

ARTICLE CRITIQUE

The WhatsApp-delivered physical activity intervention by Yarimkaya et. al. aimed to evaluate if the program impacted physical activity levels of children with Autism Spectrum Disorder (ASD) in Ankara, Turkey during the COVID-19 pandemic in 2020.¹ Forty two families (parent and child dyads) were recruited from rehabilitation and education centers for children with ASD and randomly assigned to experimental and control groups. Parents of the experimental group gained access to a private WhatsApp chat with information, strategies, and videos about physical activities that they would do with their children for 20-30 minutes, every day for six weeks. Results indicated the program was effective; mean physical activity scores in the experimental group increased by 31.19 (20.04 to 51.23) between pre and post-test, whereas mean physical activity scores in the control group decreased by 0.23 (17.71 to 17.46). Moreover, interview findings depicted that overall, parents reported improved levels of physical activity in their children with ASD.¹

One strength of the WhatsApp program is that it had community buy-in. The program conducted preliminary phone interviews with participants to understand their preferred types of physical activities, which also utilizes aspects of Community-Based Participatory Research (CBPR), emphasizing that engaging community members in the program design and building on their strengths is likely to increase empowerment and self-efficacy of participants.² Another strength of the program was that it seemed to be acceptable to the target population. Interview results showed that parents expressed satisfaction with the program's outcomes and characterized the activities as "useful," "interesting," and "fun," and that they generated a physical activity routine for the entire family.¹ Conversely, a clear weakness of the program is that it may not be replicable. The intervention relied on parents and children being home every day to perform the

activities. While this made sense during the COVID-19 pandemic when schools and offices were closed, it may not be feasible for post-pandemic programs where families are out of the house. Furthermore, the program may not be sustainable because it requires that parents watch daily videos, prepare distraction-free rooms, participate in the WhatsApp group chat, and do daily physical activities.¹ Parents who work full time and care for their families may start to feel burdened by the time and effort needed for the program to work, and without parents to administer the activities, the program could not continue in its intended form.

One of the strengths of the WhatsApp program's evaluation plan is that it had an equivalent comparison group. The study included a control group with the same sample size and similar proportions of age, gender, and education levels of participants as the experimental group. This strengthened its internal validity by reducing confounding factors and ensuring the two groups were comparable. Another strength is that they utilized the Leisure Time Exercise Questionnaire, (Godin and Shephard, 1985) a tool that was validated for children with ASD to measure physical activity levels.¹ One of the main weaknesses of the evaluation plan was its small sample size. Forty two families split into treatment and control is not large enough to make the results generalizable outside of this program. Additionally, the evaluation showed difficulty in assessing fidelity. While the program asked parents to report information on how the physical activities were being performed each week, the study was not able to fully verify if they were being done correctly, by the correct person, and at the correct rate. This poses a challenge for verifying that the intervention was being carried out as intended.

The Yarimkaya et. al. article relies on principles of the Health Belief Model (HBM) to reduce barriers to physical activity and improve health outcomes among youth; however, as the article suggests, physical activity is also an important aspect of health in adults and parents.² As

the Associate Director for Public Health in Los Angeles County (L.A.), I propose MomsOnTheMove, a web-based program that will build upon the pillars of HBM and utilize Social Cognitive Theory (SCT) to increase the incidence of physical activity among Latina women aged 18-39 in Service Planning Area 6 of Los Angeles County, which is known as South L.A.² While past studies have indicated success in increasing levels of physical activity among minority women in group and web-based programs, limitations of these studies include small sample sizes, lack of follow-up tests post-intervention, lack of validated measurement tools, and a need for additional research on social barriers for adopting physical activity routines.^{3,4}

