse. Likewise, buprenorphine replacement therapy has shown to be effective in reducing withdrawal and craving in early abstinence; however, probability of relapse after detoxification remains high [37].

Despite the effectiveness of OAT, research suggests it would be more beneficial to treat OUD with a more integrated biopsychosocial approach, implementing therapies such as Cognitive Behavioral Therapy (CBT; [35]) and structured family therapy [3] in addition to medication-assisted treatment. According to opioid literature, patients tend to be more compliant and stay in treatment longer when using OAT (methadone > buprenorphine; [38]), which allows for incorporation of psychosocial interventions into treatment regimens [39]. OAT with psychosocial support together have shown to increase compliance to treatment, decrease illicit opioid use, reduce risky drug-seeking behavior, improve mental health and decrease overall mortality [40].

Unfortunately, Black Americans have limited access to viable OUD treatment options, which contributes to further development and perpetuation of OUD within these low-income marginalized communities [3]. Methadone is often the sole treatment option provided by federally-regulated opioid treatment centers in low-income areas and patients have difficulty participating in these demanding programs due to increased burden to find childcare, transportation and time off from work [3]. Furthermore, the use of methadone replacement therapy is often underutilized in these communities due to the stigma that OAT simply replaces "one drug [with] another drug" [3]. We propose that Black American mothers with young children face additional challenges due to their parental status, which further limits their accessibility to OUD treatment. To our knowledge, very limited research has been done to examine Black American mothers with small children on OUD. Additional treatment options are needed to increase accessibility and utilization while reducing relapse rates in this vulnerable population.

Mindfulness-based interventions

Mindfulness-Based Stress Reduction (MBSR) is a mind-body complementary health approach developed by John Kabat-Zinn [41] that uses mindfulness, defined as "the awareness that emerges through paying attention on purpose, in the present moment and nonjudgmentally." Mindfulness allows for better emotion regulation in response to stress caused by negative life events and experiences, reducing physical symptoms and psychological distress and thus, improving overall quality of life [42,43]. MBSR targets the stress response system and has historically been used for stress reduction in daily life and pain management for chronic illnesses [42]. However, the practice of mindfulness outlined in MBSR now serves as a conceptual framework for other branches of Mindfulness-Based Interventions (MBIs), which have made modifications to support different populations within various contexts [44]. For example, MBSR has applications for targeting stress during addiction treatment to prevent relapse by breaking the cycle of drug cravings and use [45], which has been useful in the treatment of OUD [46].

While addictive behaviors are perpetuated by escape and avoidance of negative affect [47], mindfulness alternatively teaches acceptance of emotions and thoughts, fostering more flexible responses to cravings and stress than reactive drug use [48]. Garland and Howard [49] found evidence for the efficacy of MBIs for restoring alterations in prefrontal cognitive control function and improving reward processing, resulting in decreased drug cravings and relapse. There is also growing evidence on the benefits of mindfulness on neurological functioning related to stress-induced HPA axis [50] and autonomic activation [51]. Furthermore, MBIs, when used in conjunction with standard OUD treatment (i.e., OAT), may also be linked to greater patient retention and satisfaction levels compared to standard OUD treatment alone [52].

Although minority groups are often underrepresented in existing mindfulness research [53], some headway has been made in addiction studies involving minorities. Literature suggests that MBIs are especially beneficial within substance-addicted racial/ethnic minority populations, including African American and Latina women with history of trauma [45] and racially and ethnically-diverse low-income women [54]. Among racial/ethnic minorities, MBIs may be even more effective than current relapse prevention treatment in reducing drug use and addiction severity [55] as well as reducing relapse rates [56]. One reason may be that mindfulness can serve as a buffer for racial oppression [51,57], which we argue is a major contributor to chronic stress, the development and continuation of OUD, and relapse.

Similarly, few studies have researched the use of MBIs for treatment of mothers experiencing chronic stress. More specifically, in existing research with Chilean mothers of preschool children, there was a significant negative correlation between MBIs and the mothers' stress (general and parent-specific), depression and anxiety [58]. In drug treatment-seeking mothers (predominantly Caucasian) with young children, mindfulness was associated with significant reduction of general and parenting stress, with women exhibiting the greatest baseline general stress levels benefiting most in terms of total stress reduction [59]. However, there is no existing literature which is examining applications of MBIs as an adjunct to OUD treatment in Black American mothers with young children. We propose that this population could benefit from MBSR targeting discrimination-related chronic stress to improve their OUD outcome. If MBSR is found to be efficacious in Black American mothers with young children, this intervention can serve as an adjunct to existing OUD treatment protocols to improve outcomes.

