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Nigerian Pensioners' Knowledge, Attitudes, and Beliefs About Type 2 Diabetes

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Abstract

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MS, Walden University, 2017

MBA, Ambrose Alli University, 2 001

HDIMT, Institute of Management & Technology, 1980

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Education and Promotion

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Abstract

Diabetes is one of the leading killer diseases globally, and it is on the rise, especially in developing countries like Nigeria. The high prevalence of undiagnosed Type 2 diabetes in developing African countries has been attributed to a lack of knowledge and awareness about the disease, unbelief in modern healthcare efficacy, and limited healthcare services access. The purpose of this study was to explore the knowledge, attitudes, and beliefs about Type 2 diabetes among pensioners in Nigeria. A qualitative phenomenological research design was used for the study. The constructs of the health belief model formed the study's theoretical framework. Data were collected through individual telephone interviews in English and Igbo languages with five men and five women who responded to unstructured and open-ended questions. The data were hand-coded to identify patterns, categories, and themes. A multistep sequence was used in conducting the inductive thematic analysis of the data. The findings showed that respondents lacked knowledge about Type 2 diabetes and its long-term health effects; were unaware of the importance of reading food labels and checking blood sugar levels daily; had a negative attitude towards Type 2 diabetes; and exhibited strong spiritual, religious, and cultural beliefs about the disease. The findings were the basis for health education recommendations, the implementation of which have positive social change implications at the individual and societal levels. The recommendations may also empower people living with Type 2 diabetes by increasing their knowledge about the disease, improve diabetes self-care activities, reduce diabetes-related hospitalizations, and improve societal health outcomes.

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Dedication

I dedicate this dissertation primarily to my father, Chief Mark O. Nwosu, and my father-in-law, Ezedibia Damian Anyanwu. They died due to the complications of Type 2 diabetes. To my darling wife, Stella Oluchi Nwosu, who inspired and gave me unalloyed support to pursue my PhD in this field, I am indebted for changing my career path. To my children, Kelechi and Ugonna, thank you for putting up with my demands during this challenging period and tolerating my sometimes-overbearing reactions due to the academic pressure on me! To Almighty God, who in His infinite mercy enabled me to complete this journey successfully, I give all the glory and adoration.

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Chapter 1: Introduction to the Study

In this study, I evaluated the level of knowledge, attitudes, and beliefs about Type 2 diabetes among pensioners in Abia State of Nigeria. Approximately 3 million people in Nigeria aged 25 to 79 years are living with diabetes (Amadi et al., 2018). More than 2.5 million Nigerians living with Type 2 diabetes are not aware of their disease condition because they are still undiagnosed (Amadi et al., 2018). The trend in undiagnosed diabetes is on the rise globally, especially in developing countries like Nigeria, where undiagnosed diabetes has a prevalence rate of 85% (Arugu, & Maduka, 2017). Arugu and Maduka (2017) examined the risk factors for diabetes mellitus among adults residing in a rural district in Southern Nigeria. The findings of the study showed that the prevalence of diabetes increased with age, and this prevalence was higher in people who were 60 years and older (Arugu & Maduka, 2017). The high prevalence of diabetes in this population suggests a need for tailored interventions and outreach that are targeted to older Nigerian adults living in rural areas.

Inadequate information and lack of knowledge about Type 2 diabetes have contributed to the rise in the negative long-term health consequences of the disease in Nigeria (Ubangha et al., 2016). More than half of the respondents in a study conducted by Ubangha et al. (2016) did not know about Type 2 diabetes, and they also did not know the long-term health consequences. Assah and Mbaya (2016) estimated that approximately 14.2 million people between the ages of 20 to 79 were living with diabetes in the sub-Saharan African continent. This estimate represented a regional prevalence of

6.7%, with over 66.7 % of the afflicted people being unaware that they were living with diabetes (Assah & Mbaya, 2016).

Nigerian pensioners who were the population of interest in the study were 60 years and older because the retirement age in Nigeria is 60. The findings of the study identified how participating Nigerian pensioners understood the causes, symptoms, control, and prevention of the long-term consequences of Type 2 diabetes. Arugu and Maduka (2017) investigated the risk factors for Type 2 diabetes and discovered that age is a high-risk factor for the disease. The population of pensioners in Nigeria is aging, and this places them in a position where they are vulnerable to chronic diseases like Type 2 diabetes (Abdulazzez, 2015). The country's pensioners also face financial uncertainty that complicates their management of their health care. The states and federal governments in Nigeria have been unable to meet their financial obligations to these pensioners by paying them their deserved pensions regularly (Abdulazzez, 2015). Abia State ranks fifth in states owing the highest amount of arrears of pensions payments among the 30 Nigerian states owing pension benefits (Africa Check, 2017).

The vulnerability of the aging pensioners in Nigeria to chronic diseases like type 2 diabetes, and their limited financial resources, increase their need for support to alleviate their health challenges. The findings of the study identified the health education needs of this vulnerable population. Based on the findings, appropriate health education tools should be developed to assist pensioners in the management of their Type 2 diabetes-related health challenges. Previous researchers have found that vulnerable people can change their health behaviors and improve their health outcomes through

health education interventions (Mohebbi et al., 2019). Diabetes is a disease that needs self-care, and researchers have identified that there is a need to provide more support for diabetes health education (Dias et al., 2016). Such efforts will help to overcome the deficiencies in diabetes knowledge that currently exist (Dias et al., 2016).

In Chapter 1, I discuss the background of the study, identify the purpose of the study, and list the research questions (RQs). I laid out the theoretical framework, the nature of the study, and definitions of relevant terms and assumptions for the study. The final part of the chapter includes a discussion of the positive social change contributions the research may make to the population of interest.

Background

Research indicates a high prevalence of diabetes among older Nigerian adults that coincides with little knowledge of the disease. Achigbu et al. (2016) evaluated the knowledge, attitude, and practice of patients with diabetes and found evidence that diabetes prevalence is higher among people who are 60 years and older. The findings of the study also indicated that knowledge of Type 2 diabetes was significantly low among elderly Nigerians (Achigbu et al., 2016). Amadi et al. (2018) examined the prevalence, knowledge, attitude, and management practices of diabetes mellitus and hypertension in Amaoba Ikwuano Abia State of Nigeria and found that most of the respondents did not know about diabetes mellitus. Furthermore, the findings of the study also showed that 64.62% of the respondents were previously undiagnosed with diabetes mellitus and the prevalence of diabetes was higher in the older respondents.

In addition, Wang et al. (2018) conducted a cross-sectional study that showed the prevalence of diabetes was higher amongst older participants indicating that age is a risk factor for diabetes. As this research highlights, older adult Nigerians have a higher prevalence of Type 2 diabetes and are vulnerable to complications of the disease.

Laursen et al. (2017) explored the level of knowledge about diabetes in Denmark and discovered that health information would be most beneficial in helping people with diabetes make healthy lifestyle changes that can improve their health outcomes. The authors recommended evaluating knowledge, attitudes, and beliefs about Type 2 diabetes and identifying the health education needs of vulnerable populations. Furthermore, the authors suggested that health educators should provide clear, precise, and culturally sensitive instructions. Such positive interactions can help susceptible people imbibe necessary lifestyle changes. In a related study, Choi et al. (2017) explored the learning behavior patterns and preferences of Chinese people, and their findings highlighted the importance of exploring knowledge about diabetes as an essential avenue for creating workable health education intervention strategies for vulnerable populations. The evaluation of the knowledge of the respondents in the current study about Type 2 diabetes and identification of their health education needs provides evidence for the development of appropriate health education intervention tools.

Diabetes self-management education (DSME) programs help address existing gaps in diabetes knowledge among vulnerable populations and improve diabetes awareness and health outcomes of people living with Type 2 diabetes (Dehkordi & Samereh, 2017)**.** Dehkordi and Samereh (2017) used the phenomenological approach to

explore the experiences of people living with diabetes from a local diabetes self-management education program. The phenomenological approach these researchers used in this study helped to reveal the health education needs that can assist this population of interest to self-manage Type 2 diabetes.

Diabetes is a self-care disease. Promoting self-care behaviors therefore helps to improve the health outcomes of people living with Type 2 diabetes (Tachanivate et al., 2019). Results from a study conducted by Tachanivate et al. (2019) showed that DSME enhanced knowledge about diabetes, promoted positive diabetes self-care behaviors, and increased high satisfaction scores. The findings of the study identified the diabetes health education needs of participants. This is essential in developing interventions which will promote self-care behaviors and lifestyle changes for the target population.

Schwennesen, Henriksen, and Willaing (2016) examined patients' explanations for non-attendance at DSME sessions and found that most respondents exhibited a lack of interest and inadequate knowledge about the benefits of diabetes education and self-care. Moreover, the authors discovered that DSME improved positive self-care behavior. The finding supported the purpose of the current study which included identifying the health education needs of the respondents and proffering ways to enhance their understanding and importance of active Type 2 diabetes self-care behaviors.

Diabetes education is an essential tool for addressing the existing gap in knowledge about Type 2 diabetes and its long-term health consequences. Ogundele et al. (2016) examined the clinical profile, knowledge, and beliefs about diabetes in Lagos, Nigeria. The authors found that 55% of the participants were unaware of the causes of

diabetes, 30% believed in the use of alternative medicines, and 13% thought that diabetes was curable (Ogundele et al., 2016). The findings of the current study addressed the glaring gap in knowledge about diabetes identified by these authors. The findings of the current study may have a positive impact on the beliefs and attitudes of older adults living with Type 2 diabetes. The findings may also help in reshaping their health behaviors for improved health outcomes. In a related study, Xu et al. (2018) revealed that the use of culturally appropriate visual, tactile, and engaging diabetes education tools helps in promoting health literacy and in enhancing understanding of Type 2 diabetes prevention and management. The interactive design of this study would elicit participants' interest and improve their awareness, knowledge, and literacy about Type 2 diabetes.

In reviewing the literature, I found no previously published research studies on knowledge, attitudes, and beliefs about Type 2 diabetes that identified pensioners in Abia State of Nigeria as the population of interest. This vulnerable population has been neglected in their health education needs regarding the negative health challenges associated with Type 2 diabetes. Therefore, the findings of the current study may help fill the gap in knowledge and assist healthcare providers in identifying the health education needs of this underserved population.

Problem Statement

The Centers for Disease Control and Prevention (CDC, 2018) identified diabetes as the seventh most deadly disease globally due to its adverse health consequences. This debilitating ailment is the fastest growing long-term disease with the highest number of

sufferers who are unaware of their disease condition (Amadi et al., 2018). There has been a rising trend in undiagnosed diabetes, especially in developing countries like Nigeria, where undiagnosed diabetes has a prevalence rate of 85% (Arugu & Maduka, 2017). Ethiopia, another developing African country with similar demographic characteristics as Nigeria, also has a prevalence rate of 85% for undiagnosed diabetes (Aynalem & Zeleke, 2018). Researchers have attributed the high prevalence of undiagnosed Type 2 diabetes in developing African countries to limited access to primary healthcare, lack of knowledge and awareness about the disease, and most people's unbelief in the efficacy of modern healthcare services (Aynalem & Zeleke, 2018). Knowledge about Type 2 diabetes in Nigeria is severely lacking as 25% of Nigerians in 2014 believed diabetes was due to witchcraft, and 28% associated it with infection (Adejumo et al., 2015). Increasing urbanization, lack of physical activities, an aging population, and consumption of unhealthy foods also account for the rise in undiagnosed Type 2 cases in Nigeria, according to researchers (Arugu & Maduka, 2017).

About 95% of the Nigerian population living with diabetes mellitus have Type 2 diabetes (Oputa & Chinenye, 2015). More than 3 million Nigerians between 25 and 79 years of age are diabetic, and over 2.5 million others who live with Type 2 diabetes are still undiagnosed and unaware of their diabetic status (Amadi et al., 2018). Researchers explored the risk factors for Type 2 diabetes among residents of a rural district in Southern Nigeria and found that age is a significant risk factor for the disease (Arugu et al., 2017). Another finding of the study indicated that the prevalence of diabetes was higher in people over 60 years of age (Arugu et al., 2017). The increased prevalence of

diabetes among older Nigerians is problematic because they have fewer economic resources to manage their health. The retirement age in Nigeria is 60 years, and Nigerian pensioners who are retirees do not have a secure postretirement social and economic life due to unviable retirement pension schemes in Nigeria (Animasahun & Chapman, 2017). Nigerian pensioners are faced with income insecurity because Nigerian governments at the state and national levels do not usually pay their monthly pensions regularly (Animasahun & Chapman, 2017). Furthermore, a lack of social services and poor housing for the aged, and inadequate access to healthcare, also negatively affects the health outcomes of Nigerian pensioners (Animasahun & Chapman, 2017).

Therefore, it is not surprising that pensioners in Nigeria are vulnerable to chronic diseases like diabetes and experience limited economic powers and social pressure or apathy (Abdulazzez, 2015). Ubangha et al. (2016) reported that over half of the respondents in their study lacked knowledge of diabetes and its long-term health consequences despite some known diabetes risk factors. The findings further amplified the need to evaluate the health education knowledge of the population of interest in the current study about Type 2 diabetes. This was made more important because of a lack of previously published studies on the knowledge, attitudes, and beliefs of pensioners in Abia state of Nigeria about Type 2 diabetes.

Purpose of the Study

The purpose of the study was to explore the level of knowledge, attitudes, and beliefs about Type 2 diabetes amongst Nigerian pensioners who are members of the Abia State Chapter of the Nigerian Union of Pensioners. The qualitative study identified the

key themes about Type 2 diabetes among Abia State of Nigeria pensioners that impacted diabetes-self-management. I evaluated how the level of knowledge, attitudes, and beliefs impacted participating pensioners' understanding of the causes, symptoms, control, and prevention of the long-term consequences of Type 2 diabetes.

Research Questions

This study had the following five RQs:

RQ1. What knowledge do pensioners at the Abia State Chapter of the Nigeria Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ2. What attitudes do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ3. What beliefs do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ4. What adverse health consequences of Type 2 diabetes do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia experience?

RQ5. What health education related to Type 2 diabetes do members of the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia need to impact their health positively?

Theoretical Framework

I identified the health belief model (HBM) as the best fit theoretical model for the study. The HBM, which U.S. Public Health Service professionals developed in the early part of the 1950s, has been widely used in health education and promotion studies (Boston University School of Public Health, 2018). The constructs of the HBM are

perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Center for Innovation in Research and Teaching, 2019). The HBM is an effective theoretical model for health promotion and disease prevention interventions because it can be applied in predicting and explaining changes in human behaviors (Rural Health Information Hub, 2019). Perceived susceptibility addresses an individual's perception of the threat or sickness, perceived severity addresses the belief of possible effect of the disease, and perceived benefits deal with the potential positive benefits of acting against the disease (Rural Health Information Hub, 2019). Perceived barrier addresses the variables that may prevent the actions being taken by the individual, and cues to action highlight factors that could prompt action, while self-efficacy addresses the confidence an individual has in the ability to succeed in taking action against the disease or threat (Rural Health Information Hub, 2019).

The HBM was the best fit theoretical framework for the study because the constructs of the HBM were appropriate for exploring the respondents' knowledge about the threat posed by Type 2 diabetes (susceptibility and severity) and the health benefits accruable from avoiding the negative consequences of Type 2 diabetes (barriers). Furthermore, the HBM constructs were used to explore the variables which influenced respondents' decision to act and improve diabetes-related health outcomes (cues to action and self-efficacy) (Shabibi et al., 2017). The HBM constructs also related to how respondents' perceptions, existing modifying factors, and the likelihood of an action taking place caused changes in diabetes-related health behavior (Salazer, Crosby, & DiClemente, 2015).

The HBM, which has been successfully applied in various health behavior studies, was appropriate for the phenomenological study. Li, Lei, Wang, He, and Williams (2016) used the HBM in qualitative research to understand high-risk sexual behavior in Chinese men who have sex with men. Castillo-Angeles et al. (2017) also applied the HBM model in a qualitative study relating to decision making in pancreatic cancer treatment. The HBM was utilized in a literature review study relating to condom use and HIV prevention (Tarkang & Zotor, 2015). Noel (2016) also used the HBM in a phenomenological survey on how women make breast cancer treatment decisions. It was further used in a study to promote preventive behaviors against iron deficiency anemia among pregnant women (Baharzadeh, Marashi, Saki, Javid, & Araban, 2017).

Researchers acknowledged that knowledge, attitudes, and beliefs influenced health behaviors (Boslaugh, 2019). Researchers also suggested that theory based on self-management health interventions improved healthy behaviors and diabetes control amongst vulnerable populations (Mohebbi et al., 2019). Furthermore, health interventions that focused on reinforcement of self-efficacy, enhancing understanding of perceived threats, and reducing perceived barriers were known to improve diabetes control through better self-management efforts (Mohebbi et al., 2019). Another study finding also showed that health education based on the HBM had a positive effect on the quality of life of people living with diabetes (Tavakkoli, Mahmoodi, & Attarian, 2018). Health education intervention strategies based on the HBM improved knowledge of vulnerable populations about the phenomenon of interest. Researchers further confirmed the effectiveness and

efficiency of the HBM in helping people with Type 2 diabetes adopt self-care behaviors that improved their health status (Shabibi et al., 2017).

The HBM's dual foundation components, premised on the psychological and behavioral theories, related to health behaviors of desiring to avoid illness, and believing that specific health behaviors will prevent or cure a disease (Boston University School of Public Health, 2018). The qualitative variables or factors explored in the current study using this theoretical model included the respondents' knowledge, attitudes, and beliefs about Type 2 diabetes and to what extent such factors influenced their current health decisions and outcomes. The HBM theoretical framework provided the justification and rationale for this study. It also helped to amplify the social and research problems and justified how the study contributed to solving these. The knowledge, attitudes, and beliefs an individual has about a disease will, to a large extent, determine how that individual will perceive his or her susceptibility to the disease. It will impact how the person views the severity of such a disease condition. It will also affect the individual's perceived benefit or beliefs in affirmative action, perceived barriers, beliefs in avoidance as well as in self-efficacy.

Nature of the Study

The research was a phenomenological qualitative study. This approach was appropriate in gathering information on the lived experiences of the participants and in searching for the meanings of those experiences rather than the explanations (Center for Innovation in Research and Teaching, 2019). The phenomenological approach helped me to deduce and interpret meanings from the lived experiences of participants and in

developing a global view about the phenomenon of interest (Patton, 2015). The approach described how the respondents experienced the phenomenon of interest and their perceptions, perspectives, feelings, and lived experiences, and excluded researcher biases and preconceived assumptions on the phenomenon (Center for Innovation in Research and Teaching, 2019). Phenomenology is a direct investigation and description of the conscious experiences of the chosen population on a phenomenon of interest. It uses scientific foundations to clarify the general nature of knowledge about the phenomenon of interest (Bloland, n.d.).

The participants for the current study were registered members of the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia, Abia State of Nigeria aged 60 and older. The participants were also attendees to diabetes and high blood pressure screenings the Center for Public Health in Umuahia conducted for members of the Nigerian Union of Pensioners at Pink Rose Hospital Umuahia. A sample size of 10 respondents was selected for the study through a purposive convenient sampling method. The selected participants responded to semi-structured and open-ended questions during individual telephone interviews. I recorded all responses, and I took notes during the individual telephone interviews.

I used a qualitative inductive analysis method to code transcribed documents and to identify patterns, categories, and themes (Creswell & Creswell, 2018). The coded transcripts formed the foundation for generating concepts, explanations, and theories (Patton, 2015). I applied a multi-step sequential inductive thematic data analysis method in the analysis of the data for the study**.** I stored all the recordings from the individual

telephone interview sessions in a recording device. I secured all the notes and all recorded copies of the individual telephone interviews in a locked cabinet in my private study. I used personal backup drive and cloud for additional storage and data security.

Definitions

Definitions of key terms used in the study follow.

Abia State: One of the 36 states in Nigeria. The study took place in Umuahia, the capital of Abia State of Nigeria. Located in the southeastern part of Nigeria, Abia State was created in 1991, and 95% of its citizens are Igbo speaking (Abia State of Nigeria Government, 2019).

Abia State pensioners: Retired civil servants from the services of Abia State of Nigeria. The mandatory retirement age in Nigeria is 60 years. Therefore, Abia State pensioners are aged 60 years and older (Legit Nigeria, 2019).

Aging: The gradual progression in age. The population of interest in this study was an aging population. Aging amplifies the risks for diabetes complications as age is a high-risk factor for Type 2 diabetes (Abdulazzez, 2015; Arugu & Maduks, 2017).

Cultural beliefs: Issues that affect peoples' way of life and health outcomes because those affected emotionally or intellectually accept them as true (The Bravewell Collaborative, 2015). Diabetes cultural beliefs influence the levels of awareness, knowledge, and attitudes of people towards diabetes mellitus (Adejumo et al., 2015).

Diabetes attitudes: The behaviors of people towards diabetes mellitus (Carballo et al., 2019).

