

Mindful Hearts: Mixed Methods Findings to Inform a Technology-Enhanced Culturally Tailored Stress Management Intervention for Immigrant Women

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Abstract

Background

Immigrant women experience disproportionate psychosocial stress driven by acculturation, socioeconomic hardship, discrimination, and transnational responsibilities. Despite evidence supporting culturally tailored stress-management interventions, limited formative research has examined program preferences across diverse immigrant communities.

Methods

Using a community-based participatory research (CBPR) approach, we conducted three language-concordant focus groups (Somali, Spanish, English; $n = 18$) and a mixed-methods survey ($n = 88$) with immigrant women in southeast Minnesota. Qualitative data were analyzed using constant comparative methods; quantitative data were summarized descriptively.

Results

Participants described intersecting stressors including caregiving burdens, financial insecurity, immigration-related fears, bicultural identity strain, and transnational obligations (e.g., “Every day you are being told of problems back at home”). Barriers to discussing stress included stigma, limited culturally concordant care, religious norms discouraging emotional disclosure, and structural constraints such as lack of insurance (e.g., “How are you gonna pay for a therapist if you don't have health insurance?”). Coping strategies varied culturally but consistently emphasized social support, spirituality, and practical stress-reduction techniques. Survey findings indicated strong preference for education on stress, stigma reduction, culturally and linguistically aligned support groups, and flexible delivery formats (in-person, hybrid).

Conclusions

Immigrant women experience multifaceted stress shaped by minority stress processes and structural inequities. Findings highlight the need for culturally responsive, community-informed stress-management interventions that integrate education, social support, and flexible delivery modalities. These results directly inform adaptation of a stress-management program for Somali, Spanish-, and English-speaking immigrant women.

1. Introduction

Immigrant women face disproportionate psychosocial stress driven by acculturation, discrimination, socioeconomic hardship, and gendered expectations. Acculturative stress, arising from navigating

language barriers, cultural discordance, and social isolation, contributes to elevated rates of depression, anxiety, and PTSD across immigrant communities (e.g., PTSD prevalence 35% among refugee women compared with 8% lifetime prevalence in the general U.S. women population) (1–4). Structural barriers including limited insurance, stigma, and healthcare discrimination further exacerbate mental health disparities (5–7).

These disparities reflect the cumulative impact of acculturative stress, family separation, racial discrimination, legal vulnerability, economic hardship, labor exploitation, gender-based violence, and postpartum mental health risk, compounded by structural barriers to care including limited insurance, language discordance, stigma, and healthcare discrimination (3, 8). Despite these challenges, protective factors such as cultural values, social support, and spirituality promote resilience (9, 10).

Stress is a central psychophysiological pathway linking mental and physical health, with chronic exposure contributing to multisystem dysregulation and cardiometabolic risk (11, 12). Evidence-based interventions such as mindfulness, mind-body practice, and stress-management programs show promise, yet culturally tailored approaches for immigrant women remain limited, particularly those integrating biological markers, technology-assisted delivery, and subgroup-specific adaptations. (13–16).

Guided by community partners within the Rochester Healthy Community Partnership (RHCP), stress was identified as a priority area for intervention. RHCP is a longstanding collaboration with Minnesota's immigrant communities that has centered its work on community-based participatory research (CBPR), which is a collaborative approach in which researchers and community members engage as equal partners throughout all phases of the research process, from identifying the issue to data collection, interpretation, and dissemination. Its central aim is to co-create knowledge with the community rather than about it, ensuring that the research is culturally relevant, grounded in lived experience, and leads to meaningful, actionable benefits for those involved.(17) This formative study aimed to characterize stress experiences among *Somali-, Spanish-, and English-speaking* immigrant women in southeast Minnesota, and to assess preferences for a culturally responsive stress-management program. Using focus groups and a mixed-methods survey, we examined stress perceptions, barriers to disclosure, coping practices, and delivery preferences to inform adaptation of a community-based intervention.

2. Methods

We conducted a formative, mixed-methods study using a CBPR approach. The Mayo Clinic Institutional Review Board approved this study.

2.1. Conceptual Framework. We used Minority Stress Theory (18) as a framework for exploration of distal stressors (e.g., discrimination, immigration-related fears) and proximal stress processes (e.g., internalized stigma), as well as coping and social support in immigrant women in southeast Minnesota. Minority Stress Theory was originally developed to explain mental health disparities experienced by lesbian, gay, bisexual, and transgender individuals; the theory has since been extended to research

involving racial and ethnic minority populations.(19) It posits that individuals with marginalized identities are subject to stigma, prejudice, and discrimination, all of which contribute to a chronically stressful social environment that can negatively impact mental health.

2.2. Focus Group Recruitment. During summer 2023, RHCP community partners recruited focus group participants using convenience sampling. Although appropriate for CBPR, this sampling strategy limits representativeness and generalizability. Eligibility criteria included Spanish, Somali, or English fluency, self-identification as a woman and an immigrant, 18 years of age or older, and willingness to share personal experiences about stress.

2.3. Focus Group Data Collection. Three language-concordant focus groups were conducted (n=18) during fall 2023. RHCP has extensive experience conducting community-based focus groups in multiple languages.(20-22) All moderators (EC, GPC, and HD) and note-takers (LSP and KA) were trained and matched by language. Sessions (35–68 minutes; average 52 minutes) were audio-recorded (Olympus digital voice recorders (DS-30) (OM Digital Solutions Corporation)) and professionally transcribed (Landmark Associates, Inc.); Spanish and Somali transcripts were translated. The semi-structured guide (see Appendix) explored stress experiences, barriers to disclosure, coping strategies, and intervention preferences. We held all focus groups at a convenient Mayo Clinic building. All participants gave oral informed consent before participating in the study. Participants received remuneration for their participation and in appreciation of their time.