PROBLEM STATEMENT

Trends and Consequences: Every 33 seconds, one person in the United States (U.S.) dies from heart disease, making it the leading cause of death across both sexes and most racial and ethnic groups.⁵ In 2021 alone, 695,000 people died of heart disease, with an incurred cost of roughly \$239.9 billion in lost productivity, healthcare services, and medicine.⁵ Similarly, diabetes is the eighth leading cause of death and incurs costs of \$327 billion annually.⁵ The obesity (BMI > 30.0) prevalence in the U.S. was 41.9% in March 2020, incurring annual costs of \$173 billion.⁵ These three diseases have three key things in common: they are costly, they disproportionately impact minority people of color, and they can all be prevented with adequate physical activity.⁵ The World Health Organization (WHO) defines physical activity as “as any bodily movement produced by skeletal muscles that requires energy expenditure,” and recommends that adults aged 18-64 participate in a minimum of 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic physical activity per week, as well as muscle strengthening activities at least twice a week.⁶ Physical activity at the recommended levels have been proven to promote health and overall wellbeing and reduce the risk of chronic conditions like heart disease, obesity,

diabetes, cancer and depression.^{5,6} But while physical activity can both prevent deadly diseases and promote health, only 24.2% of adults in general and 20.4% of women aged 18-64 (compared to 28.3% of men) in the U.S. meet the recommended guidelines for aerobic and muscle-strengthening activities.⁵

Target Population: In Los Angeles County, California, race, socioeconomic status, and education level have all been associated with physical inactivity.⁷ Specifically, 11.9% of Latina women do not participate in any weekly aerobic activity, and for those living in poverty, the prevalence of physical inactivity is greater (16.2%).⁸ Some barriers to physical activity include lack of time, social support, motivation, and perceived skill.⁵ Latina women in L.A. county have the highest prevalence of overweight adults (34.3%; $25 < \text{BMI} < 30$) and the second highest prevalence of diabetes (11.5%) as well as one of the lowest prevalences of physical activity compared to other races, with only 27.1% meeting the recommendations for aerobic and strength-building physical activity.⁸ Furthermore, physical activity reportedly declines with age, and given that 50% of all Latina women in L.A. County are between the ages of 18 and 39, they may be an important population to target efforts towards increasing physical activity.^{8,9} South L.A. is predominantly Latino (68.2%), and of this population, 21.7% report not having access to outdoor recreation facilities, indicating a potential need for home-based physical activity.⁷ MomsOnTheMove aims to improve overall health and prevent chronic disease among Latina women aged 18-39 in South L.A. through increasing physical activity.

Needs Assessment: Prior to the program, MomsOnTheMove will conduct a community needs assessment to determine priorities for developing a physical activity intervention. Our initial review of quantitative data demonstrated a relative lack of physical activity prevalence, and a heightened prevalence of chronic health conditions in South L.A.; however, more information is

needed. MomsOnTheMove will conduct key informant interviews with local healthcare providers, community organizations like the YMCA, and community members to learn about the specific types of physical activities that are already performed and available in the community. This information will help us build on the communities' existing strengths and interests throughout our program. Furthermore, we will conduct focus groups with mothers from South L.A. schools to understand which aspects of physical activity they are interested in learning about, and how they might feel supported in a group learning environment.

PROGRAM DESCRIPTION

Program Goal: MomsOnTheMove aims to improve overall health and prevent chronic disease among Latina mothers in South Los Angeles (L.A.), California through increasing physical activity. **Program Rationale:** Physical inactivity is a risk factor for heart disease, diabetes, cancer, and unhealthy weight gain.⁵ Utilizing key constructs of Social Cognitive Theory (SCT), the Health Belief Model (HBM), and the Information-Motivation Behavioral (IMB) Skills Model, MomsOnTheMove will deliver a community-level web-based intervention that has two main components: 1) a private Facebook group with community support and weekly informational materials on physical activity, and 2) weekly group physical activity classes via Zoom that lead women through different types of physical activities.