Diabetes beliefs: People's understanding and acceptance of what diabetes is, what its causes and risk factors are, and how these affect their behavior (Carballo et al., 2018).

Diabetes: A health condition in which the human body is unable to produce or effectively use insulin, which is an important hormone the human body needs to function effectively (American Diabetes Association [ADA], 2019).

Diabetes knowledge: The level of accurate information that individuals have about diabetes mellitus (Carballo et al., 2019).

Diabetes self-care activities: Diabetes health-related regimen behaviors individuals engage in to self-manage diabetes mellitus (Oregon Research Institute, 2019).

Diabetes self-care education: The knowledge, or empowerment, individuals can acquire to be able to self-manage diabetes mellitus and take the best care of themselves (CDC, 2019).

Irregular payment of pensions: The failure of states and the federal government in Nigeria to pay pensioners regular pensions. This situation exposes the pensioners to income insecurity because the pensioners are incapable of meeting their financial obligations due to irregularity or nonperson payments (Abdulazzez, 2015).

Nigerian Union of Pensioners: An umbrella pressure group that advances the social, economic, and political interests of all pensioners in Nigeria. The union was registered as a trade union in 1978 (Nigeria Union of Pensioners National Headquarters, 2019). The Abia State chapter of the union has its headquarters in Umuahia, the capital of Abia State. Respondents came from the union’s membership.

Retirement age: The mandatory retirement age in Abia State of Nigeria. At age 60, civil servants in Abia State are pensionable and are required to retire. This age is an age of vulnerability to Type 2 diabetes because the prevalence of diabetes is higher amongst older people as age is a risk factor for diabetes complications (Wang et al., 2018).

Self-care: Any action that individuals take for themselves to establish and maintain health and to prevent and manage illnesses (International Self-Care Foundation, 2018).

Social support: Resources and interactions that people living with diabetes maintain with family, friends, community, caregivers, and others, which promote care, love, and positive health outcomes (Rosland et al., 2018).

Type 2 diabetes: The most common type of diabetes in which the human body is unable to use insulin properly (ADA, 2019).

Assumptions

The study had several assumptions. First, I assumed that all participants had attained the mandatory retirement age of 60 years. This qualified them as pensioners in Abia State who made up the sample population. Furthermore, I assumed that all participants were registered members of the Abia State Chapter of the Nigerian Union of Pensioners. However, this assumption, which constituted one of the inclusion criteria for participating in the study, was confirmed by the leadership of the Abia State Chapter of the Nigerian Union of Pensioners and the management of Pink Rose hospital. I also assumed that all participants were regular attendees to the health screenings, which the

Center for Public Health provided for Abia State pensioners at the Pink Rose hospital in Umuahia. This assumption which was a vital inclusion criterion in the study was confirmed by the management of Pink Rose hospital in Umuahia.

Furthermore, I assumed all participants were pensioners living with Type 2 diabetes who already had some knowledge of Type 2 diabetes. I also assumed that the pensioners communicated in English and Igbo languages. Additionally, I assumed that all participants had developed some attitudes about Type 2 diabetes due to their personal experiences and had some beliefs about the ailment. I also assumed that the sample population from the Abia State Chapter of the Nigerian Union of Pensioners was representative of the entire population of pensioners in Abia State of Nigeria. This assumption was because the sample population and the broader community of pensioners in Abia State shared the same demographic characteristics.

Nigeria has multiple languages, cultures, and ethnicities, and ethnic and cultural values distinguish societal groups in Nigeria from each other (Adejumo et al., 2015). However, I assumed that these factors did not limit the transferability of the findings of the study. This assumption was because pensioners in different geographical areas in Nigeria shared predominantly similar demographic characteristics. Finally, I assumed that all pensioners who participated in the study provided accurate and factual responses during telephone interviews.

Scope and Delimitations

Although this study explored the knowledge, attitudes, and beliefs of Nigerian pensioners about Type 2 diabetes, the sample population were members of the Abia State

Chapter of the Nigerian Union of Pensioners who resided in and around Umuahia, Abia State. Therefore, the scope of the study limited the research to the population of pensioners within Umuahia, Abia State of Nigeria, and its environs. Abia State pensioners are owed over 19 months of pension benefits (Africa Check, 2019). The scope of financial constraints that exposed pensioners to the vulnerability of diabetes-related health outcomes in the study was restricted to experiences of pensioners in Umuahia, Abia State. Abia State is in the eastern part of Nigeria and is an Igbo-speaking state. Nigeria is a multilingual, multicultural, and pluralistic society where ethnicity and cultural values distinguish ethnic groups from each other (Adejumo et al., 2015). The study did not examine the impact of culture and ethnicity on the knowledge, attitudes, and beliefs about Type 2 diabetes.

Therefore, a possible limitation of this study is that the findings may not apply to cultural and ethnic groups in other geographical regions of Nigeria. The study was limited to pensioners only who were 60 years and older, and the findings may not apply to people outside this age group who may belong to other social groups outside the pensioners' association. People who are not living with diabetes were not part of the study.

The theoretical concept of the study was limited to HBM. I did not consider expanding the theoretical base by including other health education-related models like the Information Motivation Behavioral Skills Model (IMBSM). The IMBSM asserts that health-related information, motivation, and behavioral skills are fundamental determinants of the performance of health behaviors. I also did not include the Ecological

Models of Health Behavior (EMHB). The EMHB emphasizes that the environmental, policy, social, and psychological contexts influence health behavior.

Limitations

I used a convenient sampling method in selecting participants for the study. This sampling strategy did not give every member of the population of interest the chance of being selected. Also, the sample population was limited to only registered members of Abia State Chapter of the Nigerian Union of Pensioners. However, I did not consider this limitation sufficient to impact generalizability of the findings of the study as the larger population of retirees in Nigeria have the same demographic characteristics as the population selected for the study.

The data collection process for the study was originally planned to be one-on-one interviews followed by a focus group interview. The onset of COVID-19 pandemic made it impossible to hold one-on-one interviews with the respondents. Therefore, data collection was limited to individual telephone interviews only. I did not use other data sources, including secondary data sources, meta-analysis, or observations, for the study. This singular source of data limited the opportunity of using other sources in triangulation to validate the data that came from the individual telephone interviews only. However, I used the audit trail method in establishing the adequacy and dependability of the data.

The participants were retirees who were no longer highly active in their daily activities and who did not have a high level of desire to participate in research activities, and this was a challenge during recruitment. Their physical and health conditions, which

made it challenging to sit in a position for hours, could have been a problem during the individual telephone interviews. The ability of elderly respondents to fully comprehend questions and give clear and precise answers was another limitation. Memory loss was a possible limitation during interviewing of these elderly participants, and I asked questions to clarify answers and provide needed valuable information. Most elderly interview participants do have a high degree of cultural affinity, which can introduce response bias and contaminate survey data (Fryrear, 2016). This cultural affinity was a challenge, and it was necessary to clear the minds of participants of any biases they had about participating in research activities as this may be a barrier to providing factual responses.

Significance

This study is significant because the exploration of the knowledge, attitudes, and beliefs of Nigerian pensioners about Type 2 diabetes provided more information about their vulnerability to the negative health consequences of Type 2 diabetes. The pensioners belong to an aging population and deserve moral, social, and financial support to promote their active aging process. The findings of the study will contribute to providing health educational support about Type 2 diabetes to this vulnerable population and enhance their positive health outcomes. Such health educational support includes how to use glucometers, handouts on healthier food choices, menu lists, and reading of food labels. Other support areas include recognizing signs and symptoms of low and high blood sugar and the need for adherence to medication instructions and physical activity guidelines. It was also essential to highlight the advantages of belonging to diabetes support groups as these groups help members to enjoy active and healthy lives.

Furthermore, the findings will contribute ideas towards the development of new health intervention strategies, which can help to improve the knowledge of members of this union about Type 2 diabetes. The continuously increasing population of pensioners and retirees in Nigeria is vulnerable to the adverse effects of the long-term health consequences of uncontrolled blood sugar. These long-term health complications include end-organ micro-vascular and renal complications (Stanifer et al., 2016) and eye complications and blindness (ADA, 2018). Other complications are hypoglycemia, hyperglycemia, and diabetic ketoacidosis (University of California, 2019). Therefore, it was essential to examine their knowledge, attitudes, and beliefs about Type 2 diabetes as the study findings identified how to fill this existing gap in knowledge. The results of the study will also contribute to efforts at improving the overall health outcomes of this aging and vulnerable population.

Diabetes is essentially a self-care disease, and researchers identified a need to direct more resources towards improving diabetes health education and overcoming existing deficiencies in diabetes knowledge (Dias et al., 2016). The results of the study will enhance the level of understanding of health educators about this vulnerable population and assist in efforts at preventing the early onset of complications of diabetes. This prevention of early-onset of complications of diabetes will help in reducing hospitalization numbers and diabetes-related adverse health outcomes. Also, it will improve the provision of diabetes education, which will help people living with diabetes in making educated lifestyle choices that will improve their health status with resultant

positive social change. Educational empowerment for people living with diabetes is crucial to lifestyle changes and their improved health outcomes (Mohebbi et al., 2019).

Research findings showed that health educational interventions improved knowledge about diabetes and empowered vulnerable populations in changing health behaviors by enhancing healthy eating habits, improving weight control, and incorporating physical activity in their daily lifestyles (Mohebbi et al., 2019). When members of this vulnerable population receive health educational intervention programs resulting from the findings of the study, it will help them to imbibe positive health habits. They will be able to make better food choices, change their nutrition habits, and engage in physical activity, which will help to improve the outcomes of their health. These habits will support the active aging process for the population of interest and impact the overall health status of the community positively. These self-care behaviors are crucial because diabetes is a self-care ailment.

The study is also significant because the findings revealed the educational needs of the population of interest as well as their necessities for healthy behavior. The interventions that will be developed based on the identified needs will increase the level of knowledge about diabetes and create changes in health behavior. The findings of the study will assist in overcoming deficiencies in diabetes knowledge and in enhancing diabetes awareness. This awareness will create positive social change by helping to decrease the level of occurrence of long-term complications of diabetes. Diabetes knowledge facilitates prevention and early detection and helps in preventing its adverse long-term health consequences (Ubangha et al., 2016). Therefore, the findings of the

study will play an important social change role by empowering the pensioners in managing their health conditions, and in developing positive attitudes and beliefs about Type 2 diabetes. The study results will help to identify the Type 2 diabetes-related health education needs of this and other underserved populations. The education needs identified will be the foundation for developing and adopting targeted health interventions for improved health outcomes.

Summary

I introduced the research topic and outlined the purpose and need for the study in Chapter 1. I also discussed the background to the study and provided a summary of primary peer-reviewed literature that related to the phenomenon of interest. In addition, I highlighted the gap in knowledge which I identified during the background literature review in Chapter 1. Furthermore, Chapter 1 contained the social and research problems relating to the phenomenon of interest. In addition, I highlighted meaningful gaps in current literature and how the gaps related to the phenomenon of interest. The most critical gap identified was the lack of previously published studies that have examined the knowledge, attitudes, and beliefs about Type 2 diabetes among the population of interest. In addition, I discussed the RQs along with the study design and theoretical foundation of the study in this chapter.

Chapter 1 formed the basis for more academic discussion of the literature review on the phenomenon of interest, which I presented in Chapter 2. I outlined the scope of the literature review as well as the strategy for the literature search for the study in Chapter 2. I discussed the selection of the HBM as the theoretical base for the study in greater detail

in Chapter 2. Furthermore, Chapter 2 contains key highlights arising from the review of literature, which impacted the study. Finally, I discussed the implications of prior research studies on this and future studies in Chapter 2.

Chapter 2: Literature Review

Introduction

The increasing global prevalence of diabetes mellitus continues to pose enormous challenges to healthcare researchers and providers of healthcare services (Animaw & Seyoum, 2017). From 171 million people suffering from diabetes mellitus in 2000, it is estimated this number will rise to 300 million by 2025 (Animaw & Seyoum, 2017). By 2030, there will be approximately 466 million people who will be suffering from diabetes mellitus (Animaw & Seyoum, 2017). The call by the World Health Organization (2016) for improved global efforts in the control and prevention of diabetes mellitus, especially amongst aging populations in developing countries, supported the need for this study. On a worldwide scale, diabetes mellites continues to present a great social, financial, and economic burden to many countries due to its increasing prevalence and high mortality rate (Cho et al., 2018). Cho et al. (2018) estimated that the global diabetes-related healthcare expenditure in 2017 was 850 billion U.S. dollars. The increasing negative health and economic impact of diabetes mellitus should concern global policy makers.

The literature review for the current study extends from countries with similar demographic characteristics like Nigeria to other countries where similar studies have been carried out amongst older people. I perused previous studies on knowledge, attitudes, and beliefs about diabetes mellitus, as well as its prevalence, awareness levels, disease burden and outcomes, self-care practices, and treatment. I further examined the risk factors for diabetes mellitus, its long-term health implications, and the factors associated with long-term control of diabetes mellitus. The literature review also covers

the effects of cultural practices on diabetes mellitus, especially studies carried out on populations with similar demographic characteristics to the population of interest. Finally, the review of the literature includes previous studies whose authors examined the impact of aging on diabetes mellitus and its long-term consequences on health.

Literature Search Strategy

The peer-reviewed articles that constituted this literature review were 5 years old and newer. These articles provided insight into the current social, economic, and public health burden of diabetes mellitus, especially in developing countries like Nigeria. In addition to peer-reviewed articles, current textbooks, government documents, and scholarly presentations at academic and professional conferences formed part of the literature review. In the literature review, I highlight the problems most developing nations are facing in their efforts to improve the awareness of vulnerable populations about Type 2 diabetes. The analysis also includes studies carried out in other regions of the world. This provided a basis for comparing the impact of Type 2 diabetes mellitus in such areas.

Most importantly, the literature review was beneficial in exposing areas where researchers should channel future efforts. Such areas include the need for targeted studies that address the health-education related needs of vulnerable aging populations. An example of such a population is the pensioners' group in Nigeria; none of the literature I reviewed included an examination of their diabetes-related knowledge, attitudes, and beliefs. I found no literature on the diabetes-related health education needs of this vulnerable population. Therefore, this literature review was particularly helpful in

highlighting that no previously published research work existed on Abia State of Nigeria pensioners' knowledge, attitudes, and beliefs about Type 2 diabetes.

During my search for peer-reviewed articles relating to the study phenomenon, I included the keywords *knowledge, attitudes, perceptions, beliefs, prevalence, awareness, Nigerian pensioners, Type 2 diabetes, Nigeria*, and *diabetes knowledge*. Other significant terms used in the literature search included *diabetes self-management, diabetes in developing countries, diabetes in African countries, diabetes risk factors, DSME, diabetes self-care practices, diabetes long-term control, diabetes and aging*, and *long-term diabetes consequences*. The databases used during the search included Thoreau Multi-Database Search through Walden University Library, Global Health by CABI database in EBSCOhost, Medline, British Medical Journal, Public Health database in ProQuest, CINAHL, PubMed, and the Combined Health Information Database (CHID). Other health-related websites visited for relevant non-peer reviewed literature included the World Health Organization, the Centers for Innovation in Research and Teaching, the ADA, and CDC. I used the search terms I listed in this section for my search which yielded over 25,000 results. I reviewed 310 sources. However, I included 137 of the sources I reviewed in this study.

Theoretical Foundation

The study had its theoretical base in the HBM, which was derived from the works of psychologists who were in the U.S. Public Health Service in the early 1950s. Previous researchers applied the HBM in a variety of studies related to health education and health promotion (Boston University School of Public Health, 2018). The constructs of the

HBM were appropriate in this qualitative study because I explored the knowledge of respondents about a perceived threat to their health. The HBM highlighted how susceptible and severe the population of interest viewed the threat, as well as what they would benefit health-wise by avoiding this threat, which constituted a barrier to good health (see Shabibi et al., 2017). The HBM constructs were also applied in examining the study variables that impacted the actions respondents took in improving the outcomes of their health. Shabibi et al. (2017) referred to these actions as cues to action and self-efficacy. Furthermore, the constructs of the HBM relate to how a respondent perceive a health situation and what factors can be modified to change the health behavior (see Salazer et al., 2015).

The constructs of the HBM are grounded in the fundamental tenet that an individual's behavior is a result of the person's beliefs or perceptions regarding disease and whatever strategies are in existence to reduce the occurrence of that disease (Tarkang & Zotor, 2015). The constructs of the HBM are important in health-related studied because they play a vital role in disease prevention, treatment, and control (Vahidi et al., 2015). Knowledge, attitudes, and beliefs that people have about illnesses help to determine how they will perceive their susceptibility to the diseases. The same factors will determine how they will recognize the severity of such conditions (Center for Innovation in Research & Teaching, 2019). Furthermore, these variables will impact people’s perceived benefits, barriers or beliefs in affirmative action, avoidance and self-efficacy. Karimy et al. (2016) also emphasized that self-efficacy should be given adequate consideration when developing health educational intervention programs

because it increases the likelihood of adhering to good self-care practices. For this reason, researchers commonly apply HBM in health education, health promotion, and disease prevention studies (Tarkang & Zotor, 2015).

How the HBM Relates to the Current Study

The purpose of this study was to examine the knowledge, attitudes, and beliefs of pensioners in Abia State of Nigeria about Type 2 diabetes. The findings of the study may have significant value in shaping the future behavior of this population to improve their health outcomes. The HBM provided an avenue for assessing information about participants' motivations and abilities towards making behavioral changes that can improve their health status (Tarkang & Zotor, 2015). It also provides the basis for developing future health intervention programs for this population of interest. This is because the HBM makes it possible for researchers and policy planners to determine if a planned intervention will be worth the investment in time and money, and to identify which barriers must be overcome for the intervention to be effective (Tarkang & Zokor, 2015). By using the HBM, I was able to find out how strongly the pensioners in Abia State of Nigeria in the study believed they were susceptible to the long-term consequences of Type 2 diabetes mellitus. It also revealed participants' belief whether the disease would have a negative impact on their lives on the long run. The HBM was valuable in clarifying whether participants' interactions with other individuals with tType 2 diabetes influenced them to see a need for affirmative action (Tarkang & Zokor, 2015).

The original authors of the HBM developed it on the foundation of psychological and behavioral theories. Therefore, the core components are related to the desire to avoid

disease and the belief that certain health behaviors can prevent illnesses or cure them (Boston University School of Public Health, 2018). I applied the constructs of the health belief model to explore relevant qualitative variables that highlighted the pensioners' knowledge, attitudes, and beliefs about type 2 diabetes as shown in Table1. The application helped in the examination of how these variables affected decisions concerning their health. The health belief model was the basis for justifying the need for the study and highlighted the social and research problems I addressed in this study.

Table 1

Application of HBM Constructs to Study

HBM Construct	Definition	Application to the study
Perceived susceptibility	Pensioners' belief on their chances of developing Type 2 diabetes and its long-term consequences.	High perceived susceptibility due to old age of pensioners (60 +) and their financial insecurity due to irregular payment of pensions in Nigeria.
Perceived severity	The pensioners' feeling that Type 2 diabetes heightened their negative health outcomes due to their aging condition.	Type 2 diabetes led to eye-related complications, delayed wound healing, erectile dysfunction, and complicated other Type 2 diabetes age-related ailments.
Perceived benefits	The pensioners' belief that they needed help in managing their diabetic situation. Their belief that they needed to improve their diabetes self-care practices. The belief that they needed empowerment	Enhanced health education to the vulnerable population, increased family, and social support; improved access to better care and health facilities

	through knowledge improvement and diabetes-related health education.	for improved health outcomes.
Perceived barriers	The pensioners' limited health education about Type 2 diabetes. Their inability to provide self-care. Their limited access to healthcare, inadequate social support, irregularity of income (pension payments), lack of family support, and lack of knowledge.	Identified their awareness and knowledge levels about Type 2 diabetes. Determined their attitudes to and beliefs about Type 2 diabetes. Identified their health education needs. Identified access to better care, sources of social and financial support.
Cues to action	Encouraged the pensioners to share their pre- and post-retirement experiences with Type 2 diabetes. Encouraged them to discuss their access to care, income, and other possible limitations that hindered taking positive actions. Motivated them towards self-empowerment with education and knowledge about Type 2 diabetes.	Dispelled any misconceptions about Type 2 diabetes resulting from cultural beliefs. Improved knowledge and awareness about the disease. Impacted an understanding of the long-term consequences of Type 2 diabetes. Empowered them to seek help and support. Helped them to improve knowledge about self-care behaviors.
Self-efficacy	Imbibed them with the knowledge that Type 2 diabetes is a self-care ailment. Motivated them to seek care, family, and social support. Encouraged them to network and build bridges that will promote knowledge and improve their health status.	Built self-confidence in the ability to self-manage Type 2 diabetes. Provided health education interventions on diabetes self-care management. Created awareness of access to needed care and support. Motivated them to seek help and support through health education and the importance of networking

		and belonging to diabetes care groups.