Necessary adaptations to current OUD treatment in Black mothers with small children

Adapting MBSR to align with the goals and needs of Black American mothers with OUD will require the use of flexible treatment protocols to increase accessibility and compliance in community settings. Nicholls and colleagues [60] suggest the use of outpatient OAT (methadone and naltrexone) with psychosocial treatment in a medical office setting as an alternative to placement in inpatient methadone facilities. Spears [61] also highlights the importance of cultural competency in the delivery of addiction treatments, which includes adjusting existing language and providing relevant definitions/examples, allowing for modifications to accommodate clients discomfort with triggering practices (e.g., closing the eyes), working collaboratively to identify barriers to treatment, and developing more feasible, informal practices. The culturally-sensitive practice of mindful acceptance of discrimination could also be used as a tool to target discrimination-related stress triggers [42]. Adaptations to current treatment practices also require a holistic approach to increase public awareness and community engagement, foster social support groups and increase diversity within existing programs [3]. Existing feasibility studies involving the use of MBIs within low-income racially/ethnically-diverse community settings support the use of such adaptations [45,54,62].

For mothers with young children, programs that address childcare and family support may aid in improving OUD treatment outcomes [24] while mindfulness-based parenting may aid in quality of parenting behavior [63]. We propose that similar programs can be applied to opioid-addicted Black mothers with small children to improve treatment outcomes. Another promising avenue to explore is the use of mobile health technology in adapting more feasible MBIs. Existing studies support the efficacy of mobile technologies for the delivery of psychotherapy and other behavioral interventions [64], and have had some success with low-income minority mothers suffering from depression [65]. We propose mobile technologies can be used for the delivery of mindfulness interventions for OUD treatment in Black mothers with small children. We propose that if adaptations can be made to the delivery of existing OUD treatment to ensure that it is culturally sensitive and more accessible, while also increasing public awareness and community engagement to decrease the stigma associated with seeking treatment, then there will be substantial improvement in OUD outcomes for Black mothers with young children.

Conclusion

The opioid epidemic continues to be a growing public health concern in the United States. Black mothers with OUD who have young children are a particularly vulnerable population because their drug addiction is perpetuated by the prolonged stress they experience due to lifelong struggles with racial discrimination, gender, social stigmas, psychiatric comorbidities, trauma and parenting. The role these disparities play in drug addiction is largely understudied, which contributes to the decreased accessibility of treatments, and low utilization and retention rates of services associated with this population. Current treatment regimens for OUD include OAT and limited psychosocial treatments, though increasing relapse rates persist [37]. We propose that the use of a brief MBSR [66], modified to address barriers in OUD treatment for Black mothers with small children, may be particularly useful as an adjunct to OAT, as existing research suggests MBSR can target specific neurological mechanisms implicated in chronic stress and addiction, essentially interrupting the stress-drug use cycle [45,46]. The challenge lies in increasing accessibility, effectiveness, and integration of these interventions into lower-income neighborhoods, specifically in their use with Black mothers with young children. The adaptations suggested previously, including the use of mobile health technology, may help to limit the barriers associated with seeking and sustaining treatment in this vulnerable population.

Acknowledgement

This research was supported by a Healthcare Foundation of New Jersey grant (Award# 3888) to Dr. Suchismita Ray.

Disclosure of Interest

The authors report no conflict of interest.

References

1. Centers for Disease Control and Prevention (2020) CDC WONDER. CDC, Atlanta, USA.
2. Jones MR, Viswanath O, Peck J, Kaye AD, Gill JS, et al. (2018) A brief history of the opioid epidemic and strategies for pain medicine. *Pain Ther* 7: 13-21.
3. Substance abuse and mental health services administration (2020) The Opioid Crisis and the Black/African American Population: An Urgent Issue. SAMHSA, Rockville, USA.
4. James K, Jordan A (2018) The opioid crisis in black communities. *J Law Med Ethics* 46: 404-421.
5. Back SE, Payne RL, Wahlquist AH, Carter RE, Stroud Z, et al. (2011) Comparative profiles of men and women with opioid dependence: Results from a national multisite effectiveness trial. *Am J Drug Alcohol Abuse* 37: 313-323.

