Reducing Cardiovascular Disease Risk in Adults of Miami-Dade County

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Miami Dade County in Florida has increased immensely in population within the last decade. The county has a current population of almost 3 million people.1 Most of the population is of Hispanic/Latino origin at 71.57%.1 Most of the population is also White at 75.96%.1 The average age of the population is about 45-54 years old.1 In 2019, about 54.7% of the county was made up of immigrants.2 Cardiovascular disease (CVD) is a type of disease that affects the heart or blood vessels and consist of: heart disease, occurrence of a heart attack or stroke, heart valve problems, and more.3 The main risk factors of CVD are high blood pressure and/or cholesterol, smoking cigarettes, physical inactivity, being overweight or obese, diabetes, and others.3

About 62% of adults in Miami Dade are overweight or obese.4 As of 2019, about 31% of adults in Miami Dade do not exercise regularly.5 From 2010-2020, an average count of 6,873 people died from CVD in Miami Dade County.6 According to the University of Miami Community Health Needs Assessment, 84.3% of Miami Dade County adults have reported one or more CVD risk factors.7 The Latino population has disparities in access to care due to disadvantages in limited educational attainment, inadequate health insurance coverage, citizenship and immigration status, English proficiency, and financial difficulties.8 Educational attainment contributes to health literacy which affects knowledge of disease, risk factors, use of health services, and interventions available. With these health disparities and behavioral risk factors taken into consideration, this report will focus on incorporating physical activity and healthy eating habits amongst adults in Miami Dade County.

The transtheoretical model of change describes the stages of change that people go through and the mechanisms that they use to adopt new health promoting behaviors.9 The transtheoretical model consists of 6 stages of change: precontemplation, contemplation, preparation, action, maintenance, and termination.9 These ordered stages represent the

progression that people go through when changing a health behavior. This model also consists of 4 main constructs: stages of change, decisional balance, self-efficacy, and processes of change.9 Physical activity and healthy eating habits are one of the most difficult behavioral changes to incorporate and maintain in one's everyday life.

Motivational interviewing (MI) is a counseling technique focused on enhancing motivation in participant's life by expressing empathy, developing discrepancies in behaviors, being aware of resistance to behavioral changes, and supporting self-efficacy of participant's decisions.10 This is done through setting personally meaningful goals, providing feedback, and exploring current and imagined futures for the participants to gain confidence in behavioral changes.

Ismali et al study focused on reducing weight and increasing physical activity levels.10 One group of high-risk CVD participants had group MI in addition to health trainers. The other group of participants had individual MI and health training. The third group received usual care referring to community-based weight loss and exercise programs. Participants in the MI groups are currently in the action stage by using the self-monitoring diaries and action-planning worksheets.10 Participants receiving usual care are also in the action stage because they are still participating in a program that is meant to change their behaviors. The maintenance stage was defined in this study since the participants had to maintain the physical activity behavior for more than a year. There were no significant results in weight loss and increase in physical activity due to participants having high CVD risk.10 The authors hypothesized that the enhanced MI with additional behavior change techniques would show significant results in those with lower CVD risk.10

Hardcastle and the other authors focused on examining changes in BMI, weight, physical activity, blood pressure, or cholesterol levels within 1 year of MI and health consultations.11 MI was conducted in addition to consultations with a physical activity specialist or registered dietician.11 The participants met up 4 times for 20-30 minutes in a 6-month period.11 The other group of participants only received information on health promotion behaviors to reduce risk of CVD, they did not attend any consultations.11 The action stage of the transtheoretical model was shown when the participants adopted new health behaviors like healthy eating and increasing physical activity levels. The maintenance stage was examined during the follow up assessment after 12 months to determine if the health behaviors remained or improved. The most significant results were an improvement in walking and cholesterol that were maintained at 12 months. The results were significant in that low-intensity MI counseling intervention is effective for long-term health behavior changes in some health-related outcomes associated with CVD risk.11 The study aims for future research to focus on outcomes specific to risk factor to adjust MI techniques to enhance long-lasting behavioral changes.

This theory-based intervention will be influenced by a study that wanted to evaluate the effectiveness of wearing a device that tracks physical activity and health outcomes of older participants that completed a cardiac rehabilitation program.12 In addition to having a mobile application that provides educational and motivational messages to engage in physical activity and healthy eating habits.12 This study used a test-based mobile application called “Movn” where participants are able to track their weight, blood pressure, heart rate, and medication use daily.12 These participants were in randomized controlled trials that consisted of wearing a Fitbit and using the “Movn” mobile application that provided notifications on cardiovascular disease prevention and benefits of physical activity over 2 montths.12 The participants in the action stage

were self-monitoring their physical activity and health stats on the app and following what type of exercises they should do.12 The intervention was successful in that the technology was effective in providing motivation and reminders to be physically active.12 The participants mostly did not like that the messages were automated and recommended to make messages more personalized to increase motivation. Many participants in this study maintained their health behaviors by keeping the tracker and the Fitbit application.

The intervention for Miami Dade adults will be mostly influenced by the previous study. This intervention will mainly use Fitbit. This tracker has become more popular and affordable. The Fitbit app is easy to use and has many features like providing heart rates during exercises, records nighttime sleeping and resting heart rate, food logging, menstrual health tracking, reminders to walk to complete steps, and even logging emotions and guided breathing sessions.13 The app even includes a community blog where people can follow other people's Fitbit challenges, have videos and articles on different types of exercises, and be able to share your progress with others like a social media app.13 One group of participants will only have the Fitbit to monitor their physical activity, heart rate, and other medical information while receiving motivational interviewing. This first group of participants will be assigned to a health trainer to be able to set goals, provide background information on nutrition, and what exercises will be best benefitting the participant. The second group of participants will only use the Fitbit app without the consultation of a health trainer. This is to see whether having a health trainer is essential in the maintaining health behavior changes or if an app like Fitbit can solely provide the motivation needed to change behaviors.

