Mindful Moms for Mom's House of Wilmington

University of Delaware Partnership for Healthy Communities

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Introduction

The following research and program development were conducted by a group of four Master's of Health Promotion student researchers within the Department of Behavioral Health and Nutrition at the University of Delaware. The research team has worked collaboratively with the University of Delaware's Partnership for Healthy Communities (UD PHC) and its community partner organization, Mom's House of Wilmington, to identify the greatest health problems experienced by the clients of Mom's House.

Currently located in the heart of Wilmington, DE, where they have served their community for the past 25 years, Mom's House seeks to empower their clients, predominantly low-income women with young children, to complete their educational journey through support groups, tutoring, counseling, and monthly medical clinics (through PHC) at no cost. Additionally, they provide free childcare and preschool services as well as parenting classes for single parent students and low-income families. They are currently in the process of relocating to be situated closer to Newark, DE, to better serve their clients throughout New Castle County. At this time, due to the move and the ongoing COVID-19 pandemic, Mom's House is not offering in-person services, but will reopen during late fall 2021 at their newly established location off of Kirkwood Highway.

In Delaware, female headed households with children under age 18 had the highest five year (2015-2019) poverty rate (32.1%) of any other family structure in the state, with the city of Wilmington, where Mom's House is currently located, having the highest overall poverty rate (26.0%) of any other city in Delaware.[1] Poverty alone is a risk factor for many chronic diseases, including cardiovascular disease [2] and diabetes,[3] as well as being related to overall increased mortality. [4] Single mothers face increased levels of stress, anxiety, depression, and substance abuse disorders, [5,6] all of which impact the health and wellbeing of the children [7] as well as the mothers. [8]

By strengthening the women and their families through services offered and providing the support necessary for their clients to gain an education and maintain employment, Mom's House works towards creating healthy, successful mothers, children, and families.

Social Assessment

Overview

The purpose of the social assessment is to address the top health issues that affect the quality of life of the target population. The assessment will help the research team develop strategies to address the health issues of the population. Stakeholders from the University of Delaware Partnership for Healthy Communities (UD PHC) and Mom's House of Wilmington were identified and interviewed to determine the needs of the target population. The stakeholders gave the research team input on current programs and initiatives within the population, while also sharing behavioral and environmental factors that contribute to the health issue. An online survey was developed and distributed to clients of Mom's House in order to understand the health issues that were crucial to them. The social assessment will help researchers be able to identify the needs of the population in order to develop a health promotion program for this community.

Identifying Stakeholders

The research team is partnering with the University of Delaware Partnership for Healthy Communities (UD PHC) and Mom's House of Wilmington. The mission of the UD PHC is to improve the health and wellbeing of Delaware communities through effective community partnerships that involve research, education, and service. UD PHC connects community-based organizations and state agencies with existing University resources to advance shared interests in health promotion, reduce health inequities, and improve health outcomes. In collaboration with the Lieutenant Governor's office and Saint Francis Hospital of Wilmington, UD PHC received grant funding for the HEALTH for All (**H**ealth **E**ngagement **A**ccess **L**earning **T**eaching **H**umanity) program (formerly known as *Mobile Health).* Prior to the COVID-19 pandemic, the

partnership included a mobile health van where faculty, staff, and students went into vulnerable communities in Wilmington, DE to support improvements in health outcomes through community health service outreach. Services included physical and behavioral health screenings and education. Through the HEALTH for All program, they have been able to provide virtual education programming and outreach initiatives during the COVID-19 pandemic.

To identify a community partner from the HEALTH for All program as a stakeholder, the researchers reviewed their 2020-2021 final report.[9] This report included a list of their community partners, data summaries of outreach initiatives, response to COVID-19, and qualitative data. After reviewing the final report, the research team chose Mom's House of Wilmington as the community partner for the social assessment.

Formative Methods

Two key informant interviews were conducted by the researchers. The key informants were members of the UD PHC and Mom's House of Wilmington. Each interview was completed via Zoom and was recorded with verbal consent. The interview questions were developed to determine the demographics of the client population served, the health issues that affect the population, and the programs and services currently available for clients (see Appendix A and B for the interview questions). In addition, an online survey was developed by the research team and was distributed to clients of Mom's House in order to gain the target population's perspectives on the health issues that are most important and concerning to them. The survey also asked questions related to socio-demographic characteristics and participation in previous programs at Mom's House (see Appendix C for the survey questions).

Key Informant 1

Ms. Rodriguez was interviewed by the research team on September 21, 2021. Currently, she is the Development Director of Mom's House of Wilmington and has been with the organization for 15 years. Nearly 40% of the population they serve are students ages 18-26. Many students attend Delaware Technical Community College, a 4-year institution, an online

school, or attend a graduate program (Master's or Phd program). Ms. Rodriguez explained that clients seek out Mom's House for free childcare services after being referred from their educational institution. When Mom's House staff interview new clients, they discover other areas of need in the parent's life. One area in particular is mental health. Ms. Rodriguez shared that 40% or more of their client population have a history of substance misuse. However, she emphasized that clients do not come to Mom's House for that reason. The childcare services are what clients enroll for, it just so happens that they discover that they experience substance misuse. When asked about the top health issues that impact this population, Ms. Rodriguez shared that clients struggle with managing stress and anxiety while trying to work/go to school and find childcare due to the COVID-19 pandemic, experience negative stigma of seeking treatment for mental health, and refusal to seek services for children with developmental delays. Through their Life Skills and Parenting classes, Mom's House offers services that reduce the stigma of seeking mental health services and counsel clients on managing a system that works best for their needs. In the past, they have brought in facilitators to teach clients how to manage their anxiety and practice mindfulness. They also bring in mental health consultants from the state to work with parents and observe their child to identify red flags of development delays. When asked about what behaviors contribute to mental health issues, Ms. Rodriguez stated that there is a lack of knowledge and understanding especially in marginalized populations. She highlighted that these services provide the client a different perspective on mental health. She mentioned that the resources they receive help them to not feel isolated or have a continued negative viewpoint on what they are feeling or going through.

Additionally, Ms. Rodriguez shared that they work with other organizations and bring them into Mom's House for workshops, series, and programs to help their clients. She indicated that they refrain from giving clients referrals to other places because the probability is very low that the client will seek help. She stated that the probability of program success is highest when the programs are hosted at their facility because clients are familiar with the environment. The

clients are more likely to complete services and form a rapport with outside organizations after meeting them in Mom's House. For example, Mom's House held programs such as a financial series and a parent-child yoga class. Clients were more likely to maintain the practice after establishing that relationship at Mom's House.

Although the COVID-19 pandemic vastly changed the programs and services they offer, Ms. Rodriguez expressed the feedback they received from parents has been positive. When asked what was the least effective strategy to improve quality of life in this population, she shared that ignoring the problem is not effective. She explained that most clients have a difficult upbringing, lack of social support at home, and have a hard exterior due to their experiences. She expressed that at Mom's House it's important to build trust and rapport with clients that will greatly impact both the parent and child.

When asked about the barriers this population experiences in regards to improving health behaviors related to the health issues they experience, she expressed that you cannot force the population to put the things they learn into practice. She went on to share that Mom's House is a place of support and guidance for the populations they service. The overall goal is to make people feel welcomed and know that it is a safe space to be transparent.

Key Informant 2

Ms. Sowinski and Ms. Landgraf were interviewed together by the research team on September 22, 2021. Currently, Ms. Sowinski is the Project Coordinator for the HEALTH for All (**H**ealth **E**ngagement **A**ccess **L**earning **T**eaching **H**umanity) program under the UD PHC and Ms. Landgraf is the director of the UD PHC. The information gained from this interview was intended to supplement the information learned from the first key informant interview with Ms. Rodriguez. As representatives of the PHC and HEALTH for All, Ms. Sowinski and Ms. Landgraf's insights about the PHC's partnership with Mom's House and their experience working with them were considered invaluable. The research team asked them similar questions

to the first key informant interview, as well as a few additional questions about their experience working with Mom's House.

The insight provided by Ms. Sowinski and Ms. Landgraf about the health issues and barriers Mom's House clients experience echoed that of Ms. Rodriguez. Although they said they were less familiar with the population than Ms. Rodriguez, they agreed that issues regarding food, nutrition, and mental health are health issues that impact the clients of Mom's House. They added that time may be one of the biggest barriers this population struggles with when it comes to focusing on their health and participating in programs. Ms. Sowinski also mentioned that a lack of internet or computer access may impact some individuals, but not all, and that many people are beginning to experience "Zoom fatigue", implying that connecting with the population in this manner may be difficult.

On the other hand, Ms. Sowinski and Ms. Landgraf emphasized that keeping an open line of communication with Ms. Rodriguez and the clients of Mom's House is the most effective way to engage with their community. They said that focusing on the clients needs and catering to those, opposed to assuming their needs, is the best way to keep the clients engaged. Ms. Landgraf also described Ms. Rodriguez as a strong community leader who leverages opportunities for engagement with HEALTH for All and other programs that will benefit her clients.

Lastly, Ms. Sowinski and Ms. Landgraf described their partnership with Mom's House in more detail by talking about the success of the recent programs and initiatives they have worked on together. These include group and individual behavioral health sessions, onsite clinical care, collaborating with students from the English department at UD to discover how Mom's House clients are impacted by the pandemic, creating and updating marketing materials, implementing a local community health fair, and inviting all clients to the webinars organized by HEALTH for All (including those on Mindfulness, which Ms. Rodriguez said her clients greatly enjoyed. Overall, Ms. Sowinski and Ms. Landgraf agreed that there is great opportunity for a

new partnership to generate more targeted programs that can benefit the clients of Mom's House, especially with their move and expansion to be closer to their clients in Newark.

Survey Development and Distribution

Due to the limitations of the pandemic and Mom's House not being fully operational during their move to Newark, focus groups were not encouraged by either key informant. Instead, the development and distribution of an online survey was highly encouraged, as it seemed like the most convenient option, especially for a population that tends to have hectic schedules. The research team created a brief Qualtrics survey that was distributed to the clients of Mom's House via email on September 27, 2021. Socio-demographic and health status questions were borrowed or adapted from the Behavioral Risk Factor Surveillance System (BRFSS), Health Information National Trends Survey (HINTS), and the Learning and Skills Development Agency.[10-12] Two open-ended, short answer questions were created by the research team in order to better understand the survey participant's perceptions on the health issues and health behaviors that are most concerning to them.

The survey sample size was small, with only four Mom's House clients responding; however, their responses to questions regarding health issues and concerns matched those described by Ms. Rodriguez, Ms. Sowinski, and Ms. Landgraf. The participants were predominantly non-Hispanic white (100%), female (100%), and aged 36 to 45 (75%). Most had at least one child living in their household (75%) and half were single or never married. Table 1 provides more details about the characteristics of the survey participants.

Table 1. Participant Characteristics (n=4)

Age	Frequency (%)
26-35	1 (25%)
36-45	3 (75%)
Gender Identity	

Female	4 (100%)
Race & Ethnicity	
Non-Hispanic Caucasian/White	4 (100%)
Education Level	
Completed Bachelor's Degree	3 (75%)
Completed Master's Degree	1 (25%)
Marital Status	
Single/Never Married	2 (50%)
Married	2 (50%)
Employment Status	
Full-Time Employee	4 (100%)
Number of children in household	
0	1 (25%)
1-2	1 (25%)
3-5	2 (50%)
Number of People in Household	
1-2	1 (25%)
3-5	2 (50%)
6+	1 (25%)

When asked to rate their physical health status on a five-point scale that ranged from 'poor' to 'excellent', most participants rated their physical health as 'good' (75%). Similarly, when asked about their mental health status, all four participants rated themselves as 'good'. Answers

to other survey questions regarding mental health further highlighted the difficulties this population may experience. For example, all four participants stated they feel overwhelmed, anxious, or depressed three to five days per week, and 75% of participants indicated mental health as the most concerning health issue to them. Table 2 provides more details about the health status of the survey participants.

Table 2. Health Status of Participants

Physical Health	Frequency (%)
Very Good	1 (25%)
Good	3 (75%)
Mental Health	
Good	4 (100%)
Most Concerning Health Issue	
Heart Disease	1 (25%)
Mental Health	3 (75%)
Fruit & Vegetable Consumption	
1-2 days per week	1 (25%)
3-5 days per week	2 (50%)
6-7 days per week	1 (25%)
Physical Activity	
1-2 days per week	3 (75%)
3-5 days per week	1 (25%)
Overwhelmed, Anxious, and Depressed	
3-5 days per week	4 (100%)

To further explore the health issues the participants found most concerning, the research team created and included two open-ended, short answer questions: 1. What behaviors do you think contribute to the health problems you are concerned about? And 2. In your opinion, what factors do you believe have the greatest impact on your ability to improve your health? Table 3 provides more details about the emerging themes taken from responses to these questions. Although the participants did not specify behaviors to answer the first question, their answers did provide additional information about other factors that do impact their health. Overall, participants indicated stress and family history as the factors they believe contribute to their health concerns the most. They also reported that factors such as finances, social support, education, and access to quality healthcare have the greatest impact on their ability to improve their health.

Table 3. Responses to Open-Ended Questions

Question	**Thematic Responses**	**N = 3**
What behaviors do you think contribute to the health problems you are concerned about?	Stress	2
	Family History	2
	COVID-19	1
In your opinion, what factors do you believe have the greatest impact on your ability to improve your health?	Finances	2
	Social support	1
	Food Security	1
	Education	1
	Community Engagement	1
	Access to Quality Healthcare	1

Population and Setting

The target population of the prospective program will be the clients of Mom's House, specifically low-income, single mothers. Although Mom's House serves a variety of people, including fathers and two-parent households, the results from the key informant interviews and survey suggest single mothers have the greatest needs in regards to improving their health and quality of life. Poor health is not an experience specific to low-income single mothers in Delaware. Country-wide data suggests that those who are low-income, female, or not married are more likely to have lower self-reported health scores than those who are higher income, male, or married.[13] Low-income, single mothers who are clients of Mom's House will greatly benefit from a targeted health program which focuses on the problems that are most important to them. As indicated by the key informant interviews, they will also benefit from a program or services that are offered by Mom's House directly, an organization that they are familiar and comfortable with.