6. Sinha R (2008) Chronic stress, drug use, and vulnerability to addiction. *Ann N Y Acad Sci* 1141: 105-130.
7. Berger M, Samyay Z (2015) "More than skin deep": Stress neurobiology and mental health consequences of racial discrimination. *Stress* 18: 1-10.
8. Ahern J, Stuber J, Galea S (2007) Stigma, discrimination and the health of illicit drug users. *Drug Alcohol Depend* 88: 188-196.
9. Rodgers-Farmer AY (1999) Parenting stress, depression, and parenting in grandmothers raising their grandchildren. *Children and Youth Services Review* 21: 377-388.
10. Deater-Deckard K (2008) Parenting stress. Yale University Press, USA.
11. Zhao S, Chen F, Feng A, Han W, Zhang Y (2019) Risk factors and prevention strategies for postoperative opioid abuse. *Pain Research and Management*.
12. Tipe M, Carson TL (2022) A Qualitative Assessment of Gender- and Race-Related Stress Among Black Women. *Womens Health Rep (New Rochelle)* 3: 222-227.
13. Gluck RL, Hartzell GE, Dixon HD, Michopoulos V, Powers A, et al. (2021) Trauma exposure and stress-related disorders in a large, urban, predominantly African-American, female sample. *Arch Womens Ment Health* 24: 893-901.
14. Geronimus AT, Hicken M, Keene D, Bound J (2006) "Weathering" and age patterns of allostatic load scores among blacks and whites in the United States. *Am J Public Health* 96: 826-833.
15. Williams DR, Lawrence JA, Davis BA, Vu C (2019) Understanding how discrimination can affect health. *Health Serv Res* 54: 1374-1388.
16. Ahmed AT, Mohammed SA, Williams DR (2007) Racial discrimination & health: Pathways & evidence. *Indian J Med Res* 126: 318-27.
17. Jackson JS, Knight KM, Rafferty JA (2010) Race and unhealthy behaviors: Chronic stress, the HPA axis, and physical and mental health disparities over the life course. *Am J Public Health* 100: 933-939.
18. National Institute on Drug Abuse (NIDA) (2019) Access to addiction services differs by race and gender. NIDA, Bethesda, Maryland, USA.
19. Ojeda VD, McGuire TG (2006) Gender and racial/ethnic differences in use of outpatient mental health and substance use services by depressed adults. *Psychiatr Q* 77: 211-222.s
20. Hart CL, Hart MZ (2019) Opioid crisis: Another mechanism used to perpetuate American racism. *Cultur Divers Ethnic Minor Psychol* 25: 6-11.
21. Bates RA, Ford JL, Jiang H, Pickler R, Justice LM, et al. (2021) Sociodemographics and chronic stress in mother-toddler dyads living in poverty. *Dev Psychobiol* 63: 22179.