The focus group questions aimed to explore women's experiences and preferences regarding stress and stress management within their communities. Participants were asked how women in their community talk about stress, what barriers exist to discussing stress, and how cultural beliefs shape these conversations. They were also invited to identify individuals who manage stress well and describe helpful cultural practices. The groups discussed what a stress management program should include, such as group support, awareness of stress symptoms, tracking stress levels, and tools like assertiveness, physical activity, sleep, nutrition, time management, meditation, and relaxation. Preferences for program delivery were explored, including whether it should be group-based or individual, in-person or technology-supported, and how frequently meetings should occur. Participants were asked about helpful technologies (e.g., texting, apps, websites, social media) and whether programs should be separated by language or age. Finally, focus group moderators showed participants wearable devices (ring and wristband sensors) and asked about which they preferred and their willingness to use them to monitor stress objectively.

2.4. Focus Group Data Analysis. Two analysts (AL and EC) independently applied constant comparative methods (23). This approach involves analyzing data to explore the full scope of how research questions are answered. Initially, AL reviewed the focus group transcripts. If a quote addressed one of the research questions, it was copied into a working document. Quotes that did not directly relate to the research questions were placed in a separate section. Once all relevant quotes were gathered, AL examined each research question to identify patterns, develop themes, and mapped to Minority Stress Theory as

appropriate. She then composed a summary of the themes, incorporating illustrative quotes. EC subsequently conducted a verification of the findings. Coding discrepancies were resolved through discussion. Saturation was not reached for several domains (e.g., program content, delivery format, cohort characteristics such as language, age, life stage, acculturation, technology use, and session frequency), and among Somali participants, additional gaps emerged regarding how women discuss stress and the cultural norms shaping views of stress, prompting additional investigator-developed survey data collection following consultation with community partner (Supplementary Material).

2.5. Survey Recruitment. During the Fall of 2024, RHCP community partners recruited eighty-eight immigrant women via convenience sampling. Eligibility criteria included Spanish, Somali, or English fluency, self-identification as a woman and an immigrant, 18 years of age or older, and willingness to share personal experiences about stress.

2.6. Survey Data Collection. The mixed methods survey was designed to capture women's perspectives on developing a culturally responsive stress-management program by assessing preferences related to program content, format, and logistics. It included questions on desired educational topics (e.g., stress, self-care, stigma, and self-worth), opportunities for social support and physical activity, parenting and childcare needs, and the importance of culturally and linguistically aligned programming. The survey also examined preferences for delivery modality (in-person, virtual, or hybrid), individual versus group formats, group composition (e.g., by language, age, or life stage), technology use and access, program frequency and duration, and optimal timing for implementation. Open-ended questions further explored how stress was discussed and understood within the Somali community, including cultural perspectives and barriers to discussing stress.

2.7. Survey Data Analysis. Quantitative survey responses were analyzed using descriptive statistics, reporting frequencies and percentages for categorical items. For "check-all-that-apply" items were treated as a binary indicator and summarized as the proportion endorsing that option overall and, when relevant, by language group. When group comparisons were conducted, chi-square or Fisher's exact tests were used for categorical variables, and t tests or ANOVA were used for continuous variables (or Wilcoxon rank-sum and Kruskal–Wallis tests for non-normally distributed data). Open-ended responses were analyzed using qualitative content analysis to identify recurring themes, with representative quotations used to illustrate key concepts. Quantitative analyses were conducted in Stata 19 SE.

3. Results

Focus Groups. Three focus groups were conducted with a total of 18 female participants: 7 Somali-speaking, 6 English-speaking, and 5 Spanish-speaking. The average age was 45 years (SD 12.5). Among them, 33% identified as Hispanic/Latino, 50% as Somali, and 17% as other. A third of participants held a high school diploma, and 8 (44%) worked full time. Most participants (89%) had medical insurance and were first-generation/foreign-born immigrants (93%), with an average residency of 21 years (SD 10.1). Regarding language, 39% spoke English at home, and 50% rated their English-speaking proficiency as

“very well.” In terms of technology access, 56% had internet at home, and Facebook was the preferred social media platform. Full details are available in Table 1. The qualitative analysis revealed themes related to distinct stress experiences and coping strategies among Spanish-, English-, and Somali-speaking women, with notable commonalities and culturally specific barriers.

Table 1
Demographics (combined)

DEMOGRAPHICS					
	All (N = 106) N (%)	English (N = 48) N (%)	Spanish (N = 39) N (%)	Somali (N = 19) N (%)	P value
Age, (SD)	47 (12.8)	43 (12.2)	50 (12.5)	51 (13.1)	0.017*
Ethnicity					
Hispanic/Latino	53 (50)	15 (31)	38 (97)	0	< 0.0001*
Somali	49 (46)	30 (63)	0	19 (100)	
Other	4 (4)	3 (6)	1 (3)	0	
Country Born					
Born in the US	6 (6)	4 (8)	1 (3)	1 (5)	0.190
Born Outside the US	91 (86)	41 (85)	36 (92)	14 (74)	
Missing Data/Responses	9 (8)	3 (6)	2 (5)	4 (21)	
Years in the US, (SD)	18 (10.3)	21 (7.7)	16 (12.6)	19 (6.1)	0.1466
Language Spoken at Home					
English	23 (22)	11 (23)	10 (26)	2 (11)	< 0.0001*
Somali	40 (38)	23 (48)	0	17 (89)	
Spanish	40 (38)	11 (23)	29 (74)	0	
Other	3 (3)	3 (6)	0	0	
English Proficiency (self-report)					
Not at all	23 (22)	6 (13)	11 (28)	6 (32)	0.0206*
Not very well	27 (25)	10 (21)	12 (31)	5 (26)	
Well	24 (23)	10 (21)	10 (26)	4 (21)	
Very well	31 (29)	22 (46)	6 (15)	3 (16)	
Missing Data/Responses	1 (1)	0	0	1 (5)	