Application of HBM in Health Education-Related Studies

Many previous researchers have applied the constructs of the HBM in many areas of health-related studies. In a study to determine the effect of an educational program based on the HBM on self-efficacy among patients with type 2 diabetes Vahidi et al. (2015) appropriately used this model. Li et al. (2016) also used the HBM in the research to understand high-risk sexual behavior in Chinese men who have sex with men. The HBM was the theoretical framework used by Tarkang and Zokor (2015) in their systematic review of the literature. This literature review investigated the factors associated with consistent condom use to prevent HIV/AIDS amongst senior secondary school female students in a rural setting in Cameroon. Therefore, the HBM has been successfully applied as the framework for HIV prevention studies.

Social contexts and other multiple factors influence health behaviors and health outcomes (Yoshitake, Omori, Sugawara, Akishinonomiya, & Shimada, 2019). This concept was fundamental in the study by Yoshitake et al. (2019), which investigated how health beliefs, personality traits, and interpersonal issues influenced tuberculosis prevention behavior amongst adults in Japan. The HBM was applied in this investigation, which concluded that preventive disease practices were influenced by perceived susceptibility to diseases and social factors like cues to action and concern for benefits (Yoshitake et al., 2019). Castillo-Angeles et al. (2017) used the HBM in the study that examined the decision-making process in the treatment of pancreatic cancer. Noel (2016)

also applied the HBM in a phenomenological survey on how women made breast cancer treatment decisions. In another related study, Baharzadeh et al. (2017) used the HBM in promoting preventive behaviors against iron deficiency anemia amongst pregnant women.

Health interventions focused on reinforcement of self-efficacy enhanced understanding of perceived threats and reduced perceived barriers (Mohebbi et al., 2019). Mohebbi et al. (2019) conducted a quasi-experimental study that assessed a self-management intervention program based on the HBM amongst women with gestational diabetes mellitus. This study highlighted that theories based on self-management health interventions enhanced health practices in the control of Type 2 diabetes (Mohebbi et al., 2019). Boslaugh (2019) emphasized that knowledge, attitudes, and beliefs influenced health behavior and health outcomes. This notion was given credence in the findings of a study which examined the effect of educational intervention based on the HBM on the quality of life of women with gestational diabetes (Tavakkoli et al., 2018). The results of the study showed that health education based on the HBM had a positive effect on the quality of life of people with diabetes (Tavakkoli et al., 2018). The findings of the study by Shabibi et al. (2017) confirmed that HBM could be effectively applied to help people with Type 2 diabetes in adopting self-care behaviors.

Dehghani-Tafti et al. (2015) conducted a study aimed at determining self-care predictors in patients with diabetes mellitus using the HBM. The study findings gave credence to the efficacy of HBM in predicting self-care behaviors in patients with diabetes mellitus. This finding proved that HBM is a valuable framework that can be

used to design and implement health education interventions for preventing and controlling diabetes mellitus **(**Dehghani-Tafti et al., 2015). Karimy et al. (2016) noted that self-care plays an essential role in the treatment of persons with diabetes. Karimy et al. (2016) also investigated the predictors of adherence to self-care behavior in women suffering from Type 2 diabetes mellitus using the HBM. This cross-sectional study had a sample population of 210 women whose ages ranged from 30 to 60 years. The aim was to find out how to improve adherence to good self-care practices by women afflicted with diabetes mellitus.

Abdolaliyan, Shahnazi, Kzemi, and Hasanzadeh (2017) espoused that healthcare providers need to pay adequate attention to weight control of women during periods of pregnancy. These authors observed that such periods portend grave dangers to both women and their unborn babies if their weights remain uncontrolled. Therefore, Abdolaliyan et al. (2017) explored the determinants of weight control self-efficacy in women during pregnancy with the HBM as the theoretical framework. The study findings indicated that the HBM is appropriate for identifying factors for designing health educational interventions that can help in improving weight control practices in women during pregnancy.

Hosseini, Moradi, Kazemi, and Shahshahani (2017) observed that automation in the modern lifestyle had increased the complications arising from immobility in middle-aged women. Previous studies have been done to identify factors associated with physical activity in different age groups and cultural backgrounds (Hosseini et al., 2017). Therefore, Hosseini et al. (2017) used the HBM in a study that investigated the factors

impacting physical activities in women of middle age. The study findings showed a relationship between benefits, barriers, and perceived self-efficacy with moderate physical activity. Thus, the authors recommended that researchers should develop physical activity-related health educational interventions for women of middle age using the HBM framework.

Malverd and Kazemi (2016) contended that obesity and being overweight when pregnant exposed women to adverse health effects for both the mother and the unborn child. Malverd and Kazemi (2016) investigated the relationship between the health beliefs of women and the risks of obesity during pregnancy using the HBM. The study also examined the various changes in behavior women undergo when they are receiving preconception care. The study findings revealed that HBM helps predict nutrition and physical activity behaviors that can help pregnant women in adjusting their weight. This finding led to the conclusion that the HBM can be a useful framework in developing health education interventions that can address obesity and overweight in women undergoing preconception care (Malverd & Kazemi, 2016).

In a related study, Toghiyani, Kazemi, and Nekuei (2019) evaluated the association the HBM constructs and physical activity have with a healthy pregnancy in women from Iran. This cross-sectional study had a study population of 110 women who were at the preconception stage of pregnancy. The results identified perceived barriers as the HBM construct that was most important in predicting physical activity in women during the period of preconception (Toghiyani et al., 2019). Therefore, health education

providers for women at the preconception stage of pregnancy should emphasize physical activity, which is essential during pregnancy.

The research conducted by Shafieian and Kazemi (2017) was aimed at determining the appropriate model for enhancing physical activity during pregnancy. The researchers evaluated health education that focused on HBM constructs regarding physical activity during pregnancy using a semi-experimental study method (Shafieian & Kazemi, 2017). The researchers concluded from the study findings that HBM-based health education intervention could improve physical activity during pregnancy because it increased health belief levels in women during pregnancy. Shao, Wang, Liu, Tian, and Li (2018) investigated the impact of the HBM-based education program on the perception scores of 5 HBM domains amongst asymptomatic hyperuricemia (AHU) patients. This was a randomized controlled prospective experimental study conducted in Shanghai, China. HBM components for improving knowledge and promoting lifestyle changes were used to design the educational program. Evidence from the study result highlighted the advantages of HBM-based educational program in improving physical activity, as well as in reducing the serum uric acid values in AHU patients.

Literature Review of Key Variables and/or Concepts

Prevalence and Disease Burden of Diabetes Mellitus

The disease burden from diabetes mellitus is on the rise, and disabilities and mortality from diabetes-related ailments are continuing to increase in many developing countries on the Africa continent (Animaw & Seyoum, 2017). The adverse diabetes-related health outcomes may triple diabetes prevalence within the next 25 years (Animaw

& Seyoum, 2017). These adverse effects of diabetes are due to sedentary lifestyles, unhealthy dietary practices due to increasing urbanization, changing cultural traditions, and consumption of processed foods (Animaw & Seyoum, 2017). Adeloye et al. (2017) noted that Nigeria is the most populous country on the African continent. Nigeria also has the fastest increasing prevalence of Type 2 diabetes mellitus with the highest burden of diabetes in this region of the world (Adeloye et al., 2017). Adeloye et al. (2017) did a systematic review of existing literature on Type 2 diabetes and found that many Nigerians with Type 2 diabetes are still undiagnosed. Those already diagnosed have few known treatment options. These researchers also identified an increasing diabetes-related financial burden on individuals, the Nigerian society, as well as the Nigerian government. Therefore, the authors recommended more research on Type 2 diabetes, and the adoption of targeted response to diabetes prevention, control, and management. The current study is intended to fill this gap amongst the population of interest.

Asmelash and Asmelash (2019) conducted a systematic review and meta-analysis of existing literature and statistics to determine the burden of undiagnosed diabetes mellitus in an adult African population. The results showed that a pooled prevalence of 5.3% for the African population was far higher than 2.9% for Russians, 4.1% for Chinese, 2.7% for Iranians, and 0.56% for Americans (Asmelash & Asmelash, 2019). This finding showed the high level of diabetes mellitus disease burden which African populations bear. Nigeria has the highest number of people who live below the poverty line of less than $1.90 per day (World Bank, 2019).

Statistics also showed that diabetes-related mortality is highest in developing countries like Nigeria, and 80% of global diabetes-related deaths in 2014 took place in developing and low/middle-income countries (Githinji, et al., 2018). Githinji et al. (2018) used a descriptive cross-sectional research method in reviewing data in the diabetes registry in five rural and semi-urban locations in Kenya. The aim of the study was to determine diabetes prevalence and co-morbidities in these areas**.** The researchers found that diabetes was the most common co-morbidity identified with hypertension (80%, 52%, and 34% in the first three counties). Diabetes and its associated complications were more prevalent in rural and semi-urban areas where women were also found to be more affected (Githinji et al., 2018)**.**

Supiyev et al. (2015) conducted a cross-sectional study which examined the prevalence, awareness, and treatment of diabetes in older populations living in urban and rural areas. The study, which took place in the Astana region of Kazakhstan, had a sample population of 953 adults aged between 50 to 75 years. The result of the study revealed that the overall diabetes prevalence was 12.5% when split between the rural and urban locations. However, it showed a marked difference of 8.6% in rural areas and 16.3% in urban neighborhoods. Therefore, urbanization is a risk factor for diabetes mellitus (Supiyev et al., 2015)**.** China is another country where over 100 million people were reported to be suffering from diabetes in 2010 (Liu et al., 2016). China experienced an increase in diabetes prevalence from less than 1.0% in 1980 to 11.6% in 2010 (Liu et al., 2016). This increase means that China has become one of the countries in the world with the highest Type 2 diabetes mellitus population (Liu et al., 2016). Timmons (2018)

emphasized that China, with 114.4 million people living with diabetes mellitus in 2017, had the highest diabetes population in the world. China was followed in second place by India, which had a population of 72.9 million people, and the United States was third with 30.2 million American residents living with diabetes mellitus in 2017 (Timmons, 2018). The numbers highlighted should concern policymakers and healthcare planners all over the globe, as this is an indication of the growing number of adults living with diabetes mellitus.

One in every 53 Nigerians are living with diabetes, and 60.7% of the estimated 1.6 million diabetic Nigerians are undiagnosed (Otu, Akpan, Effa, Umoh, & Enang, 2018). Otu et al. (2018) conducted a cross-sectional observational study to examine the prevalence of type 2 diabetes in a community in South-Eastern Nigeria. The researchers recruited 1200 people (683 females and 517 males) with a mean age of 41.3 years for the study. The study revealed a Type 2 diabetes mellitus prevalence of 6.9% in the community. This figure is far higher than 5.3% prevalence for diabetes mellitus, which has been internationally reported for Nigeria (Otu et al., 2018). Therefore, this grave health situation demands a refocus of diabetes-related health intervention strategies in this community.

The high prevalence of Type 2 diabetes has also contributed significantly to the growing cases of diabetic retinopathy in Nigeria (Ewuga, Adenuga, Wade, & Edah, 2018). Ewuga at el. (2018) conducted a study to investigate the prevalence, pattern, and risk factors of diabetic retinopathy amongst patients with diabetes mellitus in a hospital in North-Central, Nigeria. One hundred twenty-six males and 236 females with a mean age

of 56.6 years constituted the study population of 362 participants. The study result revealed that diabetic retinopathy was present in 18.5% of the participants, while 14.3% had macular edema (Ewuga et al., 2018). The authors attributed the glaring poor diabetes-related negative health status of the study population to the long duration of undiagnosed Type 2 diabetes and poor glycemic control. The result of the study amplified the need for regular diabetes screening and adequate glycemic control in people living with diabetes mellitus.

Risk Factors for Type 2 Diabetes Mellitus

Uluko et al. (2018) conducted a systematic review and meta-analysis on the prevalence and risk factors for diabetes mellitus in Nigeria. The study findings revealed the prevalence rate had grown from 2.2% in 1992 to 5.7% in 2018 (Uluko et al., 2018). This alarming figure superseded the average prevalence of 5.3% currently recorded for other African populations (Asmelash & Asmelash, 2019)**.** The higher prevalence rate of diabetes mellitus in Nigeria can be attributable to various risk factors. These include rapid urbanization, which promotes unhealthy feeding habits, a lack of physical activity, and the growing number of elderly populations (Uluko et al., 2019).

Gezawa et al. (2015) investigated the socio-demographic and anthropometric risk factors affecting Type 2 diabetes mellitus in Maiduguri, North-Eastern Nigeria. The study showed that the existence of a poor socio-economic environment was mostly responsible for unhealthy lifestyles, which promoted the rise of diabetes mellitus in this area. Gezewa et al. (2015) also reported that an increasingly aging population and rise in obesity were other risk factors contributing to the increase in diabetes in Maiduguri, North-Eastern

Nigeria. A similar community-based cross-sectional study was conducted by Worede, Alesmu, Gelaw, and Abebe (2015). The authors investigated the prevalence of impaired fasting glucose and undiagnosed diabetes mellitus and associated risk factors among adults living in rural North-Western Ethiopia. The researchers identified obesity, hypertriglyceridemia, and systolic hypertension as major risk factors affecting impaired fasting glucose, especially amongst the adult population (Worede et al., 2015).

The prevalence of cardiovascular disease in the African continent is as high as 48% (Bello-Ovosi et al. 2018). Bello-Ovosi et al. (2018) conducted a descriptive cross-sectional study in an urban community in North-Western Nigeria to examine the prevalence and correlates of hypertension and diabetes. In the sample population with a mean age of 51years, 87.8% of the participants were females, and the results indicated a 55.9% prevalence rate for hypertension and a 23.3% prevalence rate for diabetes mellitus (Bello-Ovosi et al., 2018). The authors thus concluded that a strong relationship existed between age, female gender, and a higher risk of hypertension and diabetes mellitus.

Although the prevalence of diabetes continues to rise in developing countries in Africa, the bulk of the population remains ignorant of the risk factors (Sabir et al., 2017). Sabir et al. (2017) conducted a community-based cross-sectional study with a sample size of 280 participants with a mean age of 42.3 years. The study examined the prevalence of diabetes mellitus and the risk factors associated with this chronic disease amongst a suburban population in Northwestern Nigeria. Analysis of the result indicated that the most significant risk factors associated with diabetes mellitus were an increasingly aging population and a rise in obesity (Sabir et al., 2017). Therefore, the authors noted that

diabetes mellitus had become a severe public health challenge that should be addressed with increased awareness creation in suburban locations.

Gaidhane et al. (2017) investigated the risk factors for Type 2 diabetes mellitus amongst adolescents from rural areas of India. Evidence from the study finding associated high risk for diabetes mellitus with sedentary life and unhealthy food consumption. Risk factors for diabetes mellitus continue to manifest on a global scale. The prevalence of this dreadful disease can be curtailed if pre-diabetes, which is a forerunner to full-blown diabetes, can be reduced (Nwatu et al., 2016). Nwatu et al. (2016) investigated the risk factors which are associated with pre-diabetes in Enugu community in Eastern Nigeria. The results of the study showed the prevalence of impaired fasting glucose at 9.2 %, while that of impaired glucose tolerance was 15.8 % (Nwatu et al., 2016). Prevalence of hypertension was the highest risk factor at 45.3 % prevalence, while obesity was 5.8% (Nwatu et al., 2016). It is important to note that the authors of these two studies on pre-diabetes sounded the alarm that diabetes prevalence will continue to rise. This will be so if no actions are taken to contain pre-diabetes by healthcare authorities in developing countries in Africa.

Katibeh et al. (2015) conducted a population-based study with 2090 participants aged 40 to 80 years to check the prevalence and risk factors of diabetes mellitus. The research was done in a central district in Iran. A startling discovery made through the study was that there is a 4% increase in diabetes prevalence for each year of aging (Katibeh et al., 2015). A 24.9% prevalence for diabetes was recorded amongst the study population (Katibeh et al., 2015). However, further analysis of the prevalence revealed

that the increase for Type 2 diabetes was more in women than in men, indicating that gender was a risk factor for Type 2 diabetes mellitus. Other risk factors for Type 2 diabetes mellitus identified by the authors were the low level of education and hypertension (Katibeh et al., 2015).

Cho et al. (2018) stated that the prevalence of risk factors for diabetes mellitus on the African continent has contributed to its highest percentage of 69% for undiagnosed cases of diabetes mellitus in 2017 when compared to other regions of the world. South East Asia had 58% for cases of undiagnosed diabetes mellitus, while the West Pacific had 54% during the same year (Cho et al., 2018). Other regions of the world that showed lower percentages for cases of undiagnosed diabetes mellitus in 2017 were 49% for the Middle East and North America and 40% for South and Central America (Cho et al., 2018). Europe and North America and the Caribbean regions had 38% each, indicating the lowest percentage for cases of undiagnosed diabetes mellitus in 2017 (Cho et al., 2018).

Impact of Aging on Diabetes Mellitus Complications

Achigbu, Oputa, Achigbu, and Ahuche (2016) evaluated the knowledge, attitude, and practice of patients with Type 2 diabetes. The authors found evidence that diabetes prevalence was higher among people 60 years and older, and that knowledge of diabetes was significantly low among elderly Nigerians (Achigbu et al., 2016). Pensioners in Nigeria are predominantly 60 years and older in age and constituted the population of interest in this study. Wang et al. (2018) conducted a cross-sectional study that showed that the prevalence of diabetes was higher amongst older participants indicating that age

is a risk factor for diabetes-related complications. The study finding by Wang et al. (2018) amplified the vulnerability of Nigerian pensioners, the population of interest in the study, to diabetes complications. The observational cross-sectional study Wang et al. (2018) conducted also examined the awareness, management, and control of diabetes mellitus. The researchers used a sample population of 10,851 people from China, a country where 25% of the middle-aged and elderly residents had diabetes in 2010/2011 (Wang et al., 2018). 40.3% of the identified diabetics were unaware of their disease condition (Wang et al., 2018). This is a challenging health situation as a low level of awareness impedes treatment and control of diabetes mellitus.

Al-Rubeaan et al. (2016) conducted a study to determine the all-cause mortality of Types 1 and 2 diabetes mellitus and their risk factors. The study, which comprised 40,827 participants and 152,038 person-years of follow up, recorded a 16.98% per 1,000 person-years all-cause mortality rate (Al-Rubeaan et al., 2016). The result of the study further showed that although the mortality rate was higher amongst male participants, it also rose with age. The finding means that elderly populations stand a higher risk of diabetes mellitus and its long-term complications. The authors noted that increasing prevalence of diabetes and its attendant health complications amongst older adults demands immediate actions. Such actions could reduce diabetes mellitus prevalence and decrease diabetes-related mortality risk.

Almetwazi et al. (2019) conducted a retrospective cross-sectional study of 728 adult patients aged 45 to 60 years with type 2 diabetes mellitus. 60 % of the respondents were female, 61% also had hypertension, and 53% had dyslipidemia (Almetwazi et al.,

2019). The most elderly diabetics in the group had these additional health issues and had less likelihood of having proper control of their blood glucose. The researchers identified the need for a better focus on diabetes management in older patients to avoid long-term health complications of Type 2 diabetes. Another study by Liu et al. (2016) investigated the prevalence, awareness, treatment, and control of Type 2 diabetes mellitus. The researchers in the study also explored potential risk factors in rural areas of China. A total of 16,413 individuals aged 18-74 years in rural districts were recruited for the study. The result of the study indicated that the prevalence of Type 2 diabetes amongst the participants increased with age (Liu et al., 2016)). However, the participants who were better educated and more aware of the illness had better control of their blood glucose levels. This is because they practiced healthier lifestyles like eating more vegetables and fruits, engaging in physical exercises, and keeping to medication instructions (Liu et al., 2016). The findings of the study also identified family history of diabetes and excessive body mass index as some risk factors for Type 2 diabetes (Liu et al., 2016).

Cho et al. (2018) estimated that 451 million people aged 18 to 99 years were living with diabetes all over the world in 2017. This figure is expected to rise to 629 million people for the global population aged 20 to 79 years in 2045. The largest population of people living with diabetes mellitus were between 65 to 99 years of age (Cho et al. (2018). The estimate showed that diabetes and its long-term complications are age-related. Diabetes management has remained a significant problem amongst older populations in low- and middle-income countries (Salas et al., 2016). Salas et al. (2016) conducted a study which examined the prevalence, social patterns, detection, treatment,

and control of diabetes amongst older people in Latin America, India, China, and Nigeria. The findings of the study indicated that diabetes prevalence was 24.2% in Cuba, 43.4% in rural Puerto Rico, 27.09% in urban Puerto Rico, and 23.7% in rural Mexico (Salas et al., 2016). The prevalence was 20.9% in Venezuela, 0.9% in rural China, 6.6% in rural India, and 6.0% in Nigeria (Salas et al., 2016). The authors related the high prevalence of diabetes recorded in most of the research locations to the age of the respondents. Therefore, they concluded that age was a significant risk factor for diabetes mellitus. Between 40% to 60% of the respondents also expressed difficulty with self-management, treatment, and control of their blood sugar levels due to age (Salas et al., 2016). The authors further noted that the absence of early diagnosis for diabetes was responsible for much of the long-term complications of diabetes that were prevalent. Inadequate access to healthcare services due to financial constraints that affected the level of diabetes care for the aging population of interest in the study also contributed to the adverse long-term health consequences of diabetes mellitus (Salas et al., 2016).

