

Nourishing Knowledge: Development and Assessment of the Impact of Low-Health-Literacy-
Tailored Nutrition and Healthy Living Educational Handouts in Group Diabetes Management

Class Settings

Honors Thesis

Aaditi Kulkarni

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Advisor: Lauren Sastre, PhD, RDN, LDN

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I. Introduction

In the United States, approximately 37.3 million Americans - or 11.3% of the population - have type 2 diabetes, with a further 8.6 million individuals undiagnosed. The economic burden of diabetes care and management exceeds \$327 billion annually. Despite the financial investment, disparities in diabetes prevalence and outcomes persist, disproportionately impacting socioeconomically disadvantaged communities. Diabetes self-management education (DSME) has emerged as a valuable approach, with its success being studied to improve glycemic control and patient outcomes. However, there is a significant knowledge gap regarding the utilization and effectiveness of DSME among lower-resource, lower-income, and lower-literacy medically underserved patient groups.

Extensive research has highlighted the efficacy of DSME in enhancing glycemic control and patient outcomes in patients with type 2 diabetes. However, these studies predominantly focus on populations of higher socioeconomic statuses, potentially overlooking the unique challenges faced by lower literacy and economically disadvantaged patients. Despite the proven success of DSME, there is a pressing need to explore and address gaps in its application within medically underserved communities. Limited research exists on the adaptation and success of DSME approaches for patients with lower literacy levels and fewer resources. This lack of evidence hinders the development of targeted interventions that could effectively empower individuals in these communities to self-manage their diabetes.

The urgency of addressing this knowledge gap is emphasized by the prevalence of low health literacy among individuals with type 2 diabetes. Current statistics reveal a significant portion of the population grapples with health literacy challenges, impacting their ability to effectively manage diabetes. General literacy refers to an individual's ability to read, write, and comprehend

information in a way that allows them to effectively function in society. Building from this idea, health literacy is the ability to obtain, process, and understand basic health information and services needed to make appropriate health and nutrition related decisions. It has been found that nearly 9 out of 10 adults struggle with health literacy, with it being more prevalent among older adults, minority populations, those with low socioeconomic status and medically underserved populations. 50% of Medicare and Medicaid recipients read below the fifth-grade reading level. Moreover, the well-established correlation between lower education, socioeconomic status, and limited general literacy and health literacy, further compounds the challenges faced by individuals with lower literacy skills in adhering to medical treatment plans and implementing necessary lifestyle changes.

Given these factors, the evidence presented highlights the urgent need for research and interventions tailored for lower health literacy and economically disadvantaged populations in the context of diabetes self-management education. In light of these findings and the disparities that persist in diabetes management, the primary objective of this study is to develop, assess the acceptability of, and evaluate the impact of adapted patient education materials designed to cater to the needs of rural, medically underserved, and uninsured patients diagnosed with Type 2 diabetes.

II. Background

It is important to review the multiple factors that shape diabetes management to assess the level of influence each factor, ranging from socioeconomical to environmental, has as well as the effectiveness of the evidence based methods that have been found to improve diabetes management outcomes.

a. Barriers to Effective Diabetes Management

Effective diabetes management faces multifaceted challenges, with barriers extending beyond individual behaviors to encompass broader socioeconomic and environmental factors.

Socioeconomic Disparities

Individuals with lower socioeconomic status often encounter barriers to accessing quality healthcare, medications, and diabetes management education. Research highlights the persistent disparities in diabetes care and outcomes among different socioeconomic groups (Herman et al., 2015). Limited financial resources may lead to difficulties in affording medications, healthy food options, and regular healthcare appointments, hindering optimal diabetes management.

Limited Health Insurance Coverage

The availability and adequacy of health insurance coverage significantly impact diabetes management. Individuals without insurance or with inadequate coverage may delay or forgo essential medical visits, screenings, and necessary medications. Health insurance plays a critical role in ensuring timely access to diabetes related care and interventions (McWilliams et al., 2009).

Social Determinants of Health

Broader social determinants, including the built environment, community resources, and social support, play a pivotal role in shaping diabetes management outcomes. The built environment, characterized by factors such as neighborhood walkability, access to parks, and availability of fresh food options, can influence individuals' ability to engage in physical activity and maintain a healthy diet (Booth et al., 2005). Individuals residing in environments with limited access to sidewalks or healthy food options may face increased challenges in adhering to lifestyle recommendations.

