How Physical Activity and Dietary Challenges Affect Self-Management Strategies among

Americans with Type 2 Diabetes

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Abstract

In their qualitative study on "Neighborhood influences on physical activity among low-income African American adults with type 2 diabetes mellitus," Park et al. (2020) found out that neighborhood influences like crime, socio-economic inequalities, and concentrated poverty were significant barriers to physical activity and dietary choices, adversely affecting type 2 diabetes self-management practices and increasing its complications. On the same note, Camplain et al. (2022), in their quantitative study, "Change in physical activity, food choices, and hemoglobin A1c among American Indians and Alaska Natives with type 2 diabetes," determined that positive behavioral choices associated with an increase in physical activity and healthy food choices significantly improved blood sugar levels over three years. As a result, a review of the qualitative and quantitative studies highlighted that physical activity and healthy eating, combined with weight management, are critical in controlling blood sugar levels and promoting a healthy lifestyle for people with type 2 diabetes.

How Physical Activity and Dietary Challenges Affect Self-Management Strategies among Americans with Type 2 Diabetes.

Qualitative Study: "Neighborhood Influences on Physical Activity among Low-income African American Adults with Type 2 Diabetes Mellitus"

Introduction

Nutrition and physical activity are significant in helping people with type 2 diabetes manage their diabetes by controlling their blood sugar levels and reducing cholesterol. However, since neighborhood shape life with diabetes *(where did you get this information? This indicates 'causality'. We need a RCT to prove causality)*, populations that lack the community infrastructure supporting self-management strategies for type 2 diabetes can significantly affect health outcomes for people with diabetes. In this case, Park et al. (2020) highlighted in their study that community and neighborhood characteristics such as low employment and income rates, *(this study does not investigate these variables. The authors mention other studies which investigated, but not their study)* higher levels of crime, and limited resources to support physical activity and healthy eating *(the authors discuss about other studies which investigated this variable, but their study did not investigate it)* have considerable impacts on physical activity and dietary choices among populations with type 2 diabetes. Studies show that neighborhood disadvantages such as the unavailability of healthy foods, low socio-economic status, higher levels of crime, and walkability may contribute to poor diabetes control by hindering people with type 2 diabetes from adopting a healthy behavioral lifestyle and dietary choices, translating to higher blood sugar levels (McDoom et al., 2020). Specifically, their study explored how neighborhood and socio-economic influences such as a lack of recreational activities, safety concerns, and low-income limited levels of physical activity, healthy eating, coping strategies, and social support towards African Americans with type 2 diabetes. *(this is completely correct. The study explored influences of*

the neighborhood environment on PA among people living with T2DM in an underserved community, and a secondary objective was to understand how experiences may differ for people with both T2DM and physical disabilities. Social support, coping strategies, and neighborhood features were themes that emerged as affecting physical exercise)

Methods

The research design ~~emphasized~~ used a qualitative approach that collected and analyzed ~~non-numerical~~ data obtained through ~~open-ended~~ 13 individual in-depth interviews and 7 focus groups to explore ~~in depth~~ the respondents' perceptions of neighborhood influences on physical activity and type 2 diabetes care. The design approach also enhanced privacy and confidentiality. *(this information is not in the article)* In Phase I: Parent study, purposive sampling was used to identify 71*(67)* adult participants from a low-income African American community in Southwest Baltimore with far below median household income. The research expanded recruitment to include participants of Union Square, Franklin Square, and Mount Clare. They also used word of mouth and placed flyers at community centers, markets, and other public places to create awareness and attract volunteers and interested participants. In these areas, crime rates were high, tree cover and vegetation were less than normal, and shootings were higher than in Baltimore. Phase II: Sub-study employed the same eligibility criteria as in Phase I but used emergent design and snowball sampling to ~~inform~~ additional data collection. Data analysis involved transcribing and analyzing digitally recorded open-ended interviews and field notes to identify emergent themes.