The transtheoretical model applies to this intervention because the participants must be in the action stage of wanting to change their health behaviors to reduce CVD risk. The outcome is

to examine whether the Fitbit app helps these adults with CVD risk maintain their behavioral changes with the mobile application features provided. The intervention should last a year and the participants should be observed 6 months and 1 year after the intervention to examine whether the participants maintained their behavioral changes. A survey will be provided before the intervention that asks questions about vegetable and fruit consumption, junk food or fast-food consumption, what typical meals are eaten in a week, what physical activity does the participant incorporate in their life and how often are they physically active. After the year long intervention and afterwards, the participants will be provided with the same survey to be able to compare whether there was a change in health behaviors.

The outcome expectations of this intervention are that participants do moderate-intensity cardio activity 150 minutes per week or 75 minutes of vigorous aerobic activity per week.14 The participants should eat 1-2 cups of fruit per day and 2-3 cups of vegetables per day as part of a healthy eating lifestyle.15 This depends on the socioeconomic status of these participants and whether they have access or are able to buy these fruits and vegetables daily. The realistic outcome expectation is incorporating fruits and vegetables at least 4 times a week into their diet. The overall goal with this intervention is to increase confidence and overcome barriers of incorporating physical activity and healthy eating into their lifestyle.

References

1. Miami Dade Matters. Ethnicity Data for County: Miami Dade. Miamidadematters.org. Updated March 2022. https://www.miamidadematters.org/demographicdata?id=414&sectionId=941.

2. Miami Dade County News. New Research Shows Immigrants Play an Outsized Role in the Local Economy and Make Miami-Dade Thrive. Miamidade.gov. Published August 2021. https://www.miamidade.gov/releases/2021-08-25-mayor-onareport-release.asp

3. American Heart Association. What is Cardiovascular Disease? Updated May 2017. https://www.heart.org/en/health-topics/consumer-healthcare/what-is-cardiovascular-disease

4. Florida Department of Health, Division of Public Health Statistics and Performance Management. Adults who are overweight or obese. Flhealthcharts.gov. Updated March 2022. https://www.flhealthcharts.gov/ChartsReports/rdPage.aspx?rdReport=BrfssCounty.Dataviewer

5. Florida Department of Health, Florida Behavioral Risk Factor Surveillance System. Adults who are sedentary. Flhealthcharts.gov. Updated March 2022. https://www.flhealthcharts.gov/ChartsReports/rdPage.aspx?rdReport=BrfssCounty.Dataviewer

6. Florida Department of Health, Bureau of Vital Statistics. Major Cardiovascular Disease Deaths. Flhealthcharts.gov. Updated March 2022. https://www.flhealthcharts.gov/charts/DataViewer/DeathViewer/DeathViewer.aspx?indNumber=0085

7. University of Miami Health System and Jackson Health System. 2020 Community Health Needs Assessment: Miami-Dade County, Florida. Umiamihealth.org. Updated January 2021. https://umiamihealth.org/-/media/UHealth/CHNA/2020-chna-report-miami-dade-county-fl.ashx

8. Oh H, Trinh MP, Becerra D. Addressing Barriers to Primary Care Access for Latinos in the U.S.: An Agent-Based Model. *J Soc Soc Work Res*. 2020;11(2),165-184. DOI: 10.1086/708616

9. DiClemente RJ, Salazar LF, Crosby RA. Chapter 6: Stage Models for Health Promotion. *Health Behavior Theory for Public Health: Principles, Foundations, and Applications.* Jones & Bartlett Learning LLC. Accessed from UNE Library.

10. Ismail K, Bayley A, Twist K, et al. Reducing weight and increasing physical activity in people at high risk of cardiovascular disease: a randomised controlled trial comparing the effectiveness of enhanced motivational interviewing intervention with usual care. *Heart*. 2020;106(6):447-454. doi:10.1136/heartjnl-2019-315656

11. Hardcastle SJ, Taylor AH, Bailey MP, Harley RA, Hagger MS. Effectiveness of a motivational interviewing intervention on weight loss, physical activity and cardiovascular disease risk factors: a randomised controlled trial with a 12-month post-intervention follow-up. *Int J Behav Nutr Phys Act*. 2013;10:40. Published 2013 Mar 28. doi:10.1186/1479-5868-10-40

12. Elnaggar A, von Oppenfeld J, Whooley MA, Merek S, Park LG. Applying Mobile Technology to Sustain Physical Activity After Completion of Cardiac Rehabilitation:

Acceptability Study. *JMIR Hum Factors*. 2021;8(3):e25356. Published 2021 Sep 2. doi:10.2196/25356

13. Hildreth D, Rowden A. The 7 best Fitbits for 2022: Comparison Guide. *Medical News Today.* Updated March 2022. https://www.medicalnewstoday.com/articles/best-fitbit#_noHeaderPrefixedContent

14. Bubnis D, Lindberg S. How Often Should You Work Out? Healthline. Updated May 2020. https://www.healthline.com/health/how-often-should-you-work-out

15. CDC Newsroom. Men, younger adults, and people living in poverty get fewest fruits/vegetables. Updated November 2017. https://www.cdc.gov/media/releases/2017/p1116-fruit-vegetable-consumption.html