Cultural and Linguistic Barriers

Cultural and linguistic factors impact diabetes management, affecting communication with healthcare providers, adherence to treatment plans, and engagement in self-care practices. Culturally tailored interventions are crucial to address diverse beliefs, practices, and language preferences among individuals with diabetes (Schwei et al., 2016).

Transportation Challenges

Access to reliable transportation is crucial for attending medical appointments, obtaining medications, and participating in diabetes education programs. Individuals without access to transportation may face difficulties in maintaining consistent healthcare engagement.

Limited Health Literacy

As previously discussed, health literacy is a significant barrier to effective diabetes management. Low health literacy can impede individuals' understanding of medical instructions, prescription details, and the importance of lifestyle modifications. The intersection of low health literacy with socioeconomic factors further exacerbates disparities in diabetes outcomes (Berkman et al., 2011).

b. Evidence Based Interventions to Improve Diabetes Management

Effective diabetes management relies on a range of evidence based interventions that have demonstrated positive impacts on patient outcomes.

Comprehensive Diabetes Education Programs

The Diabetes Control and Complications Trial (DCCT) and its follow-up study, the Epidemiology of Diabetes Interventions and Complications (EDIC) trial, provide seminal evidence supporting the effectiveness of comprehensive diabetes education programs. These programs emphasize the importance of intensive glycemic control, lifestyle modifications, and

patient education in reducing the risk of diabetes-related complications (The DCCT/EDIC Research Group, 2016).

Structured Lifestyle Interventions

The Look AHEAD (Action for Health in Diabetes) study, a randomized controlled trial, investigated the impact of a lifestyle intervention on cardiovascular outcomes in individuals with type 2 diabetes. The intervention included intensive counseling on diet, physical activity, and behavior change. Results demonstrated significant weight loss, improved glycemic control, and reduced cardiovascular risk factors in the intervention group compared to the control group (Look AHEAD Research Group, 2014).

Telemedicine and Remote Monitoring

Telemedicine interventions, such as the Cochrane Review by Tchero et al. (2019), have explored the effectiveness of remote monitoring and virtual support in diabetes management. Telemedicine allows for regular monitoring of blood glucose levels, medication adherence, and lifestyle behaviors, facilitating timely interventions and support from healthcare providers.

Group Based Diabetes Education

Group based diabetes education has shown promise in enhancing patient engagement and knowledge. One study evaluated the impact of a community-based diabetes education program targeting African American adults (Gary Webb et al., 2012). The group format fostered peer support, shared experiences, and facilitated discussion, resulting in improved diabetes knowledge and self-management behaviors.

Medication Adherence Interventions

Improving medication adherence is crucial for effective diabetes management. One study evaluated the impact of a pharmacist led intervention on medication adherence in individuals with diabetes (Farmer et al., 2012). The intervention, involving patient education, medication reviews, and adherence counseling, demonstrated significant improvement in adherence rates.

Culturally Tailored Interventions

Tailoring interventions to specific cultural contexts is essential. A study focused on culturally tailoring diabetes education programs for Chinese immigrants (Hu et al., 2016). The intervention incorporated culturally relevant materials, language appropriate content, and community engagement strategies, resulting in improved diabetes knowledge and self care practices.

c. Health Literacy Interventions to Improve Diabetes Management

i. Benefits of Health Literacy Interventions

Health literacy interventions tailored for individuals with diabetes can yield a wide array of benefits, positively impacting various facets of health and well-being.

Improved Understanding of Health Information

Tailored health literacy interventions enhance individuals' comprehension of diabetes-related health information. By using clear language, simplified materials, and visual aids, these interventions help individuals better understand their condition, treatment plans, and self-management strategies (Osborn et al., 2011).

Enhanced Medication Adherence

Health literacy interventions contribute to improved medication adherence. When individuals understand the importance of medications, dosages, and potential side effects, they

are more likely to adhere to prescribed regimens. This is critical for achieving optimal glycemic control and preventing complications (Williams et al., 2008).

Increased Confidence in Self-Care

Tailored interventions empower individuals with diabetes, fostering a sense of confidence in their ability to manage their health. This increased self-efficacy is associated with better adherence to lifestyle modifications, such as dietary changes, physical activity, and regular monitoring (Osborn et al., 2011).

Enhanced Communication with Healthcare Providers

Health literacy interventions facilitate improved communication between individuals with diabetes and their healthcare providers. When patients have a better understanding of their health status, they can engage in more meaningful discussions, ask informed questions, and actively participate in shared decision-making regarding their care (Osborn et al., 2011).