The current capacity of Mom's House and the target population indicates a strong potential for the prospective program to be beneficial and successful. Mom's House has hosted a variety of classes and programs for their clients in the past. The success and participation in these programs (as described by the key informants) show the dedication Mom's House has for improving the lives of their clients, which sets a strong standard for the prospective program that will be offered to them. The clients have also enjoyed the previous programs that were offered to them; specifically, the survey participants indicated interest in the community health fairs and Health For All's small group series on mindfulness and managing anxiety, which many clients participated in. The research team also sees great opportunity in Mom's House relocating to a new, more central location in Newark. Time is a valuable resource to this population, and between work, school, and caring for their children, single mothers often do not have enough of it. Therefore, the ability for this program to be offered at a location that is more convenient to the target population is significant. Lastly, Mom's House's participation in the PHC with other

community organizations highlights the staff's and client's interest and abilities to collaborate and use community resources in a meaningful way. Overall, Mom's House has already built a strong foundation for leadership, participation, community connection, and utilizing resources that the prospective program will build upon to ensure another successful program is offered to their clients.

Previous research adds to the community's capacity to change their behaviors. Although retention in intervention studies for this population could be a concern, as many issues can arise for mothers, the literature shows that the majority of participants are being retained in programs. For example, one intervention study that included both children and mothers had a 76%-79% retention rate.[14] Another study even evaluated the feasibility of recruitment, enrollment, and retention in a mindfulness intervention for women with depression. In the study, 74 participants completed the study, but 11 participants dropped out after enrollment due to various reasons such as schedule conflict, inability to find a baby-sitter, family emergencies, perceived religious conflict, or stigma associated with depression.[15] A third study only had four families, that included mothers and adolescents, drop out due to lack of interest.[16] The program for Mom's House will aim to address some of these barriers that moms and families experience.

Health Issue

The key informant interviews and survey results established that low-income, single mothers may experience a variety of health issues that impact their quality of life and daily living. The key informant interviews revealed that substance misuse and its associated health complications are not uncommon for clients of Mom's House, while the survey revealed that this target population may also experience issues related to cardiovascular disease, such as low physical activity levels. However, issues concerning mental health are what results of both formative research methods emphasized as being most important and concerning to the clients of Mom's House. Specifically, low-income single mothers who are clients of Mom's House appear to experience a great deal of stress related to their unique and difficult living situations.

Over the years, stress has been defined in many ways. To most, stress comprises physical, mental, and emotional reactions to the experience of tension, which may be due to having external demands that exceed an individual's resources. Stress is normal, and not all stress is unhealthy or will produce long-term effects.[17] Chronic stress, however, is associated with a variety of symptoms, such as irritability, anxiety, depression, headaches, insomnia, alcohol or drug misuse, social withdrawal, and under or overeating, and can put someone at a higher risk for other conditions such as digestive problems, muscle tension, and weight gain and other chronic conditions such as heart disease.[17,18]

Single mothers are at an increased risk for experiencing high levels of stress and its long term health consequences than married mothers or mothers with partners. A recent study revealed that single mothers were twice as likely to experience higher general life stress than married or partnered mothers. These single mothers also experienced a higher proportion of parenting-related stress. There are many factors that may impact a single mother's stress experience; however, research also suggests that stress levels are even higher among single mothers who are young, low-income, have low education levels, have a history of domestic violence, or who receive little social support.[19] Additionally, a mother's stress not only impacts her own health, but may also impact the functioning and behavior of her children.[8]

Lowering stress and improving mental health and overall quality of life is important not only to the target population, but is seen as a national concern as well. Healthy People 2030 has established a handful of objectives which focus on the prevention and treatment of mental disorders among U.S citizens young and old.[20] Healthy People 2030 also emphasizes the importance of needing to improve mental health outcomes in order for individuals to participate in other healthy behaviors, which highlights the need for a stress-reduction program targeting low-income single mothers.[20] Although low-income single mothers experience a variety of health concerns, addressing their disproportionately high levels of stress is a crucial first step in improving their quality of life.

Program Health Goal and Program Health Objectives

The goal of the prospective program is to improve the quality of life and mental well-being among single mothers. As a result, the health objective of the program is that by the conclusion of the second year of the program, participants will report significantly lower stress scores compared to baseline. Self-reported stress will be measured using the previously validated 14-item Perceived Stress Scale [21] and 14 questions from the stress subscale of the 42-item Depression, Anxiety, and Stress Scale.[22]

Epidemiological Assessment: Behavioral and Environmental Diagnosis

Demographic Factors

Mom's House serves primarily females and their children, although the entire family may be involved in the educational initiatives and counseling opportunities offered. The majority of the population at Mom's House is single parent students and underserved populations. Specifically, 40% of the population of Mom's House are Hispanic and Black, with the remaining population being white or mixed. Additionally, 40% of the population are students at varying levels of institutions including Delaware Technical Community College, online classes, vocational training, and 4-year institutions, such as the University of Delaware. These students are not just undergraduates. Some of the students that Mom's House serves are graduate students in PhD programs who are in school but do not work. For the purpose of this project, the focus will be on developing a program designed for mothers with children under 18 years of age.

The constant financial strain due to poverty, combined with the demands of parenting alone as a single mother with young children, is stressful.[23] This is without considering the additional pressures of school, vocational obligations, and providing for one's family. Ultimately, this increases women's vulnerability to additional life stressors and uncertainties. Left unaddressed, inadequate stress management behaviors can lead to chronic stress, which increases risk of long-term physical and mental health impairments. In this population, chronic

stress increases the risk of mental health issues, such as depression and anxiety, as well as suicide, which are concerns that have grown during the COVID-19 pandemic;[8,24] contributes to the development of chronic pain,[25] diabetes,[26] and cardiovascular disease;[27] and speeds up the spread of cancer in the body, most notably for this population, ovarian [28] and breast [29] cancer. All of the aforementioned diseases and conditions have a higher prevalence in low-income mothers, therefore focusing on stress, a modifiable risk factor, is paramount.[26] The consequences from chronic stress in themselves become stressors, further impeding this population's ability to perform necessary tasks, care for oneself and child effectively, and ultimately lead to a vicious, inescapable cycle of stress, poor health outcomes, and lower quality of life.

Behavioral Diagnosis

Multiple behavioral risk factors contribute to the stress experienced by low-income, single mothers. Physical inactivity, alcohol and substance misuse, poor diet, and poor stress management behaviors are behavioral risk factors that have been identified in the Mom's House population through the social assessment and in the general population of mothers through a review of the literature. Inadequate sleep behaviors have proved to be another behavioral risk factor to stress in the general population of mothers. This behavior will be explored and may be a factor that influences the stress that the population of Mom's House experiences.

Physical Inactivity

The guidelines for physical activity for U.S. adults is 150 minutes weekly, or 30 minutes for five days, of moderate-intensity aerobic physical activity. For vigorous intensity aerobic physical activity the recommendation is 75 minutes each week.[30] In Delaware, from 2015-2018, 25% to less than 30% of adults were physically inactive.[31] From the survey conducted among the population at Mom's House, 75% of the respondents stated that they engaged in physical activity only one to two times per week, indicating that they do not meet the physical activity guidelines for the U.S. adult population. Results from a study with a similar population to the

survey respondents and Mom's House in general show that engaging in physical activity can be a challenge. The population from the study was working mothers aged 18 to 50 years old with a mean age of 35 years who had an average of 1.90 children under 18 years of age living in their home and had at least a 4-year bachelor's degree. Less than half of the mothers in the study reported engaging in the recommended physical activity guidelines, and the mothers that did not engage in physical activity reported lower quality of life scores.[32]

Physical activity has shown to improve health outcomes. Specifically, physical activity lowers the risk for heart disease, type 2 diabetes, and cancers. Additionally, bones and muscles can be strengthened and risk of falls reduced with physical activity.[33] Most importantly to the population of Mom's House, physical activity reduces mental health conditions such as depression and anxiety, which is a form of stress.[30] Physical activity has been shown to reduce stress experienced by working mothers in a similar population to the Mom's House survey respondents. A study of mothers aged 19 to 60 years old with a mean of 1.72 children living in the home who were 18 years old or younger found that parenting stress was associated with lower quality of life, but that engaging in moderate intensity physical activity can help alleviate the impact of parenting stress on quality of life.[34]

Previous interventions have aimed to increase physical activity among low-income women, although they have not looked at improving stress levels.[35-37] According to one study in low-income women, physical activity did not increase in the intervention group, with stress and altered emotional state cited by focus groups as barriers to participation in physical activity,[35] indicating that addressing stress management behaviors may be an effective first step before targeting other behavior changes in this population.

Alcohol/Substance Misuse

Alcohol and substance misuse may also contribute to increased stress, specifically anxiety. Many times anxiety and alcohol abuse occur simultaneously. Anxiety might cause alcohol dependence or alcohol withdrawal may cause anxiety. Also, alcohol use has been

shown to increase anxiety. Co-occurring anxiety disorders and alcohol use disorders are more prevalent among women than among men, which may be due to the fact that women report higher stress levels.[38] In a study of Spanish undergraduate students, women reported higher levels of stress and anxiety compared to men, and being women and consuming alcohol was associated with stress.[39] There is a high prevalence of alcohol and substance misuse among adult women aged 18 years or older in the United States. In 2019, 40.8% of American women 18 years or older struggled with illicit drug use, 72.5% of U.S. women 18 years or older battled with alcohol use, and 13.3% of women 18 years or older in the U.S. experienced illicit drug and alcohol misuse.[40] Similarly, alcohol and substance misuse is a behavior that is prevalent among the population of Mom's House, with about 40% of the mothers experiencing a history of substance abuse.

Research has shown that treating individuals who have anxiety and alcohol use disorders is complex, particularly among women. Women with high anxiety have been shown to participate in alcoholic anonymous groups less than men, indicating that women may not be able to change their substance abuse behaviors.[38] Research has also shown that many women who have young children discontinue substance abuse treatment or do not even enter treatment to begin with due to having to take care of their children. Lack of child care as well as other family and work responsibilities inhibit them from starting treatment.[40]

Inadequate Sleep Behaviors

Inadequate sleep behaviors may be considered a risk factor for increased levels of stress in adult mothers of young children, although a bidirectional relationship exists with sleep and stress levels.[41] Most adult women need 7 to 9 hours of sleep each night, but not all women are receiving adequate sleep. Sleep disorders such as sleep apnea, restless leg syndrome, and insomnia can cause daytime sleepiness and make it difficult for women to maintain low levels of stress and good mental health.[42] Specifically, insomnia commonly occurs in people who have anxiety, and 1 in 4 women report having insomnia in the U.S. Research shows that mothers who

had shorter periods of sleep, took longer to fall asleep, and had more sleep problems reported higher stress scores, even when age, number of children, and hours worked in a week were controlled for.[43] According to several studies, lower socioeconomic status and lower educational attainment are associated with a greater number of sleep complaints.[44-46] Previous research has established that child night awakenings are associated with maternal night awakenings, which then predict maternal mood, stress, and fatigue[47] and have further implications on maternal daytime functionality.[48]

In the general population of mothers, there is inadequate literature on programs focused on reducing stress through improved sleep behaviors, and many focus on improving infant/child sleep rather than maternal sleep behaviors. [49-51] Although it has been established in other populations that improving sleep leads to increased resilience to stressors.[52]

Poor Eating Behaviors

Poor eating behaviors contribute to stress experienced by mothers as well. Studies have shown a correlation between weight status and levels of stress in low-income mothers,[53,54] with higher levels of stress associated with lower quality diet, lower intake of fruits and vegetables,[55] increased intake of snack foods,[56] and binge eating tendencies.[57]

Although the survey respondent numbers are low, 75% of the respondents reported consuming fruits and vegetables equal to or less than 5 days per week, with nutritional guidelines recommending consumption of 1 ½ to 2 cups of fruits and 2 to 3 cups of vegetables daily.[58] Given national data with 90% and 80% of the population not meeting the recommended servings of vegetables and fruits, respectively,[59] it is reasonable to assume the majority of this population does not consume the recommended daily intake of fruits and vegetables.[58]

One study conducted by Chang et al. with overweight or obese low-income mothers coupled healthy eating and physical activity to improve stress management and prevent further weight gain.[60] They concluded that future programs should include strategies to increase self-efficacy to cope with stress.[60] Interventions to determine if improving diet quality will lower

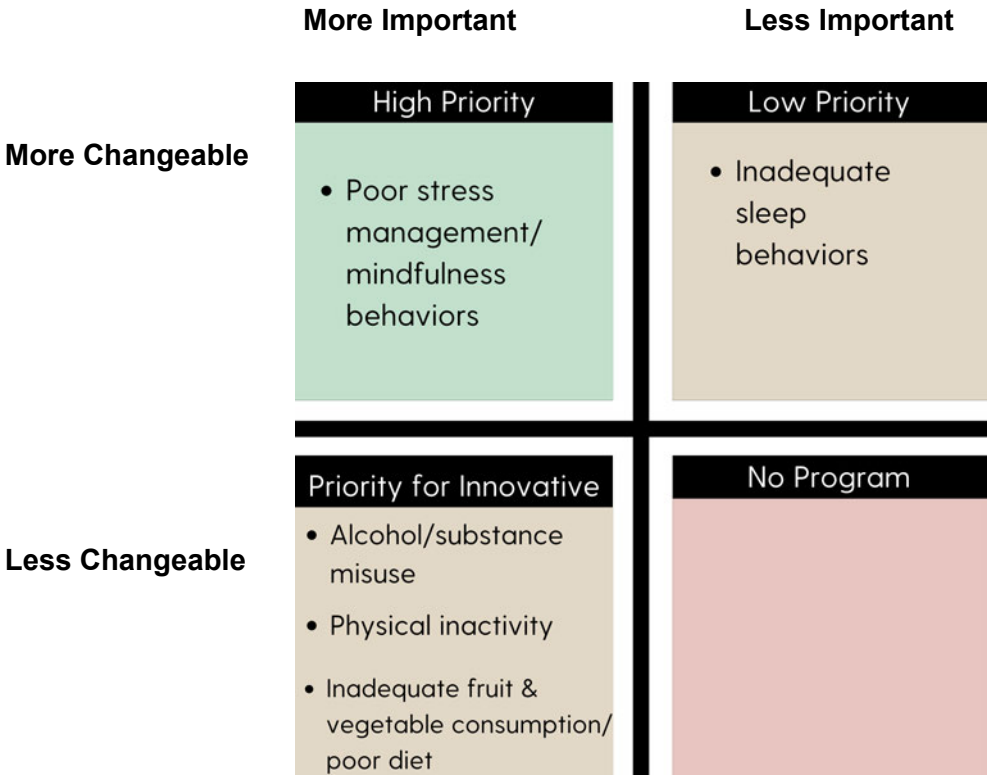
stress in adults with a mean age of 45.44, specifically anxiety, have not proven to be successful in the long-term.[61]

