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# *Exploring Mindfulness and its Psychosocial Correlates in a Population of Low-income, Female, Tobacco Smokers with Young Children*

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## Background

Tobacco smoking remains a major public health problem[1,2] and is responsible for the most preventable deaths and disease in the U.S. annually (causing >480,000 premature deaths and burdening >16 million smokers with disease).[3,4] About 17% of U.S. adults report cigarette use.[5] While smoking rates are decreasing, tobacco use and disease disparities are rising.1 Higher education level inversely relates to use and risk,[5] and the prevalence of smoking is over 10% higher for those in poverty.[5] Low socioeconomic status (SES) is also related to higher tobacco-related disease risk.[6,7] Also, women have a higher risk of smoking-related disease and death.[5,8] While 52% of smokers have made a quit attempt in the past year, only 6.2% report sustained quit status.[9] In the general population, smoking intervention success is predicted by depressive symptoms, stress, anxiety, biological sex (women), and nicotine dependence.[10–18] Success is hampered by additional factors in low SES populations:[19–21] they have lower quit rates than the general population, even when utilizing evidence-based programs.[22–27] Determinants of these disparities are greater life stress, depression, lack of skills training and support, and access barriers.[28–32] Women are more likely than men to encounter cessation barriers due to elevated levels of stress, negative affect, and sex hormones, which may interfere with skills to manage smoking urges – and they are less successful at quitting.[10,33–37] Moreover, low SES women experience elevated chronic stressors,[38] leading to calls for more research on gender specific cessation interventions.[39]

Mindfulness has been associated with positive effects on psychosocial, physical and mental health outcomes, which has increased interest in using mindfulness as an adjunctive treatment for smoking cessation and relapse prevention.[40,41] However, research on mindfulness in underserved populations is lacking. A large epidemiological study suggests that vulnerable groups in the U.S. are less likely to practice or uptake mindfulness activities (e.g., meditation).[42] Research is needed to understand and address this disparity and systematically adapt mindfulness interventions (MIs) to underserved populations,[43] with tailored elements that can address their

elevated barriers to health behavior change. Underserved women have reported mindfulness as acceptable but do not respond as well to the traditional format despite the potential for their benefitting from mindfulness practices that addresses their heightened daily stress.[44] MIs should take into account trauma histories (e.g., during the body scan mediation), potential for high noise and crowding in their daily space, and low literacy by using shorter mediations with simple language or visuals, and encouraging the use of simple informal practices throughout the day.[43,45]

MIs targeting low-income female smokers could facilitate smoking cessation, directly and indirectly.[46] Mindfulness may directly relate to smoking behavior change, but it may also mitigate stress, negative affect and cue reactivity/urge (known barriers to cessation in this population).[47,48] More research exploring mindfulness and it's correlates in underserved populations of smokers is needed. The purpose of this research was to investigate the psychometric qualities and correlates of the Cognitive and Affective Mindfulness Scale (CAMS-R)[49] in a sample of low-income, mostly minority women who smoke cigarettes. It was hypothesized that the CAMS-R will be reliable, and mindfulness will be associated with known barriers to cessation.

## Methods

Secondary analysis of self-report data from 12-month follow-up in a large, randomized smoking cessation trial, Babies Living Safe and Smokefree (BLiSS),[50] was used to explore mindfulness and its relationship to known cessation barriers and facilitators. The BLiSS trial is currently on-going; this analysis did not use the complete dataset. BLiSS recruited mothers 18 years and older from Women Infant and Children (WIC) clinics who smoked daily and had at least one child less than 6 years old.[51] Pregnancy and mental health conditions were exclusion criteria. Once screened, eligible, and consented, participants were randomized into treatment consisting of three months of telephone-based cognitive behavioral counseling (e.g., secondhand smoke reduction, cessation strategies, coping skills, and self-efficacy), nicotine replacement therapy (NRT) and a multi-modality platform including text-messaging, video clips and a mobile app, or an attention control nutrition education group. Temple University IRB approval was received before data collection.

The CAMS-R is a 12-item measure of mindfulness and was initially validated in two samples of college students (M=33.69, SD=5.32; M=34.11, SD=5.50). The sum composite score shows internal consistency, with the literature recommending to only use the CAMS-R as composite score.[49] Items scales ranged from 0 (Never) to 4 (Often). For this analysis, the 12 CAMS-R items were summed to create a composite score. Pearson correlations were used to examine mindfulness scores and psychosocial factors associations.

## Results

The sample of women (N=187) was mostly (72%) African American and had an average age of 30 (SD= 6.57) years old. Approximately 28% of the sample had less than a high school degree/GED and on average smoked 8.86 (SD=5.44) cigarettes a day. The sample had a mean CAMS-R score of 37.05 (SD=5.21, Range=25-48). The CAMS-R was reliable ($\alpha$=.74).

Pearson zero-order correlations showed higher mindfulness was significantly correlated with greater social support ($p < .01$). Higher mindfulness was significantly correlated with lower depressive symptoms, social constraints, household chaos, sleep disturbances, childhood trauma, life stressors, and chronic mental, and physical health conditions (p's < .01 except physical health $p < .05$). See Table 1.

Table 1.
*Correlations Mindfulness CAMS-R and psychosocial factors (N=187).*

| | **Correlation** | **Significance** |
|---|---|---|
| Social Support | 0.278 | <.001 |
| Social constraints | -0.269 | <.001 |
| Life Stressors | -0.339 | <.001 |
| Household chaos | -0.263 | <.001 |
| Depressive symptoms, CESD [a] | -0.475 | <.001 |
| Sleep Disturbances, PSQI [b] | -0.296 | <.001 |
| Childhood trauma, ACEs [c] | -0.287 | <.001 |
| Chronic mental health conditions | -0.19 | 0.009 |
| Chronic physical health conditions | -0.144 | 0.049 |

[a] Center for Epidemiologic Studies Depression Scale
[b] The Pittsburgh Sleep Quality Index
[c] Adverse Childhood Experiences

## Discussion

The CAMS-R is a reliable measure in this population. The sample had higher CAMS-R scores compared to central tendency scores in broader populations. The high scores may indicate an amenable characteristic of mindfulness that could be trained for interventions. Yet, more research is needed on feasibility/acceptability in this population.

Higher mindfulness is inversely related to many negative health and psychosocial factors which are known barriers to cessation, as well as positively related to social support, an important facilitator of cessation. The interplay between social support and mindfulness should be explored, as each is theorized as a "stress buffer." research should investigate psychosocial factors as potential mediators in mindfulness interventions for smoking cessation targeting vulnerable female smokers. The literature shows that mindfulness practice may directly impact smoking urge and aid in cessation. It may also in-directly aid in smoking cessation through a mediating role impacting stress reduction. Currently at Temple University, in-depth interviews and a pilot study are examining these questions with a tailored mindfulness-based study targeting stress and urge management within a similar population of low-income female tobacco smokers with children.

## Disclosures and Conflicts of Interest

No conflicts of interest to report. Posters were presented at Temple University College of Public Health research day in 2019 and at the Society of Behavioral Medicine's Annual Conference in 2019.

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## Statement of Contributions

All authors contributed to the development of the purpose, methods analysis, and conclusion of the abstract. Drs. Collins and Lepore are the Co-PIs of the parent study used for secondary data analysis.