Jaya Dantas, Joanne McVeigh and Zakia Jeemi | **2023**

SAMBA: South Asian & Middle Eastern Women Being Active Community Report

Curtin School of Population Health, Curtin University

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Healthway Intervention Grant Community Report

Project number	31974
Chief Investigator	Professor Jaya Dantas
Project Team	Adjunct Professor Nikos Ntoumanis Dr Jonathan Hallett Associate Professor Joanne McVeigh Ms Zakia Jeemi
Project Title	SAMBA: South Asian Mothers and Children Being Active
Institution	Curtin School of Population Health, Curtin University
Partner community agencies	Collaboration for Research, Evidence and Impact in Public Health (CERIPH) Department of Social Services: Families, Communities and Settlement Services Office of Multicultural Interests Consumer and Community Health Research Network Department of Local Government, Sport and Cultural Industries

Acknowledgements

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- Healthway for funding the project and providing the opportunity to undertake this participatory project.
- The organisations and community members across Perth that helped promote the study including : Indian Society of WA, Sri Lankan Cultural Society of WA, Bengali Association Of Western Australia, Probashi Bengali of Western Australia Incorporated, Gujarati Samaj of Western Australia, Hindi Samaj of Western Australia, Assam Association of WA, Goan Overseas Association WA, Telugu Association of Perth, Sikh Association of WA, Metropolitan Migrant Resource Centre, Muslim Women's Support Centre
- Members of the South Asian and Middle Eastern communities in WA. In particular, the Tamil Association of Western Australia and the Indian Society of Western Australia were involved in access of venues for the group sessions.
- Our wonderful community facilitators, Preeti, Pranshu and Jeena

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Executive Summary

Culturally and linguistically diverse (CALD) women from South Asia and the Middle East may find it difficult to settle into the wider community and might not feel like they belong. This can impact on their health and well-being. South Asian and Middle Eastern women do not always do enough physical activity and have a greater chance of developing illnesses like diabetes and heart disease. Participation in physical activity (PA) programs helps women to feel part of the community and has a positive impact on physical and mental health.

Our study is one of the first in Western Australia (WA) to involve South Asian and Middle Eastern women in research that explores what helps and what prevents women participating in physical activity. A total of 39 CALD women took part in the South Asian and Middle Eastern women Being Active (SAMBA) study. SAMBA was a 10-week physical activity program that included a variety of physical activity sessions guided by female facilitators and was delivered at three community centres in Perth, WA.

The SAMBA program was developed by the research team using feedback we received from focus group discussions with South Asian women in 2018 as well as the facilitators delivering the program. The program aimed to improve physical activity levels, lower the amount of time spent sitting, and improve motivation to exercise and mental health in South Asian and Middle Eastern women. SAMBA also aimed to generate knowledge about what helps women to be active in a culturally appropriate way. By talking with the women, and sharing their ideas, the research elucidated the variety of reasons and barriers that prevent South Asian and Middle Eastern women from participating in physical activity and help to overcome them. SAMBA also included education sessions about the health benefits of physical activity, recommendations for physical activity for health, and strategies to help women become and stay active.

South Asian and Middle Eastern Women Being Active (SAMBA) is a culturally sensitive and collaboratively-designed physical activity program for South Asian and Middle Eastern women. SAMBA was developed through community-based participatory research, which included focus group discussions and interviews with women from this community in Perth. SAMBA has been specially designed for South Asian and Middle Eastern women who are not currently doing much physical activity, but would like to become more active.

Through this research, we have thus developed a culturally sensitive, collaboratively designed, and FUN physical activity program especially for South Asian and Middle Eastern women. We delivered the program with South Asian and Middle Eastern women to see if it helps them to increase their physical activity, reduce sitting time, and improve their motivation for physical activity and psychological well-being. During the 10-week SAMBA program, women attended one 45-90 minute session per week. Each session included fun activities (e.g., dance) led by female community instructors, and interesting information to help the women to become more active.

Our Team

Chief Investigators

Professor Jaya Dantas

Adjunct Professor Nikos Ntoumanis

Dr Jonathan Hallett

Associate Professor Joanne McVeigh

Research Officers and Research Assistants

Zakia Jeemi

Dr Nikita Bhavsar

Dr Jen Olson

Dr Shelley Gower

SAMBA Physical Activity Instructors

Preeti

Preeti came to Perth from New Delhi (India) when she was less than 2 years old. She has been away from the soil, but has stayed connected with the roots. Preeti has always been a dancer since her childhood, allowing her to escape to a world full of positivity, while also keeping her fit. She has been performing professionally on various stages and events over the last several years

Pranshu

Pranshu is a mum of two beautiful little girls and a dance and fitness freak. She has been living in Perth for over 6 years. "Dance is the hidden language of the Soul" - This saying stands quite true for Pranshu. Dancing keeps her positive, fit and helps her to inspire mums like herself as well as the younger generation. She has been professionally performing at state and national level over the last several years.

Jeena

Jeena was born and brought up in the UAE. She holds a Bachelor of Art in Psychology from Kerala University, India. She is mother of two children and works as Freedom of Information Officer for WA Government Department. Jeena is a passionate dancer who love dancing Semi Classical, Bollywood, Hip Hop, Salsa, Cumbia, Merengue, Reggaeton and Soca. She has performed in numerous stages and choreographed dances for kids and women. She is the founder of Bollywood Dance N Beats dance school that was established in 2018 with the intention to groom and boost confidence in kids to perform dance. Jeena is also a qualified Zumba instructor. Her aim is to focus on strengthening the stamina level, achieve fitness goals and more importantly creating a social, entertaining, positive encouraging environment and nurturing women of all ages.

Background

Improving Health through Physical Activity

Individuals are living increasingly sedentary lifestyles, which have significant impacts on the health and wellbeing of individuals and populations (Tremblay 2010). When the increase of chronic diseases and sedentary lifestyles are combined, there is an accumulated risk for negative health outcomes (WHO 2021; Knight 2012). In Australia, the top five major causes of death for women in 2020 were dementia (including Alzheimer's disease), coronary heart disease (CHD), cerebrovascular disease, lung cancer and breast cancer (AIHW 2022). Risk factors that contribute to the leading causes of death globally and in Australia include unhealthy diet, physical inactivity, and tobacco use (WHO 2021).

Addressing physical inactivity has been found to be the most economical and effective way of preventing the major causes of death, particularly cardiovascular disease (Tremblay 2010; WHO 2021; Bailey 2013). Low levels of exercise and insufficient moderate and vigorous levels of physical activity can be modified by adopting behaviour change which can be done with minimal financial investment and time (Tremblay 2010). The benefits of sport and physical activity have long been observed and are powerful strategies for advocacy and mobilisation that can be used to promote empowerment, combat discrimination, and achieve gender equality (Beutler 2008). Increasing participation in physical activity forms a core objective across a range of government policies in most developed countries due to its significance related to the economy and health care systems (Breuer 2011). Research has shown the positive relationship between physical activity and mental health (Tamminen 2020), and that physical activity, even at lower levels, has been positively associated with mental health and wellbeing (Imai 2020).