Poor Stress Management/Mindfulness Behaviors

Poor stress management and mindfulness behaviors are large contributors to stress among many populations. Among the survey respondents, 100% stated that they feel overwhelmed, anxious, or depressed 3 to 5 days a week, indicating that they manage their stress poorly or probably do not practice mindfulness. One mindful-based strategy is practicing meditation. During meditation, the person becomes aware of their physical surroundings and the feelings they are experiencing in the moment and practices letting them go. Yoga and breathing exercises can provide similar relief from stress that guided meditations can offer.[62]

Overall, mindfulness-based therapies have proven to treat psychological issues effectively, especially showing effectiveness in reducing depression, anxiety, and stress in the general population.[63] Mindfulness-based practices have shown to positively reduce stress in multiple interventions that have included parents. A systematic review and meta-analysis show that mindfulness-based interventions that target parents can reduce parenting stress, especially in mothers, as all of the studies included primarily had mothers who participated.[64] Additionally, interventions aimed at improving stress coping skills have been shown to reduce the involuntary stress response, which can in turn reduce psychological problems of adults living in poverty, positively affecting the entire family system.[65] In a group of low-income, racial/ethnic minority individuals, a tailored mindfulness intervention was perceived as beneficial to both mental and physical health, with experienced benefits of relaxation, stress reduction, emotional regulation, improved feelings of self-worth, improved sleep, smoking cessation, improved coping skills, and feelings of empowerment and agency over one's life.[66]

Figure 1. Behavioral Target Matrix



Many stressors for these women are out of their personal realm of control. While all of these above listed behaviors are associated with stress, based on the responses of the survey and from the key informant interviews, it seems mindfulness is the most viable behavior to target, deemed most important and changeable. It is cost effective, requiring no additional resources; can be practiced more or less anywhere at any time once the skills are acquired; increases resiliency from current and future stressors; can be delivered to the population in the familiar setting of Mom's House; and has the potential to improve health outcomes and quality of life in low-SES populations.[67] Additionally, mindfulness-based approaches have proven to be helpful in treating posttraumatic stress disorders (PTSD), a concern mentioned in the key informant interview,[68,69] which is not improved or addressed by any other behavioral strategy mentioned previously.

Behavioral Objective

By the end of the program, the mean mindfulness scores will significantly increase from baseline to post-intervention for at least 80% or more of the participants. The Five Facet Mindfulness Questionnaire (FFMQ) will be used to measure mindfulness behavior. This 39-item validated scale includes the facets of observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience.[70] If scores on this measure increase then there should be an inverse association with scores on the Perceived Stress Scale.

Environmental Diagnosis

In addition to behavioral factors, the COVID-19 pandemic and accompanying recession impacted low-income households, young adults and women. Many of the challenges were present prior to the pandemic but were exacerbated by it, as it created additional stress-inducing concerns. Mothers were pushed out of the workforce to provide childcare, forcing women, especially low-income women, to lose their source of income. These same individuals are more likely to experience disruptions in health care, delaying medical care over concerns of COVID-19, leading to increased severity of illness and death due to non-COVID-19 related conditions.[71]

During the COVID-19 pandemic, the prevalence of psychological distress rose for many, but according to one study, women, most significantly those in emerging adulthood (ages 18-24), had a higher level of psychological distress, including increased anxiety and depression that corresponded with the peaks of COVID-19 in 2020.[72] These levels of anxiety and depression led to an increase in substance use,[71] a concern for the population of Mom's House according to key informant interviews. Parents who experience stress due to income loss, child care demands, food access, and illness are more likely to experience increased anxiety or depression, with impacts magnified when experienced by low-income families.[73,74] Many households in the United States are facing financial difficulties when it comes to purchasing

enough food and increasing food insecurity,[75] an already present problem for low-income Delawareans.[76]

Although the environmental factors identified influence the health behavior, health outcomes, and overall quality of life of the target population within this setting, addressing environmental risk factors extends beyond the scope of this project. Future endeavors and partnerships should be forged in order to properly address the environmental factors contributing to increased stress in low-income mothers of young children in Delaware's New Castle County.

Ecological & Educational Assessment

Behavioral Risk Factor

The research team identified a lack of stress management behaviors as the targeted risk factor for chronic stress among low-income mothers of young children, and have identified mindfulness as the key stress management behavior that will be targeted in the proposed program. The purpose of the ecological and educational assessment is to identify the most important and changeable predisposing, enabling, and reinforcing factors for the target behavior of the program. The researchers then identify which factors the proposed program will focus on based on theory, support from the literature, the needs assessment survey, and key informant interviews.[77]

Predisposing Factors

Predisposing factors are those that precede behavior change and motivate an individual to engage or not engage in a specific behavior. Psychological factors, personality traits, and sociodemographic factors are among the types of factors that may fall into this category when determining what areas to consider when tailoring a program around a specified behavior.[77] Few studies currently exist in the literature which examine the predisposing, enabling, and reinforcing factors that influence low-income single mothers' choice or abilities to engage in mindful

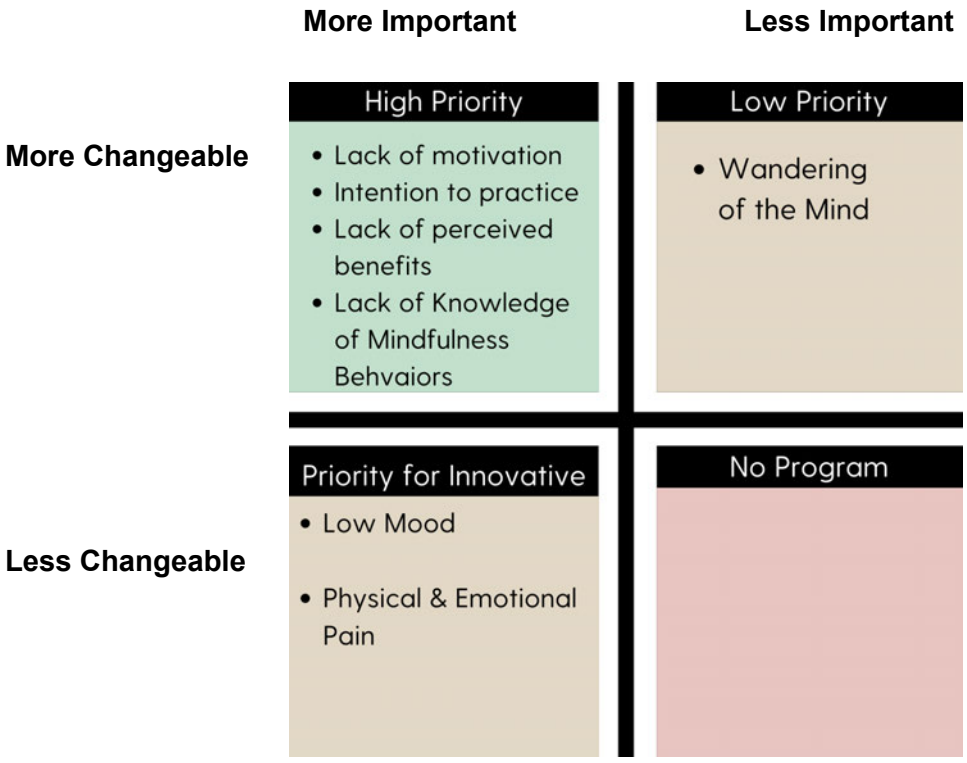
behaviors; therefore, previous studies including other populations were used to inform the PER factors that influence engagement in mindfulness practices.

Through this research, the research team identified six themes of predisposing factors present in recent literature that are relevant to practicing mindfulness. Two studies indicated 'wandering of mind' as a negative factor that prevents individuals from wanting to be more mindful.[66,78] Mindful practices emphasize a non-judgmental focus on the present moment, which may be a cause of frustration or may create a sense of doing the practice incorrectly for those that experience a wandering mind and who feel easily distracted while being mindful. This factor is related to mindfulness skill development established through consistent practice (enabling factor), and so can be addressed in the program as such.[66] Having a low mood[78] or physical or emotional pain[66] were also found to be negative predisposing factors that may motivate people to not participate in mindful behaviors. Not only is there minimal evidence to support mindful practices improving pain management,[79] but tailoring the prospective program to assist with pain that low-income single mothers may experience is beyond the scope of the program goals and objectives.

Motivation,[78] intention to practice mindful behaviors,[80] and perceived benefits[81] were found in the literature to play a role in one's ability or choice to engage in mindful behaviors and have also been deemed the most important and most changeable predisposing factors by the research team. Motivation for practicing mindfulness may look different for everyone, but often includes a desire to reduce negative emotional experiences and improve or maintain well-being. Furthermore, knowledge of the benefits may influence people to both start and maintain the behavior, making motivation and perceived benefits factors that can be easily addressed together.[82] One's intention to perform a behavior is already theorized to be associated with other predisposing factors, such as attitude, subjective norms, and perceived control, as outlined in the Theory of Planned Behavior.[83] Regarding mindful behaviors, there is research to support that intentions to practice are predictive of time spent practicing mindfulness, and in one specific

study, intentions were associated with attitudes and perceived control.[80] These three predisposing factors are relevant to the target population, related to one another, and supported by research to positively support engagement in mindful behaviors, and therefore have been identified as the most changeable and most important factors to target for the proposed program.

Figure 2. Predisposing Factors Matrix (Behavioral)



Enabling Factors

Enabling factors are those which precede behavior change and can facilitate or impede behavior change. Enabling factors typically include environmental conditions related to access and affordability of resources, conditions of living, and the skills needed to perform a new behavior.[77] Several enabling factors were identified in the literature for mindful behaviors across a variety of populations. Factors such as lack of practice space [69] and unsafe environments [66] are important when wanting to practice mindfulness at home, but unfortunately are quite difficult factors to change with just a stress reduction and mindful behavior program. The program can

potentially offer safe, quiet spaces away from the home to practice mindfulness, but the program is unable to directly influence the home environment.

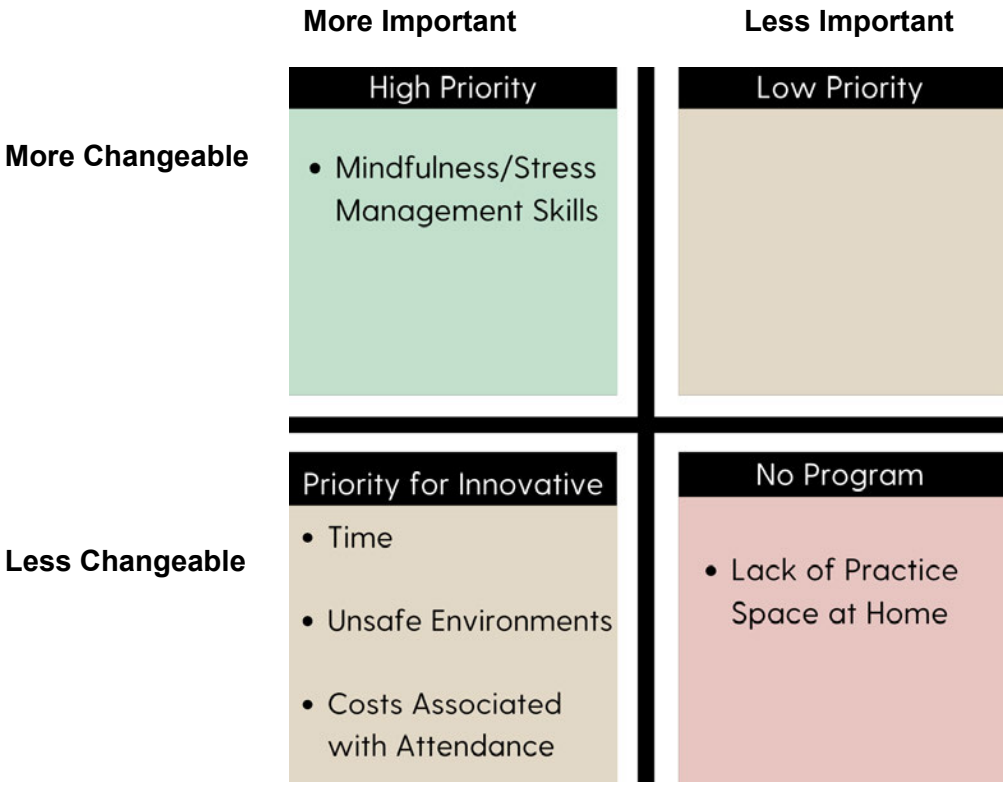
Time in relation to the stressors of daily living (work, children, family obligations, etc.) were described as barriers to engaging in mindful behaviors for similar populations. [66,69,81] As discussed previously, low-income single mothers experience a variety of daily stressors that can make time a barrier, such as school, work, and caring for children and family. Although having the time to work towards behavior change is important, it is not the most modifiable factor for many people. However, one study did emphasize the fact that, although more time cannot be created in order to provide people with more opportunities to participate in mindfulness programs, through these programs, it can be taught that mindfulness is a behavior that can be practiced anywhere at any time once appropriate knowledge and skills are developed in order for the individual to do so.[66] The current body of literature suggests that mindfulness educational interventions with similar populations are effective at increasing behavioral skills, and development of these skills are related to emotional regulation, stress management, and encouragement of overall healthier behaviors.[66,69,80] Acquiring these skills enables individuals to practice mindfulness. Therefore, despite availability and time being a barrier that cannot be easily changed, the program can focus on building skills (enabling factor) and knowledge (predisposing factor) surrounding brief, more informal mindful practices that can be adapted to any lifestyle.