1. Attitude Objective: By September 1, 2024, Latina mothers aged 18-39 in South L.A. will increase self-efficacy in their ability to perform physical activities despite facing obstacles by a mean increase of 30 points on the The Barriers Self-Efficacy-Physical Activity (BARSE-PA) Scale.⁹ **Rationale:** According to Social Cognitive Theory (SCT), individuals' behaviors are influenced by the intersection of personal factors, social structures, and environmental determinants.² Self-efficacy, which is defined as “confidence in one’s ability to take action,” is a

key concept of SCT and suggests that individuals can achieve behavior change even when faced with obstacles given appropriate resources.² Through group physical activity classes, MomsOnTheMove will strengthen participants' sense of agency by helping them work through and build plans to address common barriers to physical activity including lack of social support, motivation, and perceived skill.⁵

2. Behavior Objective: By September 1, 2024, Latina mothers aged 18-39 in South L.A. will increase their time spent performing physical activities each week by a mean increase of 5 units as reflected on the Godwin Leisure-Time Exercise Questionnaire (LTEQ).¹⁰ **Rationale:**

Information-Motivation-Behavioral (IMB) Skills Model posits that individuals will develop positive health behaviors once they understand the information about a health topic and are motivated by personal or social factors to perform that health behavior.² MomsOnTheMove will provide information on physical activity and motivate women to engage in physical activity through a group-learning environment. Participants will have the opportunity to spend time practicing at least 30 minutes of moderate to strenuous physical activity during weekly live classes, which will fulfill at least 5 units per week on the LTEQ.

3. Process Objective: By May 1, 2024, MomsOnTheMove will hire a bilingual (Spanish and English) board-certified Health Coach to lead the twelve weekly group-based physical activity classes. **Rationale:** Utilizing principles of Community-Based Participatory Research (CBPR), the Health Coach will have prior experience working in predominantly Latina community settings and will lead physical activity classes in a culturally relevant manner.² As demonstrated in Kaiser Permanente's wellness program, health coaches are frequently used in both group and individual settings to educate and provide support to communities in improving health.¹¹ While health coaching services are increasingly popular in corporate wellness programs, they may be

less accessible to socio-economically depressed communities.¹¹ MomsOnTheMove aims to reduce this disparity by providing participants with the support of a health coach.

STRATEGIES AND ACTIVITIES

Strategy 1: Community Building. Foster a community network for MomsOnTheMove participants to have accountability and role models for engaging in physical activities.

(Objectives 1, 2, 3). **Activities:** 1) Create a private Facebook group and add participants. 2) Encourage participants to introduce themselves and share their physical activity goals, questions, struggles and successes throughout the program. 3) Assign each participant an accountability buddy to encourage physical activity engagement. 4) Hire and train a bilingual Health Coach to serve as a guide and role model for the group. 5) Incentivize group engagement on Facebook page (commenting, liking, and posting) and during Zoom classes (participating in physical activity, cameras on) through a weekly point-based reward system.

Rationale: Past studies support the efficacy of group-based physical activity programs for exercise adherence behavior, specifically those utilizing principles of Social Cognitive Theory (SCT).¹² Key tenets of SCT are progressive goal setting, expectations, observational learning, and reinforcements.² For behavior change to occur, individuals need both credible role models who exhibit the targeted behavior and examples of the behavioral outcomes, as well as opportunities to set incremental goals towards behavior change.² MomsOnTheMove utilizes these concepts as the basis for the buddy system and the use of a health coach, who can provide examples for engaging in physical activity. Additionally, health coaches can provide positive reinforcement to individuals to support them in maintaining lifestyle changes.^{2,13}

Strategy 2: Skill Building. (Objectives 1, 2). Develop MomsOnTheMove participants' skills in performing physical activities, dedicating time to be physically active, and setting attainable

physical activity goals for themselves. **Activities:** 1) Prompt participants to utilize the Move Your Way® (Healthy People 2030 promotional campaign of the Physical Activity Guidelines for Americans) weekly activity planner to set physical activity goals and schedule daily activities.¹⁴ 2) Based on the Move Your Way® materials, develop and post physical activity videos, fact sheets and routines for participants to perform on their own throughout the week. 3) Schedule daily Facebook notification reminders for participants to utilize these tools and practice physical activity. 4) Via Zoom, Health Coach will lead weekly one hour physical activity classes and review goal setting strategies, tools to implement physical activity into daily life, provide motivational coaching and positive verbal reinforcement to participants, and practice engaging in at least 30 minutes of physical activity per class.