Previous research has identified that there are various barriers that South Asian and Middle Eastern women face when participating in physical activity (Babakus 2012; Chaabane 2021; Eapen 2009; Kandula 2016). According to Babakus and Thompson (2012), these challenges include both cultural and structural barriers. These challenges, inappropriate interventions and facilities have acted as barriers to the participation in physical activity (Babakus 2012). As a result, using physical activity as a protective measure against non-communicable chronic diseases in this population has been low (Babakus 2012; Eapen 2009; Kandula 2016). Furthermore, it has been reported that one's capacity to successfully engage in physical activity is inhibited by a lack of knowledge about physical activity, including recommended levels, and benefits (Babakus 2012).

Physical Activity Programs and Interventions for CALD Women

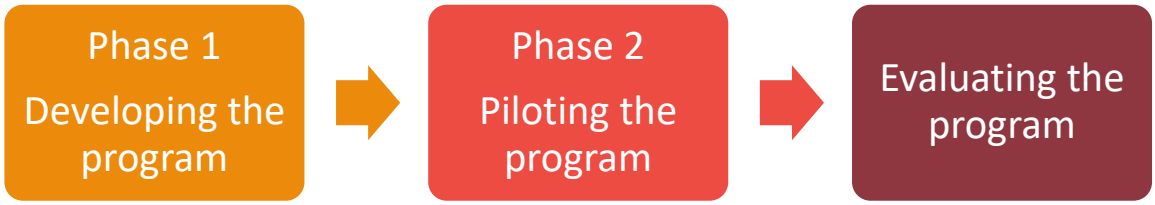
Wieland et al. (2012) used community-based participatory research (CBPR) to develop socially and culturally driven exercise and nutrition strategies to address the decline in physical activity and poor nutrition intake in immigrant and refugee women in Rochester, Minnesota (Wieland 2012). Forty-five women of Hispanic, Somali, Cambodian, and non-immigrant African American descent participated in this six-week program (Weiland 2012). Upon completion of the program, participants were more likely to exercise regularly, and report a higher quality of life and self-efficacy regarding diet and exercise (Wieland 2012). They also noted that the socio-cultural dynamics of the program has more favourable outcomes for refugees and immigrants in Westernised contexts with no structure for maintaining diet and exercise (Wieland 2012).

Studies utilising the CBPR approach to implement interventions include studies conducted by Marinescu et al. (2013) and Dave et al. (2015) also utilised the CBPR methodology. Marinescu et al. (2013) used focus groups to evaluate and gather information regarding culture and community to evaluate the "Be Active Together" program developed for Muslim women in Seattle communities. This program supported physical activity and provided outreach to women living in public housing communities (Marinescu 2013). Researchers were able to implement physical activity protocols and interventions based on cultural understandings provided by the women in these communities (Marinescu 2013).

Dave et al. (2015) interviewed South Asian immigrants in Chicago to determine the barriers to physical activity at different life stages. Researchers found that barriers differed depending on the life stage these women were experiencing. For older women, ailments such as chronic disease posed the most risk to decreased physical activity (Dave 2015). In contrast, for younger women, stigma associated with being "too skinny" prevented these women from physical exercise (Dave 2015). There was a substantial fall in physical activity among women who start families or have children, as these women's priorities and obligations to raise their families changed (Dave 2015). In any case, women of all ages stated that when developing physical activity interventions, it is important to consider cultural, religious, and life stages (Dave 2015).

The South Asian and Middle Eastern Women Being Active pilot program (SAMBA) was collaboratively developed to provide South Asian and Middle Eastern Women with a sequence of warm-up, balance, dance and movement activities that aimed at increasing the level of physical activity the women engaged in.

Structuring a physical activity intervention for South Asian and Middle Eastern Women



This study examined the effectiveness of a co-designed, pilot participatory physical activity intervention. The following steps guided the project.

Objectives

1. To recruit women from South Asian (SA) communities to form a Community Advisory Committee.
2. To undertake focus group discussions (FGDs) with SA women in order to identify cultural barriers and enablers to participation in PA and seek strategies to overcome identified barriers.
3. To collaboratively design a PA participatory intervention with SA and ME women using a community-based, participatory research approach, taking into consideration social, cultural, environmental and personal factors.
4. To implement and evaluate this pilot RCT with an experimental group of 30 SA and ME women, and a delayed matched control group of 30 SA and ME women, at two community centres located in the metropolitan Perth region.
5. To assess changes in levels of device measured physical activity (women's total physical activity will be the primary outcome), sedentary behaviour, blood pressure, BMI, motivation, and psychological well-being.
6. To collect information on the feasibility of the intervention (e.g., recruitment rates, adherence) and its short-term sustainability (3 months post-intervention).
7. To evaluate, using mixed methods, the effectiveness of the intervention design.
8. To develop an easy-to-translate protocol of the participatory PA intervention that can be replicated with other CALD communities. To develop with named partners and community groups a sustainability plan

Pre-intervention interviews

Three focus groups (n = 14) were conducted with women from India, Sri Lanka, Bangladesh, and Pakistan. The discussions were recorded and transcribed verbatim. Data were analysed by thematic analysis using NVivo Pro (version 12). An inductive approach to analysis was adopted, informed by the COM-B model (Michie, van Stralen, & West 2011). The central tenant of the model is that behaviour is a product of motivation, capability and opportunity. Behavioural interventions should focus on addressing identified shortfalls within these domains. To facilitate a behavioural diagnosis, data was coded and organised into pre-determined themes representing physical activity related capability, opportunity, and motivation. The findings of this behavioural diagnosis were presented at the International Society for Behavioural Nutrition and Physical Activity conference in Prague in June 2019. The BCTs (Behaviour Change Techniques) provided through the education component included:

- Information about health consequences
- Information about social and environmental consequences
- Identification of self-as role model
- Goal setting (behaviour)
- Goal setting (outcome)
- Action planning
- Self-monitoring of behaviour
- Social support (practical)

SAMBA Education Topic Overview

The material for the educational component of the sessions was developed and finalised by Dr Olson and Professor Ntoumanis, based on the findings of the first phase of the project and the extant literature in relation to barriers to physical activity participation among South Asian women. Based on the behavioural diagnosis, suitable intervention functions have been identified and mapped to appropriate behavioural change techniques. These include action planning; behavioural instruction/ practice/rehearsal/self-monitoring; credible source; demonstration of behaviour; feedback on behaviour, goal setting and reviewing (behavioural and outcome); information about health, social, and environmental consequences; problem solving; and social support. Culturally appropriate resources are being selected to facilitate application of these behaviour change techniques through the educational sessions and materials to be included in the intervention. A workbook for participants was also developed to facilitate the delivery of the educational component of the sessions. An overview if the topics delivered is presented in Table 1.

Table 1

SAMBA education topic overview

Week	Main Topic	Sub-topic
1	Overview of SAMBA	Introduction to the team What to expect during the program
	Why do physical activity?	Benefits of physical activity
	How much physical activity do I need to do and what kind?	Be active every day and sit less
	Participant workbooks	Overview of what is included in workbook
2	Welcome back	
	Activities in your local area	Free and low cost activities give you an opportunity to find FUN things to do, that could help you to be active every day.
	Monitoring physical activity	
3	Welcome back	
	Motivation	Enjoyment
	Coping with unpleasant feelings	
	Reasons for being active	Some reasons are more helpful than others
4	Welcome back	
	Setting goals	SMART goals for physical activity
	Habits	How to build habits
5	Welcome back	
	Planning	Planning to achieve your goals
	When things go wrong	Coping planning
	Helping each other	Social support
6	Welcome back	
	Reviewing goals	Checking your progress
	Dealing with setbacks	
	Review of what has been learned	

SAMBA physical activity and dance program

The overview of the program was:

- A ten-week program that provided South Asian and Middle Eastern Women with a sequence of warm-up, balance, dance and movement activities that aimed at increasing their knowledge and understanding of physical activity, movement, and exercise to improve health and wellbeing.
- The SAMBA program was designed by an exercise physiologist from Curtin Stadium, Professor Dantas and Associate Professor McVeigh in collaboration with community facilitators after group discussions with women from different South Asian communities.
- Elements of physical activity, movement, and dance were shared with the women over 10 weeks.