Related to time, the potential costs associated with attending a mindfulness or stress-reduction program were found to be a barrier to participation, and thus a barrier to engaging in mindful behaviors.[81] These indirect costs include factors such as finding and paying for childcare, transportation, and work conflicts, all of which may make it difficult to attend a program or take the time to perform mindful behaviors.[81] Like time, many indirect costs cannot be easily addressed by the program itself. However, given that this program will be hosted at Mom's House, it is feasible to address issues of childcare, by continuing to offer free childcare to

participants while they are completing the program, making this a more important and changeable factor.

Having qualified teachers with shared experiences was also identified by the research team as more important and changeable.[15,81] Having qualified program instructors direct the program may help improve health outcomes,[15] while having instructors who are similar to the target population may also create an empathetic, supportive, and non-judgmental atmosphere, which may make participants more comfortable to participate.[81] These are factors that can be directly addressed through the format of the program, and therefore is not an enabling factor that will need to be measured through evaluation.

Figure 3. Enabling Factors Matrix (Behavioral)



Reinforcing Factors

Reinforcing factors are defined as the factors following a behavior that allow for the incentivisation or reward to increase the probability the behavior will reoccur.[77] These factors include subjective norms, social support from peers, family/household members, and physical consequences or benefits of a behavior, which can include alleviation from pain or discomfort. Social norms provide a framework of standards which deems behaviors as acceptable or unacceptable for a particular population to engage in. For the targeted risk behavior of inadequate stress/mindfulness behaviors, research has shown that social norms have the ability to positively or negatively affect time spent engaging in mindfulness.[80] Separate from support, a previous mindfulness intervention involving low-income women alluded to the need for individuals to get along with fellow participants and instructors in order to stay engaged with and find value in the intervention,[84] having similar backgrounds or shared experiences reinforced engaging in mindfulness, as well as feeling safe.[69] Although the program design considers these factors, they are difficult to have influence over.

Due to the nature of stress management and the social and physical environment these women inhabit, it is logical that social support from family, friends, and fellow participants is the most important and amenable reinforcing factor to address in the proposed program. Mom's House focuses on including the entire family in their programming as well as fostering community and connection between mothers. To our knowledge, research has not been conducted exploring the impact of social support on the adherence to mindfulness-based stress reduction interventions for low-income, single mothers of young children. However, research on mindfulness involving a similar population, low-income African American Adults, indicates adequate support is a key reinforcing factor to continuing a mindfulness practice.[66] Additionally, perceived positive social support from family and friends is an established mediator of stress in low-income single mothers, increasing resilience and improving coping skills.[85-87] Previous research has focused on improving parenting skills in at-risk mothers using group-based [88] and

peer-administered [89] interventions, both of which led to a significant improvement in mental health and levels of stress. Therefore, based on existing literature, the key informant interviews, and the needs assessment survey, the researchers identified social support as the key reinforcing factor for low-income, single mothers of young children to engage in stress management behaviors.

Figure 4. Reinforcing Factors Matrix (Behavioral)

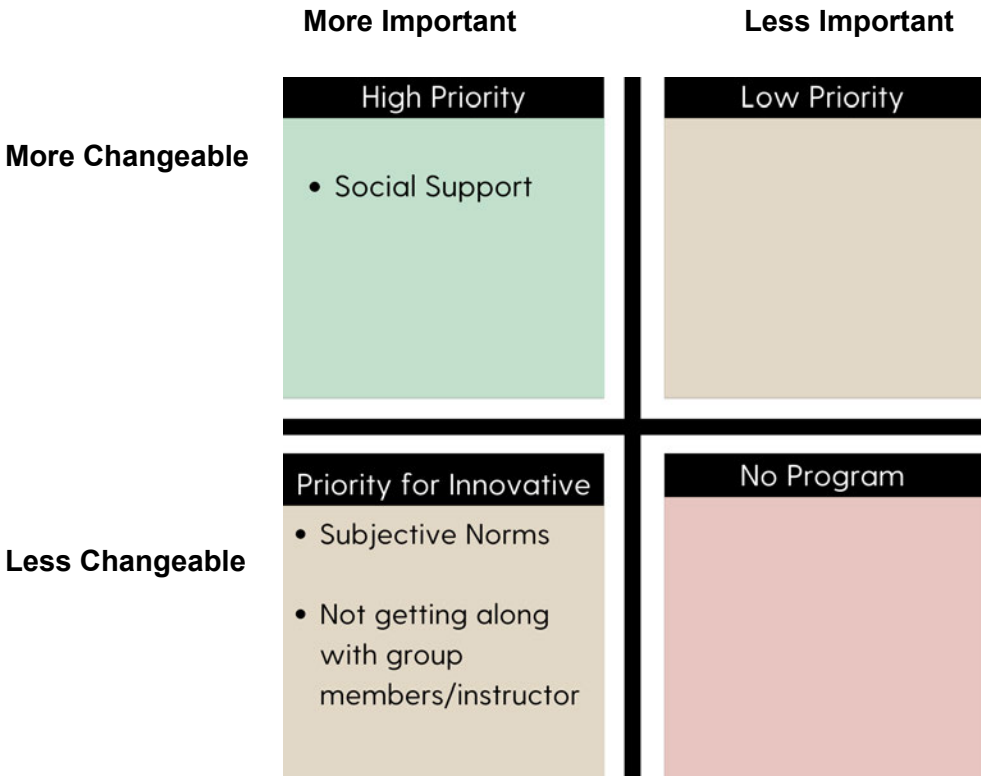


Table 4: Multi-Level Influences on Mindfulness Behaviors

Multi-Level Influences on Mindfulness Behaviors		
Behavioral Risk Factors	**Theory/Construct/Evidence**	**Expected Behavioral Impact**
Predisposing (1): Lack of motivation	Theory of Planned Behavior Construct: Motivation to Comply	Increase participant's motivation to engage in mindful practices when they are stressed
Predisposing (2): Intention to practice	Theory of Planned Behavior Construct: Intention to Perform Behavior	Increase participant's intention to engage in mindful practices when they are stressed
Predisposing (3): Lack of perceived benefits	Health Belief Model Construct: Perceived Benefits	Increase participant's perception of the benefits of engaging in mindful practices on their stress levels
Predisposing (4): Lack of knowledge of mindfulness behaviors	Social Cognitive Theory Construct: Behavioral Capability	Increase participant's knowledge of mindfulness techniques for stress management
Enabling (1): Behavioral skills to perform mindfulness exercises	Social Cognitive Theory Construct: Behavioral Capability	Increase participant's skills to perform mindful activities or engagement in mindful practices
Reinforcing (1): Social Support	Transactional Model of Stress and Coping	Increase participant's social support from family and friends to engage in mindful behavior

Table 5: Connecting Learning and Resource Objectives to PER Risk Factors

Behavioral Objective: By the end of the program, the mean mindfulness scores will significantly increase from baseline to post-intervention for at least 80% or more of the participants.				
Predisposing Risk Factors	**Learning Objectives**	**LO Indicator**	**Resource Objectives**	**RO Indicator**
1. Lack of motivation	By the end of the program, 70% of participants will report higher motivation to practice mindful activities compared to baseline.	Pre-post questionnaires on motivation to practice mindfulness that the researchers will create	By the end of the program, 100% of the participants will receive a goal setting worksheet regarding their mindfulness practice	Instructor will check off “hand out goal setting worksheet” on program checklist
2. Intention to practice	1. By the end of the program, 80% of participants will have a plan for when and how they will practice mindfulness using the goal setting sheet	Instructor will ask for copies of each participant’s plan	By the end of the program, 100% of the participants will receive a goal setting worksheet regarding their mindfulness practice	Instructor will check off “hand out goal setting worksheet” on program checklist
3. Lack of perceived benefits	1. By the end of the program, 70% of participants will be able to identify at least 3 benefits of mindfulness on stress reduction	Pre-post assessment on the benefits of mindfulness that the researchers will create	By the end of the program, 100% of participants will receive a handout describing the benefits of mindfulness and various practices	Instructor will check off “hand out benefits worksheet” on program checklist
4. Lack of knowledge	1. By the end of the program, 70% of participants will be able to identify at least 3 mindfulness practices for stress reduction	Pre-post knowledge assessment on the types of mindfulness practices	By the end of the program, 100% of participants will have received the mindful guidebook	Instructor will check off “hand out mindful guidebooks” on program checklist
Enabling Risk Factor	**Learning Objectives**	**LO Indicator**	**Resource Objectives**	**RO Indicator**
1. Behavioral skills to perform mindfulness exercises	By the end of the program, 80% of participants will be able to demonstrate at least 2 mindfulness practices	Observation by instructor	By the end of the program, 100% of participants will have received the mindful guidebook	Instructor will check off “hand out mindful guidebooks” on program checklist
Reinforcing Risk Factor	**Learning Objectives**	**LO Indicator**	**Resource Objectives**	**RO Indicator**
1. Social Support	By the end of the program, 70% of participants will report an increase in social support received for practicing mindfulness	Pre-post assessment using the Brief 2-Way Social Support Scale	By the end of the 8 week program, 100% of program participants will be invited to join a private Facebook group.	Instructors will check off “invited to Facebook group” on program checklist

Intervention Alignment and Strategies to Address Influences on Behavior

Mindfulness behaviors have increased from pre-test to post-test assessment in many interventions, and the mindfulness techniques used in these past interventions have been shown to reduce stress. [90-92,15] Specifically, “Mindful You”, a mindfulness mobile health app, showed that the mindfulness exercises included in the app were the most helpful feature to reduce stress. Inspirational messages, text messages and email messages were also reported to be helpful to the participants. Another program also used a smartphone app to deliver a mindfulness meditation program.[91] Before the intervention began, a one hour introductory talk about mindfulness took place. Then, 45 meditations were offered through the app and each meditation was 10 to 20 minutes long. Participants began with the 10 minute recorded meditations and gradually increased their listening time to 20 minute meditation recordings. These short-guided meditations proved helpful, and participants who completed at least 10 mindfulness meditations over the 8 week intervention showed a reduction in stress.[91]

The standard for mindfulness-based stress-reduction interventions is an eight week program.[91-94,15] Previous mindfulness programs had sessions that were offered once a week over the eight weeks and usually lasted from 90 to 120 minutes.[14,15,92] Additionally, sessions in the past were set up to include a check-in with the participants, an educational piece, formal mindfulness practice, and a discussion about the assigned homework. Homework included formal mindfulness practice like meditations, body scans, or yoga.[15,92] Informal mindfulness practices were also included as part of the homework for mindful programs. Informal mindfulness practices included incorporating mindfulness into daily activities, noticing pleasant and unpleasant events, practicing pausing and slowing down, and mindful communication.[15] Assigned homework was to practice formal mindfulness for 30 minutes and practice informal mindfulness for 15 to 30 minutes, daily.[92]

In a family-based mindfulness intervention, the study aimed to improve psychosocial outcomes among low-income African American mothers and increase prosocial behaviors

(voluntary actions that are intended to help or benefit another individual) in their children. The six-week intervention included eight separate cohorts of mothers and children over a two-year recruitment period. The Cognitive Behavioral Stress Management (CBSM) program for mothers focused on how to manage physiological stress responses, relaxation skills, goal setting, and coping techniques. Each week, mothers were instructed to practice skills at home and record their experiences. The Mindfulness-Based Kindness Curriculum (MBKC) for children promoted prosocial behaviors, social-emotional development, and taught coping strategies and relaxation techniques to manage one's emotions. The children participated in art projects, storytelling, and physical activity. In the qualitative interviews post-intervention, the participants reported experiencing several stressors such as, negative social interactions with others, health concerns, stressors related to caring for their children, not having enough support from others, and experiencing financial difficulties. The overall impact the program components had on the behavior post-intervention were that mothers' confidence in using stress management techniques significantly increased. There was no significant change in the child's prosocial behaviors. Mothers who had increased confidence in using assertive communication had children who demonstrated increased sharing behaviors. The researchers found that mothers and their children utilized class lessons and activities to support one another.[14] Children of mothers were included in another intervention with 83 mothers who had children aged 12 to 17 years old. However, the children were only involved in the 6th session out of the 8-week session intervention. Still, in the sessions that did not have the children attend, sessions for mothers focused on mindful experiences that involved their children like increasing non-judgmental acceptance of the parent as self and their children.[92]

In addition, all programs had trained instructors lead the mindfulness interventions. In the literature, it was found that having an instructor that was similar to the population showed improvements in mindfulness.[15] Another program that focused on African American mothers had three trained African American social workers who were also mothers with extensive experience

facilitating group-based interventions.[14] In a mobile health app program, an African American clinical psychologist with experience in mindfulness education, developed app content for the African American population in this study. A key feature of this program was the use of African American voice actors that led the guided meditations.[90] Mom's House of Wilmington, serves predominantly single-mothers. The "Mindful Moms" program intends to include female staff from Mom's House that will be trained to implement this intervention.

The "Mindful Moms" program will include a meditation journal and audio recordings for participants. Several programs provided participants with materials to practice and record their mindful experiences outside of the sessions.[15,94] One program gave participants a CD with 30 guided meditations that contained the practices that were taught to them. They were told to listen to the CD once a day for eight weeks. Participants were also given a meditation diary to write down the times and duration of their daily practice.[94] Another program provided participants with an activity log as a weekly assignment that was collected and discussed during the following weekly session.[14]

Overall, the 8-week "Mindful Moms" program will use various elements from past interventions that are the most feasible to adopt or adapt. The length of the program will be 8-weeks and each class per week will last two hours as this is the length and time of most interventions described in the literature. The main components from past interventions that will be incorporated into the "Mindful Moms" program will include formal and informal mindfulness practices and homework. Meditations, body scans, and yoga will be the formal mindfulness practices that will be incorporated throughout the program. The informal mindfulness practices that will be included are activities that can be practiced in daily life such as noticing pleasant and unpleasant events, concentrating attention on one thing, pressing pause and slowing down, listening to others and allowing people to be where they are, and non-judgemental acceptance of self and others. Homework to practice formal and informal mindfulness activities will be assigned each class so that participants can improve their mindfulness skills and confidence.