Lack of Knowledge About Diabetes Mellitus

Researchers have identified and highlighted a lack of awareness about diabetes mellitus and its complications in findings from previous research studies. Alwan et al. (2017) conducted a survey in which the participants were found to have a low awareness level for diabetes mellitus. The authors also discovered that over half of the respondents in the study were unaware that diabetes mellitus could result in health complications that affect the human heart, kidneys, eyes nervous system, and feet (Alwan et al., 2017). Ghannadi et al. (2016) conducted a cross-sectional study in Iran to evaluate how

improving the knowledge, attitude, and self- care practices of diabetic patients on dialysis can lead to better glycemic control, delay long-term complications, and enhance their quality of life. The study findings showed that the quality of self-care practices was significantly associated with their knowledge, beliefs, and attitudes (Ghannadi et al., 2016). The studies reviewed above have shown how inadequacy in diabetes knowledge and wrong beliefs affected attitudes and diabetes self-care practices.

Laursen et al. (2017) explored the level of knowledge about diabetes in Denmark. The authors discovered that health information would be most beneficial in helping people with diabetes make healthy lifestyle changes that can improve their health outcomes. The researchers evaluated the respondents' knowledge, attitude, and beliefs about Type 2 diabetes and identified a severe lack of knowledge. These identified health education needs were in line with the authors' recommendation for health educators to provide clear, precise, and culturally sensitive instructions and positive interactions. These recommendations can help vulnerable populations imbibe necessary lifestyle changes (Laursen et al., 2017). Choi et al. (2017) explored the learning behavior patterns and preferences of Chinese people, and their study highlighted the importance of exploring knowledge about diabetes as an essential avenue for creating workable health education intervention strategies for vulnerable populations. The evaluation of the knowledge of the population of interest in this study about Type 2 diabetes and identification of their health education needs provided evidence for future development of appropriate health education intervention tools.

Amadi et al. (2018) conducted a study to determine the prevalence, knowledge, attitude, and management practices of diabetes mellitus and hypertension in Amaoba Ikwuano Abia State of Nigeria. The results showed that most of the participants had no prior knowledge of diabetes. 64.62% of the respondents did not also have previous diagnose of diabetes mellitus (Amadi et al., 2018). The authors found the prevalence of diabetes to be higher in older respondents. Ogundele et al. (2016) examined the clinical profile, knowledge, and beliefs about diabetes in Lagos, Nigeria. The researchers found that 55% of the participants were unaware of the causes of diabetes, 30% believed in the use of alternative medicines, and 13% thought that diabetes was curable (Ogundele et al., 2016). The findings of the current study addressed the glaring gap in knowledge about diabetes identified by these authors. The findings will also have a positive impact on the beliefs and attitudes of the respondents. Furthermore, the study will help reshape the health behaviors of the population of interest for improved health outcomes.

Alanazi et al. (2018) examined the public knowledge and awareness of diabetes mellitus among Saudi Arabians through a systematic review of existing peer-reviewed literature. The study highlighted a high level of lack of public awareness about diabetes mellitus and its associated health complications and consequences. The study further underlined the need for actions aimed at increasing existing knowledge levels about diabetes mellitus and creating better awareness amongst Saudi Arabians. The authors recommended that structures be put in place to improve awareness and knowledge about diabetes mellitus. The recommendation can be achieved by creating better means of

disseminating diabetes information to patients, their families, and communities (Alanazi et al., 2018).

The high level of ignorance about Type 2 diabetes and misconceptions many people with diabetes in developing countries hold have contributed to its escalating prevalence and adverse health consequences (Amadi et al. 2018; Adejumo et al., 2015). Badedi et al. (2015) conducted an analytical cross-sectional study to examine factors associated with glycemic control amongst Saudi Arabia patients with Type 2 diabetes mellitus. Two hundred and eighty-eight participants with Type 2 diabetes mellitus were randomly selected, and the study result showed that over 74% of the participants had poor glycemic control. The authors noted that this situation was due to a lack of knowledge, inadequate health education, and a long period of undiagnosed diabetes. Also, unhealthy health habits, non-compliance with diet instructions, and refusal to follow medication instructions contributed to poor glycemic control (Badedi et al., 2015).

Optimal glycemic control is the foundation of proper diabetes management. Kassahun, Eshetie, and Gesesew (2016) reported that poor glycemic control by patients living with diabetes was 12.9% in the United States and as high as 65% in developing African countries. Kassahun et al. (2016) conducted a cross-sectional survey to determine factors associated with glycemic control amongst adult patients living with TSype 2 diabetes mellitus in Ethiopia. In the survey population of 325 participants, the results indicated that 70.90% had poor glycemic control, with the highest proportions being reported amongst the less literate participants (Kassahun et al., 2016). The authors determined that the reduced level of glycemic control recorded in the study was

attributable to a lack of knowledge. The lack of knowledge was due to inadequate education on the need for strict adherence to anti-diabetic treatment schedules (Kassahun et al., 2016). The findings of the current study highlighted the importance of diabetes education and awareness creation as critical intervention strategies that can improve glycemic control amongst people living with Type 2 diabetes.

The Office of Minority Health (OMH) (2016) stated that African American populations were twice more likely to develop diabetes mellitus than non-Hispanic white Americans. African Americans are also likely to suffer from long-term complications of diabetes in the same proportion (OMH, 2016). The vulnerability of this population group notwithstanding, 70.2% of them are not able to identify all the symptoms and signs of type 2 diabetes correctly (Spears, Guidry, & Harvey, 2018). In the study conducted by Spears et al. (2018) to measure the knowledge and perceptions of risk in middle-class African Americans about Type 2 diabetes, only 3.3% correctly identified the risk factors for Type 2 diabetes. 26.5% of the respondents were able to identify a few of the risk factors for Type 2 diabetes (Spears et al., 2018). It should worry policymakers and healthcare providers that the populations most vulnerable to Type 2 diabetes still lack knowledge about it. Most people who are susceptible to diabetes do not consider themselves susceptible to this debilitating disease due to ignorance. Cho et al. (2017) estimated that over 225 million people living with diabetes mellitus in 2017 were undiagnosed due to ignorance and lack of knowledge about the disease. Besides, enough global efforts are not being made to empower the vulnerable populations through appropriate health education (Spears et al., 2018).

Cultural Beliefs and Diabetes Mellitus

Results of a study by Xu et al. (2018) revealed that the use of culturally appropriate visual, tactile, and engaging diabetes education tools helps in promoting health literacy. Such tools also enhanced the understanding of Type 2 diabetes prevention and management. I designed this study to be interactive to elicit the interest of the respondents. The findings would also be able to improve their awareness, knowledge, and literacy about Type 2 diabetes. Nigeria is a multi-cultural society where various cultural practices have a significant impact on population health outcomes (Adejumo et al., 2015). Adejumo et al. (2015) noted that cultural beliefs and the multiplicity of cultural practices in Nigeria promote a high level of patronage for traditional medical practices. This poor alternative to modern therapeutic methods comes with negative health consequences, especially for chronic ailments like diabetes mellitus. The authors raised the alarm that traditional, cultural, and religious health beliefs amongst the various ethnic populations in Nigeria impact their faith, belief, and acceptance of modern medical practices (Adejumo et al., 2015). This situation continues to affect the recognition of the need for lifestyle changes as a means of improving diabetes prevention and control, especially amongst the elderly Nigerians.

Research findings showed that cultural beliefs in many underdeveloped countries where cultural adherence is still firm have affected the acceptance of modern western lifestyles (Giacinto et al., 2015). It has also limited the use of modern medicines in the prevention, control, and treatment of diabetes mellitus. Giacinto et al. (2015) conducted a study to examine cultural beliefs and the use of traditional medicines by health center

patients in Oaxaca, Mexico. The result showed that the participants had strong cultural allegiance to their traditional and cultural beliefs about diabetes mellitus. The respondents in the study believed that diabetes was a punitive disease caused by the 'gods' as mystical retribution to the afflicted (Giacinto et al., 2015). This conviction lent credence to the respondents' adherence to the use of traditional medicine in diabetes treatment rather than accept modern western diabetes medications. Such outdated cultural and traditional beliefs continue to exacerbate the prevalence of Type 2 diabetes and its long-term complications. Therefore, developing interventions that are culturally tailored will help in the prevention and management of diabetes mellitus.

Diabetes-related mortality due to the inability of health educators and other healthcare providers to make vulnerable people imbibe healthy lifestyles poses a severe public health challenge. These barriers relate mainly to the unwillingness of culturally sensitive populations to change attitudes regarding long-held beliefs and misconceptions about the causes of diabetes mellitus. Mogre, Johnson, Tzelepis, and Paul (2019) conducted a qualitative study to investigate the barriers to diabetic self-care in Tamela, Ghana. The study revealed that the respondents had strong beliefs that diabetes was because of spiritual or evil forces or caused by curses other people placed on those affected by the ailment (Mogre et al., 2019). This mystical belief informed their faith in using traditional herbal medicines for diabetes treatment instead of visiting modern medical facilities for treatment. These strong cultural and traditional beliefs make many diabetic patients in underdeveloped rural locations to intentionally avoid visiting modern hospitals or to not adhere to medication instructions (Mogre et al., 2019). Mogre et al.

(2019) identified inadequate family and community support, social stigma, and harmful cultural beliefs as major social factors that inhibited positive diabetes self-care. Therefore, strong cultural beliefs impede diabetes prevention, control, sand management in most underdeveloped and developing countries, especially on the sub-continent of Africa.

Role of Self-Management Education and Practices in Controlling Diabetes Mellitus

Research findings by Tachanivate et al. (2019) showed that DSME enhanced knowledge about diabetes and promoted positive diabetes self-care behaviors. Diabetes self-management also increased diabetes care satisfaction scores (Tachanivate et al., 2019). Therefore, it was essential to identify the diabetes-related health education needs of the participants in the current study. The identification of the health education needs of the respondents was essential in getting the population of interest to imbibe self-care behaviors and necessary lifestyle changes. Schwennesen et al. (2016) examined patients' explanations for non-attendance at Type 2 DSME sessions. The authors found that most respondents exhibited a lack of interest and inadequate knowledge about the benefits of diabetes education and self-care. The researchers also discovered that DSME improved positive self-care behavior. The discovery supported the current study, which sought to identify the health education needs of the respondents. The health education needs will be the basis for proffering ways of enhancing their understanding and importance of active Type 2 diabetes self-care.

Mamo and Demissie (2016) surveyed diabetes self-care practices and associated factors amongst diabetic patients in public hospitals in Addis Ababa, Ethiopia. The

authors discovered that only 60.3 % of the participants had good knowledge of diabetes self-care and good diabetes self-care practice (Mamo & Demissie, 2016). Further examination of these results indicated that 63.3% with good self-care practice either had a sound social support system or belonged to a diabetes association (Mamo & Demissie, 2016). The group also had access to some form of diabetes education or diabetes knowledge. Therefore, the study findings supported the fact that excellent social support, access to diabetes self-care education, and positive interaction improved diabetes self-care practices. Such practices included having regular physical exercises and self-monitoring of blood glucose levels, which improved health outcomes. Furthermore, the CDC's standards of medical care in diabetes outlined the need for diabetes care providers to provide diabetic patients with self-management education and resources (CDC, 2019). These resources help people living with diabetes to manage their health conditions better.

Although the prevalence of Type 2 diabetes has continued to rise globally, results from recent research indicated that many people living with diabetes have poor glycemic control. This situation contributed to the rise in long-term complications of diabetes mellitus. The findings from a study conducted by Alzaheb and Altemani (2018) in Saudi Arabia showed that 74.9% of 423 Type 2 diabetes mellitus patients who participated in the study had poor blood sugar control. The study examined the status of glycemic control and factors influencing poor glycemic control amongst adult Type 2 diabetes patients in Saudi Arabia. The researchers highlighted the need for patient education and improved self-care as a means of improving health outcomes in the study (Alzaheb & Altemani, 2018).

Chravala, Sherr, and Lipman (2016) conducted a systematic analysis which examined how to improve the knowledge, skills, and ability of adult diabetics in carrying out self-care activities. The researchers also investigated how to help the patients in making educated and informed decisions that will help them achieve the goals they set for themselves regarding their health outcomes. The research finding revealed how providing diabetes self-management, and self-care education can result in significant improvement in health outcomes (Chravala et al., 2016). The authors noted that effective DSME promoted glycemic control, improved A1C count, and enhanced networking and positive team spirit amongst adults living with diabetes. Another study by Badedi et al. (2015) revealed how increased patient education and knowledge about Type 2 diabetes built greater confidence in the ability to self-manage the ailment. This is because patient education enhanced self-care behaviors and lowered HbA1c levels (Badedi et al., 2015).

Withnall (2017) highlighted the need for newly diagnosed diabetics to be allowed to join a diabetes education group as this helps to provide empowerment and self-care educational support. Such groups provide avenues for people with diabetes to learn how to accept their health situation and understand their responsibilities in self-care. It also helps them to keep abreast of new developments in research and knowledge and enjoy the advantages of face-to-face discussions with other diabetics and healthcare professions (Withnall, 2017). This diabetic author shared how such group interactions and activities empowered her to seek and evaluate new advice. It also increased the ability to self-manage diabetes, which improved her health outcomes (Withnall, 2017). The author emphasized that the growth in self-confidence through diabetes education is critical to

diabetes self-care for the elderly. Furthermore, the author noted that the adverse health effect of diabetes certainly rises as one's age increases (Withnall, 2017).

Results from previous research studies have shown that good self-care played an essential role in managing diabetes mellitus. Selvaraj et al. (2016) examined self-care practices amongst people with diabetes in Puducherry, South India**,** to determine the proportion adhering to recommended self-care instructions. The researchers evaluated 162 diabetic participants' diet habits, physical activities, foot-care, adherence to medications, and blood sugar monitoring practices. 95.6% adhered to medication instructions, 99.4% maintained their diet instructions, and 78% checked their blood sugar as instructed (Selvaraj et al., 2016). However, only 50.6% kept to recommended physical exercise regimen, and 35.5% maintained required foot-care practices (Selvaraj et al., 2016)**.** The researchers concluded that better adherence to diabetes self-care practice guidelines is crucial to improved health outcomes for diabetic patients (Selvaraj et al., (2016).

High Cost of Managing Diabetes Mellitus

Diabetes management and control have become expensive to families and communities. The estimated cost of diabetes to the United States economy in 2017 alone was $327 billion (ADA, 2018). The amount was made up of $237 billion in direct medical costs and $90 billion in decreased productivity (ADA, 2018). It was further estimated that diagnosed diabetics consumed a quarter of healthcare dollars in the United States by incurring average medical bills of $16,750 per year in 2017 (ADA, 2018). People living with diabetes also incurred medical bills, which were 2.3 times higher than

what nondiabetics incurred in annual medical expenses in 2017 (ADA, 2018). It has also been estimated that the global economic costs of diabetes mellitus increased by 26% from 2012 to 2017 (CDC, 2019). This high financial burden can be reduced by improving diabetes management and control through enhanced self-care practices.

Lian et a. (2017) did a systematic review of previous studies on the cost-effectiveness of a self-management education program for Type 2 diabetes mellitus. The result showed that a $39 cost per glycemic symptom day could be avoided through good diabetes self-care practices. The finding indicated that self-management education programs for diabetes mellitus and self-care practices helped to achieve a reduction in clinical risk factors. Such health modifications translated to cost savings for individuals, families, and communities in the long run. Dedefo, Ejeta, Wakjira, Mekonen, and Labata (2019) conducted a facility-based cross-sectional study in West Ethiopia. The study evaluated the self-care practices of people living with diabetes and was conducted with 252 participants. The findings of the study revealed that the high cost of managing diabetes was partly attributable to poor diabetic self-care practices resulting from a lack of knowledge and inadequate information (Defafo et al., 2019).

Social Support and Management of Diabetes Mellitus

Diabetes is a self-care disease which progresses with age (Wang et al., 2018). Family members with good diabetes knowledge should play a prominent role in the prevention and control of diabetes mellitus. Wolde et al. (2017) conducted a study that revealed the importance of family members in providing diabetes care. The result of the study showed that family members with higher levels of education had a better

understanding of good diabetes care practices. The constant interaction of family members with diabetes mellitus patients provides better social support, increases disease awareness, and provides opportunities for improved family-related healthcare services (Wolde et al., 2017). The study was conducted in Ethiopia, a country with the same demographics and geographical characteristics as Nigeria. Therefore, the study has implications for the current research. Rosland et al. (2018) also investigated how engaging family supporters of adult patients living with diabetes can improve clinical and patient-centered outcomes. The finding of the study indicated that family supporters are essential resources that can help patients to engage better in their care and in achieving improved results in their health.

Osuji et al. (2018) conducted a cross-sectional study with 316 participating adult diabetics to examine the association between glycemic control and perceived family support amongst Nigerians. The study showed that 40.6% of the participants who had reasonable glycemic control enjoyed strong perceived family support (Osuji et al., 2018). Therefore, healthy family and social support galvanized adult diabetics into achieving improved self-care in glycemic control and better health results (Osuji et al., 2018). Research has also shown that social interaction and support were useful in creating awareness and imparting knowledge for diabetes care. Rogers et al. (2017) examined the effectiveness of social marketing campaigns in teaching participants about socio-environmental conditions influencing Type 2 diabetes and its associated risks. The findings of the study showed that the participants who identified how environmental factors could cause Type 2 diabetes were 34% pre-intervention and 83% post-

intervention (Rogers et al., 2017). Therefore, social interventions created opportunities for greater reach and engagement, resulting in more effective diabetes-related information dissemination (Rogers et al., 2017).

Furthermore, past studies have proved the importance of social support in the management of Type 2 diabetes. Rosland et al. (2018) conducted a study that showed that engaging family supporters of adult patients living with diabetes improved clinical and patient-centered health outcomes. The positive effect is because family and friends' response to the changing needs of family members living with diabetes promoted self-care and enhanced diabetes management (Rosland et al., 2018). The findings of a related study by Joeson, Almdal, and Willaing (2016) established that low social support impacted the quality of life of people living with diabetes. Furthermore, a lack of social support increased the challenges of managing diabetes because it created a high emotional burden for those living with diabetes (Joeson et al., 2016).

Asmelash, Abdu, Tefera, Baynes, and Derbew, (2019) conducted a study which assessed the knowledge, attitude, and practices of people with diabetes towards glycemic control and factors associated with it. This study, and a related research conducted by Abate, Tareke, and Tirfie (2018), established that income, educational status, and patients' marital status had significant relationships with their level of knowledge, attitude, and self-management practices in their glycemic control. In other words, higher social, educational and income levels, and more stable relationships availed diabetic patients better emotional support they needed for diabetes self-care (Abate et al., 2018; Asmelash et al., 2019). A cross-sectional study conducted by Asmamaw, Asres, Negese,

Fekadu, and Assefa, (2015) was further proof of the efficacy of social support in diabetes management and care. The study conducted in North-Western Ethiopia examined the knowledge and attitude of the respondents about diabetes mellitus and its associated factors. Eight hundred and thirty-two people participated in the survey, and 408 or 49% of the respondents had good knowledge of diabetes, while 329 or 39.5% had the right attitude about diabetes mellitus (Asmamaw et al., 2015). Educational status, family income, and family history of diabetes mellitus were the significant factors associated with good knowledge about diabetes mellitus in the study results (Asmamaw et al., 2015).

The CDC (2019) supports and promotes extensive use of social support in diabetes management. Standards of medical care in diabetes stipulates that diabetes care should be team-based with community involvement and that communities should identify and develop resources that support healthy living (CDC, 2019). The CDC (2019) encourages communities to provide fundamental social determinants of health, including food security, housing availability, financial support, recreational facilities, and a well-built environment. Such facilities promote healthy living and create positive, healthy outcomes.

Many diabetic patients have developed difficulty in diabetes management or have fallen back to their old habits due to a lack of social support and declining motivation. In a related study to determine the factors associated with long-term control of Type 2 diabetes mellitus, Badedi et al. (2015) identified low HbA1c levels amongst study participants who enjoyed strong family support and who had positive and close

relationships with their healthcare providers. On the contrary, those who were stressed out or depressed due to lack of family support had poor compliance with their diet and were unable to keep to medication instructions (Badedi et al., 2015). This affected their glycemic control. Strong family and social support improved patient knowledge by empowering them with greater self-confidence and enhanced their ability to self-manage their health condition through improved self-care behaviors (Badedi et al., 2015).