Rationale: Following the concepts of the Health Belief Model (HBM), MomsOnTheMove will work to increase participants' self-efficacy through providing information that will address the benefits of physical activity and common barriers that prevent physical activity including lack of time and lack of motivation.² MomsOnTheMove will base this content on the Move Your Way® videos on increasing motivation and implementing physical activity into daily tasks and routines.¹⁴ Additionally, daily Facebook notification reminders will serve as cues to action for participants to engage in physical activity as outlined in the HBM.² A 2018 meta-analysis evaluating the impacts of motivational interviewing on physical activity demonstrated significant physical activity outcomes with motivational interviewing interventions.¹⁵ The MomsOnTheMove Health Coach will use this technique to identify where participants are in the behavior-change process and help them to move forward through setting realistic physical activity goals and overcoming barriers to achieve those goals.^{13,15} These group classes are further

intended to provide participants with a dedicated time to engage in physical activity with the community.

IMPLEMENTATION PLAN

Timeframe: MomsOnTheMove is a 12-week program, beginning June 1, 2024 and ending September 1, 2024, with three months before and after for preparation and evaluation. **Hire and**

Train Staff: By March 1, 2024, MomsOnTheMove will hire one part-time bilingual Program Coordinator (PC), who will recruit participants, manage the Facebook group page, and track

group participation. **Recruit Participants:** On April 1, 2024, MomsOnTheMove will send bilingual digital flyers via email to two South L.A. elementary schools advertising the upcoming summer program to parents. MomsOnTheMove will send four rounds of digital flyers

throughout the two months of recruitment. **Facebook Group:** PC will create a

MomsOnTheMove private Facebook group, add participants, and create a pinned welcome post including an overview of the program, incentive/reward structure, instructions on completing weekly questionnaires and utilizing informational materials, physical activity class day/time and Zoom link, community agreements, and prompts for participants to introduce themselves to the group and build community. The PC will schedule informational Facebook posts for each week of the intervention and daily reminders for participants to engage with the material. **Zoom**

Classes: Participants will attend physical activity classes from 11am-12pm PST every Saturday via Zoom led by the Health Coach. Each class will begin with 30 minutes of information review and answering participant questions. The PC will take attendance. The remaining 30 minutes will be spent engaging in one type of physical activity presented through the informational materials.

The Health Coach will prompt participants to update their weekly planner for the upcoming

week based on new information learned, fill out their weekly questionnaires and satisfaction surveys, and post questions, struggles, and success in the Facebook group page.

EVALUATION PLAN

Process Evaluation: A Project Coordinator (PC) will attend weekly physical activity classes to track attendance and engagement (*reach, dose received*), and observe that each class follows the program's protocol of 30 minutes of information review and motivational coaching followed by 30 minutes of physical activity (*fidelity, dose delivered*). The PC will prompt participants to fill out a 5-point likert scale satisfaction survey at the end of each Zoom class (*dose received*), track participant viewership and engagement of Facebook posts/videos (*dose delivered/received*) and ensure materials cover intended topics (*fidelity*).

Impact Evaluation: Research Questions: *1) Does program participation increase physical activity self-efficacy scores among participants? 2) Does program participation increase participants' time spent engaging in weekly physical activity?* **Research Design:**

MomsOnTheMove will utilize a quasi-experimental nonequivalent pretest posttest design with a randomly assigned control group. The treatment group (n=100) will receive access to the Facebook group page and the weekly live physical activity classes. The control group (n=100) will receive links to the Move Your Way® program website. **Hypotheses:** *Hypothesis 1:*

Program participation increases physical activity self-efficacy scores among participants.

