



**Northern Illinois
University**

**Utilization of Smart Phones for Increasing
Lifestyle Physical Activity in South Asian
Indian Immigrant Women**

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Disclosure



- **Authors:** Manju Daniel and Gagandeep Singh
- **Learning objectives :**
 - To describe motivational strategies to increase lifestyle physical activity (PA) in mid-life SAI women
 - To discuss the impact of smart phones for motivational calls and text messages in increasing lifestyle PA in SAI women.
- There is no **conflict of interest** in this presentation
- **Employer:** Northern Illinois University, School of Nursing
- **Funded by:**
 - Joan Wood Research Award: Northern Illinois University, School of Nursing

Background



- **Physical Activity (PA)**
 - Essential preventive strategy to reduce the risk of cardiovascular disease, diabetes, metabolic syndrome
- **Recommended PA per week**
 - Moderate intensity: at least 150 minutes a week
 - vigorous intensity: at least 75 minutes
 - Equivalent combination of moderate and vigorous intensity aerobic activity
- **PA in SAI women**
 - 50% of midlife SAI women fail to meet the recommended PA guidelines

Background (cont. 2)



- Mortality rate for cardiovascular disease (CVD) among SAIs is twice that of Whites
 - 2.86 v 1.32 events
- Age adjusted predicted risk for coronary artery disease
 - 0.88% for SAI women
 - Non-Hispanic white women (0.61%)
- Prevalence rate for diabetes
 - 13.8% for SAI women
 - National prevalence rate (9.0%) men and women
- Prevalence of MetS among SAIs is twice that of Whites
 - 30% v 13%

Purpose



- Most preferred leisure -time PA in SAI women:
 - Briskwalking
- **Purpose-** To describe the utilization of smart phones
 - Motivational calls to motivate midlife SAI women
 - To incorporate structured brisk walking into their daily lifestyle
 - To increase their lifestyle physical activity

Method



- **Design**
 - Interventional research design
- **Eligibility**
 - Age between 40 and 65 years
 - Born in India
 - Immigrated directly from India
 - No disability
 - Sedentary lifestyle
 - Owned smart phones (received and sent text messages)
- **Sample**
 - 25 midlife SAI women

Method: Exclusion Criteria



- **Known:**
 - Cardiac, respiratory
 - Musculoskeletal, neurological
 - Liver or kidney disease
- **Current:** pulmonary or cardiac symptoms
- **Self-reported History:** myocardial infarction or stroke
- **Surgery:** within the last 6 months
- **Infections:** Acute or chronic infectious disease of hepatitis or HIV
- **Type 1 Diabetes**
- **Medical Condition:** potential of excessive bleeding with an injury
- **Advised by Healthcare Provider:** not to exercise because of a medical condition

Method: Exclusion Criteria (Cont.)



- **Blood sugar**
 - Fasting finger stick blood glucose \geq 200
 - Hemoglobin A1C \geq 9%
- **Blood pressure**
 - \geq 160/100 mmhg
- **EKG**
 - evidence of prior myocardial infarction
 - or cardiac disease
 - or any other abnormality

Method: Recruitment



- **Recruitment Sites**
 - SAI Faith based organizations
 - Christian church, Hindu temple, and Gurudwara for Sikh religion
 - SAI Nonfaith based community organization
- **Recruitment Strategies**
 - Distribution of flyers (English and Hindi)
 - Presentations
 - Weekly announcements
 - Social networking
 - Bilingual research team

Method: Measures



- **Demographics:** age, marital status, number of children, education, employment, income, & religion
- **Objective Measure of PA**
 - HJ323 pedometers
 - Measures average daily steps
 - Given 1 week prior to first works
 - Step count at
 - each work shop, 12wks, 18wks, and 24wks
- **Other**
 - Weekly walking logs to track number of minutes spent per week on brisk walking



Method: Measures (cont. 2)



- **Health Measures**
 - Baseline, 12 weeks and 24 weeks
 - Health history and physical assessment
 - Height, Weight, BP, waist circumference, BS, lipid levels
- **2-min Step Test**
 - Baseline, 12 weeks, and 24 weeks

Method: Measures (Cont. 3)



- **Six Workshop Sessions: Session Guide**
 - Started within 1-3 weeks after baseline visit
 - Held every 2 weeks for first 3 months
 - Workshop modules (each 60 minutes on average):
 1. Let it come from within yourself (Week 1)
 2. Let us think about health and looks (Week 3)
 3. Managing your time (Week 5)
 4. Let us buddy up (Week 7)
 5. Overcoming environmental barriers (Week 9)
 6. Trusting your abilities (Week 11)