The vital role social support plays in diabetes mellitus care practices cannot be over-emphasized. Abate et al. (2018) conducted a study which established a significant association between social support and good diabetes care practices. Aging diabetes vulnerable populations need social support. Studies reviewed earlier revealed how diabetes mellitus was more prevalent amongst older populations and showed that diabetes-related health challenges multiplied as people with diabetes increased in age (Achigbu et al., 2016; Al-Rubeaan et al., 2016; Wang et al., 2018). Providing healthcare services to older populations presents its challenges and complicates the problems healthcare professionals face when providing care to older diabetic patients. Besides, older people living with diabetes need empowerment to overcome the difficulties of giving diabetes self-care. Withnall (2017) shared personal experiences on how knowledge empowerment enabled her to live with this chronic disease at a later stage in life. The author revealed that the most challenging part of diabetes self-care practice for older people living with diabetes is making needed lifestyle changes. Diabetes self-care gets more difficult as people advance in age (Withnall, 2017). Furthermore, the need to

rely on social support, third party healthcare providers, and dependent relatives for diabetes self-care increases with age (Withnall, 2017).

Implications of Previous Research on Current and Future Studies

The challenges healthcare providers face in the fight against diabetes mellitus can be overcome through a better understanding and knowledge about Type 2 diabetes mellitus. Any future success in effectively addressing the adverse health effects of the long-term complications of Type 2 diabetes mellitus will be based on thoroughly understanding the knowledge the vulnerable populations have about the disease. It is also necessary to explore the beliefs and attitudes of people living with diabetes whose lives are at risk. In this regard, the recommendation made by Alwan et al. (2017) that future educational intervention programs on diabetes mellitus should focus on awareness creation and overcoming long-held misconceptions by vulnerable populations becomes relevant. The recommendation is further amplification of the need for this study, which targeted a vulnerable and underserved population group.

The lack of information and knowledge about Type 2 diabetes, which the literature review uncovered is enormous, and will also serve as a guide in addressing where gaps for future research studies exist. This indicates that healthcare planners and healthcare service providers may not have been giving appropriate attention to diabetes education and diabetes care. It may also be that policy planners have not been allocating adequate resources to this vital aspect of providing healthcare to diabetes vulnerable populations. This study examined the knowledge, attitudes, and beliefs of a vulnerable

and underserved population group. Furthermore, it shed some light on the health education intervention strategies, which will be necessary to address the gap.

The prevalence of diabetes mellitus, which the literature review identified to be higher in older population groups, is also revealing. The population of interest in the current research fell within the older population group. This revelation bolstered the need to investigate the knowledge, attitudes, and beliefs of pensioners in Abia State of Nigeria. The literature review established that older populations stand the risk of higher levels of long-term complications of diabetes mellitus. Furthermore, the importance of self-care in the management of diabetes mellitus was extensively highlighted in the research articles reviewed. The implication of this finding for this research and future studies is that it emphasized the need to pay considerable attention to the self-care efforts vulnerable populations need to make to improve their health outcomes. Therefore, it may be necessary to identify the self-care needs of diabetes-vulnerable communities in future studies. Such identification will enable researchers to develop targeted self-care strategies that future health education interventions for different population groups can apply. The development of targeted intervention strategies will empower those at risk of complications of Type 2 diabetes to attain improved healthcare status by reaping the advantages of professional self-care practices. Improved health outcomes of diabetes vulnerable populations will require enhanced expert health education interventions.

Summary

Findings from the studies reviewed in Chapter 2 highlighted the high level of inadequate knowledge and awareness about Type 2 diabetes. The findings showed the

need for culturally tailored diabetes education tools that will address the specific needs of vulnerable populations. There is a need for customized diabetes education tools because most communities that are diabetes-vulnerable still cling to cultural beliefs and ethnic practices that hinder the acceptance of modern diabetes medicines and interventions. Also, the literature review revealed a lack of adequate family and community support for people living with diabetes.

Furthermore, the literature review identified poor and inappropriate management of diabetes in older adults living with Type 2 diabetes (Almetwazi et al., 2019). In addition, findings by Dehkordi and Samereh (2017) showed that current DSME programs do not meet the needs of diabetes patients. The literature review also highlighted the importance of family and community support in diabetes care. The findings showed that family and community support efforts had hitherto not been accorded the central role they play in diabetes management. The results of the studies showed that family support is a predictor of good self-care amongst adults who have Type 2 diabetes (Osuji et al., 2018; Rosland et al., 2018). Another vital factor identified in Chapter 2 was that the use of HBM constructs in designing health education interventions promoted positive self-care practices for people living with Type 2 diabetes (Shabibi et al., 2017).

Although the review of literature examined the knowledge of people in different Nigerian states about Type 2 diabetes, none of the studies discussed centered on the population of interest for this research. Therefore, Chapter 2 highlighted that no known research study has been published on the knowledge, attitudes, and beliefs of pensioners in Abia State of Nigeria about Type 2 diabetes. The current study, which identified

pensioners in Abia State of Nigeria as the population of interest, filled the apparent gap and extended knowledge in the discipline.

In Chapter 3, I introduced the research design and the rationale for the study. I also discussed the role of the researcher in the study. Furthermore, I addressed the methodology of the study, including the research design, population selection strategy, instrumentation, data collection procedures, and data analysis strategy. I also outlined issues of trustworthiness and ethical considerations necessary for the study. Finally, I provided details of institutional permissions required for the study to take place in Chapter 3.

Chapter 3: Research Method

Introduction

In the current study, I explored the level of knowledge, attitudes, and beliefs about Type 2 diabetes amongst members of the Abia State Chapter of the Nigerian Union of Pensioners. The pensioners union has its headquarters at Umuahia, which is the capital of Abia State of Nigeria. Abia State, with a population of approximately 4 million people, is one of the six states located in the Southeastern region of Nigeria (Abia State of Nigeria Government, 2019).

In Chapter 3, I outline the population of interest and the research design for the study. I also discuss the sample size, sampling strategy, the instruments for data collection as well as ethical considerations for the study. The chapter also includes discussion of my role as the researcher, including issues of reflexivity, positionality, and possible biases; instrumentation; the establishment of trustworthiness, sources of data, and the data analysis plan and strategy.

Research Design and Rationale

I used the following RQs to guide the data collection process for the study:

RQ1: What knowledge do pensioners at the Abia State Chapter of the Nigeria Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ2: What attitudes do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ3: What beliefs do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ4: What adverse health consequences of Type 2 diabetes do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia experience?

RQ5: What health education related to Type 2 diabetes Nigerian Union of Pensioners in Umuahia experience?

RQ5: What health education related to Type 2 diabetes do members of the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia need to impact their health positively?

The Phenomenon of Interest

The central focus of this study was exploring the knowledge, attitudes, and beliefs of members of the Abia State Chapter of the Nigerian Union of Pensioners about Type 2 diabetes. I also investigated their understanding of the causes, symptoms, control, and prevention of the long-term consequences of Type 2 diabetes. Previous researchers have not examined the knowledge, attitudes, and beliefs of pensioners in Abia State of Nigeria about the study phenomenon, according to my review of the literature. The findings of the study helped to fill the gap in knowledge in this area.

Research Design

I used the inductive phenomenological approach in conducting this qualitative study. I used this interpretative phenomenological approach to explore the phenomenon of interest and to gather information on the lived experiences of the participants. The phenomenological approach was an appropriate tool for the study because it allowed me to explore the phenomenon of interest by collecting data on the lived experiences of the

participants. This approach also assisted me in understanding the respondents' physical experiences and the reality they lived in relation to the phenomenon of interest.

Furthermore, by using an inductive phenomenological approach, I was able to deduce and search for meanings and to understand and interpret such meanings from the lived experiences of the participants. Thus, I was able to develop an expanded view of the phenomenon and its impact on the health status of the population of interest. I applied the processes of bracketing, intuition, analysis, and description, which are the four necessary phenomenological steps in increasing the rigor in the study design (Maher et al., 2018).

The Theoretical Base for the Study

The HBM was the theoretical foundation for this study. The constructs of this model helped me to understand the knowledge, attitudes, and beliefs of the respondents about Type 2 diabetes. This model provided a better understanding of the research problem and the significance of the research study by clarifying key ideas. Theoretical concepts are essential in designing qualitative studies because they are an avenue to systematically understand events and to explain behaviors and attitudes (Creswell & Creswell, 2018). Researchers have found the HBM useful in conducting qualitative studies relating to health promotion and disease prevention interventions because the constructs help to explain and predict peoples' health behavioral changes (Rural Health Information Hub, 2019).

Role of the Researcher

I was the sole interviewer during the data collection process. I also designed the instrument for data collection. I ensured the effective use of the tool for the success of the

study. In preparation for the study, which involved human participants, I received training and certification from the Nationals Institute of Health in a web-based course, "Protecting Human Research Participants" (see Appendix E). Furthermore, in preparation for handling the unique demands of the aging population who participated in the study, I acquired additional training and certifications in "Customer Service in Public Health" provided by the Michigan Public Health Training Center (see Appendix E).

I had no personal or professional relationship with the respondents in the study. However, my role as a resource person for the Center for Public Health in Umuahia Nigeria provided some opportunities to participate in providing free blood sugar and high blood screenings to some pensioners in Umuahia. As a resource person for the Centre for Public Health, which conducted regular health screenings for the pensioners who made up the sample for the study, I assumed an insider position in the study. Therefore, I sought early ethics consultation with and received feedback from the Walden Institutional Review Board (IRB) office in this regard. I also did a critical self-evaluation and identified there was no influence such positionality played in the study. I was aware that a researcher's positionality can influence a study's setting, the participants, the data collected, and how the data are eventually interpreted (Center for Innovation in Research and Teaching, 2019). In conducting the study, my positionality, prior experiences, and assumptions did not influence the data collection, analysis, and interpretation of the study results.

I had personal and family experiences with Type 2 diabetes. These experiences elicited the passion I have in this phenomenon of interest. However, I remained unbiased

and non-judgmental in playing my role. I did not bias the process of the study or the data collected with any prior knowledge or experience. I put personal experiences as a person living with Type 2 diabetes aside and played a neutral role in the study. My reflexivity eschewed whatever biases and prior experiences about the research phenomenon. The reflexivity put me in a better position to evaluate the responses from respondents' perspectives. Furthermore, the reflexivity helped me to eliminate personal views, values, and beliefs that could have unknowingly impacted the process, findings, and conclusions of the study. In addition, the reflexivity helped me to clarify and contextualize my role in this research. Therefore, I examined, consciously acknowledged, and eliminated any assumptions and preconceptions that I could have brought into the research, which would have unknowingly impacted the outcomes. My self-reflection and the reflexive approach I applied to the study helped me to identify, construct, critique, and articulate my positionality even more clearly. I also outlined the necessary ethical considerations for the research in the relevant section of the study.

Methodology

Participant Selection Logic

The Population of Interest

The population of interest for the study was made up of registered members of the Abia State of Nigeria Chapter of the Nigerian Union of Pensioners. The Nigerian Union of Pensioners is a non-governmental pressure group that serves as an umbrella union for advancing the social, economic, financial, and political interests of pensioners in Nigeria.

The members who were selected to participate in the study were 60 years and older. Furthermore, all participants were living with Type 2 diabetes.

Sampling Strategy

I used a purposive convenience sampling method to select the participants from amongst the union members. The convenient sampling method is widely used in health promotion studied because it provides easy and convenient access to the population of interest (Salazer et al., 2015). This easy access is because the convenience sampling method enables quicker identification of pre-existing groups that represent the entire population of interest. According to Salazer et al. (2015), the convenience sampling strategy is also easy to use because it is devoid of technicalities and rules governing how sampling should be done. In addition, the convenience sampling method offered cost-saving opportunities in time and finance in the execution of the study. This method is a nonprobability sampling method widely used in clinical studies because it is a quick, inexpensive, and convenient sampling strategy (Elfil & Negida, 2017).

I selected only pensioners living with Type 2 diabetes for the study. Therefore, I used a purposive convenience sampling technique in participant selection. Purposive convenience sampling technique is widely used in qualitative studies because it gives access to respondents who can provide rich information about the phenomenon of interest (Palinkas et al., 2015). Such respondents usually have knowledge and experience with the phenomenon of interest and are likely to provide the most reliable information about it (Palinkas et al., 2015).

All participants were registered members of the Nigerian Union of Pensioners. All these members belong to the Abia State chapter of the union with headquarters at Umuahia, Abia State of Nigeria. Also, union members attended diabetes and high blood pressure screenings, which the Umuahia-based Centre for Public Health offered free of charge to members of the Nigerian Union of Pensioners. This regular screening exercise, which held at the Pink Rose Hospital in Umuahia, was a crucial inclusion criterion. There was no upper age limit for participating in the study. In addition, there was no gender discrimination. All participants had attained the age of 60 years, which remains the mandatory retirement age in Abia State Civil Service.

The leadership of the Abia State Chapter of the Nigerian Union of Pensioners authenticated the current membership status of the participants who were selected. Furthermore, the management of the Pink Rose Hospital in Umuahia confirmed the position of such members regarding attendance to the blood pressure and diabetes screening exercises, which were held at the hospital for pensioners. The clinical director for the Pink Rose Hospital provided the list of such members who were living with Type 2 diabetes. The list helped me to select participants who met the inclusion criteria for the research.

Sample Size and Data Saturation

Data saturation is the guiding principle in arriving at sample size in qualitative studies (Creswell & Creswell, 2018). Qualitative studies generate more data than quantitative studies, and the sample size should not be too large as to create problems in managing information generated (Creswell, & Creswell, 2018). However, the sample size

should not be too small as to create difficulty in reaching data saturation (Creswell, & Creswell, 2018). Therefore, a sample size of 10 respondents was adequate for the research. The sample size consisted of respondents who were able to provide the perceptions the study needed to deduce meanings and arrive at findings and conclusions on the phenomenon of interest. I designed the RQs and the scope of investigation for one group of respondents. Therefore, the sample size was limited, and this meant that data saturation was achieved early. Nascimento et al. (2018) emphasized that the smaller the sample size, the sooner theoretical saturation will be reached in qualitative studies. The point of theoretical saturation determined when I stopped collecting data. The point of theoretical saturation was related to the sample size because researchers should systematize the analysis of data obtained from qualitative research with samples closed by theoretical saturation (Nascimento et al., 2018). Therefore, theoretical saturation was the time when no new information, no new themes, and no new codes were emerging during the data collection process (Fusch & Ness, 2015). At this point, any data that was collected did not add anything new to answering the RQs, nor to the ability of the researcher to build theory (Nascimento et al., 2018). Data saturation ensured there was enough information to replicate the findings in this study because, at that point, the data was *rich* in quality and *thick* in quantity (Fusch & Ness, 2015).

It was crucial to identify the point of theoretical saturation because failure to reach data saturation affects research quality and content validity ((Fusch & Ness, 2015). I applied rigorous steps in achieving data saturation which ensured a high level of data quality that made meaningful contributions to the objectives and outcomes of the study.

Although it is often difficult for a researcher to know the number of questions to ask before reaching data saturation, keen observation in this study revealed when no new information and themes were emerging (Nascimento et al., 2018). Insufficiency of sample size threatens the validity and generalizability of study findings (Vasileiou, Barnett, Thorpe, & Young, 2018). The sample size of 10 respondents for this study was adequate to reach data saturation. The sample size provided adequate data that validated the responses provided by all respondents. Fusch and Ness (2015) recommended that the sample size for qualitative interviews should not be more than 6 to 12 participants. This number will enable the sample size to be small enough to allow respondents to participate fully and share their perspectives, yet large enough to provide a diversity of ideas that will enrich the quality of information (Fusch & Ness, 2015). Creswell and Creswell (2017) also emphasized that qualitative methods, unlike quantitative, are subjective and usually use a small number of samples.

Recruiting Study Participants

Members of the Abia State Chapter of the Nigerian Union of Pensioners attended a weekly free health screening session at the Pink Rose hospital in Umuahia before the arrival of COVID-19. The pensioners were screened every Friday for diabetes and high blood pressure, and these weekly gatherings offered the management of Pink Rose hospital the opportunity to identify participants who were recruited for the study. The membership of the Abia State Chapter of the Nigerian Union of Pensioners is comprised of hundreds of pensioners. I used a flyer which I designed in announcing the study (see Appendix A). I made the study announcement by emailing the flyer to prospective

respondents on the list received from the medical director of Pink Rose hospital who met the inclusion criteria. The medical director of the Pink Rose hospital in Umuahia provided me a list of members who met the inclusion criteria. The responses to the emails helped me to decide those to be emailed written consent forms for the study. The initial recruitment exercise was not able to attract enough respondents. Therefore, I had to contact the management of the Pink Rose hospital who provided more names of pensioners who fit the inclusion criteria for additional recruitment. I also contacted the Chair of the pensioners' union and obtained permission to invite these members for additional recruitment to complete the number required to make up the sample size of 10.

Instrumentation

Sources of Data

I used the data collection instrument I developed to collect data through individual telephone interviews. I based the discussions during the individual telephone interviews with the respondents on this data collection instrument. These interviews were adequate sources for data on the respondents' perceptions, thoughts, feelings, and impressions. The data I collected with the instrument helped me to explore the participants' understanding and experiences about the phenomenon of interest.

I developed the questions which formed the basis of the study. Therefore, the questions were not from any previously published studies. This was due to the understanding that knowledge, attitudes, and beliefs of people about their health conditions help healthcare providers to focus on interventions that need to be changed or reinforced to improve health outcomes (Ogundele et al., 2016). Furthermore, previous

studies highlighted the need for health educators to investigate how people understood the threat of diabetes mellitus and how this helped determine interventions that can be developed to control it and reduce its long-health consequences (Carballo et al., 2018). Also, I included questions to gather data regarding social support available to the population of interest because past studies proved the importance of social support in the management of Type 2 diabetes (Rosland et al., 2018). Approximately 42% of the respondents in a study conducted by Achigbu et al. (2016) were dependent on family members for their diabetic care. Therefore, it was necessary to seek data regarding social support as a means of improving the health outcomes of people living with Type 2 diabetes.

Data Collection Instrument

The primary tool I used to collect data for the study was the semi structured questionnaires I designed. Participants responded to open-ended questions that the questionnaire contained (see Appendix B). I administered the survey through individual telephone interviews, which were in English and Igbo languages. I started the interviews by probing the pre-retirement life experiences of the respondents about Type 2 diabetes. I went further and delved into the respondents' post-retirement knowledge, attitudes, as well beliefs about Type 2 diabetes.

Some questions explored the experiences of respondents regarding their self-management of Type 2 diabetes. Other questions explored their knowledge of the long-term consequences of uncontrolled blood sugar. In addition, I used the instrument to identify the health education needs of the population of interest. The questionnaire was

designed to start with broad questions and follow up questions emerged from these. These questions were comprehensive and guided the study design and data collection as they provided the avenue for developing interview follow up questions.

Basis for Developing Data Collection Instrument

The individual telephone interviewing strategy was proper for the study because such qualitative interviewing enabled me to explore things that cannot be directly observed (Patton, 2015). I interpreted and understood the interviewee's perspectives on the phenomenon of interest using this strategy. The instrument of data collection for the study set the road map for the research and formed the foundation for achieving the aim of the study as outlined in the purpose statement. The qualitative research interviewing process is a reflective and interrogative process (Murray & Andrasik, n. d). It provided a route that guided this investigation as it articulated what I wanted to know about the perspectives of respondents. The qualitative inquiries made with the instrument I developed for the study defined the reflexive and interactive exploration of the knowledge, attitudes, and beliefs about Type 2 diabetes among the target population.

The in-depth qualitative interviewing was an explorative journey that helped me to develop a comprehensive picture of respondents' experience, background, and actions (Steber, 2017). I used the individual telephone interview process to obtain further depth and detail and gain deeper insights into issues not imagined before the interview process (Patton, 2015). This qualitative individual telephone interviewing strategy explored and provided the perspectives of the respondents on the phenomenon of interest (Blackstone, 2019**).**

The instrument provided an objective source of data that was devoid of any attempt to evaluate the responses nor become judgmental (Ravitch & Carl, 2016). The individual telephone interviewing strategy answered the RQs because I had a conversational interaction with the respondents (Murray & Andrasik, n. d). The interaction encouraged the respondents to talk freely without distractions and interruptions. This enabled me to explore the respondent's perspectives on the phenomenon of interest (Steber, 2017). The strategy also made it possible for me to follow the internal logic of the respondent's thinking rather than imposing one on the respondents (Ravitch & Carl, 2016).

Establishing Content Validity of the Instrument

The instrument for data collection incorporated questions relating to all the RQs. The open-ended questions in the questionnaire defined the concepts the study measured (see Appendix B). I used two juror review steps in assessing the content validity of the instrument. The first was a peer juror review process. A jury of three persons who conducted an analytical debriefing on the tool were peers who were Walden University doctoral students who have already completed their qualitative data collection process. These jury members availed me the experiences and knowledge they acquired during the proposal stage of their dissertations in the validation of the instrument. I benefited from the jurors' wealth of experience by using their juror comments to modify the instrument. The jurors' ratings helped in validating the contents of the data collection instrument by uncovering any perspectives I would have omitted in designing the tool. The validation

also presented an opportunity for me to test and defend emergent questions or assumptions that formed the basis of developing the instrument.