Hypothesis 2) Program participation increases participants' weekly time spent engaging in

physical activity. **Variables:** The independent variables include live physical activity classes (*attended, not attended*) and Facebook informational posts/videos (*viewed, not viewed*). The

dependent variables include physical activity self-efficacy (*baseline, increase, decrease*) and

weekly time spent being physically active (*baseline, increase, decrease*). The control variables

include day/time of physical activity classes, participants' ethnicity, participants' gender identity, and parental status. **Sampling:** MomsOnTheMove will use a convenience sampling strategy to recruit participants from two elementary schools in South L.A. with high proportions of Latinx families (109th St Elementary School, 81% Latinx; 116th St Elementary School, 80% Latinx).¹⁶ The estimated sample size (n=200) is based on one third of 80% of the total student body (745 students).¹⁶ **Inclusion criteria:** participants must be Latina, identify as a woman/mother, aged 18-39, have access to Facebook, Zoom, and WiFi, and be physically able to exercise. Those who sign up for the program and are eligible will be randomly assigned to the treatment or control group. The **unit of analysis** in this study is individuals. **Anticipated internal validity threats** include the following: differences in age, employment status, body ability, housing type/space, and relational status (*selection bias*); and potential dropout due to parents likely having limited time (*attrition*). To address this, MomsOnTheMove will provide a \$15 Visa Gift Card for participants who complete the program (and all surveys), and \$10 Visa Gift Cards for control group participants for completing all surveys. **Measures:** The Barriers Self-Efficacy-Physical Activity (BARSE-PA) Scale assesses adults' perceived capability of engaging in physical activity and has been validated for use in Latinx populations.⁹ The scale asks users to rate their confidence (0 - 100%) in their ability to engage in physical activity despite facing 13 possible environmental, psychological, personal, and social obstacles.⁹ The Godwin Leisure-Time Exercise Questionnaire (LTEQ) is a 4-item questionnaire that records the number of times per week someone participates in mild, moderate, and strenuous activity for at least 15 minutes. Levels (mild, moderate, strenuous) are multiplied by points (3,5,9) to rank individuals' physical activity.¹⁰ Both questionnaires will be distributed online via email as a pre/posttest survey, monthly after each live physical activity class, and 3-months post-intervention for both treatment

and control groups. **Data Collection:** The Program Coordinator will collect data from the BARSE-PA Scale and LTEQ at the end of the program (September 1, 2024), and the Research Evaluator will collect again at 3-months post-intervention to begin analysis (December 1, 2024). The Research Evaluator will analyze the data using SPSS version 29. Descriptive analysis will be used to calculate the primary outcomes of the program (self-efficacy and time spent participating in physical activity). Using a standard effect size of 0.8 with an alpha level 0.05 (CI: 95%) a paired t-test will be used to compare mean scores of the pre/post-tests to determine if improvements have been made. Data will not be used from participants who dropped out of the program, did not complete either or both pre/posttest questionnaires, or did not complete a minimum of 2/3 of the monthly questionnaires.

DISCUSSION

Limitations and future considerations: Of Latinos in South L.A., 32% live in poverty and likely work full time to support their families, which could interfere with the weekly time needed to participate in the program.⁷ Additionally, it could be difficult to recruit participants via email if they are not frequently utilizing technology that would allow them to view the flyers. While MomsOnTheMove will prioritize a large sample size, future interventions may consider strategies to target age more specifically. Future studies may also evaluate environmental determinants to physical inactivity as this is a growing public health concern. Lastly, policies to support physical activity initiatives in vulnerable communities may consider funding for community health coaches. **Budget:** One part-time Program Coordinator (6 month contract; \$6,600); one contracted Health Coach (12 sessions; \$250); one Zoom Premium subscription (3 months, \$45); participant/control group rewards (100*\$15, 100*\$10 = \$2,500) = \$9,395 total; \$46.98 per beneficiary.

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