Program Components

Before the beginning of the first session, the Community Health Educator and the Program Coordinator will obtain informed consent for participation and data collection from all of the participants of the “Mindful Moms" program. Any participant has a right to deny consent. However, individuals will not be allowed to participate in the program without signing the consent forms. Pre-assessments will also be distributed prior to the program beginning. Pre-assessments will ask participants questions about their stress levels, participation in mindful behaviors, social support, using the Perceived Stress Scale, Depression, Anxiety, and Stress Scale, Five Facet Mindfulness Questionnaire, and Brief 2-Way Social Support Scale. Additional questions will be created by the research team to assess participant’s knowledge of mindfulness, perceived benefits of mindfulness, and motivation to practice mindfulness. The same post-assessment will be delivered at the end of the program, and will also include questions regarding participant’s experience with the program instructors.

The “Mindful Moms” program will be conducted in-person at Mom’s House’s new location near Newark, DE. The program will run weekly for eight weeks at a time. Four, 8-week sessions will be offered to four separate cohorts of 12 newly recruited participants, for a total of 48 participants enrolled throughout the duration of the program. The first instance of the program will be offered in fall 2022, followed by spring 2023 and summer 2023 sessions to align with the school semesters. The fourth and final 8-week program will be offered during fall 2023. The educational components and mindfulness practices will be led by two instructors: the Community Health Educator and the Certified Yoga Instructor.

For each 8-week session, one class will be offered per week. Class will last 2 hours to provide a comprehensive experience, but one that does not take up too much of the participant’s time. Every class will follow a similar structure, but will address different educational topics and skill-building activities every week. The class will begin with a preliminary group check-in to go over the previous week’s homework and to discuss successes and struggles from

the past week. Following the check-in will be an educational component based on the weekly topic and a formal practice of mindfulness meditation. Formal, in-class meditation sessions will increase in duration week-to-week as skills increase, and will ensure participants have experience practicing the technique prior to trying during the week on their own. Additionally, informal mindfulness practice will occur at each session, as well as group discussion to ask for participants feedback and discuss the assigned homework for next week. During the last two classes, the children of the participants will be invited to attend.

Educational Presentations

Educational presentations will be the component directly following checking-in with the participants. Each class will cover a different topic to be presented on in order to increase participants' knowledge throughout the duration of the program. The first educational topic will be an introductory talk about mindfulness. The presentation will introduce participants to the concept of mindfulness including basic mindfulness techniques. Since this is the first session of the eight classes, the instructors will prepare and inform participants that they may experience possible uncomfortable experiences. The topics of the remainder of the classes will include noticing thoughts and wandering of the mind, coping with stress and stress management, daily life practice and time, responding versus reacting, mindful communication, mindfulness practice and parenting, and self-compassion. These educational presentations will last approximately 30 minutes.

Through these presentations, motivation, intentions, perceived benefits, knowledge, and behavioral skills will be addressed. Each presentation will cover new knowledge regarding mindfulness, such as what it is, how it is done, and the various mindful behaviors, as well as the overall benefits of mindfulness and individual benefits of each type of practice. As the program progresses, the increased knowledge and perception of benefits will assist in participants developing the skills, motivation, and intentions to regularly practice mindfulness. These factors are also further enforced through the other program components.

Formal Mindfulness Practice

Formal mindfulness practices will be offered after education is provided on the topic for the week. The formal mindfulness practices will include meditations, body scans, and yoga. The type of formal mindfulness practice will rotate every week, and each week participants will practice outside of class for their homework. The rotation of formal practice will be meditations, body scans, then yoga. During week seven, the formal mindfulness practice will delineate from the others, and the practice will consist of guided imagery because this is the first session the children will be invited to attend.[14] The formal mindfulness practice will start out as lasting five minutes and by the end of the eight weeks, will last 20 minutes. The first two classes (class 1 and 2) will provide 5-minute formal mindfulness practices. The next two classes (classes 3 and 4) will provide 10-minute formal mindfulness practices. The formal mindfulness practices for classes 5 and 6 will last for 15 minutes and the last two classes (classes 7 and 8) will last for 20 minutes. Increasing the duration of mindfulness practices combats wandering of the mind, a predisposing factor to engaging in mindfulness behaviors.[66]

Informal Mindfulness Practice

Informal mindfulness practices will be offered each class following the formal mindfulness practice component. Compared to formal mindfulness practices which necessitate intentional commitments of time to the practice, informal mindfulness practices involve weaving mindfulness into day-to-day activities.[69] The instructors will provide information on the informal mindfulness practice being offered during the class and then the participants will practice. After practicing the informal mindfulness practice there will be a discussion. The informal mindfulness practices will include practicing being present in daily life, diaphragmatic breathing, noticing pleasant and unpleasant events, concentrating attention on one thing, pressing pause and slowing down, listening to others and allowing people to be where they are, non-reactivity to experience to adolescent behaviors, and non-judgemental acceptance of self and others. This component will last approximately 30 minutes. Like the formal mindfulness practice each week,

participants will also be given homework to practice the informal mindfulness practice for the week. Providing participants with the opportunity to practice formal and informal mindful behaviors each week will help them to develop their skills, thus increasing their motivation and intentions to continue practicing beyond the program.

Group Discussion

As mentioned above, there will be group discussion after the informal mindfulness practices. There will also be group discussion at the beginning and end of each class. The time allotted for group discussions will depend on the time given for formal mindfulness practice as the time for these practices increases throughout the program. At the start of the classes there will be check-ins. Check-ins will allow the instructors to ensure participants are progressing with their homework and allow participants to ask questions about their homework. The group discussion at the end will allow participants to give their feedback on the topic and practices that happened during the class. The instructors will also assign the homework for the following week. Homework will involve journaling and practicing either the formal mindfulness practice or informal mindfulness practice once a day until the next class. The last class discussion at the end of the session will be a wrap up and summary of the program and instructors will provide resources to the participants that they can use in the future.

Group discussions are crucial for increasing the social support provided and received among participants. Participants will be reminded each week that Mom's House is a safe, and non-judgemental space for them to openly discuss their experiences with stress and mindfulness. By the end of the program, participants should feel adequately supported to continue practicing mindfulness.

Facebook Group

The last component of the program will be to provide the private Facebook group "Mindful Moms" to the participants. The Facebook group will be open only to the moms that attend the program and will be facilitated by the program coordinator and student volunteers.

The group will be provided to the participants at the end of the program. Participants can join the group to receive additional resources and engage in continued discussion around stress and mindfulness. This component adds extended support as participants continue their mindfulness journeys after the conclusion of the program. A Facebook group was chosen as a resource to be provided due to the fact that Mom's House regularly uses social media like Facebook and Instagram to reach their participants.

Delivery

Having a trusted member of the community with shared experiences and background to deliver program components in a familiar setting will increase participants' comfortability and increase motivation to participate in the program.[15] Our key informant, Ms. Rodriguez, has a Master's degree in Human Services with a focus on counseling and has been working with the organization for over 15 years. She is currently the Development Director at Mom's House and her role as a change-agent is key to the implementation of this program. Ms. Rodriguez would assist with recruitment, development of materials, training staff, and attend every session to have a familiar face for the participants. To teach the sessions of the program, one community health educator with experience in working with single mom's and low-income families will be hired as a program instructor. A Certified Yoga Instructor who is experienced in evidence-based mindfulness techniques for stress management will deliver yoga-based meditation practices. A Program Coordinator will be hired to coordinate and oversee all program components and activities. Student volunteers from the University of Delaware Partnership Healthy Communities will assist the program coordinator with supplies, materials, activities, and other administrative tasks during the program. The Development Director, Ms. Rodriguez, will help train the staff on the population participating in the program and how to engage with and recruit participants.

Supplies

Each week, participants will be provided with a mindful guidebook that includes links to guided meditations of audio recordings, activity logs, worksheets, a list of mindfulness

meditation apps, and resources and information about Mom's House. In the guidebook, there will be a guided meditation page that includes audio recording links to the formal and informal practices that are discussed in the weekly sessions. The links will be arranged by the week and a worksheet will go along with each formal and informal practice. The activity logs will be used for participants to journal their experiences with the practices. The exhaustive list of the meditation apps will be an additional resource for participant's to use while they practice. It will include a description of an app and will be organized by race/ethnicity and age range. These targeted apps already exist and will reinforce the factor of preferring instructors who have shared experiences. The goal setting worksheets will be included in the guidebook. Other materials for activities will include pencils, pens, highlighters, loose-leaf paper, coloring pencils and markers, glue, yoga mats, disinfecting wipes, hand sanitizer, and face masks. This program will also provide participants with weekly incentives to help maintain mindfulness practices outside of the program.

Training

The training activities to run the program will be limited. The Certified Yoga Instructor will be hired and already trained in mindfulness and yoga. Therefore, a one day, 8-hour training will be provided for the Community Health Educator and Program Coordinator. This training will cover each class topic, the educational presentations, and formal and informal mindfulness practices. The staff will be provided with a program manual that includes: the educational presentation materials or slides; the specific mediation, body scan practice, or yoga practice that the yoga instructor will help perform as the formal mindfulness practice; the specific informal mindfulness practice for each class; and discussion questions to use in the beginning and end of each class. The Certified Yoga Instructor will be present during this training in order to know the specific components of the program and the mindfulness practices to cover. In addition, the training will include a review of the homework assignments for each week. Additionally, the research team will train Ms. Rodriquez on the program components as she will serve as a

change agent and be familiar with the population. Ms Rodriguez will also assist with training the staff (Community Health Educator, Program Coordinator, Certified Yoga Instructor) on the population and how to engage with the participants. Other training will be provided to the student volunteer(s) who assist the Program Coordinator with the Facebook Group. Types of resources to provide and examples of thought provoking questions to post in the group will be provided during the training, which will last approximately 2 hours.

Table 6: Mindful Moms Program Plan

Program Component/ Activity	**Who will deliver the component/activity?**	**When, where, and how will the component/activity be delivered? What resources are needed for the program component/activity?**	**What are the training needs for program staff, change-agents, volunteers, and/or other stakeholders?**
Educational Presentations	Community Health Educator (CHE) Student Volunteers from UD's PHC	Will be conducted once a week for 8 weeks during the fall 2022 semester (Sept-Oct), spring 2023 semester (Feb-Mar), summer 2023 (Jun-Jul), and fall 2023 (Sept-Oct) All sessions will take place at Mom's House Presentations and worksheets will be prepared by Research Team and Staff prior to the start of class Information about the program will be given prior to the start of the program At the beginning of the session, all guidebooks, worksheets, and other materials will be handed to the participants by the student volunteers	The Research Team and Ms. Rodriguez will provide training for the CHE and student volunteers to review what is expected for each weekly session and responsibilities of each individual. Ms. Rodriguez will train the CHE and student volunteers on the population participating in the program
Formal Mindfulness Practice (mediation, body scan, yoga)	Community Health Educator, Certified Yoga Instructor	Participants will use the meditation guidebook and worksheets to follow along with instructors during sessions. These worksheets will be prepared by Research Team and Certified Yoga Instructor At the beginning of the session, all guidebooks, worksheets, and other materials will be handed to the participants by the student	Ms. Rodriguez will train the CHE, Yoga Instructor and student volunteers on the population participating in the program

		volunteers	
Informal Mindfulness Practice	Community Health Educator, Certified Yoga Instructor	Participants will use the meditation guidebook and worksheets to follow along with instructors during sessions. These worksheets will be prepared my Research Team and Certified Yoga Instructor At the beginning of the session, all guidebooks, worksheets, and other materials will be handed to the participants by the student volunteers	Ms. Rodriguez will train the CHE and student volunteers on the population participating in the program
Group Discussions	Community Health Educator	Discussions will be facilitated by staff At the beginning of the session, all guidebooks, worksheets, and other materials will be handed to the participants by the student volunteers	Ms. Rodriguez will train the CHE and student volunteers on the population participating in the program
Facebook Group	Program Coordinator Student Volunteers	Participants will be invited to the Facebook group following the 8-week session. Participants will be able to interact as little or as much as they would like with each other and ask questions. Additional resources like yoga youtube videos and meditations will be available through this group, and not found anywhere else in the program's resources.	Research Team members will train on how to create a Facebook group and how to use all the features associated with the group. The student volunteers will be trained to adequately monitor the Facebook group and how to appropriately interact with members.

Figure 5. Conceptual Model for the 8 Week Mindful Moms Intervention:

Program Component/Activity	P, E, R Factor	Learning/Resource Objectives		
Educational Presentation	Lack of Motivation **(P)**	**L Obj:** By the end of the program, 70% of participants will report higher motivation to practice mindful activities compared to baseline **R Obj:** By the end of the program, 100% of the participants will receive a goal setting worksheet regarding their mindfulness	**Behavioral Objective** By the end of the program, the mean mindfulness scores will significantly increase from baseline to post-intervention for at least 80% or more of the participants.	**Health Objective:** By the end of the two year program, there will be a significant reduction in stress scores compared to baseline values in the target community.
	Intention to Practice **(P)**	**L Obj:** By the end of the program, 80% of participants will have a plan for when and how they will practice mindfulness using the goal setting sheet **R Obj:** By the end of the program, 100% of the participants will receive a goal setting worksheet regarding their mindfulness practice.		
	Lack of Perceived Benefits **(P)**	**L Obj:** By the end of the program, 70% of participants will be able to identify at least 3 benefits of mindfulness on stress reduction. **R Obj**: By the end of the program, 100% of participants will receive a handout describing the benefits of mindfulness and various practices		
	Lack of Knowledge of Mindfulness Behaviors **(P)**	**L Obj**: By the end of the program, 70% of participants will be able to identify at least 3 mindfulness practices for stress reduction		

		R Obj: By the end of the program, 100% of participants will have received the mindful guidebook.		
Formal Mindfulness Practice (meditation, body scan, yoga)	Behavioral Skills to perform mindfulness **(E)**	**L Obj**: By the end of the program, 80% of participants will be able to demonstrate at least 2 mindfulness practices **R Obj:** By the end of the program, 100% of participants will have received the mindful guidebook		
Informal Mindfulness Practice	Behavioral Skills to perform mindfulness **(E)**	**L Obj**: By the end of the program, 80% of participants will be able to demonstrate at least 2 mindfulness practices **R Obj:** By the end of the program, 100% of participants will have received the mindful guidebook.		
Group Discussions	Social Support **(R)**	**L Obj:** By the end of the program, 70% of participants will report an increase in social support received for practicing mindfulness		
Facebook Group	Social Support **(R)**	**R Obj:** By the end of the 8 week program, 100% of program participants will be invited to join a private Facebook group		
Program activities will address...	**...which will lead to changes in...**		**...that will impact...**	**...that will lead to...**

Administrative and Policy Assessment

Organizational and Community Resources

Organizational resources were assessed in the key informant interview with Ms. Rodriguez. Mom's House has a new location and will be providing their facilities to conduct and implement the proposed program. Ms. Rodriguez, who serves as the Development Director, will help with the implementation of the program. Her salary is covered by Mom's House and will not be accounted for in the program's budget. Mom's House provides free childcare services for their clients therefore it will not be accounted for in the budget. The Mom's House new location will be in a central area that is closer to the University of Delaware-Newark Campus and will offer free parking which will make their facilities accessible for their client population. Therefore, parking fees for participants and employees will not be accounted for in the budget. The proposed program will recruit clients from Mom's House. Ms. Rodriguez will assist with the recruitment of participants and will attend all weekly sessions for participants to have familiarity with the program.