- Participants learned to increase their physical activity, reduce sitting time, and improve their motivation for physical activity and psychological well-being.
- Participants completed simple movement sequences that showed an understanding of dynamics, spatial awareness, relationships, and timing.
- Participants developed proficiency in the fundamental movement skills of jumping, hopping, turning, dodging and fundamental locomotor movements. Participants also developed strength and benefited from conditioning exercises.
- Participants learned how the dancing body relates to other individuals, and groups.
- The women participated in physical activities that promote enjoyment and recognise the importance of these for health, strength, lifestyle, and balance.

And through the education sessions, the participants learned:

- About the importance of physical activity for health and well-being.
- Behaviour changes and motivation to sustain physical activity.
- About the human body and movement and the importance of stretching.

Motivational training of our dance facilitators

We recruited three community facilitators from South Asian backgrounds with significant experience in delivering cultural dance and fitness sessions and programs to CALD women in the WA community. We completed motivational training with the three community facilitators to deliver the sessions. The objectives of the motivational training were to 1) challenge and expand current understandings of 'motivation', 2) examine how and why subtleties in communication can be critical in supporting or undermining others' motivation, 3) provide an opportunity for facilitators to enhance their communication skills, specifically drawing from motivation theory, and 4) work with facilitators to create an action plan to support them in developing and implementing new communication techniques.

Recruitment

Organisations across WA were contacted. Of these, 12 organisations promoted the study information to their member mail-lists or organisation sub-committees including: Indian Society of WA (ISWA), Sri Lankan Cultural Society of WA (SLCWA), Bengali Association Of Western Australia (BAWA), Probashi Bengali of Western Australia Incorporated, Gujarati Samaj of Western Australia, Hindi Samaj of Western Australia (HSWA), Assam Association of WA, Goan Overseas Association WA, Telugu

Association of Perth (TAP), Sikh Association of WA, Metropolitan Migrant Resource Centre, Muslim Women's Support Centre.
Women were also recruited through Ishar Multicultural Health Services with which Professor Dantas has an established and ongoing research partnership with.

SAMBA groups

The program was piloted at three sites in metropolitan Perth, in local community centres (one to the north of the Swan River and two to the south). Participants were recruited and screened for eligibility to participate. A total of 39 women participated in the study: 8 women in the north group, 13 women in south group 1 and 18 women in south group 2.

We completed 8 out of 10 sessions in-person with women in the north group. These in-person sessions were held at the Herb Graham Recreation Centre in Mirrabooka. The remaining two sessions were delivered online due to the COVID-19 social distancing measures in place at the time of program delivery.

For the women in south group 1, we completed 5 out of 10 sessions in-person. These in-person sessions were held at Mandala Hall in Bateman. The remaining 5 sessions were delivered online, again due to the COVID-19 social distancing measures in place at the time of program delivery.

All 10 sessions for south group 2 were planned to be delivered online due to the pandemic, however, we were able to deliver all 10 sessions face-to-face because the COVID-19 pandemic restrictions changed. These sessions were held at ISWA Centre for Arts and Culture in Willetton.

Participant attendance was recorded by a research assistant, Zakia Jeemi, and Professor Jaya Dantas, who attended all sessions for all three groups. The research team sent out weekly emails and text messages to remind participants of their sessions, and followed up with those who missed a session to explore reasons for their absence.
COVID-19 and the lockdowns impacted the sessions and we transferred to online sessions, however, these were not successful due to multiple issues of tele-communication, time and family issues.

Evaluation

Participants completed questionnaires at baseline (2 weeks before the program began), post-intervention (2 weeks after the 10th session), and at follow-up (at 3 months after the 10th session). The questionnaire included items that collected information on the women's physical activity levels, mental and physical health, as well as questions about the sessions and facilitators. At baseline, post-intervention, and follow-up, physical measurements from our participants were collected, including height, waist, and weight measurements. Participants also wore activity monitors (accelerometers) for 8 consecutive days at the three time points, baseline, post-intervention, and follow-up. This provided an objective measure of their physical activity levels.

As part of the process of evaluation, we conducted individual interviews with 23 participants from all three groups. Interviews were conducted within a month of program completion. Upon program completion, participants were invited to participate in a phone interview. The aim of the interviews was to assess the participants' experiences of enrolling in the SAMBA program. We also examined their views on program aspects such as the physical activity sessions, the education content, and instruction provided by the facilitators. Finally, we explored participants' views of how they would like the program to be improved. The interviews were between 10 to 20 minutes in duration.

All three physical activity facilitators participated in the focus group. Facilitators were asked about their experience of the motivational training that they were provided prior to delivering the SAMBA program, the delivery of the structured program, as well as factors influencing this delivery including the COVID-19 pandemic. The focus group lasted over an hour.

We used reflexive thematic analysis to analyse the participant interviews and facilitator focus groups (Braun & Clarke 2019). Two research assistants listened to the audio recordings and read the transcripts to develop the semantic codes individually. They each worked to develop the themes individually, which were subsequently discussed with Professor Dantas.

Results from phase 1

These results are about the participants in phase one of the SAMBA project (i.e., focus group discussions). The age of the participants ranged between 34 and 50 years (M = 42.64, SD = 5.73). Most were educated to university level (86%), and most were engaged in paid work outside of the home (71%). All but one participant had children (aged between 5 – 21 years). The most prevalent

behavioural barriers to physical activity among the women were lack of time due to work and family-related commitments, and tiredness. A culture of self-consciousness among South Asian women was also described as impeding participation. Perceptions of unique physical limitations also hindered participation (e.g., large child-bearing pelvises that make running difficult). For some, religious constraints presented barriers to participation (e.g., dance was described as unacceptable by some Muslim women) and dictated the need for female-only venues.