22. Thompson MS, Ensminger ME (1989) Psychological well-being among mothers with school age children: Evolving family structures. *Social Forces* 67: 715-730.
23. McCallum DM, Arnold SE, Bolland JM (2002) Low-income African-American women talk about stress. *Journal of Social Distress and the Homeless* 11: 249-263.
24. Huhn AS, Dunn KE (2020) Challenges for women entering treatment for opioid use disorder. *Curr Psychiatry Rep* 22: 76.
25. Burton LM (1992) Black grandparents rearing children of drug-addicted parents: Stressors, outcomes, and social service needs. *Gerontologist* 32: 744-751.
26. Guilliams TG, Edwards L (2010) Chronic stress and the HPA axis. *The Standard* 9: 1-12.
27. Smith SM, Vale WW (2006) The role of the hypothalamic-pituitary-adrenal axis in neuroendocrine responses to stress. *Dialogues Clin Neurosci* 8: 383.
28. Causadias JM, Telzer EH, Lee RM (2017) Culture and biology interplay: An introduction. *Cultur Divers Ethnic Minor Psychol* 23: 1-4.
29. Busse D, Yim IS, Campos B, Marshburn CK (2017) Discrimination and the HPA axis: Current evidence and future directions. *J Behav Med* 40: 539-552.
30. Sinha R (2001) How does stress increase risk of drug abuse and relapse? *Psychopharmacology (Berl)* 158: 343-359.
31. Anekar AA, Cascella M (2020) WHO Analgesic Ladder. StatPearls Publishing, Florida, USA.
32. Mill RD, Winfield EC, Cole MW, Ray S (2021) Structural MRI and functional connectivity features predict current clinical status and persistence behavior in prescription opioid users. *Neuroimage Clin* 30: 102663.
33. Gordon AJ, Krumm MM (2013) Buprenorphine for opioid dependence. *Interventions for Addiction: Comprehensive Addictive Behaviors and Disorders*: 417-427.
34. Joseph H, Stancliff S, Langrod J (2000) Methadone maintenance treatment (MMT): A review of historical and clinical issues. *Mt Sinai J Med* 67: 347-364.
35. Kosten TR, George TP (2002) The neurobiology of opioid dependence: Implications for treatment. *Sci Pract Perspect* 1: 13-20.
36. Stine SM, Southwick SM, Petrakis IL, Kosten TR, Charney DS, et al. (2002) Yohimbine-induced withdrawal and anxiety symptoms in opioid-dependent patients. *Biol Psychiatry* 51: 642-651.
37. Mei W, Zhang JX, Xiao Z (2010) Acute effects of sublingual buprenorphine on brain responses to heroin-related cues in early-abstinent heroin addicts: An uncontrolled trial. *Neuroscience* 170: 808-815.
38. Bell J, Trinh L, Butler B, Randall D, Rubin G (2009) Comparing retention in treatment and mortality in people after initial entry to methadone and buprenorphine treatment. *Addiction* 104: 1193-1200.