There are several outside resources that will be needed for the proposed program. The ordering of consumable supplies such as office supplies, printed materials, promotional materials, sanitation products, face masks, and incentives will have to be ordered by the research team. The hiring, training, and delivery of the proposed program will come from the research team. To deliver the proposed program components, the Community Health Educator, Program Coordinator, and Certified Yoga Instructor will need to be outsourced and accounted for in the budget.

Examining, evaluating, and processing the data of the proposed program will not fall under the organizational capacity. To analyze the data, a Program Evaluator will be hired and experienced in conducting a process, impact, and outcome evaluation using the PROCEED framework of the PRECEDE-PROCEED health promotion program model.

Table 7. Budget - 1 Year

Budget Items	Hours	Rate	Year 1 Totals
Personnel			
Salaries			
Community Health Educator	30 hours/wk: 32 weeks	$32/hr	$30,720.00
Program Coordinator	30 hours/wk: 32 weeks	$30/hr	$28,800.00
Certified Yoga Instructor	2 hours/wk: 32 weeks	$65/hr	$4,160.00
Program Evaluator	200	$50/hr	$10,000.00
Development Director	salary is covered by Mom's House		$0.00
Student Volunteers	2 hours/wk: 32 weeks		$0.00
Total Personnel			**$73,680.00**
Non-Personnel			
Consumable Supplies			
Office Supplies			$1,000.00
Yoga Materials (48) @ $20.00	48 x $20.00		$960.00
Laptops (2) @729.99	2 x $729.99		$1,459.98
Projector @ $329.99			$329.99
Printed Materials for Guidebook- supplied by University of Delaware Printing Services	20 pages x 48 guidebooks		$345.00
Promotional Materials- supplied by Docucopies.com	300 full color copies		$65.20
Sanitation Products- Bulk			$500.00
100 Pc Disposable Face Mask (4) @ $5.99	4 x $5.99		$23.96
Incentives	Mindful Mom Spa Kit x 4 @ $200		$400.00
	Visa Gift Cards x 4 @ $100		$400.00
	13-month Delaware Children's Museum Membership x 4 @ $119		$476.00
	Mommy & Me Mindfulness Kit x 4 @ $100.43		$400.73
Total Supplies			**$6,360.86**

TOTAL Direct Costs			**$80,040.86**
Indirect costs (24%)			**$19,209.80**
Total Budget Estimate			**$99,250.66**

Budget Justification

Personnel:
Community Health Educator: There will be (1) Community Health Educator (CHE). It is estimated that they will be hired for a total of $30,720 for Year 1. They will oversee and implement the program for four, 8-week program sessions. They will be responsible for the facilitation of all educational presentations, data collection, distribution of pre and post assessments, and assist the research team with maintaining program timeline and resources. The CHE will have experience working with single mothers and low-income families specifically as it relates to techniques for stress reduction.

Certified Yoga Instructor: There will be (1) Certified Yoga instructor. It is estimated that they will be hired for a total of $4,160 for Year 1. They will be responsible for leading all evidence- based formal and informal mindfulness practice components of the program. They will be experienced in using mindfulness techniques for stress reduction. This position will be a part-time position.

Program Coordinator: There will be (1) Program Coordinator. It is estimated that they will be hired for a total of $28,800 for Year 1. They will be responsible for coordinating and overseeing all program components and activities. They will enroll participants, distribute pre and post assessments, distribute resources and materials to participants, create and coordinate Facebook groups, and assist the research team to maintain program timeline. The program coordinator will supervise the Student Volunteers. This position will be an hourly, part-time position.

Development Director: LaHoma Rodriguez will serve as the liaison between Mom's House and the University of Delaware. She is the Development Director from Mom's House of Wilmington and will not be accounted for in the Year 1 budget. However, she will be responsible for the recruitment of participants, training hired staff, distribution of promotional materials, attend all weekly sessions, and work collaboratively with the program staff and research team.

Program Evaluator: There will be (1) Program Evaluator. It is estimated that they will be hired for a total of $10,000 for Year 1. They will be responsible for evaluating all program components and activities. They will have experience in conducting a process, impact, and outcome evaluation using the PROCEED framework of the PRECEDE-PROCEED health promotion program model.

Student Volunteers: Under the supervision of the program coordinator, there will be student volunteers from the University of Delaware Partnership for Healthy Communities. They will not be accounted for in the Year 1 budget. They will be responsible for distribution of program resources, monitoring the Facebook group, and all other administrative tasks during the program.

Supplies:

It is estimated that a total of $6,360.86 will be accounted for in the Year 1 budget. All consumable supplies will be purchased by the research team. The following supplies will be:

Office Supplies: These materials will be needed to put together resources for participants to use during the weekly sessions. The supplies needed are paper, pencils, pens, coloring pencils, markers, highlighters, stapler and staples, hole puncher, dividers, binders, notebook journals.

Yoga Materials: These materials will be used for the weekly sessions. The Certified Yoga Instructor will guide the participants in the formal and informal mindfulness practices each week.

Participants will be able to keep these materials and use them at home for their weekly assignment outside of the sessions. The supplies needed are yoga mats, yoga straps (to carry mat), and a yoga block.

Laptops: There will be (2) laptops accounted for in the Year 1 budget. They will be given to the Community Health Educator and the Program Coordinator. They will be used for the educational presentations, data collection, the Facebook group, and all other administrative tasks for the program.

Projector: There will be (1) projector accounted for in the Year 1 budget. This will be used at Mom's House for the educational presentations instructed by the Community Health Educator and the Certified Yoga Instructor.

Printed Materials: The printed materials are worksheets that will be added to the mindful guidebooks that will be administered to the participants. The worksheets include audio recording links of informal and formal practices, worksheets, activity logs, goal setting worksheets, and a list of meditation apps. In the mindful guidebook, the worksheets will be arranged by the week for a total of eight weeks. The University of Delaware's University Printing office will print the materials for the guidebook and will be accounted for the Year 1 budget.

Promotional Materials: The promotional materials will include flyers for recruitment of participants for the program and will be accounted for the Year 1 budget.

Sanitation Products: The sanitation products will be purchased to sanitize the Yoga mats, tables, chairs, and other resources supplied by Mom's House.

Disposable Face Mask: Disposable face mask will be given to participants each week for the sessions. Participants and staff members will be required to wear a face mask indoors for all components of the program

Incentives: The incentives the participants will receive are:

- Mindful Mom's Spa kit- Massage gift certificate and an at-home spa treatment kit
- Visa gift cards
- 13- month Delaware Children's Museum Membership
- Mommy and Me Mindfulness kit- 1- year Calm app subscription for parents & kids and a mindfulness cards set for adults

Participants who complete their weekly activity log will be entered in a raffle to receive the incentives (prizes will vary week to week).

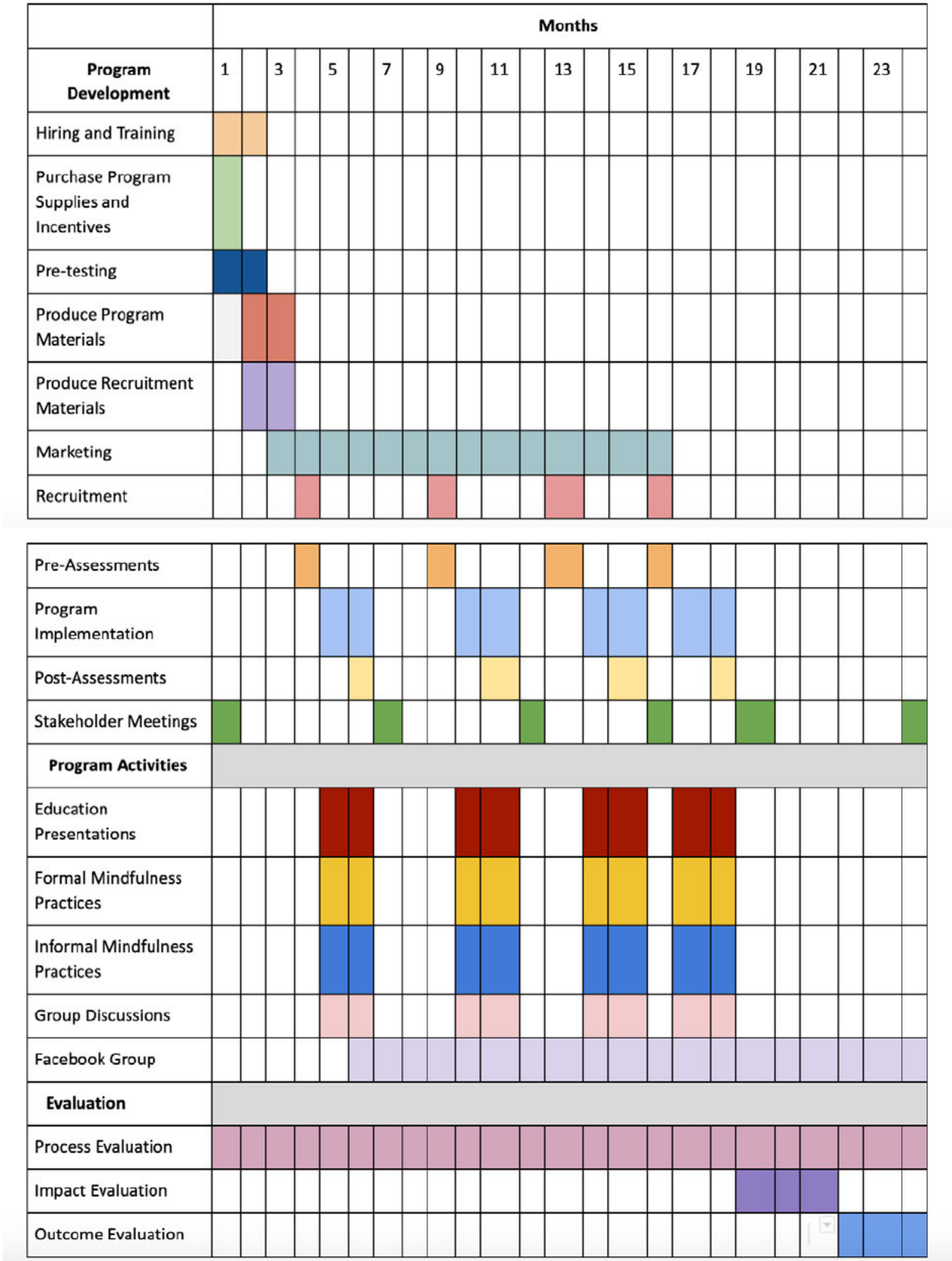
Equipment:
Equipment over $5,000 was not accounted for in the Year 1 budget.

Figure 6. Key Project Personnel

Key Personnel	Year 1 Duties
Community Health Educator	The Community Health Educator (CHE) will oversee the program for four, 8-week sessions that will be offered to four separate cohorts of participants. The CHE will be responsible for obtaining informed consent for participation and data collection, facilitating all educational components, distributing pre and post assessments, enrolling participants, and assisting the research team with maintaining the program timeline.
Program Coordinator	The Program Coordinator will be responsible for the coordination of all activities to ensure organization productivity and efficiency throughout the program. They will distribute pre and post assessments, enroll participants, distribute resources and materials to participants, create and coordinate Facebook groups, and assist the research team to maintain program timeline.

Certified Yoga Instructor	A Certified Yoga Instructor will be responsible for teaching evidence-based formal and informal meditation practices as it relates to mindfulness and stress management to participants in the weekly workshop sessions.
Student Volunteers	The Student Volunteers will be responsible for distributing supplies and materials to all participants. They will be responsible for assisting with program activities and all administrative tasks during the program.
Development Director (salary covered by Mom's House)	The staff member will be responsible for recruitment, enrolling participants, development of materials, distribution of materials, assisting the research team with training staff, and participating in weekly sessions.
Program Evaluator	The Program Evaluator will be responsible for the process, impact, and outcome evaluation of the program. They will have experience in health promotion programs and use the PROCEED framework of the PRECEDE-PROCEED model for the proposed program.

Figure 7. Timeline of all Program Activities



Program Fit

The “Mindful Mom’s” program that the researchers have created aligns well with the program's community partners, the organization where the program will be formerly housed, and the population that the program is targeting. Mom’s House of Wilmington, the primary community partner of the program, offers free childcare services and various health services. The organization’s main goal is to provide a place where people feel welcomed and safe. University of Delaware Partnership for Healthy Communities (UD PHC), the second partner of the program and a community partner of Mom’s House of Wilmington, aims to improve the health and wellness of Delaware Communities. “Mindful Mom’s” emphasizes both of these organization’s goals by providing a program that is housed at Mom’s House to make the participants comfortable while aiming to improve the overall health of the population of Mom’s House, specifically mental health. Both of these partner organizations and the population of Mom’s House mentioned that mental health issues, like anxiety and feeling overwhelmed, are concerns that need to be addressed for the population of Mom’s House. “Mindful Mom’s” addresses these concerns through an evidence-based mindfulness program that will teach program participants knowledge and skills about mindfulness and offer support to enhance mindfulness in everyday life. Therefore, the program will improve stress management in this population.