3.1 Emergent Themes (Summary Table 2)

Theme	Spanish Group	English Group	Somali Group
Main Stressors	Family responsibilities, work, supporting aging parents, financial insecurity, immigrant pressures	Work overload, financial instability, undocumented status, living between cultures	Substance abuse, suicide among youth, supporting family abroad, interpreting for parents
Barriers to Help	Stigma, health literacy, cost, language, confusion about medication, cultural norms	Access to care, gender roles, religion, stigma, generational differences	Stigma, lack of social support, distressing media reports, cultural expectations
Coping Strategies	Therapy, music, yoga, hobbies, support groups, sharing with other Hispanics, WhatsApp for support	Exercise, prayer, talking to family/friends, self-advocacy, learning from experience, support groups, tech options	Reading the Koran, praying, group discussions, seeking advice, in-person support groups, WhatsApp, apps
Program Recommendations	Language-congruent programming, groups with familiar peers, train-the-trainers, education on stress & stigma	Education (nutrition, self-worth, stress), support groups, incentives for mothers, tech tailored by generation	Education on stress & stigma, support groups, space for exercise, in-person focus, tech as supplement
Technology Preferences	WhatsApp	WhatsApp, Instagram, Facebook, Google, Zoom	WhatsApp, apps
Representative Quote	"How are you gonna pay for a therapist if you don't have health insurance? Yikes. That's out of the question."	"Can I drive to get X from the store without getting pulled over? What will happen if my kids grow up here, and I have to go back to Mexico?"	"Every day you are being told of problems back at home."

Table 2
Summary
of
Themes

Understanding Stress Through Shared Experiences

Participants across all language groups described significant family-related stressors, including the burden of supporting aging parents, navigating divorce, coping with the death of loved ones, and the disproportionate caregiving responsibilities placed on mothers. Immigrant-specific stressors were also prominent, such as serving as interpreters for family members, managing financial obligations to support relatives abroad during celebrations or crises, and the emotional toll of living between cultures, *"also, when you live between two cultures, and that's kind of hard too. It's very hard."* Spanish-speaking participants described stress as a pervasive aspect of daily life, often rooted in family responsibilities, work demands, and the unique pressures of supporting aging parents. Financial insecurity and the

challenge of accessing mental health care, especially for those without insurance, were prominent barriers, as one participant noted, *"How are you gonna pay for a therapist if you don't have health insurance? Yikes. That's out of the question."*

English-speaking participants described stressors related to undocumented immigration status and the complexities of bicultural identity, whereas *Somali-speaking* participants reported distress related to media coverage of violence affecting Muslims and community concerns, including youth substance use and suicide; *"if you are told that a Somali has no stress, you are being lied to because—even those who are at home that's with their family have stress...Every day you are being told of problems back at home,"* reflecting the emotional toll of transnational responsibilities. Work-related stress emerged primarily in the *English- and Spanish-speaking* groups. Across groups, gender roles and religious expectations often discouraged open discussion of stress, and mental health stigma—particularly among older women—remaining a substantial barrier. *Somali-speaking* participants additionally emphasized the ongoing emotional burden of supporting family in their home country, and the stress of interpreting for parents while navigating cultural expectations; *"...you have to interpret for your parents. That's a lot of stress for a young child... A lot of responsibilities. You have to take your mom to the store to do this. You have to as an immigrant."*

Barriers to Mental Health Disclosure

Participants identified a range of structural and societal barriers to discussing stress, including limited access to cultural and linguistically appropriate mental health care, high service costs, and persistent stigma surrounding psychiatric treatment. *Spanish-speaking* women emphasized low health literacy and cultural norms that discourage open conversations about stress. Some expressed confusion about psychiatric medications and reluctance to seek help, noting, *"...they're sending me medication. How bad am I?" You start taking it, and you don't know."* *English-speaking* participants described stress as a personal rather than cultural matter and cited barriers to self-care such as limited time for exercise and financial instability. They also highlighted the fear and uncertainty faced by undocumented immigrants, asking, *"Can I drive to get X from the store without getting pulled over? What will happen if my kids grow up here, and I have to go back to Mexico?"* *Somali-speaking* women reported stigma, lack of social support, and distressing media coverage of violence against Muslims as key barriers to discussing stress, *"you saw what happened the other day in Libya and Morocco which was very stressful. If you turn on the news what you see is enough to get you stressed."*

Gender and religion were frequently mentioned across groups as factors that discourage acknowledgment of psychological distress, with women expected to manage household responsibilities without complaint and religious beliefs sometimes discouraging emotional disclosure; *"Also, I think being a woman of faith and growing up in the Catholic church, I learned that they don't talk about stress because you have God. Therefore, mental health isn't a thing."* Participants also described how generational and intercultural gaps hinder open dialogue, noting that older immigrants may struggle to relate to younger generations, and long-term residents may still feel disconnected from U.S.-born peers, especially in

communities where emotional restraint is culturally valued. Collectively, these insights reveal the complex interplay of psychosocial, cultural, and structural factors that shape how stress is experienced and expressed across diverse immigrant communities.