Method: Measures (cont. 4)



- **Six Motivational Calls Sessions**

- Script developed

- Calls made every 2 weeks ~~ks~~ 12 weeks

- Alternating with workshop sessions

- Lasted 20 minutes

- **Study Goal:**

- Each participant to increase daily steps by:

- Minimum 3,000 steps a day above the baseline up completion of 24 weeks

Method: Measures (cont.5)



- SA bilingual researcher
- Reminder phone calls
- Reminder text messages
 - Week prior
 - Day prior

Results : Participant Characteristics

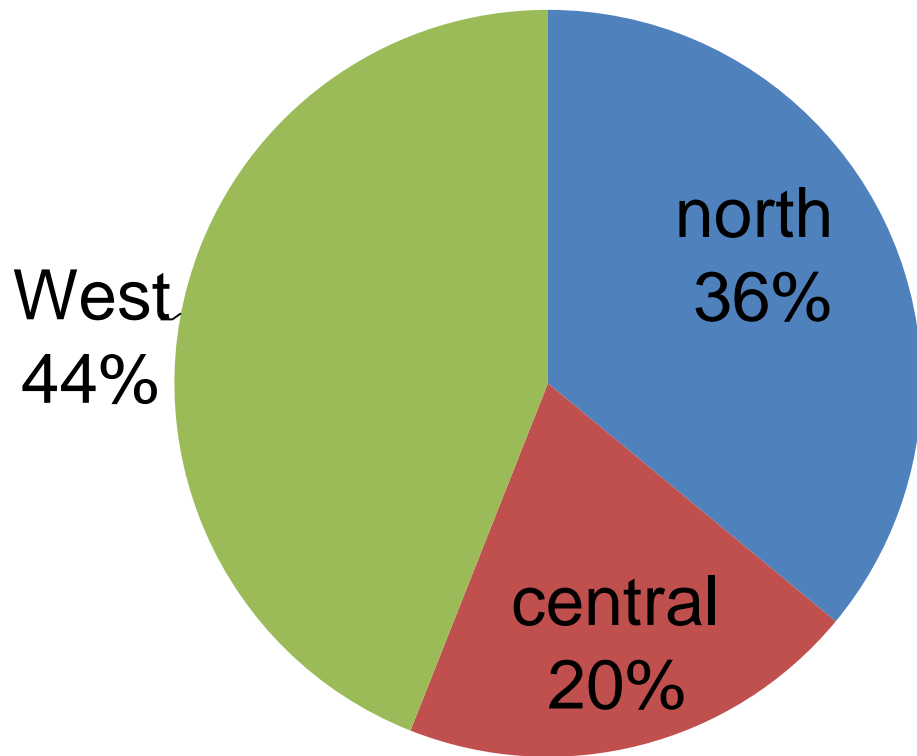


Demographics	Mean (SD)
Age	50 (7.0)
Years living in the United States	21.8 (7.9)
Household size	4.8 (1.45)
	%
Married	100
Have Children	100
Graduated college	84
Currently employed	98
Annual household income > \$50,000	98

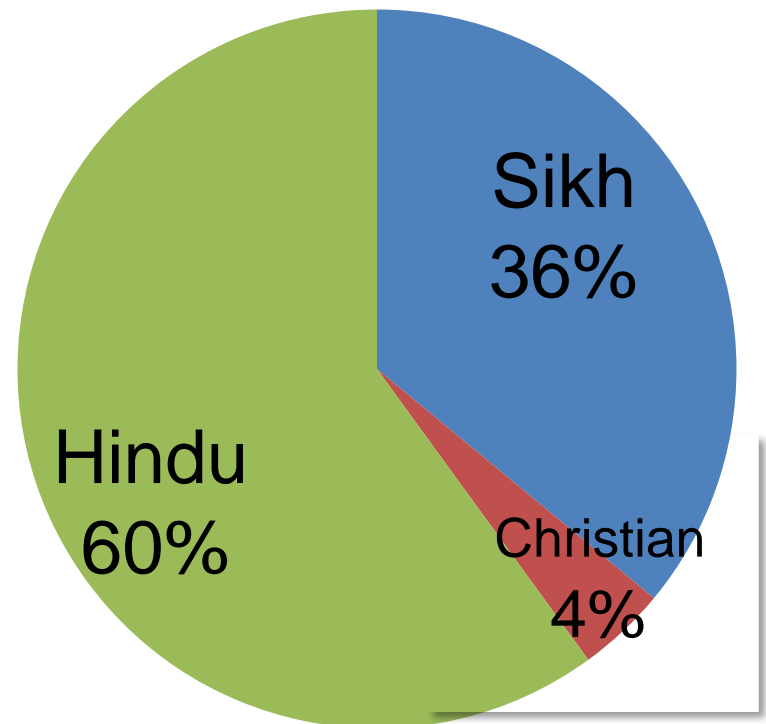
Results :Participant Characteristics (cont.)