Reduction in Health Disparities

Tailoring health literacy interventions to the specific needs of diverse populations helps address health disparities. By considering cultural, linguistic, and literacy differences, interventions contribute to more equitable access to information and resources, reducing disparities in diabetes outcomes (Berkman et al., 2011).

Increased Engagement in Diabetes Education Programs

Individuals with improved health literacy are more likely to actively engage in diabetes education programs. This engagement leads to better retention of information, increased participation in group discussions, and a greater likelihood of applying learned concepts to daily diabetes management (Paasche-Orlow et al., 2005).

Positive Impact on Health Outcomes

Numerous studies demonstrate that health literacy interventions are associated with positive health outcomes (DeWalt et al., 2004). These outcomes include improved glycemic control, reduced hospitalizations, and a lower risk of diabetes-related complications.

Empowerment and Self-Advocacy

Tailored health literacy interventions empower individuals with diabetes to become advocates for their own health. They are more equipped to navigate the healthcare system, seek appropriate resources, and actively participate in decisions related to their diabetes care (DeWalt et al., 2004).

ii. Results of Prior Health Literacy Interventions

Research studies focusing on health literacy interventions in the context of diabetes management have provided valuable insights into the outcomes of tailored approaches.

The Diabetes Literacy and Numeracy Education Toolkit (DLNET)

A study by Rothman et al. (2008) implemented the DLNET, a health literacy intervention aimed at improving diabetes self-management skills. The toolkit, designed for individuals with low literacy and numeracy skills, included simplified materials, visual aids, and interactive activities. Results indicated significant improvements in participants' diabetes-related knowledge, self-efficacy, and medication adherence.

Project Dulce

Project Dulce, a community-based diabetes care program, incorporated health literacy principles to enhance patient understanding and engagement. A study by Philis-Tsimikas et al. (2004) evaluated the program's impact on glycemic control and found that participants in the intervention group achieved better HbA1c levels compared to the control group. The use of culturally tailored materials and a focus on health literacy contributed to the program's success.

The Talking Prescription Program

Davis et al. (2006) conducted a study on the Talking Prescription Program, an intervention using audible prescription labels to improve medication adherence for individuals with low health literacy. Results indicated a significant increase in medication understanding and adherence rates among participants who received the audible labels compared to those who received standard printed labels.

Tailored Diabetes Education for Spanish Speakers

A study by Rosal et al. (2011) focused on the development and evaluation of a culturally and linguistically tailored diabetes education program for Spanish-speaking individuals. The intervention, delivered in a group format, demonstrated improvements in diabetes knowledge, self-management behaviors, and psychosocial outcomes.

Mobile Health Interventions

Mobile health interventions have also been explored in the context of health literacy. A study by Holtz et al. (2017) investigated the impact of a mobile app designed to improve diabetes self-management among individuals with low health literacy. The results suggested that the app, incorporating plain language and interactive features, positively influenced participants' knowledge and self-care practices.

iii. Barriers to Health Literacy Interventions

Despite the potential benefits, several barriers hinder the successful implementation of healthy literacy interventions. A notable challenge being the unsuitability of existing educational materials for individuals with low health literacy.

Unsuitability of Educational Materials

Many educational materials related to diabetes management are often complex, laden with medical jargon, and assume a certain level of health literacy that may not be representative of all individuals with diabetes. The National Assessment of Adult Literacy (NAAL) reported that a substantial portion of health-related materials exceed the reading abilities of the average adult, limiting their accessibility and effectiveness for those with low health literacy (Kutner et al., 2006). This mismatch between the literacy levels of individuals and the complexity of available materials creates a significant barrier to understanding and applying critical health information.

Limited Readability and Accessibility

Studies emphasize the importance of readability in health communication materials (Rudd et al., 2000). Readability, defined as how easy or difficult something is to read, depends on the text's presentation (font choice, spacing, colors) and context (words and sentences). Many existing materials lack readability, making it challenging for individuals with low health literacy to comprehend essential information. Additionally, limited access to materials in languages other than English further exacerbates the issue, especially in diverse communities where language barriers contribute to disparities in health care and literacy.

Lack of Visual Aids and Interactive Content

Effective health literacy interventions and resources should incorporate visual aids, interactive content, and multimedia elements to enhance comprehension. However, a common barrier is the absence of such features in conventional educational materials. There is a significant need for visual communication tools in conveying health information, especially for individuals with low health literacy (Davis et al., 2006). The reliance on text-heavy materials without sufficient visual support impedes the understanding and retention of crucial information.