Community Perspectives on Stress Reduction and Resilience

Participants across all three focus groups described a range of personal and social strategies for managing stress. Common coping mechanisms included exercising, spending time in nature, praying or seeking spiritual support, and talking with family and friends (Fig. 1). *Spanish-speaking* participants emphasized therapy, particularly with culturally compatible providers, as well as music, yoga, breathing exercises, hobbies like painting or cooking, and support groups. *English-speaking* participants highlighted self-advocacy, education about stress and mental health, and practical strategies such as exercise, prayer, and learning from past experiences. They also shared approaches like gaining independence through driving, working on school tasks, and seeking community through religious organizations. *Somali-speaking* participants focused on spirituality, including reading the Koran and praying, and valued group discussions and consulting with other women or a doctor. Across all groups, the importance of social support was consistently emphasized, particularly the value of sharing problems with peers within cultural or faith communities; *“Actually, most of the time, anxiety is something that you can self-treat if you regularly pray, read the Koran and pray to God. The anxiety will reduce and won't bother you as much as before.”*

Community Perspectives on Program Structure and Delivery

Participants across *English-, Somali-, and Spanish-speaking* focus groups offered aligned yet culturally nuanced recommendations for a women's stress management program. All groups emphasized the importance of education, particularly around understanding stress and reducing mental health stigma, and supported flexible delivery formats, including in-person, technology-assisted, and hybrid options. Support groups were recommended, along with stress coping strategies such as breathing techniques and culturally relevant activities. Across all groups, participants agreed that effective stress management programs should prioritize education about stress and stigma, offer cultural and linguistically tailored support groups, and provide accessible coping strategies, *“stress can come in many forms. Women who are mothers have a specific type of stress. Other women of a younger age experience another form of stress. If a common forum is organized for each group and people come together, there things can be discussed.”* The need for trust, social support, and practical resources, such as transportation and childcare, was consistently emphasized. Representative quotes from each group illustrate the depth and diversity of experiences, underscoring the importance of culturally responsive interventions (Table 3).

Table 3
Participants' Quotes

ENGLISH

- What I want to say is that when we are at work, there is stress from work. That is different from stress that we go through in life. At home or in the community.
- One stress that I personally experienced as a child of immigrants and an immigrant myself, is being good enough because my parents gave so much to get me here. I had to really try in school. Then the problem is that then you're left alone to do your education.
- Because a lot of immigrants from Mexico came here illegally, and the truth is that they're under a lot of stress from, "Can I drive to get X from the store without getting pulled over? What will happen if my kids grow up here, and I have to go back to Mexico?"
- For the woman that I know, it's hard for them. First, they don't—let's say they don't work. Housewife and only the husband work. The children, and they don't speak the language. A lot of time, if they're going to participate in anything outside in the family, then they feel like—they bring something—burden for the children and the husband... For example, let's say they are going to see a psychiatrist, you're gonna have to be routine coming, right? Then when they come, and they say, "No. I'm fine. I'm okay," because they don't want to bother the children to bring them, to drive them, take them away from the time from the family. Yeah. They'll say, "I'm okay."
- I know having a therapist that is in your own Spanish is very difficult to find.
- Everybody, we are all different. We handle things differently. The way she explained her own, what breaks them down—I mean, what didn't break her down might break someone else down - because of the way she handled things. There are people that when they are stressed, they can't think of anything. They are burdened down. They can't focus on anything.
- Now, my generation, so the kids of immigrants or the immigrant kids that grew up here, because of the culture surrounding us, in school, they talk a little bit about mental health and that it's okay to not be okay. Having education that there is no stigma, and I —unfortunately, I think for my Hispanic community, the older generation, they shun away from stigma from mental health, which causes a lot of issues.
- For me, where I come from, people don't really share that. The woman that I know, close friend, I said, "Just, it's okay." If you talk about [being] depressed, people always think you are crazy and mental.
- ...but also growing up in this country, stress is easy for me to talk about. It's not so easy to talk to my parents about it because also the whole concept that...like I grew up and I didn't have anything to eat. I'm like how can you talk to your parents with that if they think that what you're dealing with—say, like, "Oh. I wasn't able to go to high school—to a high school event. They think that's silly. You shouldn't be stressed about that because they grew up without food, so you don't really wanna tell your parents what's wrong.
- This is a part where the empowerment comes when someone is independently able to drive themselves...That is a one piece, you have two legs, but in American you need a car. Without that, to get point A to point B, it's hard. Those women always would be in a disadvantage point. Because if you're relying on a family, today they can say yes, tomorrow they'll say no.
- One thing I would do is to go to church and pray.
- If you don't know how to identify it, then you don't know how to help yourself. I go back to being educated.

- Like you said, eat good. Women who eat good health. You have the routine. Myself, I know when I do routine is exciting: I'm in a good mood. Little thing or even problem, you don't see is a problem because you've—it has—your body feels good.
- Also, faith that you believe. In your life, you always do good things in your life. Anything bad thing happen to you; you will survive through it. That's how I believe it myself.
- There has to be a lot more education on it of what does it mean to be stressed? What does it look like to be stressed? It's okay to talk about it. Also, I think, as a Christian, saying like, "It's okay to have mental health problems even if you believe in God because we live in an imperfect world."
- Then for the support group to have the self-care because we never take care of ourselves. In our culture, it's like when you say you're gonna do something like that, it's like you're selfish.
- You're wasting your time. You're wasting money.
- You could do a class with painting or crocheting.
- We do this sewing class at our organization for mature women. When women go for sewing at that time, it's like your mind is off everything outside. When you enter the door, you're just thinking about the machine, "How am I sewing this stuff?" It helps them a lot. When they leave the room, they're like, "I feel good because I only had to focus on what I'm doing at that time."
- I think one are taught to learn to speak up. Because not everybody is capable of saying something— - and ask for help. Either at work or with the relationship with somebody to say, "Okay. I am in this situation. Please understand me or help me or something." That it's important to speak.
- One of the reasons, I think, women won't even come to it is 'cause of kids. What if you offered programs, special curricula for the kids too, so that the mom would feel that the kids are also growing?