Regional background



Religion



Results : Step Count



Weeks	Average Daily steps M (SD)	Weeks	Average Daily steps M (SD)
Baseline	1758.5 (1096.78)	Week 9	4787.9 (2803.72)
Week 3	2537.8 (1563.64)	Week 11	5252.56 (2642.58)
Week 5	3969.7 (2218.04)	Week 13	6198.32 (2970.11)
Week 7	4105.16 (2945.72)		

Results : Step Count Follow Up

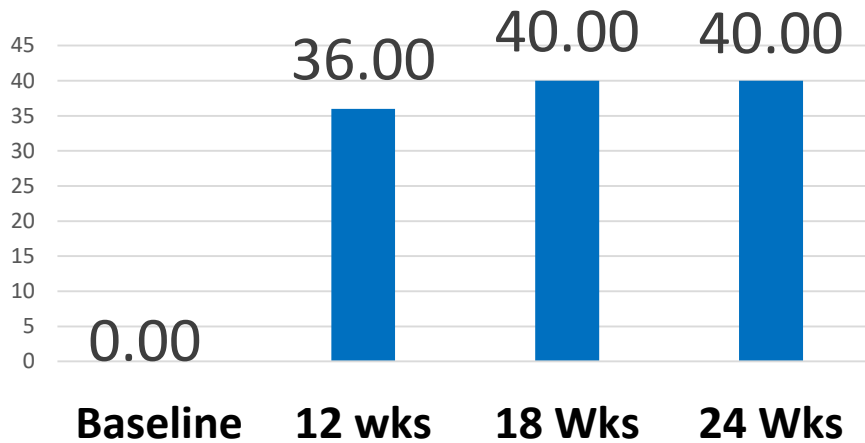


Weeks	Average Daily steps M (SD)	2 Min Step count M (SD)
Baseline	1758.5 (1096.78)	96.9 (10.24)
12 Weeks	6198.3 (2970.11)	104.8 (9.48)
18 Weeks	7598.0 (2428.34)	Not done
24 Weeks	8606.8 (3727.37)	109.4 (11.30)