Cultural Insensitivity

Cultural factors play a vital role in health literacy, and material that do not consider cultural diversity may contribute to misinterpretation or disengagement. One report highlights the importance of cultural competence in health communication to ensure that educational materials resonate with diverse populations (Brach et al., 2010). Insensitivity to cultural nuances in existing materials may create a barrier to effective health literacy interventions.

d. Gaps in Research

Despite progress in understanding the impact of health literacy interventions in diabetes management, there are notable gaps in research, particularly regarding low health literacy tailored nutrition and healthy living educational handouts. Existing studies have focused on diverse interventions, but the outcomes of interventions specifically centered on low-health-literacy-tailored handouts for nutrition and healthy living in diabetes management remain underexplored. Similarly, few studies have explored the integration of tailored handouts into established programs addressing diabetes related health disparities, leaving a gap in understanding the synergies between tailored educational materials and comprehensive lifestyle interventions.

Given these gaps and barriers faced by individuals with low health literacy, the primary purpose of this research is to conduct a comprehensive study on the development and assessment of the impact of low-health-literacy-tailored nutrition and healthy living educational handouts in group diabetes management class settings within the Fresh Start Program.

The Fresh Start Program

The Fresh Start program serves as the ideal setting for this research study due to its unique approach in addressing diabetes related health disparities in eastern North Carolina. This

mobile, rural health program offers an intensive healthy lifestyle intervention targeting uninsured, low income patients who receive care at free clinics in partnership with the North Carolina Association of Free and Charitable Clinics (NCAFCC). Key components of the program include:

Produce Prescriptions (PRx)

The produce prescription component addresses barriers related to access and acceptance of fresh produce through a weekly distribution of fresh produce, highlighting non-starchy vegetables. Similarly, cooking demonstrations and taste testing allow patients to enhance their cooking skills and familiarity with diverse vegetables.

Group Classes

The group classes include face to face sessions focusing on various healthy behavior topics. During classes, patients have access to in depth discussions, live lectures, aligned handouts, cooking demonstrations, and hands on activities covering fruits and vegetables, weight management, physical activity, produce shopping, and heart health.

Health Coaching

The health coaching aspect involves undergraduate health science students serving as health coaches in collaboration with registered dietician nutritionists. Coaches and patients work on a one-on-one basis to goal set in areas such as reducing energy dense foods, increasing nutrient dense foods, and enhancing physical activity. Regular communication through telephone calls and text check ins are used to support patients in achieving their health goals.

e. Discussion and Implications

This proposed study will add value to the field of diabetes self-management for underserved patients in Eastern NC with type 2 diabetes who have low health literacy rates and live in low-

income households. By addressing this gap in knowledge and resources, this research aims to improve diabetes management and outcomes for these populations.

III. Purpose

The purpose of this study is to holistically investigate the impact of low-health-literacy-tailored nutrition and healthy living educational handouts within the Fresh Start group diabetes management group classes. This will be achieved following two main goals:

1. **Fall 2023** - Develop and update current Fresh Start group diabetes management class educational materials
2. **Spring 2024** - Quantitatively and qualitatively assess patients' satisfaction and content knowledge of the provided nutrition and healthy living educational handouts

IV. Research Question

The guiding questions to be answered through this investigation is as follows:

- a. How can DSME approaches be adapted to address the unique needs of patients with lower literacy levels and fewer resources?
- b. To what extent do adapted DSME resources effectively improve glycemic control and patient outcomes in lower-resource settings, particularly among socioeconomically disadvantaged populations?

V. Methodology

- a. **Goal #1: Develop and update current Fresh Start group diabetes management class educational materials**

The methodology for Goal #1, centered on the development and enhancement of Fresh Start educational materials, begins with a comprehensive assessment of existing handouts. An in-depth examination of handouts sourced from organizations such as the ADA and Learning About Diabetes Inc. has been conducted, acknowledging the valuable insights gained from feedback provided by both patients and organizers engaged in the Fresh Start group diabetes management classes. This initial phase facilitated the identification of critical areas for improvement, particularly concerning the challenges posed by text heaviness, medical jargon, and a lack of patient diversity representativeness. Subsequently, the development process is structured to address these concerns and tailor handouts to the unique needs of the diverse, low health literacy population participating in the Fresh Start program across its eight distinct topics: in order, they include healthy eating and living, fruits and vegetables, carbohydrates, cooking and meal planning, shopping and budgeting, stress and mental health, diabetes self-management, and heart health.