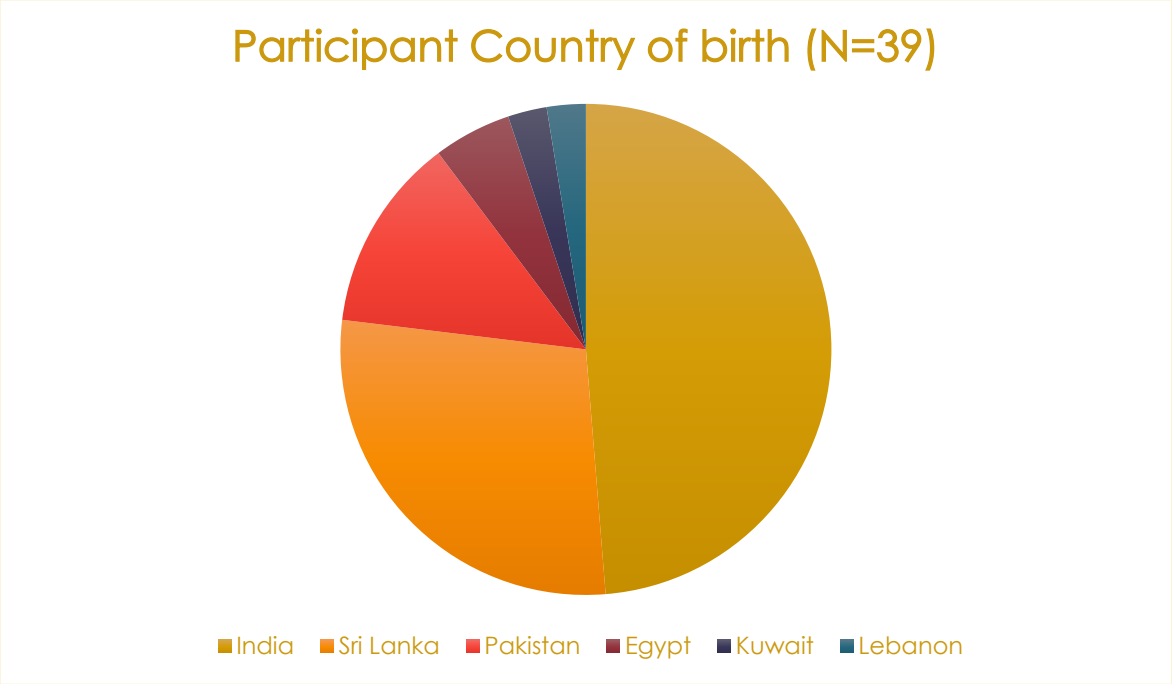
The women expressed a strong desire for social interaction with other women. Accordingly, programs that provided opportunities for social interaction were described as desirable. Physical activity programs that involved children were described as particularly appealing, due to the potential of such programs to facilitate 'family time,' consistent with the women's prioritisation of 'family needs' over personal needs. Such programs also negated the need to make childcare arrangements.

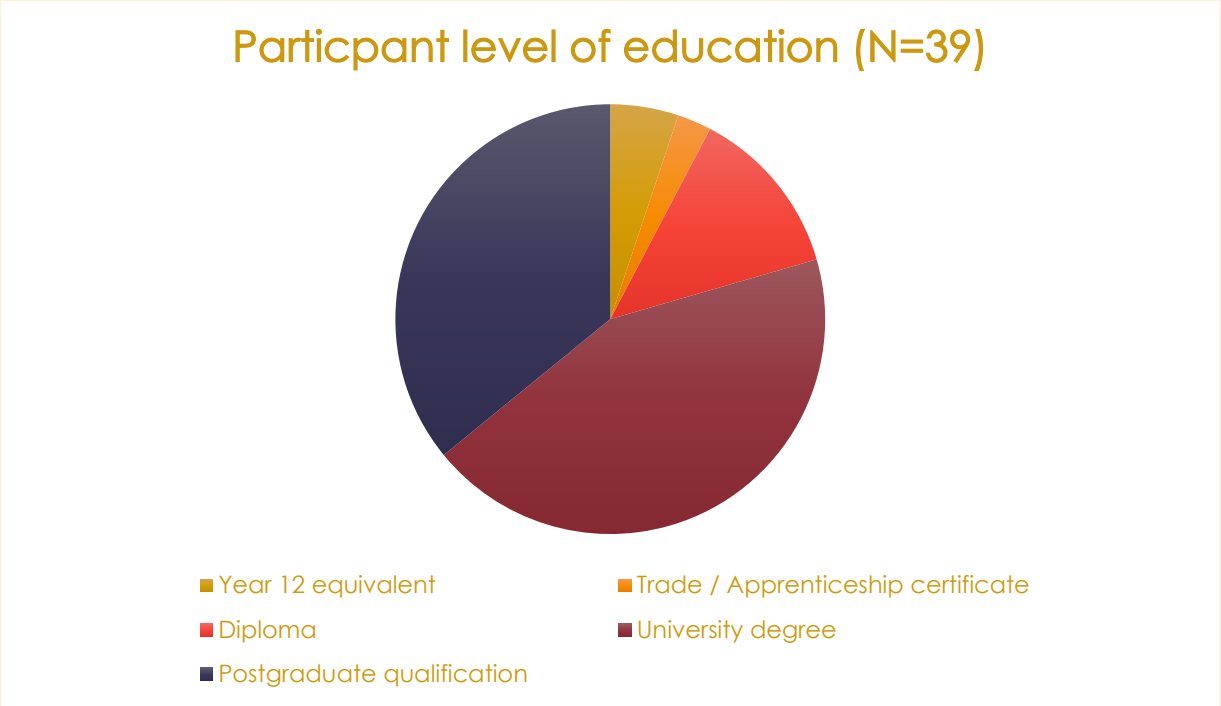
Practical information about appropriate intervention design was also provided. For example, the women indicated preferences for a program that was close to home, scheduled on a weekend day rather than a weeknight, incorporated age-appropriate activities for their children, was fun and enjoyable, and of a suitable duration (typically a weekly session of 90 minutes was considered appropriate). The design of the participatory action intervention has been informed by the findings of this phase of the research.