I conducted a second juror review of the instrument after using the peer juror comments to check if the tool contained all the essential questions that answered the RQs. I identified three respondents from members of the Nigerian community in the Washington, DC, metropolitan area who were retirees from Nigeria. Such retirees were 60 years and older and were requested to evaluate the data collection instrument. I gave them the instrument to review along with the RQs. Thereafter, I asked the second juror members if the instrument made meaning to them. Their responses confirmed that they understood the information I was desiring to gather with the instrument. They also re-emphasized that the instrument would provide answers to the RQs.

I used the validated data collection instrument to conduct the individual telephone interviews. The primary purpose of the juror reviews was to establish the content validity of the instrument. Another important reason was that the juror reviews helped in modifying the interview guide which ensured the appropriate application of the instrument in the data collection process. The interview guide served as the framework for developing the final RQs, putting the questions in sequence, and giving guidance on which questions were to be explored more with follow-up questions (Patton, 2015).

Procedure for Pilot Studies

This procedure was not applicable in the study as the instrument for data collection was not pilot tested as approved by the IRB.

Procedures for Recruitment, Participation, and Data Collection

Data Collection Procedure

I collected the data through individual telephone interviews. I made the individual telephone calls while in my private study room. This room was quiet, private, and devoid of any distractions. The respondents were in the privacy of their homes when the individual telephone interviews were conducted. I called them at convenient times and dates which had been previously agreed with them at previous calls I made to discuss the modalities for the interviews. I had requested the respondents to ensure the locations were conducive for effective data collection. I requested them to provide snacks, tea, coffee, and water for refreshment and to guarantee a clean restroom was available for their use. The respondents were asked to ensure the telephone interview environment were convenient, noiseless, and comfortable for maximum concentration. I discussed and agreed times that were convenient for the interviews with the respondents. This arrangement ensured there was no time pressure during the conversations. Time pressure which could have led to incomplete or inadequate answers, and which could have made the respondents miss essential details in their responses was completely avoided in the data collection process (Ravitch & Carl, 2016). Respondents did not take short breaks to relax in-between sessions during the interviews as planned because there was no need for that.

I was the only data collector in the study. No assistant helped with recordings and note-taking as the recording device recorded automatically and I toke the notes myself. I was asking questions and taking notes. I ensured I was strictly applied to the interview

process. The notetaking did not distract the interview process. No interpreter participated in the research process because I am proficient in both English and Igbo languages, which were the languages of communication during the data collection process. The individual telephone interviews took place on different days and by so doing the respondents were not tired out with long wait times. The conversations also took place at agreed times convenient to the respondents because of the 6 hours difference in times zones between the United States and Nigeria.

The primary data collection for the study took from Monday to Friday over a 2-week period. Ten respondents constituted the sample size. One respondent was interviewed on each day from Monday to Friday. The times of interview varied as I had previously agreed a convenient time of interview with each respondent. Each individual telephone interview was planned to last for one hour. However, the actual time it took was less than an hour for each respondent. Details of the time duration are discussed in Chapter 4. There was no need to repeat any of the interviews.

Recording of Data

I downloaded an automatic recording app into my smart phone to record the individual telephone interview responses. I audio-recorded all responses while taking notes at the same time. I asked for clarification on responses that were not clear. I applied strict objectivity in the data recording process, and respondents will be provided copies of recordings and transcripts later upon request. I liaised with the management of Partner Organization A and the chair of Partner Organization C to invite more members living

with Type 2 diabetes for additional recruitment when the initial recruitment results did not provide enough respondents to complete the sample size.

Exiting and Debriefing Participants

I thanked participants for their time after the individual telephone interviews. Although no deception was involved in the design for the study, I debriefed the participants at the end of the individual telephone interviews. Debriefing is an essential part of the informed consent and data collection process (University of Massachusetts Amherst, 2019). I emailed the participants a debriefing statement to take home (see Appendix D). The statement also reemphasized the study objective and the use to which the data collected will be put. Participants were also given another opportunity to re-evaluate their participation should they desire to withdraw their consent at that stage. Furthermore, participants who wished to receive a copy of the study results were assured they will have their wishes fulfilled. In addition, I provided participants contact information on who to reach out as stipulated in the IRB approved consent form should they wish to discuss the interview process with a Walden University authority. Furthermore, I briefed them on who to contact should they feel distressed and need help after the telephone interviews.

Data Analysis Plan

Connection of Data to Research Questions

The questions on the data collection instrument were designed to elicit responses that enabled me to achieve the purpose of the study. Therefore, the concepts from the applicable theoretical model incorporated into the interview ensured questions were

within the provisions of the interview guide or outline. The interview guide started with questions relating to the respondents' experiences about the phenomenon of interest and progressed to direct questions. Answers to the systematic flow of questions and follow up questions were tailored towards providing data that explored the phenomenon of interest. The data that emanated from the interview guide gave answers to the specific RQs. The instrument for collecting data in the study was adequate in providing answers to the five RQs. The process of analyzing the words and interpreting the meanings of words gathered from respondents provided needed information to draw the necessary conclusion. I used the inductive phenomenological approach applied in the study to deduce meanings from the data that provided answers to each of the five RQs.

Procedure for Coding

I started the coding process with the analysis of words and interpretation of meanings of the words gathered from respondents during the individual telephone interviews. I started retrieving the meaning of what was said by assigning summative or evocative attributes symbolically through coding (Ravitch. & Carl, 2016). These words or phrases made meanings when they were coded and put together into categories (Saldana, 2016). The meanings emerging from the coding and categories generated themes or concepts (Saldana, 2016). I applied a qualitative inductive approach in coding and in generating ideas (Patton, 2015). This method helped in creating new concepts, explanations, and theories from the data collected (Saldana, 2016). The themes formed the basis for understanding the information or data and in explaining the relationship of the information to the RQs (Patton, 2015). The themes also supported the theoretical

concept of the study. The data coding stage involved looking for ideas and common themes that were recurring to identify critical responses (Saldana, 2016). It further entailed labeling the nature of the emerging themes and developing working definitions for each theme (Patton, 2015). Finally, the working definitions were adopted to provide a framework for confirming the codes and illustrating quotes (Ravitch. & Carl, 2016).

Software for Data Analysis

I did not use any software for data analysis**.** I self-transcribed the data and I used the open hand-coding technique in the data analysis. I applied an analytical multi-step sequence in conducting the inductive thematic data analysis for the study.

Data Storage and Security

All the data were stored in the recording devices. I kept all the recording devices in a locked cabinet in my private study. I also used a personal backup flash drive and cloud to provide additional storage and data security. Because this research involved human subjects, I stored all information securely to protect the respondents' privacy and confidentiality. The transcripts were in a laptop in my private study. This password protected laptop is accessible to only me. I kept the hard copies of the transcripts in a locked cabinet in my private study.

Treatment of Discrepant Cases

I searched and identified elements in the data that were contrary to the pattern of most of the information received. I obtained explanations for such discrepant patterns which emerged from data analysis. Such data were explained and broadened the trends of

information which emerged. However, I excluded discrepant data from the data analysis to prevent such data from distorting the meaning and mode of emerging data.

Issues of Trustworthiness

I applied Guba's evaluation criteria in establishing trustworthiness by proving the credibility, transferability, confirmability, and dependability of the findings that resulted from the study (Nowell et al., 2017). I proved the credibility of the study findings by establishing the confidence that the results were credible in truth and accuracy through a triangulation process. I compared the automatic recordings of the individual telephone interviews I conducted with the notes I made during the interviews to ensure the true responses of the respondents were fully and completely recorded. This vetting process confirmed the internal validity of the information recorded. This was proven when the automatically recorded version of the responses was found to be consistent with the notes taken.

I proved the transferability of the research findings by demonstrating that the results of the study can apply to other pensioners or other populations in similar situations through the process of thick description. I used the detailed account and description of experiences during data collection process to explicitly establish patterns and relationships in the context of the pensioners experience and situational characteristics. This process helped in determining the external validity of the study findings as it established that other pensioners in Abia State of Nigeria in particular, and Nigeria in general are undergoing the same health and socio-economic tribulations. Therefore, the

applicability of the study findings to pensioners in similar situations and locations is not in doubt.

Furthermore, I established the dependability of the findings by using the inquiry audit method to prove that other researchers will get conclusions consistent with the findings of this study if they repeat the study. The audit trail showed that the study processes provided adequate information that is adequate to guide any other researcher who wishes to replicate the study. The audit trail established the adequacy and dependability of the study findings. This is because the data collected in Chapter 4 of the study supported the findings and interpretations, as well as the conclusions drawn in Chapter 5.

In addition, I established the confirmability of the study findings by ensuring that the data reflected the authentic lived experiences of the respondents. This was done by cross-checking responses with the respondents. A final round of individual telephone calls was made to the respondents after that data was collected. I discussed the responses they provided in detail to confirm that the original information recorded are consistent with the actual responses of the participants during the initial interviews. I also reviewed the audit trail, which detailed every step of data collection and analysis, to provide the rationale for the findings and conclusions of this study. The audit trail established that the study findings were accurate reflection of the responses given by the participants.

I used reflexivity which is central to an audit trail to ensure that the findings are based on the actual responses of the participants and not on any biases or my personal motivations (Nowell et al., 2017). Reflexivity provided an avenue for a high degree of

neutrality by ensuring that the data collected were the real views of the respondents and not my perspectives. This process of reflexivity ensured that my interests did not influence the interpretation of responses to fit a pre-conceived narrative. Thus, it helped to ensure no researcher biases skewed the findings and conclusions of this study.

I maintained a self-critical account of the research process and this enhanced the trustworthiness of the findings and conclusions of this qualitative study (Nowell et al., 2017). I also had adequate passion, commitment, and time in understanding the phenomenon of interest. I paid particular attention to the social setting and the cultural values of the respondents. Furthermore, I applied an inquiry mind and critical observation during data collection and ensured no information detail was lost, overlooked, or disregarded.

Ethical Considerations Related to Participants

I received all necessary external institutional permissions required for the study. The chair of Partner Organization C provided me with written permission to access the sample population. In addition, the medical director of Partner Organization A consented in writing to the request to provide the list of respondents who met the inclusion criteria. Furthermore, the executive director of Partner Organization B gave me a letter authorizing me to sample participants from the pool of pensioners who attended free diabetes and blood pressure screenings which was conducted for the organization by Partner Organization C. Finally, the government of Abia State of Nigeria conveyed full approval for the study through the Ethics Committee of the Abia State Ministry of Health in a letter dated August 27, 2019. These approvals are in Appendix C.

All respondents needed to sign an IRB-approved informed consent form with approval number 04-24-20-0647031. I explained the objectives of the study and the possible use of the information they provided. Each participant was informed of the expected duration of individual telephone interview, the study procedures, and their rights to decline further participation or withdrawal if they so wished. Respondents were informed that no foreseeable adverse consequences, potential risks, and possible discomfort would arise from participating in the study. Also, I emphasized to all respondents that there was no coercion, and that participation was entirely voluntary. I responded to all participants' questions and inquiries and provided respondents with full information that enabled them to decide if they wished to participate or not. The respondents were informed there were no financial incentives for participating in the study because there was no ethical justification for providing such financial incentives.

I did not exploit any vulnerabilities in the conditions of the respondents to get them to participate in the study. The rights and dignity of all respondents was respected, and the moral principles and standards of ethics stipulated by Walden University was upheld. I did not take advantage of any respondent due to sexual orientation, gender, family situation, ethnicity, or socioeconomic status. In addition, the privacy of all participants in the study was protected. I did not divulge any personal information of any participant, and all respondents were assured of the confidentiality and privacy of any information they provided. All respondents' information was de-identified, and I used no personal names in identifying respondents. In addition, I assured all participants that their

responses or any information they provided would not lead to physical, psychological, or emotional discomfort or harm.

Ethical Concerns Related to Data Collection Activities

I identified all respondents by alphabets to provide privacy and prevent identification by names. I informed the respondents of their right to decline further participation during the interview and to withdraw from the research process for any reasonable or unforeseeable factors. I told the respondents who else to contact regarding questions about the research process and research participants' rights should they wish to do so.

Data security was a critical part of this study. I recorded all information in a private and secured environment which was devoid of unauthorized access. I audio-recorded data collected in the study, and I secured all electronic recording devices in a locked cabinet in my private study along with an additional backup flash drive. I was the only person who had authorized access to all stored data. No recording assistant and notetaker assisted during data collection.

I treated all data relating to the study with confidentiality and privacy. All the data were solely for obtaining information about the purpose of this study. I did not use any data from this study for any other purpose as any such use would have been unethical and unauthorized. The storage of all the data collected will remain as the study process is still active. However, I will destroy all such data after a five-year period as stipulated in the IRB approval document.

Other Ethical Issues

I have no conflict of interest in this study. In addition, I have previously declared that no inducement was applied in any part of the study as there was no justification to offer such inducements.

Summary

This was a qualitative study in which I explored the knowledge, attitudes, and beliefs the members of the Abia State Chapter of the Nigerian Union of Pensioners have about Type 2 diabetes. I used an inductive phenomenological method to examine the phenomenon of interest. The HBM was the theoretical framework of the study. I used a semi-structured and open-ended questionnaire to collect data for the study. The questions on the data collection instrument adequately investigated the knowledge, attitudes, and beliefs of the respondents. I applied the purposive convenient sampling method to select a sample size of 10 respondents from the membership of Partner Organization C. The members selected were living with Type 2 diabetes and were regular attendees to free diabetes and blood pressure screening, which the Partner Organization B conducted for the pensioners.

I used individual telephone interviews to collect data which answered the five RQs. I transcribed and analyzed the data which was collected. I took several steps to ensure that the study was devoid of researcher biases and that the findings and conclusions reflect real and un-skewed accounts of the respondents. These actions included explaining my background and relationship with the phenomenon of interest and outlining and eschewing whatever biases that may have existed.

In Chapter 4, I provide a brief review of the process used in validating the study instrument for this study. I also detail the demographic characteristics of the study respondents and provide results of the data analysis. I use tables, figures, and narratives to illustrate the findings of the study in this chapter. In Chapter 5, I interpret the results and a summary of the study's conclusions and limitations. Furthermore, I outline the social implications of the study, in addition to the recommendations for future research studies and recommendations for further actions relating to the phenomenon of interest.

Chapter 4: Results

Introduction

I conducted this study to explore the level of knowledge, attitudes, and beliefs about Type 2 diabetes amongst members of the Abia State Chapter of the Nigerian Union of Pensioners. Specifically, I evaluated how the level of knowledge, attitudes, and beliefs impacted participants' understanding of the causes, symptoms, control, and prevention of the long-term consequences of Type 2 diabetes. The key themes that emerged from data analysis clarify how participants' knowledge, attitudes, and beliefs impacted their diabetes-self-management. Following are the five RQs I sought to answer:

RQ1: What knowledge do pensioners at the Abia State Chapter of the Nigeria Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ2: What attitudes do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ3: What beliefs do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ4: What adverse health consequences of Type 2 diabetes do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia experience?

RQ5: What health education related to Type 2 diabetes do members of the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia need to impact their health positively?

Chapter 4 highlights the key changes that were made to the original study proposal because of the outbreak of the COVID-19 pandemic. I also describe the setting

where the study was conducted and the demographic characteristics of the selected respondents. The sample population, sample selection process, duration of data collection, and recording of data are outlined in this chapter. In addition, I provide evidence of trustworthiness for the study and discuss the results obtained from the study. The chapter concludes with a summary of the results and a transition to Chapter 5.

Pilot Study

There was no pilot testing of the instrument used in collecting data for the study as approved by the IRB. However, I had juror panels conduct the analytical debriefing of the tool. The first step consisted of having three peer juror reviewers from Walden University vet the data collection instrument's content validity. They uncovered any perspectives I had omitted in designing the tool. I used their feedback to modify the data collection instrument.

A second juror review of the instrument confirmed that the tool contained all the essential questions to answer the RQs. I selected three retired members of the Nigerian community in the Washington, DC, metropolitan area, who evaluated the data collection instrument and the RQs. The second juror members confirmed they understood the information I desired to gather with the tool and re-emphasized that the data collection instrument would answer the RQs.

Setting

A major change in the proposed setting for this study's data collection was the change in data collection strategy. I proposed collecting the data for this study in the conference hall of Partner Organization A because it was comfortable, conducive, and

convenient for the study. However, the advent of the COVID-19 pandemic necessitated a change in data collection methodology from the proposed one-on-one interviews to individual telephone interviews. Respondents were interviewed in the comfort of their home by telephone. I made calls to all respondents on the agreed interview dates and briefed them on the need for privacy and comfort during the interview. I also educated the respondents on the need to identify suitable locations in their homes where the individual telephone interviews could be held. I admonished respondents to identify quiet locations that were private and comfortable with ambient temperature and devoid of distractions and interferences from family members, friends, and pets. Furthermore, I advised respondents to make some snacks, water, or soda if there was a need for intermittent refreshments during the interview. I also informed the respondents that they should indicate if they needed some rest to relax during the individual telephone interviews, and this would be allowed.

Conditions That May Have Influenced Interpretation of Study Results

The study took place during the COVID-19 pandemic. This was a period of tension and stress as people were on lockdown, and heightened fear of contracting the virus was being felt globally. The fear of contracting the COVID-19 virus was exceptionally high for people who fell within the age bracket of the population of interest. The respondents and I took part in this study when they were all struggling to provide the basic needs of life while staying safe at home due to their vulnerability to the COVID-19 virus. Although I asked respondents preliminary questions about their conditions and how they were coping during this pandemic season, these were not part of

the IRB approved RQs and are not included in this analysis. I used this method to confirm that COVID-19 did not cause any traumatic conditions that would affect the respondents' ability and willingness to adequately respond to the RQs.

The partner organizations were on lockdown at the time of the study. I contacted representatives of the partner organizations exclusively through telephone discussions. The lockdown did not inhibit the plans for and conduct of the study in any way. It did not have any negative impact on the personnel and budget provided for this study. Therefore, the COVID-19 pandemic did not give rise to any adverse conditions that might have affected data collection for the study. Also, the pandemic did not adversely affect the analysis and interpretation of the results of the study.

Demographics

There were 10 participants in the study: five men and five women between the ages of 60 to 77 years. They were all retirees from the public service of Abia State of Nigeria. They were residents in and around Umuahia, which is the capital of Abia State. The participants selected for the study were identified by Partner Organization A as living with Type 2 diabetes. They were also registered with Partner Organization B. One respondent had an elementary school education, and another had high school as the highest educational level. Of the remaining eight respondents, four had a college education, and the last four had master's degrees. In like manner, the positions they held while in the service of Abia State of Nigeria civil service varied, with two respondents in junior-level positions, three respondents in midlevel positions, and five others in senior-level positions. All respondents were married to living spouses at the time of the

interview. Table 2 shows the general demographic information of participants, while Table 3 contains specific demographic details of the 10 respondents.

Table 2

Summary of Respondents' Demographics

Respondent	Age	Gender	Highest educational level	Position held at retirement
M1	62	Male	College degree	Midlevel positio
M2	67	Male	Master′s degree	Senior position
M3	63	Male	College degree	Senior position
M4	65	Male	Elementary school	Junior position
M5	72	Male	Master′s degree	Senior position
F1	77	Female	High school	Junior position
F2	65	Female	Master′s degree	Midlevel positio
F3	60	Female	College degree	Midlevel positio
F4	68	Female	College degree	Senior position
F5	60	Female	Master′s degree	Senior position

Table 3

Demographic Characteristics

Characteristics	Frequency (n = 10)	Percentage (%)
Gender		
Male	5	50
Female	5	50
Marital status		
Single	0	0
Married	10	100
Widowed	0	0
Age		
60-64	4	40
65-69	4	40
70-74	1	10
75-80	1	10
Educational level		
Elementary school	1	10
High school	1	10
College degree	4	40
Master's degree	4	40
# of years living with diabetes		
1-4	4	40
5-9	3	30
10-14	2	20
15-19	1	10
Position in service		
Junior position	2	20
Midlevel position	3	30
Senior position	5	50
Family history of diabetes		
Yes	4	40
No	6	60

Data Collection

Type and Number of Respondents

I collected the data for this study from the selected sample of five men and five women. These respondents were all members of Partner Organization B who were living with Type 2 diabetes. These men and women have been living with diabetes for varying years, ranging from a year to sixteen years. All ten respondents answered all interview questions through individual telephone interviews. Therefore, each respondent contributed equally to each RQ in the data collection instrument. Table 4 below shows the year of each respondents' retirement and year of diagnosis of Type 2 diabetes. Table 4 also shows how many years each respondent has lived with Type 2 diabetes.