The refinement strategy focuses on reducing text density, incorporating visual enhancements such as images and graphics, and adjusting the reading level to fifth grade or below to enhance accessibility. To ensure cultural relevance, the materials will be crafted to resonate with the ethnic diversity of the patient population, including older White, Black, and Hispanic individuals. Additionally, the methodology emphasizes the incorporation of practical and sustainable suggestions, such as chair exercises for those with limited mobility, recognizing the environmental constraints faced by participants who may lack access to a clean built environment or gym facilities. Ongoing collaboration with patients and organizers remains integral to the development process, with constant review and refinement ensuring that the handouts evolve through systematic feedback loops. Thorough documentation and version

control mechanisms will be implemented to manage changes effectively. Furthermore, the methodology includes the engagement of health literacy experts for validation, and the focus group interview regarding the handouts with a subset of the target population will provide valuable insights into their usability and effectiveness. Ultimately, this structured approach aims to produce 34 updated handouts that align closely with the health literacy needs and cultural diversity of the Fresh Start program participants, contributing to the overall success of the initiative in addressing diabetes-related health disparities in Eastern North Carolina

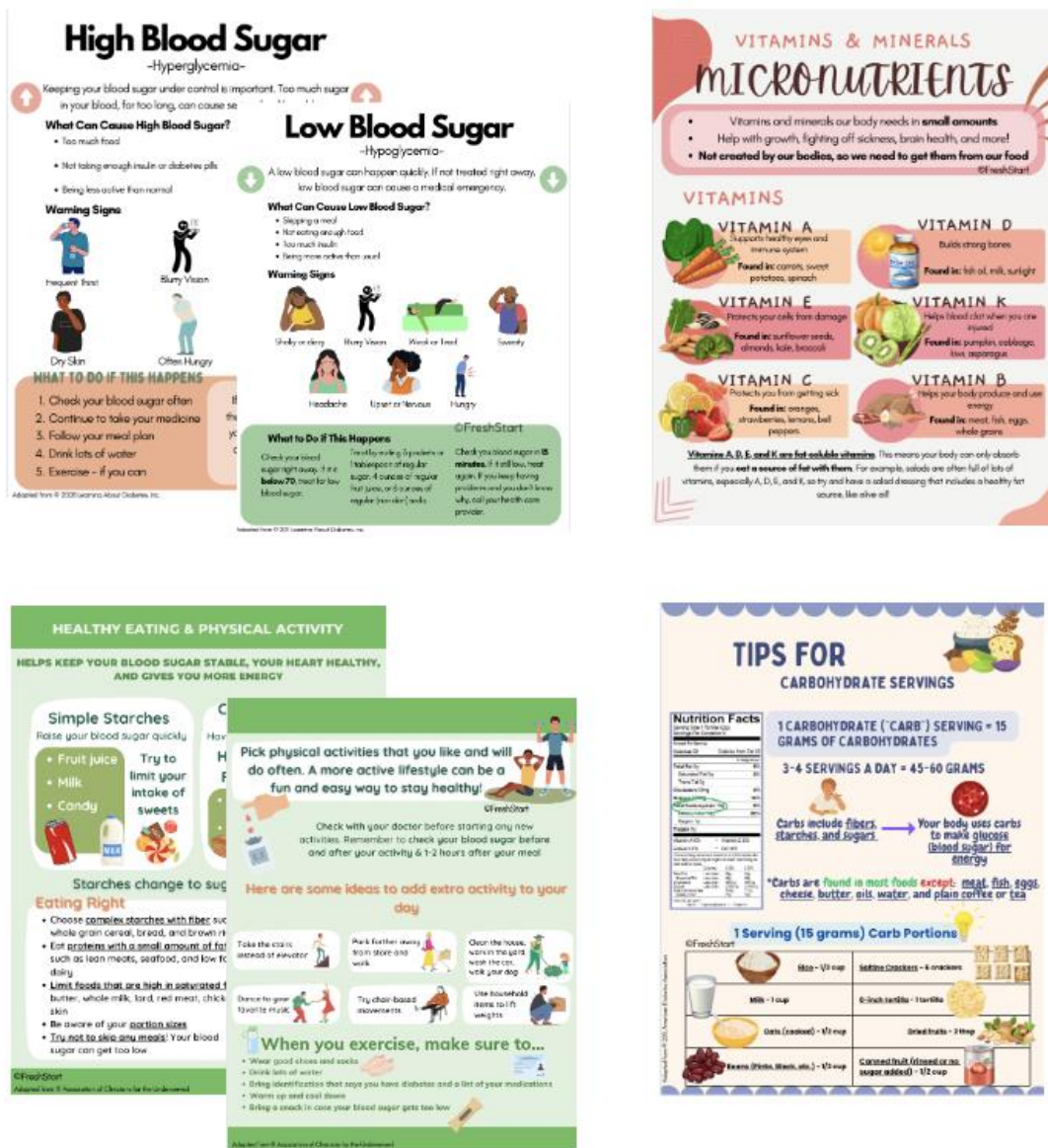


Figure 1: Examples of Adapted Fresh Start Diabetes Self-Management Educational

Handouts

b. Goal #2: Quantitatively and qualitatively assess patients' satisfaction and content knowledge of the provided nutrition and healthy living educational handouts

i. Process for Data Collection

The implementation of Goal #2 involves a comprehensive methodology to quantitatively and qualitatively assess patients' satisfaction and content knowledge regarding the adapted Low-Health-Literacy-Tailored Nutrition and Healthy Living Educational Handouts within the Fresh Start program. During the Spring semester, the adapted handouts will be distributed to patients actively engaged in Fresh Start group diabetes management classes, seamlessly integrating them into the existing curriculum covering eight distinct topics. To capture quantitative metrics, the traditional group class survey will be enhanced with additional questions focusing on the acceptability, impact, and usefulness of the adapted handouts. Concurrently, a series of focus group interviews will be conducted at the conclusion of each of the four group classes, each dedicated to a different handout topic. With an invitation extended to 10 patients per class, the total number of participants in the focus group interviews will be 40. The qualitative data collected during these interviews will delve into patient experiences, exploring aspects such as comprehension, engagement, cultural relevance, and practical applicability. An incentive structure involving a \$15 gift card for each interview participant aims to motivate engagement and ensure diverse representation. The survey data, analyzed using statistical methods, will provide numerical indicators of patient satisfaction, while thematic analysis of qualitative insights will identify recurrent themes and patterns. The triangulation of quantitative and qualitative findings will offer a nuanced perspective on the overall impact of the adapted handouts, contributing to a continuous feedback loop for the iterative refinement of educational