SPANISH

- We all have stressors—I lost a son, and I've been divorced twice.
- I hear about it at work. "I'm stressed because I have a lot of work."
- I went to the clinic to get therapy because they give free therapy, and, yes, they give you medication right away. And being ignorant, I took it, and I started feeling better, and I figured I would stop taking it. It takes five minutes, and the only thing they tell you is, "Here's your medicine." I don't think that it's only because we're Hispanic. I think this is also in the United States. You say, "They're sending me medication. How bad am I?" You start taking it, and you don't know.
- I've tried different things all the time. For example, if the problem in my marriage was religious, I went to talk to a priest, and he was an American. I think that sometimes there's the language barrier. At that moment, I thought, "I'm never coming back because this man was never married, and he doesn't know what he is talking about."
- "Why would I talk about what stresses me? They're probably not understanding." I deal with it in my own way.
- I don't have time for anything. I'm always running like crazy.
- Yes, and in our culture and our generation, the matter of going to a psychologist or a psychiatrist has a very negative connotation.

- What I've been able to observe is that people from this part of the country will not express personal opinions. For example, I've been here for a long time, and I still express stressors differently from my colleagues. There are emotional planes. They think that not showing emotion shows strength. Culturally, stress is a very complicated topic because of the diversity of people, including how we manage or express stress.
- I've had American friends all my life—I don't know why. I know they go through difficult times. They're wonderful. They bring me food when I'm going through a difficult time. Or, "We are going out. How are you?" However, I don't feel I can trust them the way I trust friends from my own country....My friends, here, when you start talking about your things, and you're going to start telling them how you feel, it turns awkward. The situation turns weird.
- In the end, I go with my beliefs, and I say, "Dear God, before going to sleep, help me. I have to continue onward. You sent this, and I don't know why." You start getting that same energy.
- As time goes by, it starts healing and you start calming down from everything that you're going through. Sometimes we don't see it that way. We want to heal at that moment, but it takes a while.
- It's necessary to have support groups for the community. A person from <Name> is now doing it in Spanish. They have support groups for Americans. When I had my problems, I wanted to participate in a support group. I even told them that I would be willing to lead a support group. It's necessary sometimes to talk and have friends.
- I would like for you to teach what stress is, and that it can be expressed.
- For example, if you can't sleep, they can give you techniques. If someone learned the method, they could share it with someone else in the group.
- That type of program has to be almost multidisciplinary. Most of Spanish-speaking countries are Catholic—I was talking about faith in God, and such. Our Catholic religion also includes on way or another, women's roles in the sense that we have to be self-sacrificing, or submissive, or suffer. Unfortunately, religion doesn't help in that sense.
- Think about what they did with the one about health. Hispanic leaders could get together to be trained. We can train trainers, and have our groups, and you can train us. That would be perfect because you come and get together with people who know you and who are willing to talk because they feel comfortable with you. Like the way you did it with the mental health program. That would be perfect.
- When I came here, I tried to get therapy with someone that was Hispanic. I said, "The American therapist didn't work." I think that language is essential. We can't mix. I am not a racist, but I think that language is essential.
- I think it would be good to form groups with people that know each other so they can feel more comfortable speaking. Not necessarily because they will also get to know each other.

SOMALI

- You have seen young kids doing drugs. There is a lot of stress. How many people are committing suicide? Young kids have witnessed this.
- Actually, there are people who go for a walk when they become anxious. Walking helps get rid of the anxiety. They say, "I'm going to the gym or I'm going outside to get some air to reduce my stress." For example, when I get angry and feel stressed, if I go out I tend to forget about it.
- When women come together in a place; they give each other confidence—they can talk and share a lot of things.

- They display a lot of confidence. They talk. They discuss their affairs.
- Yes. They can talk with each other.
- ...for example if you are facing a problem at home or one of your kids has issues at school you say, " Sister, my boy or girl is worrying me. What should I do? What is the solution?" Maybe that person will give you a helpful suggestion.
- There are people who think that stress is something else. Stress is something normal. If you talk and share with others what you are going through and have fun, there is no problem.
- Stress can come in many forms. Women who are mothers have a specific type of stress. Other women of a younger age experience another form of stress. If a common forum is organized for each group and people come together, there things can be discussed.
- They can assist by establishing a place where women can get fit and also somewhere to swim. Usually, what helps with stress is going for a swim, going to the gym. Especially, sitting at the sauna also helps. These types of facilities are limited in our city. The ones that are available have men and women mixing.

3.2 Survey Findings. Total of 88 female participants: 12 Somali-speaking, 42 English-speaking, and 34 Spanish-speaking. The average age was 47 years (SD = 13). Among them, 53% identified as Hispanic/Latino, 45% as Somali, and 1% as other. 88% were first-generation/foreign-born immigrants. Regarding language, 18% spoke English at home, and 25% rated their English-speaking proficiency as "very well." Full details are available in Table 1. The survey identified education as the most frequently selected topic, with eating habits and stress management emerging as the top priorities within that category. All three groups, *English, Spanish, and Somali-speaking* women expressed interest in both group and individual formats, with flexibility in delivery methods, favoring in-person, technology-based, or hybrid options. Additional highly rated areas included the creation of support networks, promotion of physical activity, and training community members to assist others in managing stress. Most respondents preferred in-person sessions, followed by a hybrid format combining in-person and virtual components. Most participants favored a program structure that included both individual and group sessions, while only a small proportion (8%) preferred individual sessions exclusively.