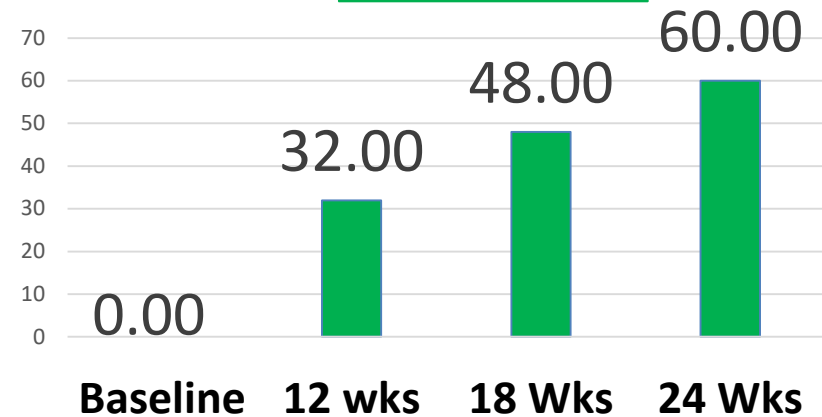
Results: Step Count Progress



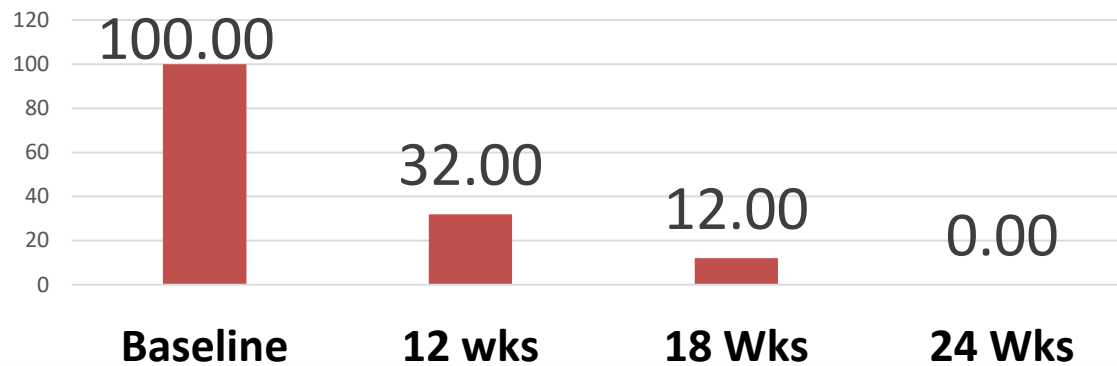
5000-7499 Steps



≥7500 Steps



< 5000 Steps



Results : Anthropometric and BP Measurements



Weeks	Weight in lbs M(SD)	Waist in inches M(SD)
Baseline	139.25 (12.82)	36.4 (3.40)
Week 12	129.08 (11.60)	35.8 (3.58)
Week 24	125.04 (8.03)	35.1 (6.26)
Weeks	SBP M(SD)	DBP M(SD)
Baseline	134.6 (15.01)	79.08 (8.04)
Week 12	127.1 (11.36)	80.04 (10.06)
Week 24	121.9 (19.90)	77.75 (7.03)

Results : Lipid Level



Weeks	Triglycerides M(SD)	Cholesterol M(SD)
Baseline	240.0 (141.05)	200.1 (63.38)
Week 12	166.1 (84.85)	178.2 (36.39)
Week 24	134.88 (63.78)	164.0 (22.96)
Weeks	HDL M(SD)	LDL M(SD)
Baseline	70.83 (60.44)	58.71 (49.28)
Week 12	53.63 (15.20)	87.42 (35.83)
Week 24	54.75 (10.47)	79.92 (31.51)

Results: Time spent



- Self reported daily logs
 - Overall time spent per week brisk walking
 - Overall time spent per week increased
 - Number of minutes spent per week on brisk walking
 - Baseline 41 minutes
 - 24 week 158 minutes

Discussion



- Smart phones: good networking resources for SAI women
 - WhatsApp group
 - Weekly and day before reminders
 - Participants interaction started
 - Messages on their progress for walking
 - Starting gym membership
 - Walking at stores, at work
 - Fitbit watches
 - Healthy nutrition recipes
 - Bonded created a cohort

Discussion (cont.2)



- SAI faith based organizations
 - Good locations for recruitment
 - Community involvement
 - Community approval for women's PA program
 - No need to make extra trip for workshops
 - Arranged on weekends
 - During lunch hour (SAI nofaith based)

Discussion (Cont. 3)



- Community stakeholders provided vital support for recruitment :
 - Social networking
 - Phone calls
 - Email messages
 - Flyer distribution
 - Placing notices on bulletin board
 - Being present at community presentations
 - Provided vital support in arranging locations with privacy for:
 - Health history and assessment
 - Measurements—Height, weight, waist circumference

Discussion (Cont 4)



- Culturally sensitive bilingual staff was appealing to SAI community
- Motivational calls
 - perceived as an additional benefit
- Meeting in groups
 - provided interactive learning, motivation, and encouragement to continue in study
- F/U every 2 weeks, 12, 18 and 24 weeks
 - Continuous improvement
 - Step counts, body weight and BP
 - Motivation to continue in meeting step goals
- No attrition

Limitations and Implications



- **Limitations:**
 - Downloading data from HJ323 pedometers was time consuming and challenging process
 - Female participants
 - Midlife sample
- **Implications:**
 - Future researchers to use easily downloadable accelerometers or actigraph:
 - With good reliability and validity
 - That could hold 2 weeks of data
- Collaborative partnership with SAI community's key stakeholders:
 - for women's walking program at other locations
 - for men's walking program

Implications



- During workshops discovered importance of:
 - Smart phones
 - Faith based organizations
 - Physical activity motivational groups
 - Group walking program
 - Group yoga
 - Group stretching/toning exercises
 - Group Indiandance

Conclusion



- Utilization of smart phones for:
 - motivational calls and text messages
 - An effective innovative strategy
 - For promoting enhanced lifestyle PA in midlife SAI women
 - For increasing number of minutes spent per week for brisk walking
 - BP control
 - Body weight management
 - Waist circumference
 - Cholesterol management

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