39. Gowing LR, Farrell M, Ali RL, White JM (2002) Alpha2-adrenergic agonists in opioid withdrawal. *Addiction* 97: 49-58.
40. European Monitoring Centre for Drugs and Drug Addiction (2017) Health and social responses to drug problems: A European guide. European Monitoring Centre for Drugs and Drug Addiction, Portugal.
41. Kabat-Zinn J (1990) Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness. Delacorte Press, New York, USA.
42. Spears CA (2019) Mindfulness-based interventions for addictions among diverse and underserved populations. *Curr Opin Psychol* 30: 11-16.
43. Reibel DK, Greeson JM, Brainard GC, Rosenzweig S (2001) Mindfulness-based stress reduction and health-related quality of life in a heterogeneous patient population. *Gen Hosp Psychiatry* 23: 183-192.
44. Cullen M (2011) Mindfulness-based interventions: An emerging phenomenon. *Mindfulness* 2: 186-193.
45. Vallejo Z, Amaro H (2009) Adaptation of mindfulness-based stress reduction program for addiction relapse prevention. *The Humanistic Psychologist* 37: 192-206.
46. Dhingra L, Ahmed E, Shin J, Scharaga E, Magun M (2015) Cognitive effects and sedation. *Pain Med* 16: 37-43.
47. Kassel JD, Greenstein JE, Evatt DP, Roesch LL, Veilleux JC, et al. (2007) Chapter 8 - Negative Affect and Addiction. *Stress and Addiction*: 171-189.
48. Fruzzetti AE, Erikson KR (2010) Mindfulness and acceptance interventions in cognitive-behavioral therapy. *Handbook of Cognitive-Behavioral Therapies* 347.
49. Garland EL, Howard MO (2018) Mindfulness-based treatment of addiction: Current state of the field and envisioning the next wave of research. *Addict Sci Clin Pract* 13: 14.
50. Marcus MT, Fine M, Moeller FG, Khan MM, Pitts K, et al. (2003) Change in stress levels following mindfulness-based stress reduction in a therapeutic community. *Addictive Disorders & Their Treatment* 2: 63-68.
51. Woods-Giscombé CL, Gaylord SA (2014) The cultural relevance of mindfulness meditation as a health intervention for African Americans: Implications for reducing stress-related health disparities. *J Holist Nurs* 32: 147-160.
52. Price CJ, Merrill JO, McCarty RL, Pike KC, Tsui JI (2020) A pilot study of mindful body awareness training as an adjunct to office-based medication treatment of opioid use disorder. *J Subst Abuse Treat* 108: 123-128.
53. Waldron EM, Hong S, Moskowitz JT, Burnett-Zeigler I (2018) A systematic review of the demographic characteristics of participants in US-based randomized controlled trials of mindfulness-based interventions. *Mindfulness* 9: 1671-1692.
54. Amaro H, Spear S, Vallejo Z, Conron K, Black DS (2014) Feasibility, acceptability, and preliminary outcomes of a mindfulness-based relapse prevention intervention for culturally-diverse, low-income women in substance use disorder treatment. *Subst Use Misuse* 49: 547-559.
55. Witkiewitz K, Greenfield BL, Bowen S (2013) Mindfulness-based relapse prevention with racial and ethnic minority women. *Addict Behav* 38: 2821-2824.
56. Greenfield BL, Roos C, Hagler KJ, Stein E, Bowen S, et al. (2018) Race/ethnicity and racial group composition moderate the effectiveness of mindfulness-based relapse prevention for substance use disorder. *Addict Behav* 81: 96-103.
57. Anālayo B (2020) Confronting racism with mindfulness. *Mindfulness* 11: 2283-2297.
58. Corthorn C, Milicic N (2016) Mindfulness and parenting: A correlational study of non-meditating mothers of preschool children. *Journal of Child and Family Studies* 25: 1672-1683.
59. Short VL, Gannon M, Weingarten W, Kaltenbach K, LaNoue M, et al. (2017) Reducing stress among mothers in drug treatment: A description of a mindfulness based parenting intervention. *Matern Child Health J* 21: 1377-1386.
60. Nicholls L, Bragaw L, Ruetsch C (2010) Opioid dependence treatment and guidelines. *J Manag Care Pharm* 16: 14-21.
61. Spears CA, Houchins SC, Bamatter WP, Barrueco S, Hoover DS, et al. (2017) Perceptions of mindfulness in a low-income, primarily African American treatment-seeking sample. *Mindfulness (N Y)* 8: 1532-1543.
62. Burnett-Zeigler I, Satyshur MD, Hong S, Wisner KL, Moskowitz J (2019) Acceptability of a mindfulness intervention for depressive symptoms among African-American women in a community health center: A qualitative study. *Complement Ther Med* 45: 19-24.
63. Gannon M, Mackenzie M, Kaltenbach K, Abatamarco D (2017) Impact of mindfulness-based parenting on women in treatment for opioid use disorder. *J Addict Med* 11: 368-376.
64. Lindhiem O, Bennett CB, Rosen D, Silk J (2015) Mobile technology boosts the effectiveness of psychotherapy and behavioral interventions: A meta-analysis. *Behav Modif* 39: 785-804.
65. Broom MA, Ladley AS, Rhyne EA, Halloran DR (2015) Feasibility and perception of using text messages as an adjunct therapy for low-income, minority mothers with postpartum depression. *JMIR Ment Health* 2: 4.
66. Ray S (2022) Implementation of a mindfulness intervention in an underserved drug abusing population in the community: A brief report. *Journal of Addiction & Addictive Disorders* 9: 100078.