Participants generally preferred group-based programming organized by language and, to a lesser extent, age, with SMS text messaging and zoom/virtual platforms cited as favored modalities. Most reported internet access, primarily via smartphone (73%). Preferences for duration of program delivery varied: 52% favored monthly sessions, 47% indicated interest in a six-month program with a later recap session, and 43% identified summer as the most favorable time to initiate the program. *Somali-speaking* participants emphasized the importance of women-only exercise spaces and preferred in-person gatherings, with WhatsApp suggested as a supplemental communication tool; they favored weekly or biweekly sessions scheduled around Koranic school and discussed whether to separate mothers and daughters or mix age groups. *Spanish-speaking* participants strongly preferred language-congruent programming and forming groups with familiar peers, supported a train-the-trainer model, and recommended WhatsApp to sustain support networks. They endorsed both in-person and virtual

delivery, preferred meetings once or twice monthly, and supported mixed-age groups starting at ages 18–21years. *English-speaking* participants highlighted nutrition, self-worth, and the need for parallel programming for children to facilitate mothers’ participation. They suggested monthly meetings and expressed mixed views on grouping by culture or age. Preferences for group structure and communication platforms varied by generation, with Instagram favored by younger women and Facebook by older adults. Full survey details are provided in Table 4.

Table 4
Survey Results

INTERVENTION SURVEY			
	English (N = 42)	Spanish (N = 34)	Somali (N = 12)
	N (%)	N (%)	N (%)
1. What do you think a program to help women manage stress should include?			
Education	38 (91)	33 (97)	8 (67)
Education – Eating Habits	25 (60)	11 (32)	5 (42)
Education – Self-worth	13 (31)	17 (50)	5 (42)
Education – Stress Definition	8 (19)	9 (26)	4 (33)
Education – Stigma	9 (21)	5 (15)	4 (33)
Education – Stress Management	13 (31)	24 (71)	4 (33)
Education – Self-care	18 (43)	9 (26)	2 (17)
Education – Hobbies/Skills	10 (24)	7 (21)	0
Education – Communication	8 (19)	11 (32)	0
Space for support networks/groups	24 (57)	17 (50)	6 (50)
Space for women to exercise	23 (55)	13 (38)	9 (75)
Stress management - teaching	22 (52)	19 (56)	7 (58)
Cultural Appropriate Language	13 (31)	14 (41)	4 (33)
Groups who know each other	11 (26)	5 (15)	5 (42)
Parenting and childcare	17 (41)	12 (35)	3 (25)
2. How would you like to meet?			
In Person	19 (45)	17 (50)	8 (67)
Virtual	3 (7)	2 (6)	6 (50)
Both	21 (50)	15 (44)	5 (42)
3. How should the program be offered?			
Individually	3 (7)	2 (6)	2 (17)
Group	18 (43)	8 (24)	6 (50)
Both	22 (52)	24 (71)	3 (25)
4. Separate groups based (check all that apply)			

INTERVENTION SURVEY			
	English (N = 42) N (%)	Spanish (N = 34) N (%)	Somali (N = 12) N (%)
Language	26 (62)	27 (79)	5 (42)
Age	24 (57)	19 (56)	9 (75)
Life stage	19 (45)	18 (53)	8 (67)
Acculturation	12 (29)	14 (41)	3 (25)
5. What types of technology would be helpful to get support and learn from others?			
Texting (e.g., WhatsApp)	28 (67)	27 (79)	11 (92)
Instagram	5 (12)	6 (18)	0
Facebook	9 (21)	4 (12)	1 (8)
Email	15 (36)	15 (44)	1 (8)
Zoom/virtual meetings	17 (40)	23 (68)	1 (8)
Not interested in using technology	1 (2)	1 (3)	0
6. What technology do you have access to regularly (at least once per month)?			
High-speed internet at home	20 (48)	18 (53)	8 (67)
Internet through cellular service	21 (50)	26 (76)	2 (17)
Laptop computer	22 (52)	9 (26)	3 (25)
Desktop computer	8 (19)	9 (26)	1 (8)
Tablet (iPad or other)	4 (10)	8 (24)	2 (17)
Smartphone	30 (71)	29 (85)	5 (42)
7. How often should the program meet?			
Weekly	0	10 (29)	2 (17)
Twice a month	16 (38)	14 (41)	1 (8)
Monthly	27 (64)	10 (29)	9 (75)
8. How long should the program last?			
3 months	8 (19)	4 (12)	4 (33)
3 months + Booster Session	10 (24)	8 (24)	1 (8)
6 months	2 (5)	7 (21)	1 (8)

INTERVENTION SURVEY			
	English (N = 42) N (%)	Spanish (N = 34) N (%)	Somali (N = 12) N (%)
6 months + Booster Session	21 (50)	16 (47)	4 (33)
9. What would be the best time of the year to start this program?			
Winter	11 (26)	14 (41)	1 (8)
Spring	11 (26)	10 (29)	4 (33)
Summer	20 (48)	11 (32)	7 (58)
Fall	13 (31)	7 (21)	3 (25)

4. Discussion

This study provides formative, community-driven insights into stress experiences and intervention preferences among *Somali*, *Spanish*, and *English-speaking* immigrant women. Findings demonstrate that stress is shaped by intersecting minority stress processes, including discrimination, immigration-related fears, socioeconomic hardship, and cultural expectations. These stressors align with Minority Stress Theory's distal and proximal constructs and highlight the cumulative burden experienced by immigrant women.