Barriers

Previously, Ms. Rodriguez, the Development Director of Mom’s House, identified location and time as barriers to program implementation. It has been noted that the population of Mom’s House tends to participate in programs more when they are hosted at the facility of Mom’s House. When creating the program, the location was taken into account and the research team decided to have the program run at Mom’s House in order to provide the most comfortable and safe place for participants. Using Mom’s House as the location where the program will take place also ensures that participants will be able to get to the program. As mentioned previously,

Mom's House of Wilmington is in a transition period and moving from their original location in Wilmington to a new location closer to Newark, DE. One reason for this change is due to the fact that many moms who come to Mom's House are students who attend schools around the new area. Mom's House believes that changing locations will allow for a more convenient location for the population that they serve. Time is another concern for this population. The population of Mom's House has many responsibilities such as school, work, and motherhood. In order to adjust for this barrier, the program is offered four times throughout the year. The program is offered three times during school semesters, and once during the summer. The research team chose two months each semester that were felt to be the least busiest months in terms of school responsibilities. The summer session was chosen as a time that may be less busy for the mothers as well. If the program is too much to commit to during the school year, then mothers can participate in the program during the summer session. A final barrier to the implementation of the program includes Ms. Rodriguez's familiarity with the program components. To account for this barrier, Ms. Rodriguez will be introduced to and trained in all the program components.

Organizational Capacity

Overall, Mom's House of Wilmington has the capacity to carry out the program. The issue of mental health and stress was emphasized by all parties, the community partners and population of Mom's House, as a major concern. "Mindful Moms" addresses this issue through mindfulness education and practice. Additionally, Mom's House has the ability to run the program at their location and it is in fact preferred that the location where the program takes place is Mom's House in order for participants to feel comfortable. Finally, Ms. Rodriguez has shown her passion to help the population she works with through the key informant interview. Additionally, the program's second partner, UD PHC, has identified Ms. Rodriguez as someone who actively seeks resources and partnerships to assist the population of Mom's House. Both UD PHC and Mom's House have worked together successfully in the past. The research team

believes that Ms. Rodriguez will be a champion for the program to run and continue to run if it is successful.

Program Evaluation

Process Evaluation Plan

Program Component: Educational Presentations

The “Mindful Moms” program will include educational presentations during each of the 8 weekly sessions to address participants' lack of motivation, intention to practice, perceived benefit, and knowledge regarding mindfulness behaviors. This component will last approximately 30 minutes in the beginning of each of the 8 weekly sessions. It is expected that attendance will increase motivation and intention to practice mindfulness, perceived benefits of practicing mindfulness, and be able to identify at least 3 mindfulness practices for stress reduction by the end of the 8 weeks.

Evaluation Plan & Measures

The following plan (see table 8) describes how the processes leading up to the implementation of the Educational Presentation program component will be evaluated. The following components and their measurement techniques will be discussed: fidelity, dose, reach, and recruitment.

Fidelity describes the quality of implementation and includes aspects of dose delivered, dose received, and reach,[95] and in this case, means how well all of the eight weekly educational presentations were implemented as planned. Fidelity of this program component will be captured using the checklists, focus groups, and attendance sheets, as described below. The Community Health Educator, Certified Yoga Instructor, student volunteers, and select program participants will be the data sources used to assess the quality of how the presentations were implemented. How and when data related to fidelity is further described below. Once all data is collected, a score will be calculated based on the sum of all parts of dose delivered, dose

received, and reach. The resulting information will be used both formatively and summatively, as described below.

Dose delivered refers to the amount of the program component delivered,[95] and in this case, the extent to which each of the intended educational presentations were implemented. Dose delivered for each presentation will be evaluated using weekly checklists, where the CHE and Program Coordinator will document which aspects of the presentations were fully and correctly implemented. These checklists will include items such as, handing out and collecting materials, presenting the PowerPoint presentation from start to finish, and answering all participant questions. These checklists will be filled out after each of the eight sessions. How well each presentation was implemented will be analyzed by determining a percentage score based on how many of the total presentation items were implemented. This information about dose delivered can be used formatively to share with the CHE and Program Coordinator every week for feedback purposes, as well as summatively, where the total fidelity of each session, cohort, and program as a whole can be reported and shared with program implementers, stakeholders, and the community.

Dose received reflects the extent to which participants received and used program components or materials,[95] and in this case, how much program participants enjoyed the weekly presentations, as well as how satisfied the CHE were with the presentations they delivered. To assess presentation enjoyment, focus groups will be conducted following the end of each of the four cohorts. Using predetermined open-ended questions, a thematic analysis will be conducted to understand participant's overall enjoyment of the presentations, as well as individual components and topics. Results from these focus groups and qualitative analyses will be used summatively at the end of year two and shared with program implementers, stakeholders, and the community. To assess satisfaction with the educational presentations, focus groups will be conducted with the CHE and Program Coordinator following the conclusion of each of the eight-week interventions. Similar to the focus groups for participants, themes will be identified

through qualitative analysis of each focus group, and results will be shared summatively at the end of year two.

Reach refers to how much of the target audience attended and participated in the activity,[95] and in this case, if the educational presentations were implemented to at least 80% of the participants enrolled in the program. The CHE will be in charge of taking attendance on weekly attendance sheets that will later be used to calculate a score based on the number of participants who attended at least 80% of the sessions, divided by the total number of participants. These results can be used both formatively and summatively. Attendance information can be used on a weekly basis by the CHE, and if any participant does not attend one of the sessions, the Program Coordinator and/or Mom's House staff will reach out to them to identify potential barriers that hindered their attendance. Commonly identified barriers will be addressed on a regular basis to allow for consistent participation. This information will also be summarized by session, cohort, and overall and shared with program implementers, stakeholders, and the community at the end of the two year period.

Recruitment for "Mindful Moms" will occur when mothers sign up to be a scholarship family at Mom's House, which provides mothers with free child care and requires participation in life skills classes. They will be offered the opportunity to participate in one of the 8-week sessions, but will not be required to become a scholarship family. Marketing strategies will include advertisement using Mom's House's official social media platforms on Facebook and Instagram, as well as physical flyers posted at high-traffic locations in at Mom's House, such as child drop-off/pick-up spots, any communal areas, or areas where mothers may attend another offered class or event. Additionally, prior to the start of each 8-week session, targeted emails will be sent to all clients of Mom's House announcing the start of a new session. It is expected that the knowledge and skills gained during the program in an identified area of interest, mindfulness, along with resources and social support provided by the program will incentivize participants to remain engaged in the program. Additionally, all participants who complete

certain components of the program will be entered into raffles to win prizes, which will increase retention and engagement in program activities.

Expected Behavioral Outcomes

Providing weekly mindfulness educational presentations and accompanying resources will result in increased intention and motivation to practice mindfulness in addition to increased knowledge and perceived benefit of mindfulness behaviors, resulting in increased likelihood participants will engage in regular mindfulness behaviors, which will lead to lower stress levels.

Table 8. Process Evaluation Plan Table: Educational Presentations

Component	*Process Evaluation Question*	*Data Sources (who)*	*Tools/Procedures*	*Timing of data collection*	*Data analysis or Synthesis*	*Reporting*
Fidelity	To what extent were all components of the 8 weekly educational presentations implemented as planned?	Community Health Educator Program Coordinator	Self-reported checklist, focus groups, attendance sheets (all of the tools listed below)	Following each weekly session and each cohort (collected as described below)	Calculate score based on sum of its parts (outlined below)	Formative: weekly feedback for CHE, students, and research team Summative: summarized by session, cohort, and overall (outline below)
Dose Delivered	To what extent were each of the intended educational presentations of the curriculum implemented?	Community Health Educator Program Coordinator	Self-reported checklist	Following each weekly session	Calculate score based on percentage of intended presentations included	Formative: weekly feedback for CHE, students, and research team Summative: summarized by session, cohort, and overall

Dose Received (a)	To what extent did participants from each cohort enjoy the educational presentations?	Program participants	Focus group with open-ended questions for participants	Following the end of the 8-week program for each of the four cohorts	Themes identified through qualitative analysis	Summative: summarized and reported after implementation complete (end of year 2)
Dose Received (b)	To what extent were the Community Health Educator satisfied with the educational presentations?	Community Health Educator Program Coordinator	Focus group with open-ended questions for CHE	Following the end of the 8-week program for each of the four cohorts	Themes identified through qualitative analysis	Summative: summarized and reported after implementation complete (end of year 2)
Reach	Were the educational presentations implemented to at least 80% of the participants who enrolled?	Community Health Educator	Attendance sheets	Each weekly session	Calculate score based on number of participants who attended at least 80% of the sessions/total number of participants	Formative: weekly feedback for CHE, students, and research team Summative: summarized by session, cohort, and overall
Recruitment	What planned and actual advertisement procedures were used to attract participants?	Program coordinator and staff	Document all recruitment activities	Daily during the 4-8 weeks of recruitment	Narrative description of procedures	Formative: Examined weekly during the 4-8 week recruitment for each of the four cohorts to prevent/solve problems Summative: summarized by session, cohort, and overall

Evaluation/Implementation Monitoring Logic Model

Table 9 outlines the logic model for the implementation/process evaluation for “Mindful Moms”. The research team will invest resources to recruit and train one Community Health Educator, Certified Yoga Instructor, and Program Coordinator for the program. They will be trained to deliver the educational materials for each session and disseminate information about mindfulness techniques, the science behind how mindfulness can reduce stress, and the application of mindfulness techniques for this specific participant population. Information will be delivered to participants during the educational portion of the 8 weekly in-person sessions.

Clients of Mom’s House who participate in the “Mindful Moms” program will be reached. Offering the program at Mom’s House will increase the likelihood of participation, as the clients are familiar with the setting and have built trusting relationships with the staff. Some participants may not have consistent, reliable access to the internet, which would limit participation if the program was delivered via the internet. Additionally, lack of child care is a cited barrier to participating in mindfulness programs for this population.[69] This may be an issue if sessions were completed remotely and is addressed through utilization of Mom’s House’s provision of free child care while mothers attend in-person sessions.

As a result, short-term changes in the predisposing factors knowledge about mindfulness behaviors, motivation and intention to practice mindfulness behaviors, and perceived benefits of mindfulness are expected to increase as a result of implementation. Medium-term changes expected are changes in the behavioral objective as a result of increases in the changes to the predisposing factors (short-term changes listed below in table 9). By increasing the mean mindfulness score as measured by the FFMQ[70] , via knowledge about mindfulness behaviors, motivation and intention to practice mindfulness behaviors, and perceived benefits of mindfulness, long-term changes are expected to occur. The expected long-term outcome is a significant decrease in self-reported stress as measured by the PSS-14[21] and DASS-14[22], as compared to baseline values, for low-income, single mothers in New Castle County, DE.

Perceived stress is expected to decrease as engagement in mindfulness behaviors increases for this population, as a result of the increase in the predisposing factors increases through the attendance of the educational component of the “Mindful Moms” program as delivered by the CHE.

Table 9. Logic Model

Inputs	**Outputs**		**Outcomes - Impact**		
	Activities	**Participation**	**Short**	**Medium**	**Long**
What We Invest	*What We Do*	*Who is Reached*	*Short-Term Changes Expected*	*Medium-Term Changes Expected*	*Long-Term Changes Expected*
Trained Community Health Educator, Certified Yoga Instructor, for the program components who will deliver the in-person education and facilitate discussions.	Provide in-person mindfulness education and formal and informal practice	Low-income, single mothers from Mom’s House participating in Mindful Moms	Immediate changes in PER factors Increased knowledge about mindfulness, motivation and intention to practice mindfulness, and perceived benefits of practicing mindfulness	By the completion of the program, the mean mindfulness scores using the FFMQ[70] will significantly increase from baseline to post-interventi on for at least 80% or more of the participants	By the end of year two, there will be a significant decrease in self-reported stress compared to baseline as measured by the PSS-14[21] and DASS-14[22] for low-income, single mothers

Impact and Outcome Evaluation

The “Mindful Moms” program looks to decrease stress levels in low-income, single mothers in New Castle County, Delaware through increasing mindfulness behaviors. Through partnering with the organization, Mom’s House, “Mindful Moms” will have direct access to the target population. The program will utilize weekly, 2-hour classes over the course of 8 weeks that will include an educational session, formal and informal practices, group discussions, weekly homework assignments, and a private Facebook group to encourage participants to start and continue practicing mindfulness-based stress reduction techniques to deal with stress.

Within the two year program, four cohorts of twelve women each will be recruited (N=48). No randomization will occur, as all participants will be encouraged to attend all sessions and use resources provided. For evaluation purposes, “Mindful Moms” will follow a nonexperimental design where participants’ results will be compared pre- and post-intervention (design notation: O_1 X O_2). Participants will be solely recruited from Mom’s House. The inclusion criteria for participation is as follows: must be 18 years or older, have one or more children, identify as a single-mother, and be a current resident of New Castle County, DE. Recruitment will occur 4-8 weeks before each of the four cohorts begin. Once participants are recruited, they will meet individually with the Program Coordinator and/or CHE, where they will address informed consent and once it is ensured each participant understands the intervention and what is expected, they will complete the informed consent documentation. Afterwards, the Program Coordinator and/or CHE will go over the program and the Facebook group.

Impact and outcome evaluation will happen mostly through an online survey that will be administered pre- and post-program completion by participants in every cohort. These surveys will be identical, with the exception of some additional questions regarding participant’s experience with the program instructors on the post-program survey. These surveys will address stress levels, mindful behaviors, social support, knowledge of mindfulness, perceived benefits of

mindfulness, and motivation to practice, and are described in more detail below. Other, non-survey evaluation measures will include observations and collection of goal setting sheets.