- Advances In Industrial Biotechnology | ISSN: 2639-5665
- Advances In Microbiology Research | ISSN: 2689-694X
- Archives Of Surgery And Surgical Education | ISSN: 2689-3126
- Archives Of Urology
- Archives Of Zoological Studies | ISSN: 2640-7779
- Current Trends Medical And Biological Engineering
- International Journal Of Case Reports And Therapeutic Studies | ISSN: 2689-310X
- Journal Of Addiction & Addictive Disorders | ISSN: 2578-7276
- Journal Of Agronomy & Agricultural Science | ISSN: 2689-8292
- Journal Of AIDS Clinical Research & STDs | ISSN: 2572-7370
- Journal Of Alcoholism Drug Abuse & Substance Dependence | ISSN: 2572-9594
- Journal Of Allergy Disorders & Therapy | ISSN: 2470-749X
- Journal Of Alternative Complementary & Integrative Medicine | ISSN: 2470-7562
- Journal Of Alzheimers & Neurodegenerative Diseases | ISSN: 2572-9608
- Journal Of Anesthesia & Clinical Care | ISSN: 2378-8879
- Journal Of Angiology & Vascular Surgery | ISSN: 2572-7397
- Journal Of Animal Research & Veterinary Science | ISSN: 2639-3751
- Journal Of Aquaculture & Fisheries | ISSN: 2576-5523
- Journal Of Atmospheric & Earth Sciences | ISSN: 2689-8780
- Journal Of Biotech Research & Biochemistry
- Journal Of Brain & Neuroscience Research
- Journal Of Cancer Biology & Treatment | ISSN: 2470-7546
- Journal Of Cardiology Study & Research | ISSN: 2640-768X
- Journal Of Cell Biology & Cell Metabolism | ISSN: 2381-1943
- Journal Of Clinical Dermatology & Therapy | ISSN: 2378-8771
- Journal Of Clinical Immunology & Immunotherapy | ISSN: 2378-8844
- Journal Of Clinical Studies & Medical Case Reports | ISSN: 2378-8801
- Journal Of Community Medicine & Public Health Care | ISSN: 2381-1978
- Journal Of Cytology & Tissue Biology | ISSN: 2378-9107
- Journal Of Dairy Research & Technology | ISSN: 2688-9315
- Journal Of Dentistry Oral Health & Cosmesis | ISSN: 2473-6783
- Journal Of Diabetes & Metabolic Disorders | ISSN: 2381-201X
- Journal Of Emergency Medicine Trauma & Surgical Care | ISSN: 2378-8798
- Journal Of Environmental Science Current Research | ISSN: 2643-5020
- Journal Of Food Science & Nutrition | ISSN: 2470-1076
- Journal Of Forensic Legal & Investigative Sciences | ISSN: 2473-733X
- Journal Of Gastroenterology & Hepatology Research | ISSN: 2574-2566
- Journal Of Genetics & Genomic Sciences | ISSN: 2574-2485
- Journal Of Gerontology & Geriatric Medicine | ISSN: 2381-8662
- Journal Of Hematology Blood Transfusion & Disorders | ISSN: 2572-2999
- Journal Of Hospice & Palliative Medical Care
- Journal Of Human Endocrinology | ISSN: 2572-9640
- Journal Of Infectious & Non Infectious Diseases | ISSN: 2381-8654
- Journal Of Internal Medicine & Primary Healthcare | ISSN: 2574-2493
- Journal Of Light & Laser Current Trends
- Journal Of Medicine Study & Research | ISSN: 2639-5657
- Journal Of Modern Chemical Sciences
- Journal Of Nanotechnology Nanomedicine & Nanobiotechnology | ISSN: 2381-2044
- Journal Of Neonatology & Clinical Pediatrics | ISSN: 2378-878X
- Journal Of Nephrology & Renal Therapy | ISSN: 2473-7313
- Journal Of Non Invasive Vascular Investigation | ISSN: 2572-7400
- Journal Of Nuclear Medicine Radiology & Radiation Therapy | ISSN: 2572-7419
- Journal Of Obesity & Weight Loss | ISSN: 2473-7372
- Journal Of Ophthalmology & Clinical Research | ISSN: 2378-8887
- Journal Of Orthopedic Research & Physiotherapy | ISSN: 2381-2052
- Journal Of Otolaryngology Head & Neck Surgery | ISSN: 2573-010X
- Journal Of Pathology Clinical & Medical Research
- Journal Of Pharmacology Pharmaceutics & Pharmacovigilance | ISSN: 2639-5649
- Journal Of Physical Medicine Rehabilitation & Disabilities | ISSN: 2381-8670
- Journal Of Plant Science Current Research | ISSN: 2639-3743
- Journal Of Practical & Professional Nursing | ISSN: 2639-5681
- Journal Of Protein Research & Bioinformatics
- Journal Of Psychiatry Depression & Anxiety | ISSN: 2573-0150
- Journal Of Pulmonary Medicine & Respiratory Research | ISSN: 2573-0177
- Journal Of Reproductive Medicine Gynaecology & Obstetrics | ISSN: 2574-2574
- Journal Of Stem Cells Research Development & Therapy | ISSN: 2381-2060
- Journal Of Surgery Current Trends & Innovations | ISSN: 2578-7284
- Journal Of Toxicology Current Research | ISSN: 2639-3735
- Journal Of Translational Science And Research
- Journal Of Vaccines Research & Vaccination | ISSN: 2573-0193
- Journal Of Virology & Antivirals
- Sports Medicine And Injury Care Journal | ISSN: 2689-8829
- Trends In Anatomy & Physiology | ISSN: 2640-7752

Submit Your Manuscript: <https://www.herallopenaccess.us/submit-manuscript>