Participants across all language groups identified family-related stressors, including caregiving responsibilities, bereavement, and transnational obligations, as central to their lived experiences. *Somali-speaking* women emphasized the emotional toll of supporting family abroad and concerns about youth substance use and suicide, while *Spanish-speaking* participants highlighted financial insecurity and limited access to mental health care. *English-speaking* women uniquely described stressors related to undocumented status and bicultural identity. These findings are consistent with prior research documenting the multifaceted stressors faced by immigrant communities, including the challenges of navigating dual cultural identities, balancing responsibilities to family locally and abroad, and coping with the added strain of documentation-related insecurity, a well-established source of chronic stress among immigrants.(19)

Somali and *Spanish-speaking* participants described generational and religious influences that discouraged emotional disclosure, while *English-speaking* women emphasized the personal nature of stress and the impact of legal precarity. Barriers to discussing stress, psychosocial challenges, and accessing mental health care were pervasive across groups. Cultural stigma surrounding mental health, limited health literacy, language barriers, and structural constraints such as lack of insurance and high service costs were frequently cited. These findings underscore the applicability of Minority Stress Theory, which posits that individuals with marginalized identities endure chronic stress stemming from

stigma, discrimination, and social exclusion.(24, 25) Limited access to culturally attuned mental health services further exacerbates these stressors, reinforcing systemic barriers to care.(26, 27)

Coping strategies varied culturally but consistently emphasized social support and spirituality, underscoring the importance of integrating culturally grounded practices into intervention design. *Somali-speaking* women emphasized spirituality and group consultation, *Spanish-speaking* participants valued therapy, music, and creative outlets, and *English-speaking* women described self-advocacy and community engagement. Across all groups, social support emerged as a critical protective factor, consistent with prior studies highlighting the buffering effects of peer networks, cultural values, and spiritual resources.(28–30)

Preferences for a stress-management program were highly consistent across groups: education on stress and stigma, culturally and linguistically tailored support groups, flexible delivery formats, and practical coping tools. These findings align with prior research on culturally adapted interventions for Latino and Somali communities and underscore persistent gaps, particularly for Somali populations. Among Hispanic populations, available studies suggest that successful programs incorporate Spanish-language delivery by culturally concordant facilitators, integration of core Latino cultural values (e.g., familism), community-based implementation, and explicit attention to immigration-related stressors.(15, 31) Fewer stress-management interventions have been developed and evaluated for Somali communities; however, identified factors contributing to success include Somali-language delivery by bilingual and bicultural providers, holistic mind–body–spirit frameworks, integration of Islamic spiritual practices, community-based group modalities, and explicit attention to war-related trauma and acculturation stress.(16, 32) Despite these advances, substantial gaps remain. In particular, the incorporation of biological stress markers is extremely limited, and attention to cardiometabolic risk is notably absent, underscoring the need for greater focus on the intersection of trauma, chronic stress, and cardiovascular disease.

These findings emphasize that a one-size, fits-all approach is insufficient for addressing stress among immigrant women and highlight the need for interventions that are linguistically and culturally responsive, community-informed, and attentive to structural barriers to care. The use of CBPR was instrumental in centering the voices of immigrant women, engaging them as co-creators in the research process, and ensuring that the proposed intervention reflects their lived experiences, priorities, and contextual realities. This study contributes to the growing evidence base for culturally adapted mental health interventions by emphasizing the integration of education, emotional support, mind-body strategies, and cultural sensitivity. Collectively, these findings lay the foundation for a scalable, culturally responsive stress management program tailored to communities with limited access to mental health care. Future research should focus on implementing and rigorously evaluating such interventions across diverse settings, with particular attention to scalability, technology integration, biological markers, cardiovascular outcomes, and the promotion of mental health equity among immigrant women.

This study has several limitations that should be considered when interpreting the findings. First, the use of convenience sampling may have introduced selection bias, limiting the generalizability of results beyond the specific communities engaged through RHCP. Participants were recruited through existing community networks, which may have excluded more isolated or less-connected individuals, particularly those with limited English proficiency or undocumented status. Second, while the focus groups were conducted in Somali, Spanish, and English to ensure linguistic concordance, translation and transcription processes may have led to loss of nuance or cultural meaning. Although professional translation services were used, subtle expressions and culturally embedded concepts may not have been fully captured in the transcripts. This limitation persisted despite review and interpretive input from native-speaking community partners, consistent with the CBPR model. Third, the relatively small sample size of the focus groups ($n = 18$) and limited number of focus groups (one per language group) may have constrained the diversity of perspectives, particularly across age, immigration status, and socioeconomic backgrounds. Data saturation was not achieved, necessitating a qualitative–quantitative survey to supplement initial findings, and the absence of survey validation coupled with reliance on descriptive statistics represents additional limitations. Fourth, the discussion of technology-assisted interventions, including wearable stress monitoring devices, may have been influenced by participants' varying levels of digital literacy and access. Preferences expressed during focus groups may not reflect broader community attitudes, especially among older adults or those with limited internet access. The study's cross-sectional design captures a snapshot of stress experiences and preferences but does not account for changes over time or the impact of evolving sociopolitical contexts, such as immigration policy shifts or public health crises.