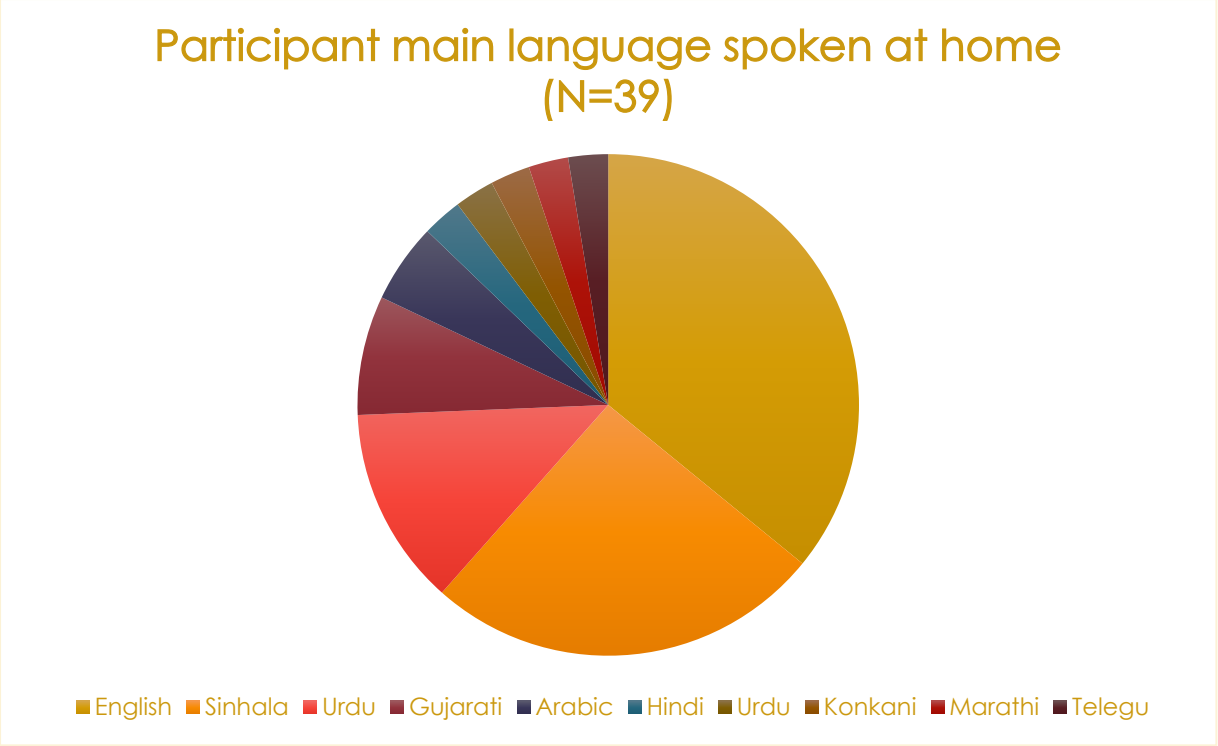
Results from phase 2

These findings are from phase two of the SAMBA project (i.e., intervention delivery and post-intervention evaluation interviews and focus group discussions). A total of 39 women participated in the SAMBA program. The majority of the women reported being of Indian origin (n = 19), followed by Sri Lankan origin (n = 11). Participants were in the age range of 28 to 57 years. Further demographic information, physical measures such as BMI, self-reported physical activity and sedentary information are presented the charts and graphs below.

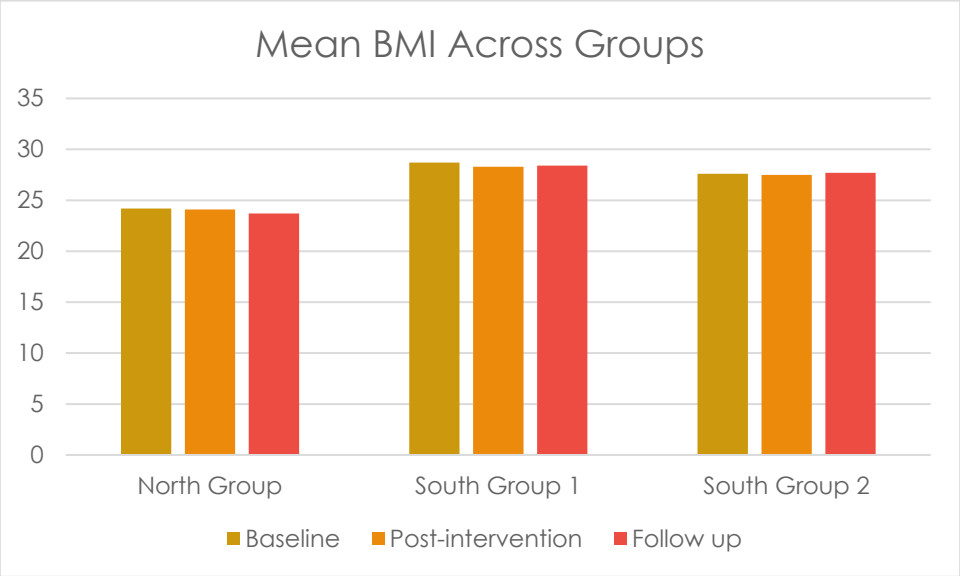
Participant characteristics



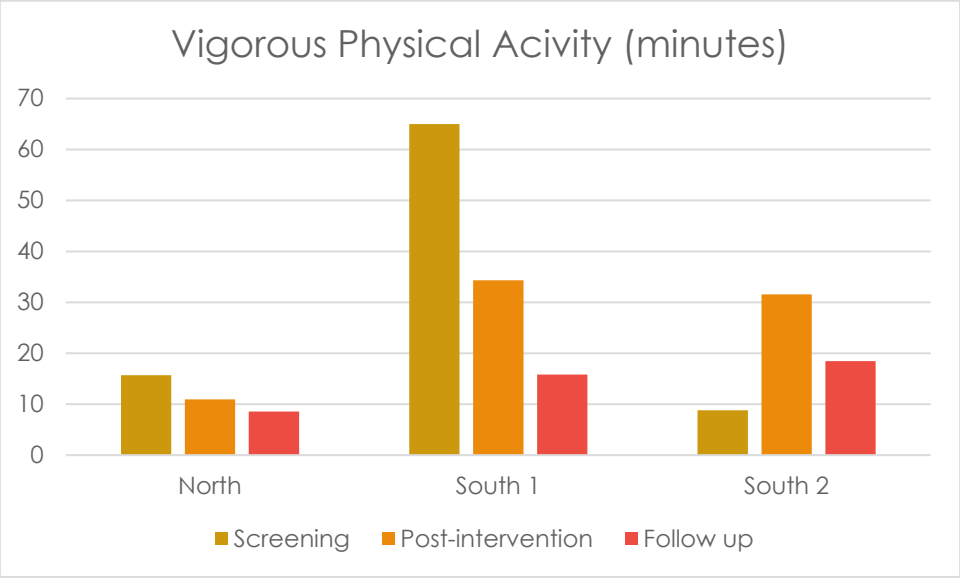




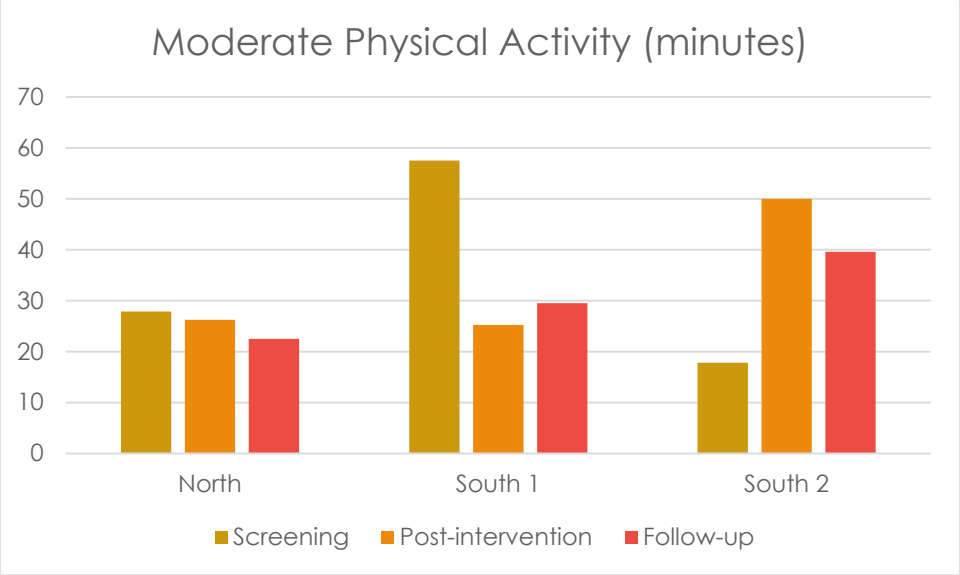
Self-reported physical activity levels and physical measures



