



## The Slow Down Program: A mixed methods pilot study of a mindfulness-based stress management and nutrition education program for mothers



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### ABSTRACT

**Objective:** Stress levels have been associated with a broad range of adverse health outcomes, particularly for mothers and subsequently, their children. Mindfulness-based stress management is a tool that has effectively been utilized in several disciplines and has potential applications to eating behaviors. This paper describes the effects of an exploratory mindfulness-based stress management and nutrition education program, the Slow Down Program, on mothers' perceived stress, eating behavior, and self-efficacy.

**Design & setting:** This study used a mixed methods quasi-experimental design. Nineteen mothers with young children (five or younger) participated in the study. The SDP consisted of four consecutive weekly 1.5 h sessions focused on experiential learning and facilitated discussion.

**Main outcome measures:** Quantitative data were collected pre- and post-intervention and included: the Perceived Stress Scale; Mindfulness Self-Efficacy Scale; and the Three-Factor Eating Questionnaire Revised-18. Qualitative data included a focus group post-intervention and an individual interview 4–6 weeks post-intervention.

**Results:** The SDP showed significant improvements in participants' perceived stress ( $p = .04$ ), uncontrolled eating ( $p < 0.01$ ), cognitive restraint ( $p < 0.01$ ), and mindfulness self-efficacy ( $p < 0.01$ ). Qualitatively, participants also reported changes in self-efficacy and eating behaviors – specifically improvements in mindful eating, and sensory and satiety awareness.

**Conclusions:** The results of this pilot study demonstrate that nutrition programs incorporated with mindfulness strategies may offer positive, short-term impacts on stress reduction and eating behaviors. Additional studies are warranted across a variety of populations with more rigorous study designs to assess long-term effects.

### 1. Introduction

Maternal stress contributes to a broad range of outcomes among mothers, influencing appetite, the drive to eat, and the types of food they are likely to select. For example, one recent review and meta-analysis found that higher maternal stress altered a wide variety of parenting behaviors, including parent sensitivity to attachment bond and meal preparation, resulting in children's lower ability to utilize or learn self-regulation skills.<sup>1</sup> Maternal stress can be caused by a multitude of factors, including perceived social support, socioeconomic status, number of children, and health status, among many others.<sup>2</sup>

Compared to fathers, mothers report higher levels of stress and a belief that they are not optimally or successfully managing their stress.<sup>3,4</sup> Correspondingly, they report sleeplessness and other physical symptoms of chronic stress, such as depression, anxiety, and unhealthy eating patterns.<sup>3,5</sup>

Mindfulness has long been utilized to successfully improve stress management, through programs like Mindfulness-Based Stress Reduction (MBSR).<sup>6,7</sup> Mindfulness can be defined as a “moment-to-moment, non-judgmental awareness of the present moment”.<sup>8</sup> More recently, it has been put forward as a strategy to improve eating habits and has been termed ‘mindful eating’ (ME), which includes sensory

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### Abbreviations and acronyms

IM	Fishbein's integrated model of behavior change
ME	Mindful eating
MBSR	Mindfulness-based Stress M Reduction
MSE	Mindfulness self-efficacy scale
PSS	Perceived stress scale
SDP	The Slow Down Program
SMART	Specific, measurable, achievable, relevant, time-bound goals
TFEQ	Three-factor eating questionnaire

experiences, mental and emotional states, and internal processes related to eating behavior.<sup>9</sup> The application of ME to address potential dietary outcomes, particularly related to stress, is relatively new despite research demonstrating that higher scores on mindfulness and ME measures are associated with lower weight status, smaller portion sizes of energy-dense foods, and less disordered eating patterns.<sup>10–13</sup> A 2014 review of the effects of mindfulness-based interventions found support for their use with improving obesity-related eating behaviors (emotional eating, external eating, etc.).<sup>14</sup> Moreover, a number of studies have demonstrated the effectiveness of mindfulness-based interventions on eating behavior and diet with women, though none have specifically targeted mothers of young children.<sup>15,16</sup>

Although the relationship between maternal stress and eating behaviors is compelling, currently there are no published nutrition interventions specifically attempting to affect maternal stress and eating behavior among mothers of young children. The purpose of the present study was to pilot-test a mindfulness-based stress management and nutrition program on mothers' eating behavior, perceived stress, and self-efficacy.