Results

Results showed that major neighborhood themes and characteristics such as insecurity and poor access to recreational facilities hindered the adoption of physical activities, creative coping strategies like walking in preferably safe streets enhance physical activities, and support from family, community organizations, and healthcare providers were main sources of motivation to exercise and engage in healthy food choices*(this was not in the present study)*. Their responses emphasized the challenges of neighborhood insecurity and its hindrance to engaging in physical activities, such as discouraging communities from walking after dark. For example, one respondent highlighted that "When it gets dark, it's not secure enough for anyone to walk around and get exercise to improve diabetes" (Park et al., (2020, p. 5). However, a support system like family and community health centers and organizations motivates them to exercise. For example, organizations improve neighborhood safety by fitting lights, educating and connecting, facilitating yoga or dance classes, and enhancing physical activities and networks.

Discussion

Generally, the results showed that neighborhood disadvantages such as security issues, lack of recreational facilities, and walkable spaces limited people with diabetes from engaging in physical activities, exacerbating type 2 diabetes complications. The results agree with Yasmin et al. (2020) conclusion that the lack of safe public places and walkable such as parks for physical exercise were major challenges to the overall type 2 diabetes management in communities with low socio-economic status. Additionally, food insecurity in the community negatively impacted healthy eating, affecting type 2 diabetes management practices among African Americans*(not investigated in this study)*. However, one limitation of the study is that the purposive sampling strategy excluded more type 2 diabetes participants, encouraging researcher bias because of the subjective assumptions when choosing participants.

Quantitative Study: "Change in Physical Activity, Food Choices, and Hemoglobin A1c among American Indians and Alaska Natives with Type 2 Diabetes"

Introduction

In the qualitative study, Park et al. (2022) stressed the need for physical activity and healthy lifestyle choices in managing type 2 diabetes. In this quantitative study, Camplain et al. (2022) acknowledged the importance of physical activity and healthy food choices in managing and reducing blood sugar levels among people with type 2 diabetes. The prevalence of type 2 diabetes among American Indians and Alaska Natives (AI/AN) was more than 15%, the highest record of all U.S. population groups (Camplain et al., 2022). Alaska natives had a 6-24% type 2 diabetes prevalence. Specifically, the study examined the relationship between physical activity and healthy dietary choices and how they affected hemoglobin A1c (HbA1c) among AI/AN adults over three years.

Methods

The study designed a Special Diabetes Program for Indians (SDPI) Healthy Heart (HH) to translate knowledge regarding improving diabetes risk factors. It involved 30 healthcare programs managed by healthcare providers in the state and administrative health agencies, with the University of Colorado Anschutz Medical Campus as the Coordinating Center. 3,039 participants of the majority age with type 2 diabetes diagnosis participated in the SDPI-HH. They were AI/AN recruited from January 2006 to July 2009 through community and clinical activities involving provider referrals or health affairs. They filled in their demographic data, comorbid healthy conditions, physical activity and dietary choices, and alcohol consumption in the Rapid Assessment of Physical Activity (RAPA) questionnaire. The program evaluated the participants' physical activity, food choices and frequency, and HbA1c. Researchers used

multivariate logistic regression models to evaluate the relationship between the participants' physical activity and healthy food score and compared the distribution of HbA1c using ANOVA tests. However, SAS 9.4 informed all the analyses, with results significant if the P-value was <0.05.

Results

Results indicated a mean RAPA of 3.89 and a low healthy food score at baseline, categorizing 62% of participants as inactive regarding physical activity. However, they reported significantly higher physical activity during follow-up year one than baseline. Moreover, participants recognized as physically active were associated with healthy food choices in the follow-up years compared to the baseline. At the same time, active participants, particularly women, who promote healthy food choices reported lower blood sugar levels than those who were inactive and promoted unhealthy food choices. However, in follow-up year three, participants who did not significantly improve their physical activity or healthy food scores reported increased blood sugar levels.