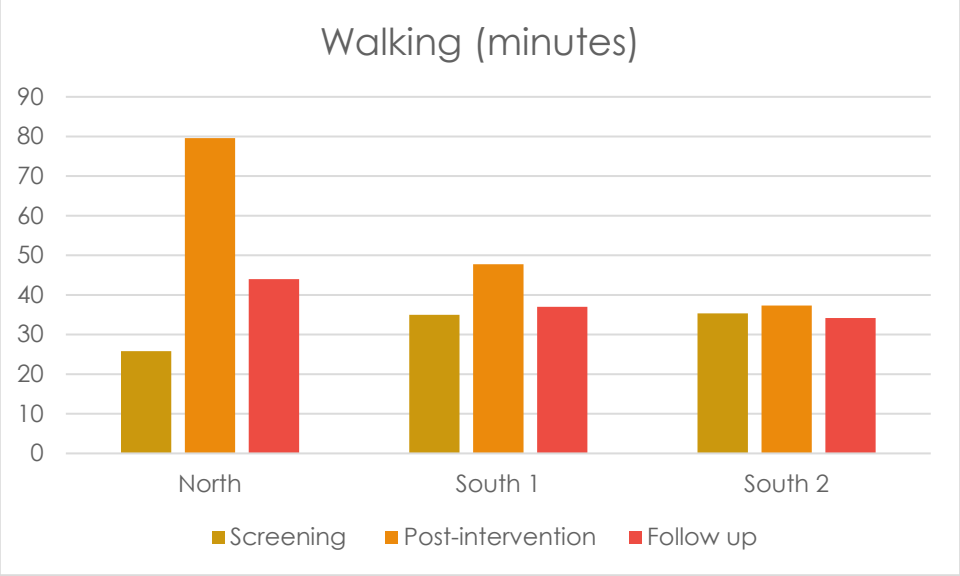
This figure shows mean body mass index (BMI) for the three groups across three time points. Baseline was 2 weeks before the first session of physical activity intervention, post-intervention was 2 weeks after the last session of physical activity intervention, and follow-up was 3 months after the last session of physical activity intervention.



This figure shows mean self-reported Vigorous Physical Activity for the three groups across the three time points. Vigorous Physical Activity was self-reported time (in minutes) spent doing vigorous physical activities on one day from the last 7 days. Screening was 2 weeks before the first session of physical activity intervention, post-intervention was 2 weeks after the last session of physical activity intervention, and follow-up was 3 months after the last session of physical activity intervention. The reason that South group 2 did not see a general decrease from screening to follow up in VPA could be attributed to the fact that this group was not affected by the COVID pandemic restrictions as South group 1 and North group were. For instance, 50% of South group 1's sessions had to be held online.

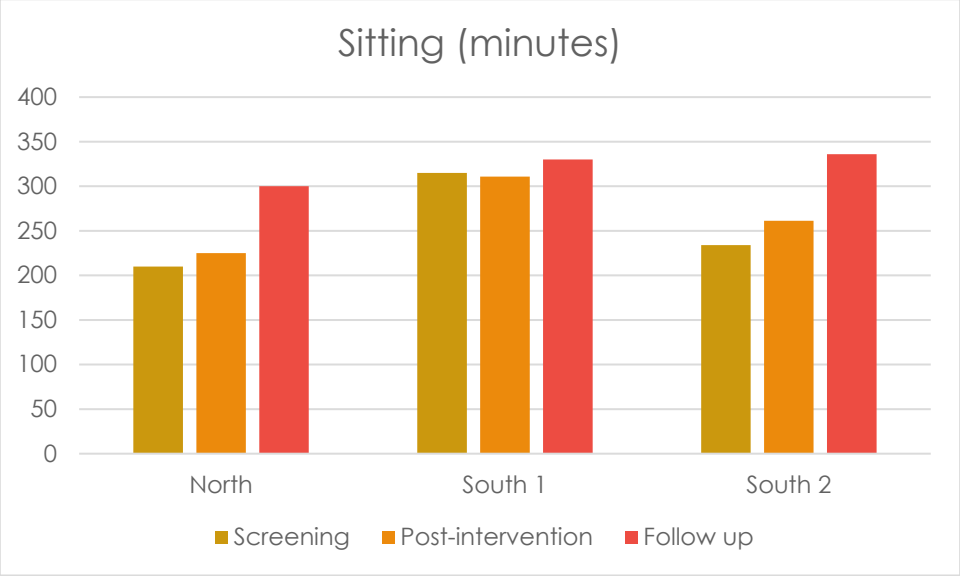


This figure shows the mean self-reported Moderate Physical Activity for the three groups across three time points. Moderate Physical Activity was self-reported time (in minutes) spent doing vigorous physical activities on one day from the last 7 days. Screening was 2 weeks before the first session of physical activity intervention, post-intervention was 2 weeks after the last session of physical activity intervention, and follow-up was 3 months after the last session of physical activity intervention.



This figure shows mean self-reported time spent walking for the three groups across three time-points. Walking was self-reported time (in minutes) spent walking on one day from the last 7 days. Screening was 2 weeks before the first session of physical activity intervention, post-intervention was 2 weeks

after the last session of physical activity intervention, and follow-up was 3 months after the last session of physical activity intervention.



Finally, this figure shows mean, self-reported time spent sitting for the three groups across three time-points. Sitting was self-reported time (in minutes) spent sitting on a weekday from the past 7 days. Screening was 2 weeks before the first session of physical activity intervention, post-intervention was 2 weeks after the last session of physical activity intervention, and follow-up was 3 months after the last session of physical activity intervention. Sitting generally increased across all groups and this may be linked to the general increase in sedentary behaviours during the lockdowns as a result of the COVID pandemic.

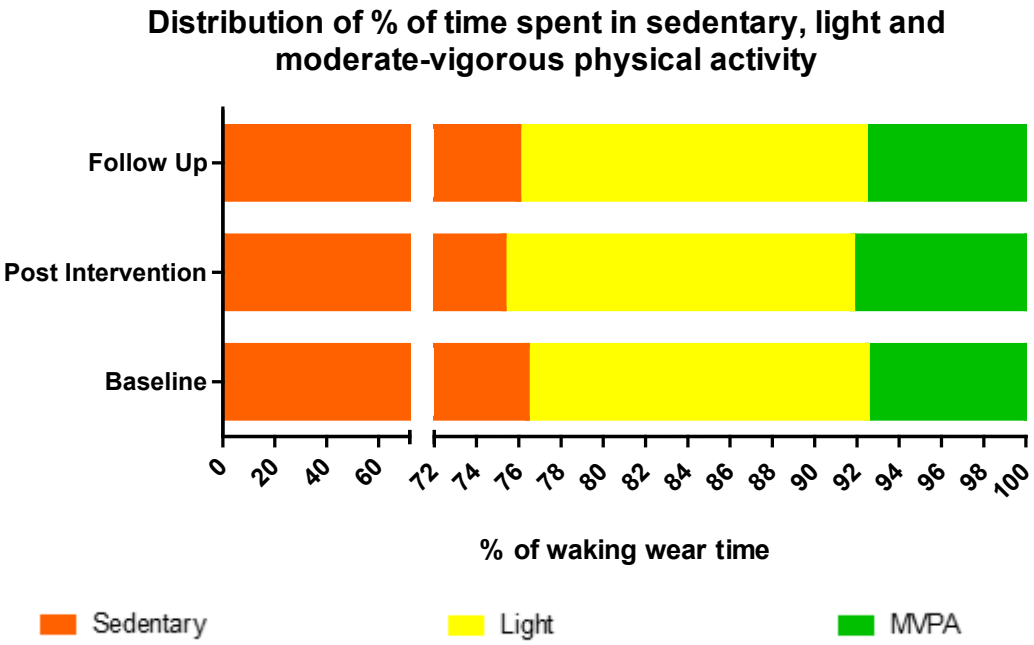
Summary of ActiGraph data

Activity measures were taken at three time points using wrist-worn ActiGraph GT9X accelerometers (picture below).