## 2. Program description

The Slow Down Program (SDP) was developed based upon previously published intervention research and MBSR-based programs.<sup>17,18</sup> Fishbein's Integrated Model (IM) of behavior served as the theoretical framework of the SDP's weekly session activities.<sup>19</sup> The IM includes behavior change constructs related to social norms, attitudes, self-efficacy, and behavioral intention. Each session was delivered by an experienced public health educator who was certified in the Professional Mindfulness-Based Eating Awareness Training program.<sup>18</sup> During each session, participants completed an empirically sound experiential mindfulness activity and nutrition education. See [Table 1](#) for details about each program session.

Facilitated dialogue was used in all program sessions, which encourages participants to share their own experiences and recognizes everyone present as equals.<sup>20</sup> SDP participants were asked to attend four weekly 1.5-h sessions, as opposed to the typical MBSR-based programs that stretch over 8–12 two-hour sessions. The intention was to create a more accessible program for those with limited resources, like time, that could maintain similar outcomes to a longer, more

intensive program. Each participant was asked to develop specific, measurable, achievable, relevant, and time-bound (SMART) goals related to nutrition or the practice of mindfulness.<sup>21</sup> Although they were not required to complete homework as part of the program, they were invited and encouraged to share and discuss the status of their goals at the beginning of each session from Week 2 through Week 4, as well as at the end of each session. During the final program session, participants spent time developing an action plan based on the goals they had developed and achieved thus far.

## 3. Methods

### 3.1. Participants

Participants were recruited in a university town in rural Virginia using snowball sampling techniques. As early childhood is an important intervention point, particularly before a child begins school,<sup>22</sup> mothers were included if they were at least 18 years of age or older and had one child aged 5 or younger living in their home. They were excluded from participation if they were pregnant, breastfeeding, participating in a structured weight loss or diet program, or had been diagnosed with an eating disorder in the last five years.

The intervention took place in two waves. Thirteen mothers participated in the first wave and six mothers in the second wave (n = 19). Data were excluded from analysis if mothers did not attend at least three out of four program sessions or other data collection sessions.

### 3.2. Study design

This study was a non-randomized, quasi-experimental mixed-methods pilot study. All participants received the same intervention, with some content adjusted minimally for individual group differences. All participants provided informed voluntary consent to participate in the study. All aspects of the study were approved by the [Blinded for Review] Institutional Review Board.

### 3.3. Measures

The Mindfulness Self-efficacy Scale (MSE) was used to assess whether participants believe they can maintain non-judgmental awareness during different stressful situations.<sup>23</sup> Participants are asked to rate their confidence in being able to maintain nonjudgmental awareness using percentages on a scale, with 0 percent indicating 'no confidence', 50 percent indicating 'moderate confidence', and 100 percent indicating 'complete confidence'. The participant's score is then calculated by averaging the percentage of each of the 15 items. This measure was previously tested in a sample of mostly Caucasian/White women and demonstrated good internal consistency. The authors of the MSE ensured content validity of the measure by including items that characterize common sources of adult stress that may also interfere with maintenance of non-judgmental awareness, including frustration during goal-oriented activities (i.e. shopping, driving, work) or interpersonal problems (i.e. fatigue, sleep, hunger).

**Table 1**

Outline of the mindfulness topics, activities, and nutrition discussion topics covered during each of the four weeks in the Slow Down Program.

	Key Mindfulness Topics	Experiential Mindfulness Activity	Nutrition Topics
Week One	Introduction to mindfulness; inner wisdom vs. outer wisdom; definition of mindfulness	Mindful Eating Raisin Exercise	Mindful eating
Week Two	Emotional/stress eating; pausing mid-meal for hunger and satiety checks; deep breathing	Progressive muscle relaxation	Sugars (added sugars, artificial sweeteners, Nutrition Facts Label)
Week Three	Mind-body connection; taste satiety; sensory awareness	Guided Imagery; Mindful Eating Raisin Exercise using other foods	Fats (solid fats, oils, Nutrition Facts Label)
Week Four	Stress management, nonjudgmental awareness, critical self-talk	Self-forgiveness meditation	Picky eating, Healthy food selection, Healthy food selection on a budget

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