materials within the Fresh Start program. This multifaceted mixed methods approach seeks to provide a comprehensive understanding of patient experiences, facilitating ongoing improvements and contributing to the overall success of diabetes management initiatives in Eastern North Carolina.

Consenting Process

The consenting process begins with an introduction to the research team and an overview of the study's objectives. Participants are explicitly informed that their involvement is entirely voluntary and opting out will not affect their access to the regular benefits and services of the Fresh Start program. Detailed explanations follow, outlining the study procedures, including the distribution of adapted handouts during Fresh Start group diabetes management classes, while emphasizing that participation in the study will not alter routine program activities. Participants are briefed on data collection, with an explanation of the additional survey questions focused on handout acceptability, impact, and usefulness. The option to volunteer for focus group interviews at the end of each class is presented, with an emphasis on the qualitative insights these interviews aim to capture. The confirmation of participants' understanding is sought, and their voluntary and informed consent is obtained. The process concludes with expressions of gratitude for considering participation and a reiteration of contact information for post-consent communications, ensuring participants feel empowered and informed throughout their involvement in the study.

ii. Procedure for Data Analysis

Quantitative data collected via REDCap will be carefully prepared, ensuring consistent coding of Likert scale values. Subsequently, IBM SPSS Statistics will be employed for the primary phase of analysis. Descriptive statistics, such as mean, median, mode, and standard deviation, will be computed to provide a summary of the dataset. The implementation of Goal #2 involves a comprehensive methodology to quantitatively and qualitatively assess patients' satisfaction and content knowledge regarding the adapted Low-Health-Literacy-Tailored Nutrition and Healthy Living Educational Handouts within the Fresh Start program. During the Spring semester, the adapted handouts will be distributed to patients actively engaged in Fresh Start group diabetes management classes, seamlessly integrating them into the existing curriculum covering eight distinct topics. To capture quantitative metrics, the traditional group class survey will be enhanced with additional questions focusing on the acceptability, impact, and usefulness of the adapted handouts. The survey data, analyzed using statistical methods, will provide numerical indicators of patient satisfaction, while thematic analysis of qualitative insights will identify recurrent themes and patterns. The triangulation of quantitative findings will offer a nuanced perspective on the overall impact of the adapted handouts, contributing to a continuous feedback loop for the iterative refinement of educational materials within the Fresh Start program. This multifaceted approach seeks to provide a comprehensive understanding of patient experiences, facilitating ongoing improvements and contributing to the overall success of diabetes management initiatives in Eastern North Carolina.