ActiGraph

The complete and valid accelerometry data for the women who participated at all three time points (n=25) are shown below. On average women wore the devices for 5 days and for approximately 16

hours per day. Overall, there were no significant differences (despite a trend towards increased time spent in moderate to vigorous physical activity (MVPA) during and after the intervention) in any activity measure from baseline to follow-up, nor at the post-intervention time point. The distribution of the percentages of time spent in sedentary, light physical activity and moderate to vigorous physical activity is shown in the figure below.

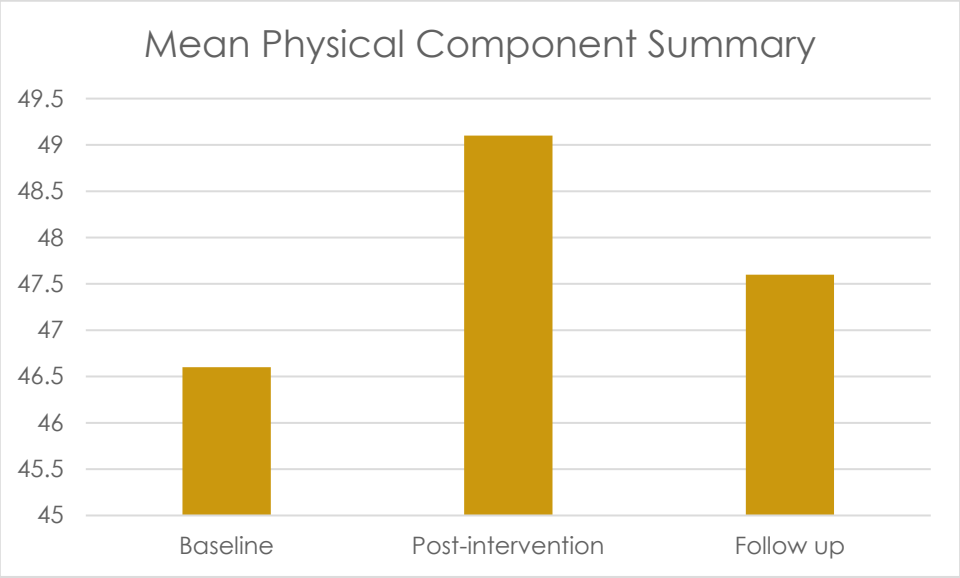


Mental health and physical health

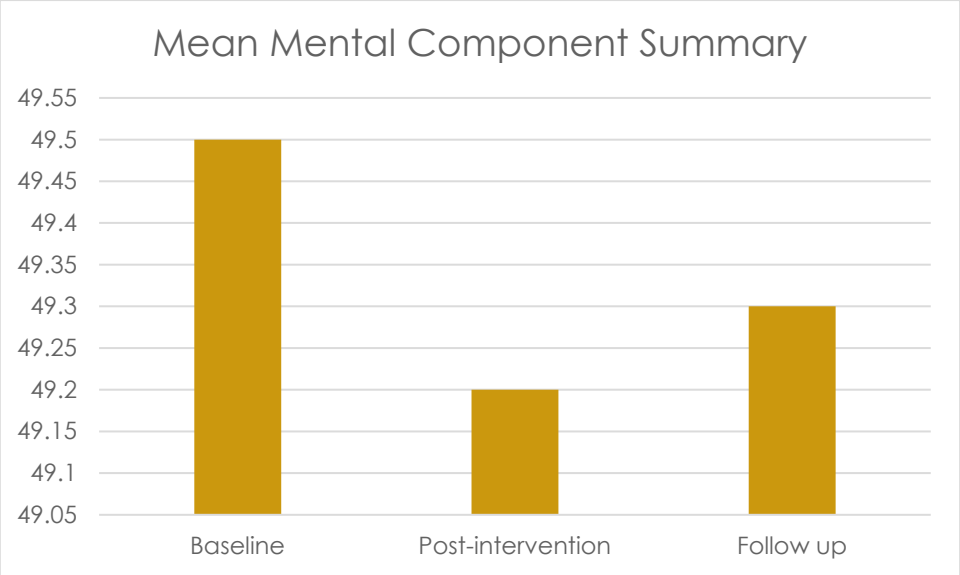
These are the results from the 12-Item Short Form Survey (SF-12) (Ware 1996) completed at baseline, post intervention and follow-up. Results from the SF-12 survey highlighted the poor mental health of the mentees. Results are shown as PCS (Physical Component Summary) and MCS (Mental Component Summary).

Whilst the PCS and MCS scores did not indicate illness, they were relatively low and were close to the cut-off scores for physical illness and clinical depression. Scores range from 0 to 100, with higher scores indicating better physical and mental health functioning. A score of 50 or less on the Physical Component Summary of the SF-12 has been recommended as a cut-off to determine a physical condition; while a score of 42 or less on the Mental Component Summary may indicate clinical depression. The results from this study cannot be considered diagnostic and were not administered to clinically assess participants' physical and mental health. However, the relatively low scores highlight the physical and mental stress that refugee and migrant women experience. There was no statistically significant change in either of the scores over the time interval of the study. The overall p value for PCS was 0.3109 and for MCS was 0.9924.

Physical Component Summary (PCS), PCS is composed of four scales assessing physical function, role limitations caused by physical problems, bodily pain, and general health. Higher scores represent better physical health.



Higher scores represent better mental health.



Post-intervention interviews with facilitators and participants

Results from participant interviews and focus group discussions with facilitators. Themes and sub-themes are presented below (Table 2) from the initial coding using thematic analysis (Braun & Clarke 2019)

Table 2

Thematic analyses results in the following themes and subthemes.

Themes	Sub-themes
Intrinsic motivation	Putting myself first Connecting with women like me Recommendations by others
Feasibility of intervention delivery	Physical activity Motivational training Facilitators Education Enablers Barriers
Culturally appropriate, fulfilling experience	Physical Social Psychological
Room for improvement	Facilities Sessions Research component

Participants emphasised that it was common for women of their cultural backgrounds to be occupied with running the house, without much time to take care of themselves. Many of the women also might not venture out of the house as much because of the time spent completing chores. Children were stated as a key reason that kept the participants busy. Participants viewed enrolling in SAMBA as an opportunity to take the time to care of themselves, and a way to connect with other women like themselves.

> *"I want to communicate with people and while I'm not doing any job and am at home. So I want to make friends as well and communicate with them."*

In describing their experiences of the PA content participants noted that they found the physical activity difficult in the first few sessions. This was particularly true for those who had been inactive previously as well as those for whom PA was limited to walking every now and then. Some participants found it hard to keep up with the others as they were unfamiliar with the activities. Few experienced

muscle aches for several weeks, after which they felt that their bodies became familiar with being active.