The surveys will be created in Qualtrics. Survey dissemination and data collection will be conducted by the Program Coordinator and/or CHE, and data analysis will be conducted by the Program Evaluator. The pre-surveys will be administered at the time of recruitment after participants have agreed to participate and have signed the necessary consent forms. Participants will be given access to one of the two program computers to complete the online assessments. The post-surveys will be administered immediately after the conclusion of each 8-week program and participants will have four weeks to complete the survey. Participants can choose to complete the post-survey using one of the program computers after the final session, or they can complete the survey on their own device with a link to the Qualtrics survey which will be emailed to all participants. Email reminders will be sent to participants who have yet to complete the post-survey by the two-week, post-program mark. The Program Evaluator will use SPSS to analyze data following each cohort and in total at the end of the second year to measure both impact and outcome evaluation.

Impact Evaluation

Impact evaluation will be conducted by the Program Evaluator in order to assess if the behavioral objective was met, which will also include measuring the learning and resource objectives. The behavioral objective of Mindful Mom's is "by the end of the program, the mean mindfulness scores will significantly increase from baseline to post-intervention for at least 80% or more of the participants" and will be measured on the pre- and post-surveys with questions from the 39-item Five Facet Mindfulness Questionnaire (FFMQ)[70]. It is expected that as scores on the FFMQ increase, stress scores for the outcome evaluation will decrease. The learning and resource objectives will also be used for impact evaluation and will be measured using the pre-post surveys, behavior observations by the CHE, and program checklists that are completed by the CHE. For the learning objectives, increases in knowledge, skills, perceived benefit,

motivation, intention, and social support are expected to result in increased scores on the FFMQ, and thus decreased stress scores. The Brief 2-Way Social Support scale will be used to measure social support, and questions regarding mindfulness knowledge, skills, perceived benefits, and motivation will be created by the research team. A full description of the evaluation design for the behavioral, learning, and resource objectives can be found in table 10.

Outcome Evaluation

The purpose of the outcome evaluation is to assess the long-term effects of the "Mindful Moms" program. Specifically, the outcome evaluation will assess if the health objective for the "Mindful Moms" program was met. The health objective for the program is that by the conclusion of the second year of the program, participants will report significantly lower stress scores compared to baseline. This objective will be assessed using two scales. The Perceived Stress Scale (PSS) is the primary measure that will be used to assess the health objective. It is a 14-item previously validated scale. The Depression, Anxiety, and Stress Scale (DASS) is a 42-item validated scale, but only 14 questions from the stress subscale will be used. If the program is successful in improving mindfulness and significantly improves stress across the population by the end of the program, then the program will have evidence to show that the program should continue at Mom's House and be implemented in other organizations that serve similar populations.

Table 10. Evaluation Design

Objectives	Data sources (who will be measured)	When will data be collected	Indicator (measure)
Program Outcome			
By the conclusion of the second year of the program, participants will report significantly lower stress scores compared to baseline.	Mindful Moms participants	Pre and post-program survey for each of the 4 cohorts	Perceived Stress Scale and Depression, Anxiety, and Stress Scale.

Behavioral Impact			
By the end of the program, the mean mindfulness scores will significantly increase from baseline to post-intervention for at least 80% or more of the participants.	Mindful Moms participants	Pre and post-program survey for each of the 4 cohorts	The Five Facet Mindfulness Questionnaire
Ecological & Educational/Impact			
By the end of the program, 70% of participants will report higher motivation to practice mindful activities compared to baseline.	Mindful Moms participants	Pre and post-program survey for each of the 4 cohorts	Questions about motivation to practice mindfulness that the researchers will create
By the end of the program, 100% of the participants will receive a goal setting worksheet regarding their mindfulness practice	CHE written confirmation that goal setting worksheets were given to all participants	At the end of the final session of each of the 4 cohorts	CHE will check off “hand out goal setting worksheet” on program checklist
By the end of the program, 80% of participants will have a plan for when and how they will practice mindfulness using the goal setting sheet	Mindful Moms participants	At the end of the final session of each of the 4 cohorts	CHE will make copies of each participant’s completed goal setting sheet; CHE will check off “hand out goal setting worksheet” on program checklist
By the end of the program, 70% of participants will be able to identify at least 3 benefits of mindfulness on stress reduction	Mindful Moms participants	Pre and post-program survey for each of the 4 cohorts	Questions about the benefits of mindfulness that the researchers will create
By the end of the program, 100% of participants will receive a handout describing the benefits of mindfulness	CHE written confirmation that handout was given to all participants	At the end of the final session of each of the 4 cohorts	Instructor will check off “hand out benefits worksheet” on program checklist

and various practices			
By the end of the program, 70% of participants will be able to identify at least 3 mindfulness practices for stress reduction	Mindful Moms participants	Pre and post-program survey for each of the 4 cohorts	Knowledge assessment on the types of mindfulness practices created by research team
By the end of the program, 100% of participants will have received the mindful guidebook	CHE written confirmation that guidebooks were given to all participants	At the end of the final session of each of the 4 cohorts	CHE will check off “hand out mindful guidebooks” on program checklist
By the end of the program, 80% of participants will be able to demonstrate at least 2 mindfulness practices	Mindful Moms participants	At the end of the final session of each of the 4 cohorts	Observation of 2 mindful practices by CHE
By the end of the program, 70% of participants will report an increase in social support received for practicing mindfulness	Mindful Moms participants	Pre and post-program survey for each of the 4 cohorts	Brief 2-Way Social Support Scale
By the end of the 8 week program, 100% of program participants will be invited to join a private Facebook group.	Program coordinator’s written confirmation that Facebook group invites were sent to all participants	At the end of the final session of each of the 4 cohorts	Program coordinator will check off “invited to Facebook group” on program checklist

Sustainability Plan

Sustainability refers to a community’s capacity to initiate, advance, and maintain effective strategies and services to promote ongoing improvements in the health and overall quality of life of individuals within the population.[96] Creation of a sustainable program begins from conception through engagement of the community and organizational leaders; buy-in and support of stakeholders; organizational-fit with the mission statement; continued funding; and

provision of on-going communication, skill development, and support.[96, 97] Without proper sustainability capacity, the program cannot endure long-term, and it's failure ultimately wastes resources, damages the trust of the community for future endeavours, and may limit the ability of the population to achieve their health goals.[97] Ensuring the "Mindful Moms" program will continue to support and improve the health of low-income, single mothers in the New Castle County area through Mom's House is a top priority. Keys to the sustainability of the "Mindful Moms" program are the identification of additional funding sources, promotion of necessary infrastructure to maintain programmatic function, and cultivating ongoing communication and support.[96]

Through the process, impact, and outcome evaluation measures, the research team will gauge the success of each of the Mindful Moms' program components. Assessment of the sustainability capacity of the "Mindful Moms" program will be completed by key staff and stakeholders, including leadership from Partnership for Healthy Communities and HEALTH for All, using the Program Sustainability Assessment Tool (PSAT).[98] Additionally, a subset of program participants from each of the four cohorts will be asked to participate in focus groups to discuss their perspectives of program components and provide feedback and suggestions. A coalition will be assembled from a subset of the stakeholders and key program staff who completed the PSAT, using findings from focus groups and the PSAT to guide in the creation of a detailed action plan and in the determination of which programmatic elements to maintain, eliminate, or adapt for future sustainability. Revaluation of the program will be undertaken annually by the coalition to assess implementation, allow for adjustments, and discuss how best to continue to promote program components of "Mindful Moms" after the initial two years.[98]

In preparation for the end of the initial two-year funding period, additional funding sources will be sought in order to meet resource and staffing needs to continue implementation of program components. The research team will ensure there is a protocol in place for the "Mindful Moms" program to be embedded within Mom's House, supported by community partner

HEALTH for All, part of the University of Delaware's Partnership for Healthy Communities. Fostering this partnership will allow for access to resources, administrative support, and student volunteers, as well as strengthen the connection between Mom's House, Partnership for Healthy Communities, and the University of Delaware, which may lead to future opportunities for growth and improvement.

Communication Plan

Results from the impact and outcome evaluations will be shared with key stakeholders, including all current staff of Mom's House and members of the University of Delaware's Partnership for Healthy Communities and HEALTH for All program. Key members of the "Mindful Moms" program team will develop a presentation summarizing the program and findings at the culmination of the two-year funding period, presented at an open-house celebration held at Mom's House. All stakeholders, community members, University of Delaware leaders, local Delaware government officials, and News Journal reporters will be invited to attend. An annual report will be created from this information to be shared with stakeholders and posted on the Partnership for Healthy Communities website. In addition, any significant findings will be presented in manuscripts published in relevant peer-reviewed journals, and data from this program will be presented at local and national conferences.

Future Use of Findings

Findings from the program can be used by researchers, program planners, social services and government agencies to guide the development of future programs that aim to improve the health of low-income, single mothers. Researchers will be able to analyze the impact of a mindfulness-based stress reduction program on stress levels within this population and the impact on overall health and quality of life. Findings can be used to promote the development of similar programs in organizations throughout the United States that support low-income women and their children.

Appendix A. Key Informant Interview Questions for Ms. Rodriguez

1. What is your job title and duties? How long have you been in this position?
2. What are the main objectives and mission of Mom's House?
3. What are the typical demographics of the population you serve? (i.e. age, race, gender, SES, marital status, number of children, etc.)
4. In your opinion, what are the top health issues that the clients of Mom's House experience?
5. How do these issues impact the quality of life of this population?
6. In your opinion, what behaviors contribute to the health issues the population experiences?
7. Does Mom's House currently have any programs or initiatives that address any of these health issues?
8. In your opinion, what do you think have been the keys to successful programs? Why do you feel that way?
9. In your opinion and experience, what would you say are the least effective strategies to improve the quality of life of this population?
10. In your opinion, what kinds of barriers/obstacles/challenges does this population experience in regards to improving health behaviors?
11. Is there anything else you believe we should know about the populations you serve or Mom's House in general?

Appendix B. Key Informant Interview Questions for Ms. Sowinski and Ms. Landgraf

1. Can you describe your previous involvement and experience with Mom's House?
2. In your opinion, what, if any, are the barriers to engaging with Mom's House?
3. In your opinion, what are the top health issues that the clients of Mom's House experience?
4. In your opinion, what are the most effective ways to engage with this community?
5. In your opinion, what barriers/obstacles/challenges does this population experience in regards to improving health behaviors?

Appendix C. Survey Questions for Mom's House Clients

1. What is your age?
    a. Younger than 18
    b. 18-25
    c. 26-35
    d. 36-45
    e. 46+
2. How do you identify your gender?
    a. Male
    b. Female
    c. non-binary/third gender
    d. Agender
    e. Trans female
    f. Trans male
    g. Prefer Not to Answer
3. Please specify one or more of the following that best describes your race/ethnicity
    a. African American
    b. Asian or Pacific Islander
    c. Caucasian/white (Non-Hispanic)
    d. Hispanic/Latino
    e. Native American/American Indian
    f. Multi-Racial/Ethnic
    g. Other, please specify
4. What is your current marital status?
    a. Single/Never Married
    b. Married
    c. Widowed
    d. Divorced
    e. Prefer Not to Answer
5. What is the highest degree or level of education you have completed?
    a. Some of high school
    b. Competed high school or GED
    c. Some of Associate's Degree
    d. Completed Associate's Degree
    e. Some of Bachelor's Degree
    f. Completed Bachelor's Degree
    g. Some of Master's Degree/Ph.D or higher
    h. Completed Master's Degree/Ph.D or higher
    i. Trade School
    j. Prefer Not to Answer
6. Including yourself, how many people live in your household?
    a. Just me
    b. 1-2
    c. 3-5
    d. 6+
7. How many children under the age of 18 live in your household?
    a. 0
    b. 1-2
    c. 3-5
    d. 6+

8. Which best represents your current occupational status?
    a. Part-time employee
    b. Full-time employee
    c. Student
    d. Employed and a student
    e. Unemployed
    f. None of the above
    g. Other
9. Do you have access to the internet/Wi-Fi?
    a. Yes
    b. No
    c. Sometimes
10. Do you have a disability or learning difficulty?
    a. Yes
    b. No
11. If yes to the previous question, please tick the relevant box(es)
    a. Wheelchair Use/Disability Affecting Mobility
    b. Deaf/hearing Impairment
    c. Blind/partially Sighted
    d. Mental Health Difficulty
    e. ‘Unseen’ Disability (ex. Asthma, diabetes, epilepsy)
    f. Disabled
    g. Personal Support Need
    h. Disability other than listed
12. How would you describe your physical health?
    a. Excellent
    b. Very Good
    c. Good
    d. Fair
    e. Poor
13. How would you describe your mental health?
    a. Excellent
    b. Very Good
    c. Good
    d. Fair
    e. Poor
14. In your opinion, which of the following is the most concerning health issue to you?
    a. Heart Disease (High Blood Pressure, Heart Attack, Heart Failure, Stroke)
    b. Cancer (Breast, Lung, Skin)
    c. Diabetes (Type 1, Type 2)
    d. Mental Health (Anxiety, Depression)
    e. Obesity (Overweight)
    f. Infectious Diseases (COVID-19, Flu/Cold, STDs/STIs)
    g. Other
15. Short Answer: What behaviors do you think contribute to the health problems from the previous question? (ex. Poor diet, food insecurity, COVID-19, access to healthcare)
16. Short Answer: In your opinion, what factors do you believe have the greatest impact on your ability to improve your health? (ex. Finances, transportation, education, social support, etc.)
17. How many days per week do you eat fruits and vegetables?
    a. 0

b. 1-2 days
c. 3-5 days
d. 6-7 days

18. How many days per week do you engage in physical activity? (ex. Walking, riding a bike, going to the gym, doing household chores, etc.)
    a. 0
    b. 1-2 days
    c. 3-5 days
    d. 6-7 days
19. How many days per week do you feel overwhelmed, anxious, or depressed?
    a. 0
    b. 1-2 days
    c. 3-5 days
    d. 6-7 days
20. What programs at Mom's House have you enjoyed the most?
    a. Community Wellness Health Fair
    b. Wellness Clinics
    c. Behavioral Health Screening & Consultation
    d. Mobile Health Program Small Group Series (Let's Talk About Gratitude, Let's Talk about Mindfulness & Managing Anxiety)
    e. Other
    f. I have not attended these programs

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