Establishing Validity and Reliability

For qualitative and quantitative research, trustworthiness is established through internal validity, external validity, and reliability. Validity offers credibility to the value of the research through standardizing the research tools, techniques, and processes, which includes the data

collection and analysis methods. The validity of this research is established by having a research team and supervisor review and provide feedback on survey questions to ensure that there are no leading or loaded questions that can influence the answers of the group class participants.

External validity refers to the generalizability of the results of the study to the larger population. In the case of this study, the sample size is limited to 40 participants across 4 separate DSME group classes. While the sample size is small and not completely representative of the national population, a study regarding the attitudes towards updated low-health literacy tailored DSME handouts in a Fresh Start group class setting is novel and will provide insight into the suitability, readability, and accessibility of the handouts, which have often been critiqued for their lack of readability.

In order to ensure reliability within the study, methodological triangulation will be used along with recording data in an organized manner. Furthermore, a reliability analysis, often using Cronbach's alpha, may be conducted to assess the internal consistency of Likert scale items if they measure the same underlying construct. For comparative purposes, group differences can be explored through inferential statistics like Analysis of Variance (ANOVA). Correlation analysis helps unveil relationships between Likert scale items, shedding light on potential patterns and associations. Additionally, factor analysis may be employed if there is a need to identify underlying factors or dimensions within a set of Likert scale items.

Methodological triangulation is comprised of ensuring the credibility, transferability, dependability, and confirmability of the research. Credibility will be ensured through a thorough review of literature which supports the interview techniques used in the study. Transferability will be established through conducting adequate background research to compare the results of this study to and ensure consistent results. Dependability will be established by providing a

detailed methodology regarding data collection, data analysis, consent, training, and recruitment processes to ensure that the study can be replicated. Confirmability of the study will be ensured through stating the limitations of the study early on as well as by having the data analysis be reviewed by a supervisor to ensure that the evaluations of the answers have not been misunderstood.

Finally, objectivity within the study will be performed through methodological procedures such as consistent data collection and analysis methods.

Potential Risks

The risks associated with this study are minimal. Fresh Start group class participants will not be coerced into participating in surveys and their confidentiality will be maintained throughout the study and after. Should a participant wish to no longer participate at any time during the study or survey, etc., they will be allowed to do so with no consequences and the collected data will be withdrawn from the study.

Data Storage

All data will be stored electronically in the Pirate OneDrive provided to ECU students. Data will be placed in a private folder and only shared with the IRB approved researchers on the team.

Benefits of the Study

Participating in the "Development and Assessment of Low-Health-Literacy-Tailored Nutrition and Healthy Living Educational Handouts in Group Diabetes Management Class Settings" study offers individuals several notable benefits. Firstly, participants will gain access to newly developed educational handouts specifically tailored for individuals with low health literacy. These materials aim to be more culturally relevant, accessible, and practical, providing

participants with a valuable resource to enhance their understanding of crucial health information related to diabetes management. By engaging with these tailored resources, participants have the opportunity to contribute to their own health literacy, potentially gaining the knowledge and skills necessary for effective diabetes self-management.

Moreover, participants play a pivotal role in influencing the future of diabetes management initiatives. Their feedback and experiences with the adapted handouts will inform ongoing refinements, ensuring that future programs are better aligned with the diverse needs and preferences of the target population.

On a broader scale, the study carries significant overall benefits. It aims to improve patient-centered resources within the Fresh Start program, addressing the unique challenges faced by a diverse, low health literacy population. The implementation of low-health-literacy-tailored educational handouts has the potential to enhance diabetes management outcomes, contributing to better self-management practices and potentially improved health outcomes for participants. The study also contributes to the broader field of health literacy by informing best practices for designing materials that resonate with populations facing health disparities.

Importantly, the study reflects a commitment to community-based research, focusing on a mobile, rural health program. Its findings may positively impact similar settings, contributing to the evidence base for community health interventions. Through continuous feedback and refinement, the study establishes a pathway for ongoing program improvement within the Fresh Start initiative, ensuring its adaptability to the evolving needs of the community it serves. In essence, participation in this study not only benefits individuals directly but also contributes to the advancement of diabetes management practices and health literacy initiatives on a larger scale.