> *"it was good to do the exercises and all but for a week I was really sore and then I think that continued for a couple of weeks but then your body gets used to it so I really enjoyed that part as well because I knew that my muscles are working"*

In terms of content, participants found the PA to be appropriate and engaging. It was appropriate in that it was well suited to women who were inactive previously and just getting started with PA. Participants reported SAMBA as consisting of a good mix of activities with options to suit everyone. Participants enjoyed the PA content, especially the dance. This was reinforced by comments such as:

> *"I think it was good, it was, it was quite engaging. I would say entertaining. I was never ever like bored in the sense that ok, or very exhausted, I think it just, it was just perfect for, for the fitness level of the, of, I don't know about everyone else but for me it was just perfect, for me to look forward for the next session"*

The COVID-19 pandemic brought some practical and technological challenges. For two groups of participants, in-person sessions were changed to online sessions via Webex. This was problematic for not just the participants, but also the facilitators. One participant reported:

> *"it was a little bit hard for me because I know, just to go to the laptop or just mobile and that's it, I'm not a tech person so it was hard for me to find out a right app and do all that"*

The key physical benefit experienced by the women related to how active they felt, and how they benefitted from this in other aspects of their lives such as running their households. Many women explained that this was the most active they had ever been, which made them want to continue to set future exercising or activity goals. Few participants thought that they had lost weight as a result of SAMBA. Social benefits of SAMBA included meeting others of the same cultural background, as well as people from other cultural backgrounds. Finally, participants reported benefitting psychologically as a result of feeling accomplished and confident in performing basic exercises such as squatting and planking, as well as joining and keeping up with a group exercise class.

Community benefits from the research and recommendations

The research has identified the multifaceted barriers to physical activity among SA women in the first phase of the study and collected information on the interplay between health-conducive behaviours, social determinants of health, gender and cultural issues.

Participants had the opportunity to improve PA levels and reduce time spent sedentary. We have built collaborative networks among members of SA and ME communities whose feedback has contributed to the design of the PA intervention. This collaboration continued throughout the project.

Additional benefits to the WA community included: providing motivational training to deliver culturally appropriate physical activity intervention for three, South Asian community facilitators. The facilitators continue to deliver successful physical activity interventions with CALD populations in WA and continue their relationship with the research team.

There were multiple community benefits: building collaborative networks among the SA and ME community group members who were co-researchers in the design of PA intervention; increasing PA levels of a population group that is traditionally not sufficiently physically active; reducing prolonged bouts of sedentary time. This reduction in sedentary time is an important (and separate to PA) outcome. The educational component helped the women reflect on physical activity and nutrition and other social and individual behaviours to improve well-being. Increasing motivation/attitudes/efficacy overcomes barriers to participate in PA. Improving psychological wellbeing was enhanced by improving physical activity and building social networks. There was an understanding of overcoming gender barriers to PA. Our program was aligned to the overarching principles of inclusion, adaptive delivery and collaborative relationships of the SD6 Framework of Department of Sport and Recreation, WA Government. Over the course of the project, there was improved communication among study participants who were able to grow their social networks. Strong partnerships were created with the SAMBA facilitators who delivered the physical activity intervention with the potential to be collaborators in future research.

Some recommendations from the study include:

- Further intervention research to expand the program to include larger groups of women for different migrant groups.
- Establishing communities and networks of women facilitators that will promote physical activity and dance among migrant women groups

Presentations and publications

Olson, Ntoumanis, Jeemi, Gower, & Dantas (2019, June). South Asian Mothers and Children Being Active (SAMBA): A qualitative investigation of barriers and enablers to physical activity participation. Poster presented at the 2019 International Society of Behavioural Nutrition and Physical Activity annual meeting, Prague, Czech Republic.

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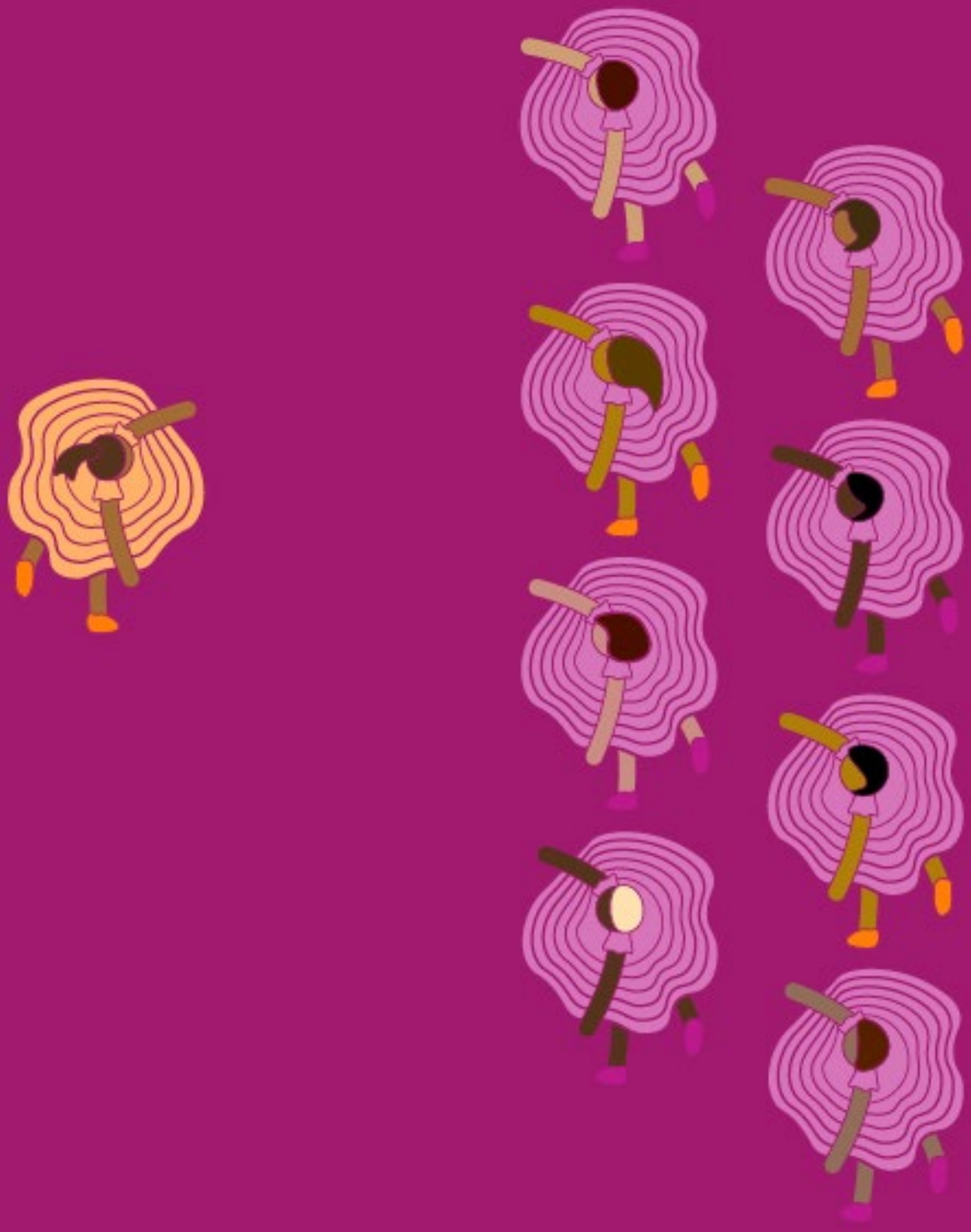

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