Table 4

Years Respondents Retired/Have Lived With Type 2 Diabetes

Respondent	Year retired	Year of diabetes diagnosis	Number of years living with diabetes
M1	2015	2008	12
M2	2014	2004	16
M3	2016	2017	1
M4	2010	2015	5
M5	2002	2018	2
F1	2007	2016	4
F2	2016	2019	1
F3	2018	2006	14
F4	2012	2014	6
F5	2019	2013	7

Sampling and Respondent Selection Process

The management of Partner Organization A provided me with a list of twenty registered members of Partner Organization B. These were pensioners who had been regular attendees to free diabetes and blood pressure screening which were conducted by Partner Organization C. Furthermore, Partner Organization A confirmed that the respondents were all living with Type 2 diabetes. These confirmations were critical to the study as they were part of the inclusion criteria for the study.

I then reached out to the chair of Partner Organization B for confirmation that the pensioners whose contacts were provided were registered members of this organization. This meant that all respondents were confirmed retirees from the services of Abia State of Nigeria Public Service. Therefore, they had all attained the retirement age as stipulated by the Abia State of Nigeria Civil Service. I proceeded to contact all prospective respondents by telephone after receiving the confirmation.

I introduced myself and explained the reasons for the call and the purpose of the research during the telephone calls. I informed these respondents that I needed their email addresses to send them the recruitment flyer and a written copy of the informed consent form. They would study these documents to understand all the information concerning the study. The prospective respondents willing provided their email addresses. I emailed the recruitment flyer to each of these twenty potential respondents. The conduct of the initial telephone calls offered the opportunity to assess each respondent and to determine those who could communicate effectively and could be able to respond in a manner that would contribute meaningfully to the data collection process. Therefore, I used this

process to evaluate which of the twenty names could take part in the interview and would be sent informed consent forms. Although a maximum of ten respondents was needed for the data collection process, thirteen members were emailed informed consent forms initially. Ten of these responded with their consent by emailing the consent forms back with the words ‘I consent’. The three who did not return their consent forms were deemed to have not given their consent and were dropped from the list.

However, at the time of making calls to agree on interview dates with the respondents who had given their consent, three respondents could not be reached as their telephone lines were found "unavailable'. I again reached out to the managing director of Partner Organization A who provided information on an additional five prospective respondents who met the inclusion criteria. I contacted these new prospects after confirming from the chair of Partner Organization B that the new candidates were members of their organization. They were also proved to be regular attendees to diabetes and blood pressure screenings conducted by Partner Organization A. I made initial telephone calls to the five new prospective respondents to discuss the purpose of the study and to request their email addresses. I then emailed them the recruitment flyer and consent forms. I eventually selected three of the new respondents who emailed back their consent forms to complete the sample size of ten respondents needed for the study.

I made another round of telephone call to each of the ten respondents to acknowledge receipt of their written consent forms and thank them for agreeing to participate in the interview. I also discussed possible interview dates and times during this call. This final round of calls before the interview was necessary because there was a

difference of five hours in time zones between the United States and Nigeria. This could have created difficulties if times to hold interviews were not agreed at periods convenient for each of the respondents. This agreement on interview days and times ensured individual telephone interviews were held at times that produced the required commitment and concentration from respondents. I conducted the sample selection procedure smoothly. No respondent expressed dissatisfaction with the arrangement for the individual telephone interviews.

Location, Frequency, and Duration of Data Collection

The approved study questionnaire was the only instrument I used for collecting data for this study. I was the sole data collector, and I used this instrument while alone in my study. To ensure the respondents were ready and prepared for the interview, I made prior telephone calls to all respondents to reaffirm the need for privacy and maximum concentration during the period interviews were held. I admonished all respondents to ensure that family and friends and pets did not distract them during the discussion period.

I pretested the data recording tool to ensure it was in perfect working condition. I conducted the individual telephone interviews and recordings were conducted over two weeks. Although respondents were asked to anticipate each interview could take about 60 minutes, the interview with the least duration took 29 minutes, 21 seconds to conduct. The interview with the longest duration lasted for 37 minutes, 40 seconds. The average duration for the 10 individual telephone interviews was 33 minutes and 38 seconds. Eight of the interviews were conducted between the hours of 7 am, and 9 am EST, which was between 12 noon and 2 pm in Nigeria. Two interviews were held between 12 pm and 3

pm EST. This was between 5 pm and 8 pm in Nigeria. These were the times available and suitable for two respondents and agreed with the researcher.

Ethical considerations for the privacy, availability, comfort, and convenience of the respondents made this arrangement necessary. Therefore, the data collection process did not present any ethical issues like physical and psychological risks to the respondents. Also, none of the respondents was subjected to any legal risk or relationship risk. No respondent experienced any adverse effect during the data collection process. The frequency and duration of the interviews and recording for individual respondents are shown in Table 5.

Table 5

Data Collection Frequency and Duration

Respondent	Interview day	Time of interview (EST)	Time of interview (Nigeria time)	Duration of interview
M1	1	07.06 am	12.06 pm	32 mins 10 secs
M2	2	08.03 am	01.03 pm	32 mins 06 secs
M3	3	12.31 pm	05.31 pm	29 mins 21 secs
M4	4	06.06 am	11.06 pm	32 mins 45 secs
M5	5	06.06 am	11.06 pm	37 mins 40 secs
F1	6	08.01 am	01.01 pm	30 mins 00 secs
F2	7	07.03 am	12.03 pm	33 mins 16 secs
F2	7	07.03 am	12.03 pm	33 mins 16 secs
F4	9	07.03 am	12.03 pm	33 mins 06 secs
F5	10	09.02 am	02.02 pm	35 mins 21 secs

Recording of Data and Storage

I downloaded a call recorder into my smartphone. This recording app recorded all the telephone conversations automatically. I pre-tested this recording app before conducting interviews. The pre-test had a positive result as the test recordings were clear, audible, and devoid of unwanted noise or technical contamination. The recordings did not reveal names and telephone numbers of people whose conversations were recorded. In this way, I protected the identities and telephone numbers of all respondents. However, the recording app indicated the date, time, and duration of each recording. I transferred these recorded files to the cloud in my personal computer for storage. I coded this computer with a password for privacy and unauthorized access. I also stored another set of recordings in a private USB flash drive, which was stored in a locked cabinet in my private study. I was the only person with access to these storage facilities and the location where they were stored. I will store all data relating to this study for a minimum of five years, after which I will destroy all such recordings and transcripts.

Variations in Data Collection Procedure From the Plan Presented in Chapter 3

The onset of the COVID-19 pandemic led to some key changes in the proposed methodology for this study. My initial proposal was to conduct a two-step interview for the study. I proposed that the first step of one-on-one interviews would be conducted with the respondents within a two-week period. Thereafter, I would conduct two focus group interviews to validate the participants' responses during the one-on-one interviews. However, the onset of the COVID-19 pandemic resulted in concerns about the proposed methodology. The resulting social distancing guidelines that stipulated staying a distance

of at least six feet apart from each other to avoid the spread of the virus resulted in a need to change the proposed methodology.

Moreover, the fact that the respondents were 60 years and older and were living with Type 2 diabetes placed them amongst the groups of people most vulnerable to the COVID-19 virus (CDC, 2020). Therefore, the IRB approved that the study methodology could be revised and conducted through individual telephone interviews only. Focus group interviews were also considered risky as this would probably have exposed the respondents to the possibility of COVID-19 infection. The idea of conducting a focus group interview was discarded, as this was considered unnecessary.

Unusual Circumstances Encountered in Data Collection

I planned to conduct this study at a time people enjoyed the freedom of movement and association. No one envisaged that a pandemic like COVID-19 was going to ravage the globe and present such a global public health challenge the time it did. The population of interest for the study were retirees who were 60 years and older. I selected these retirees for this study because they met the inclusion criterion as members of Partner Organization B, who were living with Type 2 diabetes. Their age and underlying disease conditions placed them among the population who were considered vulnerable to COVID-19 infection, as stipulated by CDC guidelines (CDC, 2020).

I conducted the study at the peak of the COVID-19 pandemic, which presented an unusual economic and public health situation in the entire world. It should be mentioned that it was a period of national lockdown in Nigeria. People in Nigeria were experiencing both economic and social hardship and stress, which affected everyone economically,

emotionally, and socially. Although this was an unusual and difficult situation, it did not appear to have any adverse effect on the responses I received and did not in any way bias the content of the data collected.

Exiting and Debriefing Respondents

I thanked all the respondents for their time and for participating after the individual telephone interviews. I emailed each of the respondents a debriefing statement in which I reassured them there was no deception involved in the design and data collection for this study. The debriefing statement was necessary because debriefing is an essential concluding part of the data collection process (University of Massachusetts Amherst, 2019). I re-emphasized the objective of the study, and how the information I have collected will be used. I reminded the respondents they were free to request discontinuation of the use of the information they had provided if they so desired. I also informed them they would get a copy of the study results on request. I assured them such requests would be honored through the chairman of partner organization B. I provided contact information on who to reach out as stipulated in the IRB approved consent form if a need to discuss the interview process with the university authority arose. I also debriefed the respondents on who to contact if they felt distressed and needed help after the individual telephone interviews. I outlined all this information in the debriefing statement, which I sent to all the respondents through email after the individual telephone interviews.

Data Analysis

Process Used in Moving Inductively From Coded Units to Categories and Themes

I used a multistep sequence in doing the inductive thematic analysis of the data for the study. The purpose of the thematic analysis was to identify patterns of meaning across the dataset, which provided answers to the five RQs the study addressed (Creswell & Creswell, 2018). The multistep sequence shown in Figure 1 which I used in the data analysis has some semblance with Creswell and Creswell's (2018) data analysis in qualitative research procedure. However, the sequence I used was based entirely on the method I created for the study. I transcribed the data after I concluded the data collection. I then proceeded to vet the data by comparing the transcription I made with the notes I took during data collection. Thereafter, I hand-coded the data and arranged the data into categories. Finally, I identified and defined the theme clusters from which I deduced the meanings. The meanings from the theme clusters formed the basis from which I produced the report of the findings of the study.

I took notes while conducting the individual telephone interviews. I also used an automatic recording device to record all the responses when I collected the raw data. After this initial step, I organized the raw data by compiling the notes I took for each respondent under each question in the data collection instrument. I also arranged all the answers to each question in a logical sequence, which helped me analyze them. I identified all respondents in the transcripts using labels as M1 to M5 for male respondents and F1 to F5 for female respondents. After this step, I played back the automatic recording for each respondent and compared these with the notes I made for each respondent. This was to ensure that the notes reflected the actual answers from each respondent.

I took the time to vet each recording, and I identified any answers in the recordings that could have been missed in the notes. I included these to the notes to ensure that the transcripts which I produced from the notes and records reflected the actual and complete answers received to each question from the respondents. I also re-listened very attentively to the recordings and compared these with the updated notes and the vivid memory of the responses which I had. This was the data familiarization stage of the data analysis. Therefore, I was able to recollect and reconnect any missing part of the notes from the recordings.

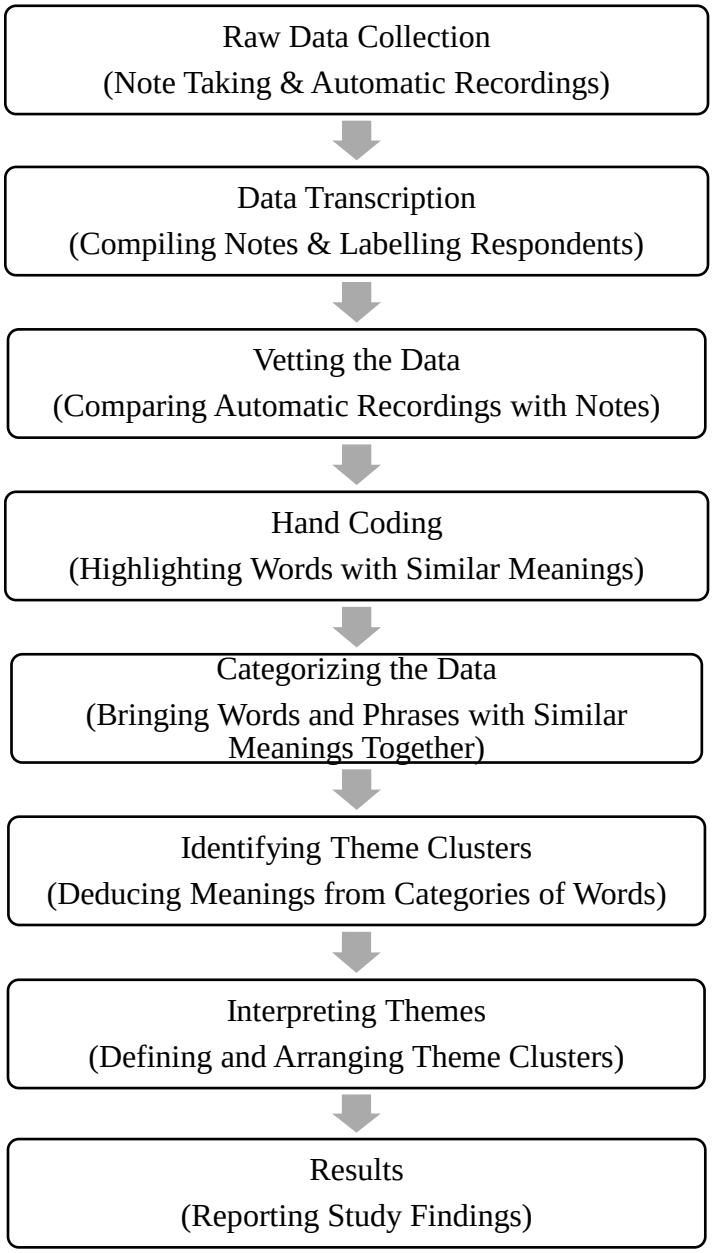
The next step I took in this process was to identify similarities in words, meaning or relationships among some words in the answers of each respondent to each question. I coded these similar words or meanings and similarities using the open coding method and highlighting them in various colors. This coding in different colors differentiated the patterns I identified. I sorted out these recognized words of similar meanings and similarities into categories of terms or groups of words. I used this process to make meaning out of the words or phrases and to identify codes that I put together into categories. I also used the inductive analysis method espoused by Patton (2015) in deducing meanings from this arrangement. I identified themes and concepts which the groups of words conveyed from the coding and categorization. I used the themes deduced from the codes and categories to develop the report of the findings of the study.

Some English language responses were intertwined with some in the Igbo language, which I speak fluently, and I also write. I was not presented with any difficulty in transcribing the interview notes and the recorded responses. Therefore, transcription

and data analysis enabled me to effectively explore the respondents' lived experiences and get their perspectives on the phenomenon of interest. Figure 1 illustrates the multi-step sequence I used for the inductive thematic analysis of the data.

Figure 1

The Multistep Sequence Used for Inductive Thematic Data Analysis



Description of Codes, Categories, and Themes From the Data

I conducted this qualitative study to explore the level of knowledge, attitudes, and beliefs about Type 2 diabetes amongst members of Partner Organization B. I evaluated how the level of knowledge, attitudes, and beliefs impacted their understanding of the causes, symptoms, control, and prevention of the long-term consequences of Type 2 diabetes with the questions in the data collection instrument. I collected the raw data through individual telephone interviews with a sample of five male and five female respondents. I proceeded to do the open coding and categorization. After that, I identified the key theme clusters, which I used to arrive at the study's findings, which provided answers to the five RQs. The following are the identified theme clusters:

Definition of Theme Clusters

Demographics: Provide demographic information on age, gender, highest educational level, and service position of respondents at the time of retirement.

Post-retirement life: Provides information on pre-retirement experience, and included “arrears of pensions owed, worried, concerned, suffering, unenjoyable, stressful, financial hardship, life has been rough, difficult, challenging”.

The reaction at diagnosis: This theme cluster includes “I did not feel good, disbelief, I was in shock, I was unhappy, sadness, depression” and they described respondents’ experiences and reactions when they were first diagnosed with Type 2 diabetes.

Knowledge and awareness of diabetes: This theme cluster contains the group of words like “it does not run in my family, I never knew I had it, I do not know how I got

it, I never believed it could happen to me, I came with another ailment to the hospital, I was shocked.” These were expressions indicating respondents’ unawareness of their disease condition prior to diagnosis.

Post-diagnosis experiences: This theme cluster includes “lack of money to buy drugs, lack of genuine medications, unable to carry out daily activities, does not have a glucometer, unable to control my urine, embarrassing leakages" described some challenges respondents’ have since after their Type 2 diabetes diagnosis.

Education about Type 2 diabetes: This theme cluster contains meanings like “no one had ever given me an education about diabetes, I do not know anything about the disease, I am unaware of diabetes, and I have not received any formal education." These groups of words conveyed meanings regarding education, which respondents have been given about Type 2 diabetes.

Self-acquired education: The theme cluster conveys meaning regarding the education that has been self-acquired by respondents since their diagnosis. It contained groups of words like “take medications regularly, minimize intake of alcohol, avoid carbohydrates and sugary foods, do regular exercises, drink green tea, take herbs, bitter leaves, mango leaves, and guava leaves."

Diabetes self-care activities: The theme cluster describes the activities the respondents undertake in managing their Type 2 diabetes. The words and group of words included “I check my blood sugar one or two times a week, I keep to recommended diet, and I take my medications as recommended." Other groups of words were, “I take long walks. I eat a lot of vegetables and fruits. I use local herbs. I walk around my compound

about 30 minutes a day. I use vitamins to support my immune system. I go for monthly checkups."

Challenges in managing diabetes: This theme cluster refers to the problems the respondents face in managing Type 2 diabetes. These included "constant malaria attack increases my blood sugar level, difficulty in controlling sugar level, lack of money for medications, medical checkups have been tiring, difficulty keeping to my medication instructions, inability to buy the right foods, not having a testing kit, no one to go to for financial help, and difficulty eating in moderation."

Family help/support: This theme cluster describes family members who rendered support to respondents in managing Type 2 diabetes. The meanings expressed included "wife, husband, son, daughters**,** and brothers."

Type of family support: The theme cluster provides meaning to the Type of family support family members rendered respondents in managing their Type 2 diabetes. Groups of words expressed included, "my wife cooks my food, spouse and children help me buy food, brothers and spouse help with medications, spouse and son help sometimes with finances". Also expressed were "son helps me read food labels, children provide money for a medical check-up, and wife reminds me when to take medicines."

Community support: The theme cluster describes support received from community members in managing Type 2 diabetes. Group of words included "no community support from anyone; everyone is on his own; nobody in the community helps us; you alone can help yourself."

Available community resources: Theme cluster refers to resources available in the community to help people with diabetes manage their sugar levels. Answers expressed included “no resources exist in our community, no recreational centers here, we do not have resources here."

Causes of Type 2 diabetes: The theme cluster refers to respondents’ knowledge of the causes of Type 2 diabetes. Meanings expressed here included “drinking too much alcohol, consumption of sugary foods, eating foods high in carbohydrates, negative lifestyle, and extreme social interaction." Others were “lack of awareness, ignorance, and lack of knowledge."

Diabetes reducing behaviors: Theme cluster describes behaviors that can reduce or prevent Type 2 diabetes. The meanings expressed here included “reducing alcohol consumption, taking regular exercise, avoiding sugary foods, avoiding foods high in carbohydrates, eating in small portions or moderation, and eating foods high in vegetables.”

Other health effects of diabetes: This theme cluster referred to the negative health effects diabetes has caused the respondents. Meanings included “frequent urination, erectile dysfunction, body pains, constant salivation, weakness, stroke, difficulty stooling, weight loss, blurry vision, prostate, arthritis, and speech problems."

Belief in diabetes cure: The theme cluster examined the respondents’ faith that diabetes can be cured. Meanings expressed included “diabetes cannot be cured; diabetes can only be managed."

Spiritual and cultural beliefs: This theme cluster referred to words that portray respondents' religious and cultural beliefs in the cure for Type 2 diabetes. This included group of words like “my God will heal me, herbs can cure diabetes, coconut water can neutralize blood sugar, and my strong belief in God will heal me.”

Table 6 contains the frequencies for common theme clusters identified in the data analysis.