Discussion

The results confirm that physical activity levels and promoting a healthy diet help people with type 2 diabetes manage their condition, leading to lower blood sugar levels and overall quality of life. Indeed, diet and physical activities significantly reduce blood sugar levels because they predict positive outcomes in diabetes management by informing healthy coping strategies, effective self-management, and optimal health outcomes (Adu et al., 2019). Additionally, considering the slight health outcomes differences between men and women, the results indicate that men and women manage diabetes differently. Therefore, self-management strategies for type 2 diabetes should differentiate by gender for efficacy. However, the study is not without

limitations. Self-reported data may lead to inconsistency of results. Additionally, participant retention and the idea that half of the participants did not complete the baseline questionnaire while 60% did not complete the third-year questionnaire might have led to invalid or inconclusive results.

Evaluation of the Articles

Qualitative Study

Park et al. (2020) study "Neighborhood influences on physical activity among low-income African American adults with type 2 diabetes mellitus," published in *The Diabetes Educator Journal*, highlights the neighborhood challenges people with type 2 diabetes, particularly Baltimore residents, face regarding physical activity and food availability in the management of their condition. Additionally, considering that the authors are knowledgeable in health, health technologies, and medicine and affiliated with reputable academic institutions like Johns Hopkins School of Public Health and the University of Maryland in Baltimore, they are experts in their fields. By exploring how neighborhood factors affect physical activity among patients with type 2 diabetes, the authors add clinical evidence that healthcare plans should incorporate religion and spiritual practices to balance professional treatment for type 2 diabetes. *(the study didn't investigate this)*

The article does not seem to appeal to a specific group. For this reason, it is geared toward the general audience, compelling the researcher to use general language for all people to understand the article.*(what do you mean by this?)* As such, the authors use general phrases

throughout the article to present their arguments. It is also critical to note that the authors do not promote wishful thinking because their arguments are valid and backed by empirical evidence*(that's is what is expected from any and every research)* drawn from a variety of reputable sources such as government agencies and organizations, healthcare journals, books written by experts in their fields, other scholarly publications such as the American Diabetes Association, *American Journal of Public Health* and Baltimore City Health Department.

Since qualitative studies explore and understand people's beliefs, attitudes, and behaviors, it is critical to appraise the study design's approach that emphasizes face-to-face interviews*(they also used focus groups)* to collect data on neighborhood characteristics and their influence on physical activity. Besides generating non-numerical data, face-to-face conversations help explore issues or topics in detail, helping researchers gain in-depth, rich, and cultural interactions with the population under study (Saarijärvi & Bratt, 2021). Most importantly, although limitations address the study's potential weaknesses, providing them strengthened the study identifying specific problems before other researchers or readers identified them*(that's not correct. They even referred to other researches)*.

Quantitative Study

Camplain et al. (2022) quantitative study, "Change in physical activity, food choices, and hemoglobin A1c among American Indians and Alaska Natives with type 2 diabetes," published in the *Preventive Medicine Reports,* highlighted the need for physical exercise and better dietary choices in managing type 2 diabetes. The study focuses on the topic by contextualizing the relationship between physical exercise, healthy dietary choices, blood sugar levels, and managing type 2 diabetes.

Regarding the study design, it was an appropriate design for the quantitative approach the study applied. Usually, quantitative studies focus on <mark>generating numerical data that can be converted to numbers</mark>*(??)* to examine various variables and detailed information regarding the various variables under study. As a result, it is critical to acknowledge using a program database to collect data on the health, <mark>religion</mark>, and socio-economic status of the population under study because it provides more understanding of a series of study participants to explore possible links to the outcome.*(this sentence is confusing)*

Furthermore, Camplain et al. (2022) do not also promote <mark>wishful thinking</mark>*(what do you mean by that?)*. Their arguments are backed by evidence from reputable and verifiable sources, including national health agencies, scholarly journals, and books such as the American Diabetes Association and the *International Journal of Public Health*. While the article is good research because it is reproducible, replicable, and transparent, it also addresses its limitations and potential weaknesses, allowing readers and other researchers to place the study's findings in context or ascribe a credibility level to the conclusions.

Where is your research question in pico format?

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