VI. Results

Preliminary results have shown that most participants agree that they learned something new from the handouts (84%, n = 31) and will make a change because of it (89%, n = 33).

Participants showed the greatest response to learning about food portions and serving sizes when asked about a new topic learned about from the handouts.

Table 1: Quantitative Survey Feedback Regarding Handout Acceptability and Impact among Rural, Uninsured Patients with Type 2 Diabetes who Participated in the 2023-2024 Fresh Start Program

Group Class Topic	Questions			
	Q1: I learned something new	Q2: The pictures on the handouts helped me understand today's topic better	Q3: The information was easy to follow	Q4: I will likely make a change because of what I learned/saw on the handouts
1. Healthy Eating/Healthy Living	Strongly Agree 59.5% (22)	Strongly Agree 70.3% (26)	Strongly Agree 67.6% (25)	Strongly Agree 70.3% (26)
	Agree 24.3% (9)	Agree 18.9% (7)	Agree 24.3% (9)	Agree 18.9% (7)
	Neutral/Some what 5.4% (2)	Neutral/Some what 2.7% (1)	Neutral/Some what 0% (0)	Neutral/Some what 2.7% (1)
	Disagree 2.7% (1)	Disagree 0% (0)	Disagree 0% (0)	Disagree 0% (0)
	Strongly Disagree 8.1% (3)	Strongly Disagree 8.1% (3)	Strongly Disagree 8.1% (3)	Strongly Disagree 8.1% (3)

Figure 2: I learned something new

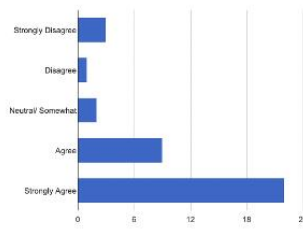


Figure 3: The pictures on the handouts helped me understand today's topic better

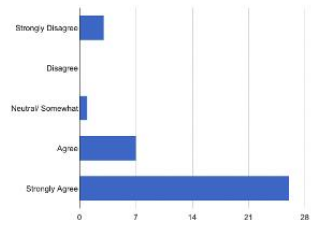


Figure 4: The information was easy to follow

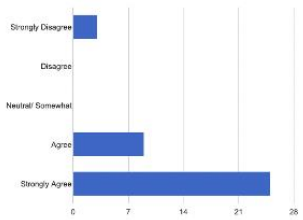
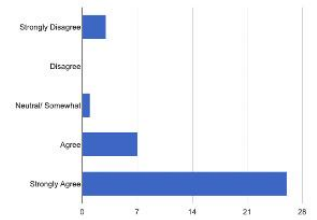


Figure 5: I will likely make a change because of what I learned/saw on the handouts



VII. Closure

In conclusion, this research outlines a comprehensive study focused on the "Development and Assessment of Low-Health-Literacy-Tailored Nutrition and Healthy Living Educational Handouts in Group Diabetes Management Class Settings." Through active engagement with the Fresh Start program, participants stand to gain access to culturally relevant, accessible, and practical educational resources, potentially empowering them with enhanced health literacy for more effective diabetes self-management. Beyond individual benefits, participant involvement holds the promise of influencing the future of diabetes management initiatives, contributing to

the improvement of tailored resources, and fostering a sense of community engagement. The study, anchored in a commitment to community-based research, not only strives to address the unique needs of a diverse, low health literacy population but also aims to contribute valuable insights to the broader field of health literacy. By continuously refining the Fresh Start program through participant feedback, this study seeks to make a lasting impact on diabetes-related health disparities, promoting improved health outcomes in Eastern North Carolina and potentially serving as a model for community health interventions in similar settings.

Moving forward, we aim to delve deeper into understanding the nuanced impact of the adapted handouts on patient satisfaction and health outcomes. Currently, data has been collected and analyzed for first topic of healthy eating and living. Encouraging results have been observed regarding participant satisfaction and knowledge acquisition.

Over the course of the Spring semester (April-May), quantitative and qualitative data will continue to be collected and analyzed, with the focus expanding to encompass data collection for all eight topics covered in the Fresh Start program. This extended data collection period will enable us to capture any evolving trends or insights among participants.

By the end of the semester, we anticipate having a robust dataset that captures the holistic impact of the adapted handouts, paving the way for informed decision-making and continuous improvement within the Fresh Start program.

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