Despite these limitations, the study offers several notable strengths. Foremost, it employed a CBPR approach, ensuring that immigrant women's voices were central to the research process. This methodology fostered trust, cultural relevance, and co-ownership of findings, enhancing the validity and applicability of the results. The use of language-concordant, trained focus groups moderators allowed for rich, contextually grounded data collection. The inclusion of three distinct language groups, *Somali, Spanish, and English*, enabled comparative analysis across diverse immigrant experiences, highlighting both shared and unique stressors and coping strategies. Additionally, the integration of Minority Stress Theory provided a robust conceptual framework for interpreting the psychosocial dynamics affecting immigrant women. The study's emphasis on structural, cultural, and gender-specific stressors contributes to a more nuanced understanding of mental health disparities in immigrant populations. The findings directly informed the design of a culturally responsive, scalable stress management intervention tailored to community-identified needs which will be piloted for feasibility as the next step. By incorporating end user feedback on program content, delivery format, and technology preferences, the study lays a foundation for future implementation and evaluation of evidence-based mental health support for immigrant women from the studied communities.

5. Conclusions

This study provides critical insights into the lived experiences of stress and the culturally specific preferences for stress management among immigrant women from Somali-, Spanish-, and English-speaking communities in southeast Minnesota. Through a CBPR approach and the application of Minority Stress Theory, we identified a complex interplay of psychosocial, cultural, and structural factors that shape how stress is experienced, expressed, and managed across diverse immigrant populations.

Declarations

Ethical Publication Statement: This study was conducted in accordance with the ethical standards outlined in the Declaration of Helsinki, the International Committee of Medical Journal Editors (ICMJE) guidelines, and all applicable federal and institutional regulations. The protocol was reviewed and approved by the Mayo Clinic's Institutional Review Board (IRB #23-003670). All participants provided oral informed consent. No part of the research violated patient privacy or confidentiality, and data were de-identified before analysis.

Consent for publication: Not applicable. This manuscript does not contain any individual person's data in any form (including images, videos, or clinical details) that require consent for publication.

Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests: The authors declare that they have no competing interests.

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Author Contributions: L.S. conceived and designed the study, collected the data, performed the statistical analyses, and drafted the manuscript. A.M.L and E.C. conducted the qualitative analyses. C.A.B., M.L.W., I.G.S., and C.A.P. critically revised the manuscript for important intellectual content. Community partners S.I., H.D., K.A., L.M., M.G., G.T.H., and G.P.C. reviewed the manuscript. All authors approved the final version and agreed to be accountable for all aspects of the work.

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Figures

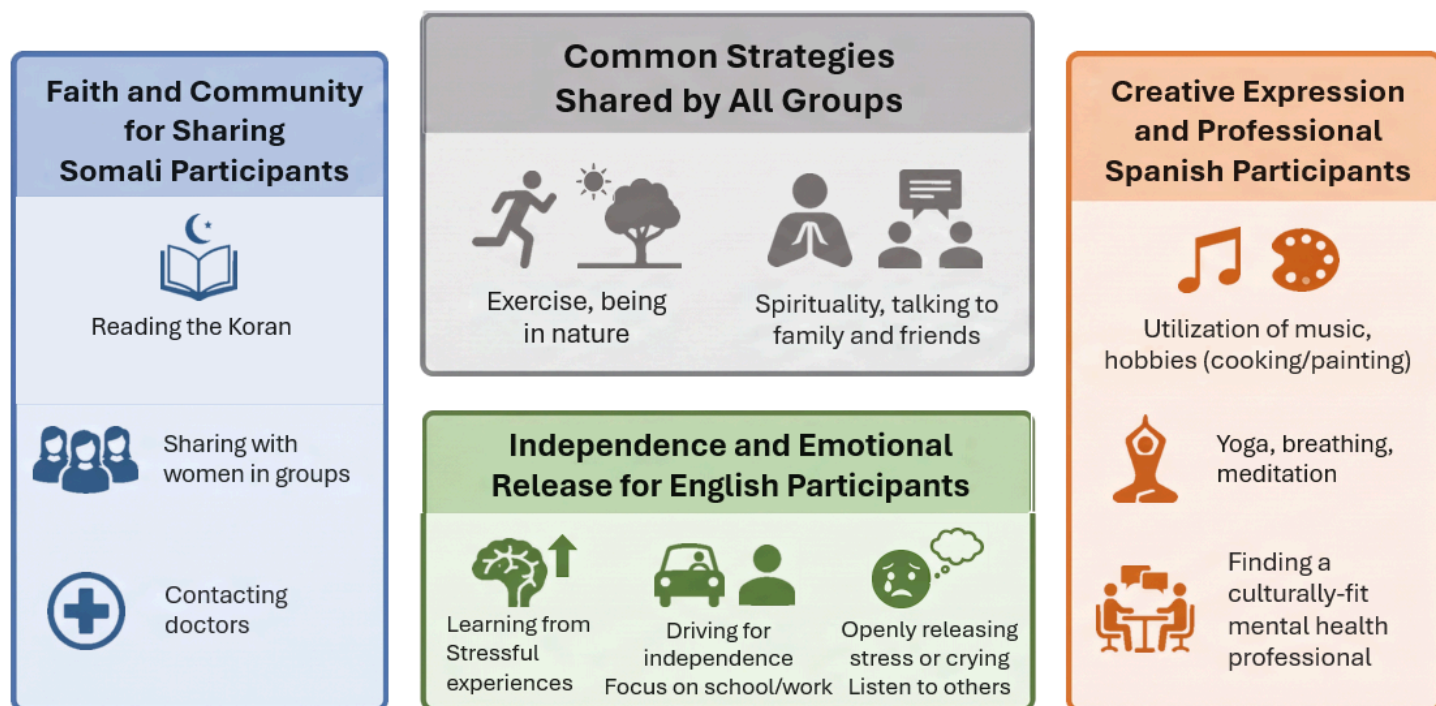


Figure 1

Cross-Cultural Mental Health Coping Strategies

Supplementary Files

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- [AppendixMH7.2026.docx](#)