Table 6

*Common Theme Clusters, Frequency, and Percentages (*N = *10)*

Common theme clusters	Frequencies (n = 10)	Percentages (%)
History		
≥60 years	10	100
Male	5	50
Female	5	50
Living with diabetes	10	100
Post-retirement experience		
Unhappy	10	100
Frustrated	10	100
Suffering	10	100
Financially handicapped	10	100
Owed 20-30 months pension arrears	10	100
Declining health	10	100
Knowledge/Suspicion of type 2 diabetes		
Before diagnosis	1	10
After diagnosis	9	90
Inadequate knowledge of long-term effects	10	100
Diagnosis of diabetes		
Before retirement	4	40
After retirement	6	60

Reaction on learning of diagnosis		
Shocked	10	100
Depressed/sad	10	100
Most Challenging part of diabetes experience		
High cost of medications	10	10
Inability to buy drugs	10	10
Education received about diabetes		
No	6	60
Yes	4	40
Reading of food labels		
No	9	90
Yes	1	10
Major steps in managing diabetes		
Owes a glucometer	5	50
Keeps to medication instructions:		
Yes	1	10
No	9	90
Support from family		
Yes	10	100
No	0	0
Support from community		
Yes	0	0
No	10	100
Access to resources		
Yes	0	0
No	10	100
Availability of recreational centers		
No	10	100
Yes	0	0
Ailments caused by diabetes		
	5	100
Erectile dysfunction (n = 5)	9	90
	6	60

Frequent urination Blurred vision		
Diabetes care behaviors	10	100
Awareness of long-term consequences		
Yes	3	30
No	7	70
Spiritual/cultural beliefs about diabetes		
Yes	9	90
No	1	10

Qualities of Discrepant Cases and How They Were Factored Into the Analysis

I found some discrepant answers which were not relevant in any way to the questions where such answers were provided. However, these answers were still good quality answers to some questions in other sections of the data collection instrument. I factored some discrepant answers into the analysis by moving the answers to sections where they were relevant. This provided the opportunity of considering such responses during the data analysis. An example was in question 1C, where M3 gave the following response, "Medical checkups have been tiring, I am having problems keeping to my medication instructions, and my health situation has been made worse by a stroke." I moved this answer to question 4C, where the answer was relevant because question 4C asked about significant problems and challenges respondents were facing in managing their Type 2 diabetes.

Another example was in question 2D, where respondent M4 gave this unrelated answer, “I have been having difficulty getting my medication. I buy some off the counter

anytime I can afford as I have limited access to finance." I moved the answer to question 4C, where it was relevant. M1 gave this answer, which was not applicable in question 6C, "I have been told to control the type of food I eat and minimize alcohol intake. I was also told to take regular exercise." I moved this answer to the section where it was relevant to the questions.

Treatment of Other Discrepant Cases

I searched and identified elements in the data that ran contrary to the pattern of most of the common themes. I sought clarification for such discrepant data with the respondent where necessary. In most cases, I analyzed such discrepant patterns further if they broadened the trends of information which emerged. I excluded any discrepant data that could have distorted the meaning and mode of emerging data from the final data I presented in this study findings.

Evidence of Trustworthiness

I applied Guba's Evaluation Criteria in establishing trustworthiness by proving the credibility, transferability, confirmability, and dependability of the findings that resulted from the study (Nowell, Norris, White, & Moules, 2017). I proved the credibility of the study findings by establishing the confidence that the results were credible in truth and accuracy through a triangulation process. I triangulated by comparing the information I derived from the automatic recordings of the individual telephone interviews with the notes I made during the interviews. This proved that the transcripts I produced contained true responses of the respondents who were fully and completely recorded. This vetting process confirmed the internal validity of the information recorded. This was proven

when the automatically recorded versions of the responses were found to be consistent with the notes taken during the individual telephone interviews.

I proved the transferability of the research findings by demonstrating that the study results can apply to other pensioners or other populations in similar situations through thick descriptions. I used the detailed account and description of experiences during the data collection process to explicitly establish patterns and relationships in the context of the pensioners' experiences and situational characteristics. This process helped in determining the external validity of the study findings as it established that other pensioners in Abia State of Nigeria in particular, and Nigeria, in general, were exposed to the same health and socio-economic tribulations and challenges. Therefore, there is no doubt that the study findings will apply to pensioners in similar situations and locations. The sample population from the Partner Organization B was representative of the entire population of pensioners in Abia State of Nigeria. This assumption was because the sample population and the broader community of pensioners in Abia State shared the same demographic characteristics.

Furthermore, I established the dependability of the findings by using the inquiry audit method to prove that other researchers will get conclusions consistent with the findings of this study if they repeated the study. The audit trail showed that the study processes provided adequate information to guide any other researcher who wished to replicate the study. The audit trail established the adequacy and dependability of the study findings. This is because the data collected in the study supported the results and interpretations and the conclusions drawn in Chapter 5.

I also established the study findings' confirmability by ensuring that the data reflected the respondents' authentic lived experiences. This was done by cross-checking responses with the respondents. I discussed the responses they provided to confirm that the original information recorded were consistent with the respondents' actual responses in the initial telephone interviews. I reviewed the audit trail, which detailed every step of data collection and analysis, to provide the rationale for the findings and conclusions of this study. The audit trail established that the study findings were accurate reflections of the participants' responses.

I used reflexivity, which is central to an audit trail to ensure that the findings were based on the respondents' actual responses and not on biases or personal motivations (Nowell et al., 2017). Reflexivity provided an avenue for a high degree of neutrality and ensured that the data collected were the real views of the respondents and not my perspectives. This reflexivity ensured that my interests did not influence the interpretation of responses to fit a pre-conceived narrative. Thus, it helped to ensure no researcher biases skewed the findings and conclusions of the study.

I maintained a self-critical account of the research process, and this enhanced the trustworthiness of the findings and conclusions of this qualitative study (Nowell et al., 2017). I also had adequate passion, commitment, and time in understanding the phenomenon of interest. I paid attention to the social setting and demographics and cultural values of the respondents, especially their age. I also developed a good rapport with the respondents before the individual telephone interviews. The friendship helped build trust and ensured they felt relaxed in having such sensitive discussions regarding

their painful private lives. Their eagerness to discuss such a subject that negatively impacted their lives proved they were excited to relive their experiences. I felt comfortable that they were indeed unburdening their hearts on their knowledge and beliefs and revealing their attitudes towards Type 2 diabetes. Furthermore, I applied an inquiry mind and critical observation during data collection and ensured no information detail was lost, overlooked, or disregarded.

Results

The inductive thematic data analysis provided answers that addressed each of the five RQs. The questions formed the basis for achieving the purpose of this qualitative study. The results relating to each of the five research questions follow.

RQ1. Knowledge of Respondents About Type 2 Diabetes

Ninety percent of the respondents did not have any knowledge of Type 2 diabetes before their diagnosis. The lack of knowledge was confirmed by the quotations “I never knew I had it,” “I do not know how I got it,” “I never believed it could happen to me,” “I had no prior knowledge or diagnosis,” “I was shocked,” “I never had an idea I had diabetes,” and “I was shocked and devastated.”

Ninety percent of the respondents had late diagnosis of their Type 2 diabetes due to ignorance and lack of knowledge. The quotations illustrating this are “I never knew I had diabetes before this hospital visit,” "I had elevated blood pressure, and I was taken to the hospital,” “I came with another ailment to the hospital,” “I had malaria, and I was taking medications for malaria," "I was unconscious, and was I was being treated at the hospital for malaria. Further tests conducted on me revealed I had diabetes,” "I had a

fever, and I was taken to the hospital for treatment only to be diagnosed with Type 2 diabetes," and "I went to the general hospital to be treated for a swollen face. I was sad."

All 100% were not aware of the wide range of negative long-term consequences Type 2 diabetes could have on their health. Their knowledge was limited to their personal experiences on the negative health impact of Type 2 diabetes. The following quotations showed their limited knowledge of the long-term consequences of Type 2 diabetes, "I am not aware of any long-term consequences of diabetes Type 2," "I do not know of any long-term consequences of diabetes except blindness or short-sightedness," "I know only of sight problems," "I know of blurry vision and erectile dysfunction," "amputation, weakness of the body, and blindness," "Loss of hair. Hard at hearing," and "High blood pressure. Erectile dysfunction."

RQ2. Attitudes of Respondents About Type 2 Diabetes

The data collected indicated that the sample population's attitudes about Type 2 diabetes was not positive. This attitude has been embedded in sadness, frustration, depression, and worry. The following quotations illustrate the negative attitudes towards Type 2 diabetes "I was depressed and sad," "It was a shock," "I was worried and devastated," "I was shocked," "I am concerned about my health, and it makes me feel worried," "I felt bad and psychologically depressed with shock," "I was not happy. It came as a surprise because diabetes does not run in my family," and "I was in shock and unhappy when the news was broken to me."

The population felt helpless and abandoned. The reason for this negative attitude was due to many months and years of unpaid pensions. The following quotations

illustrated their frustrations “Life has been rough because we are being owed 26 months arrears of pensions,” “our gratuities are not being paid,” "I have not been living my normal life and carrying out normal life activities,” "Life has not been easy for me,” “I have been suffering from financial instability," "Life gets more difficult every day,” “Non-payment of pension by the government has caused me financial difficulty,” “We are owed 24 months in pension arrears,” "I have been facing financial hardship since my retirement due to nonpayment of pensions by the government,” and “We have not received a payment since 2017.” Others are “We are experiencing financial hardship due to about 30 months of arrears of pensions,” “We owe rent for over a year,” "Life has been difficult because our pension payments are not forthcoming from both state and local governments," “Life has been challenging due to the nonpayment of pensions," and "Life has been difficult due to lack of finances because of my 30 months of unpaid pension arrears."

The respondents have also experienced negative post-retirement experiences, and this has increased their negative attitude towards Type 2 diabetes. The bitterness is evident in the following quotations “I had partial stroke and paralysis in June due to diabetes,” “Diabetes has affected my retirement life negatively and made it unenjoyable,” “I do not feel comfortable,” “Medical checkups have been tiring,” “I am having problems keeping to my medication instructions and my health situation has been made worse by a stroke,” “I have been sad since after retirement due to the lack of financial support,” “Nonpayment of pensions has created financial difficulties and my inability to buy my medications,” “This has led me to depression and emotional distress,” “I cannot

do anything for myself anymore due to diabetes," "I am experiencing decline in my health due to Type 2 diabetes," "Financial hardship has affected my ability to have access to good healthcare,' "It has been stressful and uncomfortable due to Type 2 diabetes," and "I have been experiencing physiological and emotional changes."

The respondents have undertaken some actions towards mitigating the impact of Type 2 diabetes on their health in the face of daunting challenges. The quotations illustrating this include "I try keep to the recommended diet," "I try to take my medications as recommended," "I talk long walks, about half a mile once in three days," "I think I am managing my diabetes well," "I try to avoid eating food high in sugar," "I also eat a lot of vegetables and fruits," "I no longer drink anything that contains sugar," "I avoid starchy foods and carbohydrates," "I also avoid foods high in sugar," "I walk around my compound about 30 minutes in a day as part of my exercise," and "I have changed my diet, and I now eat a lot of vegetables and water yam." Others include "I avoid carbohydrates, and I eat just a little rice," "I eat mostly fiber foods, and I use vitamins to support my immune system," "I go for monthly checkups" and "I visit dieticians for food advice. I also Google to read about Type 2 diabetes."

The major challenges affecting the respondents' attitudes to managing Type 2 diabetes identified in the data analysis include 90% indicated they lacked money to buy their medications, 80% said they have difficulty keeping to their medication guidelines and instructions, and 70% cited the inability to buy the right foodstuff. One common challenge which was mentioned was the lack of access to the recommended type of food they need. The respondents were forced to eat whatever food they could lay their hands

on due to their financial problems. In most cases, the readily available foods were carbohydrate-based foods that spiked blood sugar levels. Another 30% reported that constant attack of malaria, which they experienced increased their blood sugar level. Other quotations included “to go for regular medical checkups have become tiring,” “I do not have a testing kit,” “we have to pay a fee when we go to private healthcare businesses to check our blood sugar." The respondents complained that paying fees each time they went for tests was a burden because they did not have anyone to go to for financial help. They also had difficulty eating in moderation.

The data showed that all respondents (100%) had family members who helped them to manage Type 2 diabetes. All respondents (100%) were married and had living spouses residing with them. All respondents (100%) also confirmed they got help from spouses and biological children only, except M2, who mentioned his brothers also helped. What the family members did to help the respondents manage Type 2 diabetes are included “My wife helps in procuring and preparing the right type of food, especially vegetables,” “My brothers support me with money to go for regular medical checkups and buy my medications,” “My wife helps provide me with the type of diet recommended and in preparing my meals,” “She makes sure I feed well. I am satisfied with the support I get from my family," “My wife buys and prepares my food. She buys me medications when she can afford it. She prepares my herbs,” “She also reminds me to take my medications when due,” “She regularly reminds me to avoid certain foods,” “My son and daughter help with finances and in providing money for food when they can,” “I have seven children, and they help me with preparing my food,” “My son helps me sometimes

to provide for my medications," “My family members advise me on foods and diets,” and “My children read the food labels and check for sodium and carb levels of the food I eat.”

RQ3. Beliefs of Respondents About Type 2 Diabetes

Sixty percent of the respondents expressed strong religious beliefs that God would heal them. They provided Biblical quotes to support their positions. One respondent believed that it was a person who got some cash from her that must have sent this ailment to her. A similar fetish belief was also expressed by two other respondents who said they believed diabetes could be cured by consuming local herbs. One interesting response was a respondent's belief that Type 2 diabetes could be cured with coconut water, which she claimed she had been drinking. She said she believed coconut water neutralizes high blood sugar levels. However, 30% of the respondents indicated they did not believe there was a cure for Type 2 diabetes. This 30% expressed the opinion that Type 2 diabetes could only be managed but cannot be cured. Another discovery was the belief by 40% of the respondents that Type 2 diabetes can be cured by consuming herbal medications, drinking green tea, taking herbal leaves like bitter leaves, mango leaves, and guava leaves.

The following quotations from the transcript supported these strong beliefs “My religious belief is a major part of my diabetes care and management,” “I pray before I take my drugs,” “I believe God will heal me,” “I believe diabetes can come through God,” “I believe health is in God’s hands, and I am living at the mercy of God,” “I believe doctors treat, but God heals,” “God can cure diabetes,” “My religious belief is a major part of my diabetes care and management,” “I believe God will heal me," “I trust

God for everything," "I am a man of strong faith, and my strong faith is helping me a lot," "I believe that doctors treat, but God cures, and if you believe in Him, you will be cured," "I am a strong Christian, and I believe in God and His healing power," "He that is in me is greater than he that is in the world," "I am a Christian, and I have strong faith in God. My faith tells me that God will cure me," "I believe diabetes can be cured with herbal medication and consumption of local herbs," "Use of herbal medications for diabetes cure is a common practice in this community," "I am a strong believer in culture and the effectiveness of traditional medicines," "I consume coconut water to see if it can help to reduce my sugar level," "People told me coconut water can neutralize high blood sugar," and "I believe I got this diabetes from someone I gave money who used it to do this disease to me."

RQ4. Adverse Health Consequences of Type 2 Diabetes for Respondents

Respondents complained of embarrassment, frustration, and sadness arising from what they were experiencing from Type 2 diabetes. The following quotations are evidence of the respondents' frustrating health consequences of Type 2 diabetes, "Frequent urination, erectile dysfunction, body pains and emotional discomfort. Urinating continuously and salivating constantly," "I had a stroke, and sometimes I feel weak," "Diabetes triggered my stroke attack," "I suffer from frequent urination," and "I also suffer from difficulty in stooling." Other responses were "I have erectile dysfunction, weight loss, swollen face and legs, loss of strength, constant urination, blurred vision," "Prostrate, erectile dysfunction, arthritis, rheumatic pains," "Constant urination, lack of strength, dizziness, and constant body pains," "Stroke that affected my gait when I walk.

It affected my speech and my sight," "Stroke, blurry eyes, my speech," "I urinate frequently," "I have developed heart disease because of Type 2 diabetes," "My legs are painful and swollen," "I have blurred vision," "I have become short-sighted," "Insufficient sleep," and "Body pains."

Ninety percent of the respondents could not proffer an answer when asked other negative long-term health consequences of Type 2 diabetes. They knew only the adverse health consequences they were experiencing or the ones that had afflicted them. Only one respondent (10%) could mention delayed wound healing, which is an important health consequence of Type 2 diabetes, especially for people who are 60 years and older. The adverse health consequences of Type 2 diabetes were among the major challenges the respondents faced in managing Type 2 diabetes. The following themes illustrate the other challenges the respondents faced "I am having difficulty keeping my medication instructions," "The cost of medications for diabetes is extremely high, and I cannot afford them," "I am unable to buy the right foodstuff due to financial difficulty," "I have no one to go to for financial help," "I cannot afford my prescriptions, and I cannot keep to medication guidelines," "I am unable to buy my medications and the type of food I should be eating," "Financial challenge due to irregular pensions payment," "Difficulty adhering to medication guidelines and doctor's prescription," and "Self-discipline in keeping to the right type of food and eating in moderation is my problem."

The data revealed that no other community members played any roles in supporting the respondents' in managing Type 2 diabetes. Furthermore, none of the respondents had ever received any form of support from community members. All

respondents (100%) indicated they did not benefit from any support from any community member outside their immediate family in managing Type 2 diabetes. The quotations in this regard were “I do not get any support of any kind from community members”, “everyone is on his or her own in this community," “you alone can help yourself,” and “no other community member plays any role in my diabetes care."

No respondents were aware of or had access to any community resources that could have helped them manage their diabetic condition. No community recreational resources or sporting facilities were available in these communities. No social resources like community-funded health centers, hospitals, gyms, or walking trails were available. The following responses revealed the absence of community resources that could have helped the respondents in managing Type 2 diabetes “There are no community resources like gyms and recreational facilities,” “No health center near the community and no access to a nearby hospital”, “No support of any kind from the community,” “I am not aware of any community resources,” and “I do not have access to any community support in managing my diabetes."

Although there were no resources available to the people living with Type 2 diabetes in their communities to support their diabetes management, 40% of the respondents made some effort to participate in activities that could be helpful. The remaining 60% did not do anything to engage themselves in any helpful activities. Such quotations revealed in the data analysis were “I try to attend community events, meetings, and volunteering in community services and activities. These help me to be busy, manage my emotions, and live an active life,” “There is a hotel in a nearby town that has a gym. I

go there a few times every week to do some exercise. This hotel charges a fee, and sometimes I am unable to afford the fee," "I go to the sports council in a neighboring town to jog and walk once a week," "The group meetings we hold in churches help us gather information to improve diabetes management. It helps people living with diabetes to share and adopt new ideas that they find useful sometimes," and "The group meeting we hold in our church helps us to gather information to improve diabetes management".

RQ5. Health Education Needs of Respondents About Type 2 Diabetes

The data revealed that only one respondent (F3) had any knowledge of Type 2 diabetes before diagnosis. She said, and I quote, "being a former staff in the health sector, I suspected diabetes mellitus and I went for a test where it was confirmed." The other 90% of the respondents were completely ignorant about Type 2 diabetes before their diagnosis. This 90% have not had the opportunity of any formal education about Type 2 diabetes before diagnosis. After the diagnosis and hospitalization, only 30% received any type of formal briefings or education from the hospital staff about Type 2 diabetes. The quotations below indicated this "I was hospitalized with a stroke, and the medical personnel gave me some talks of diabetes," and "I had briefings during hospitalizations and medical checkups."

One respondent (F3) belonged to a diabetes care group where Type 2 diabetes was discussed. She said, "I belong to a diabetes care group in my church where we have occasional doctors' visits to give us health talks." Only 10 % (M5) had ever attended a workshop or seminar about Type 2 diabetes since diagnosis. He said, "I attended two seminars on Type 2 diabetes conducted by the state ministry of health." Only 20% of the

respondents (F4 and F5) ever browsed the internet out of curiosity and tried to seek information about Type 2 diabetes, although none had ever talked to them about the disease. F4 said, “nobody ever gave me an education. I depend on some information I get from the internet.” F5 said, “no one has given me an education. I browse the internet for information on diabetes.” The other 30% never had an opportunity to receive any education or health talks regarding Type 2 diabetes. Therefore, this population group has a yearning need for education relating to Type 2 diabetes. The health education needs of this vulnerable population are recommended in Chapter 5.

The data analysis showed that only 10% of the respondents had any awareness of food labelling. They also did not know why it was important for people living with diabetes to read and pay attention to food labels to enable them to make educated food choices. The other 90% were unaware of what food labels were and their importance and need to be educated on this. Table 7 illustrates the unawareness and the need for reading of food labels amongst the respondents.

Table 7

Knowledge and Reading of Food Labels

Respondents (n=10)	Responses
M1	No
M2	No
M3	No
M4	No
M5	No
F1	No
F2	No
F3	No
F4	No
F5	Yes

The data showed that only 50% of the respondents owned glucometers. None of the respondents checked their blood sugar levels daily, as recommended (ADA, 2019). Although 50% of respondents owned glucometers, only 20% checked their blood sugar levels daily. The other 30% who owned glucometers said they checked their blood sugar level every other day, once or twice a week. Ten percent of the respondents checked two or three times a week. According to the respondents, the reason for this irregularity in blood sugar monitoring was that they wanted to stagger the use of the strips and lancets because they were expensive to buy. By spreading the use of these medical supplies over several days in a week instead of daily, they could use whatever quantity they could afford to buy over a more extended period.

This is ill-advised as blood sugar levels should be monitored daily. The CDC (2019) recommends that daily monitoring of blood sugar is the most important thing that people living with diabetes should do to manage their health condition. The daily readings help keep the blood sugar level in check and prevent the long-term negative consequences of Type 2 diabetes. Table 8 shows the respondents' ownership of glucometers and the regularity of their blood sugar check.

Table 8

Ownership of Glucometers and Regularity of Blood Sugar Checks

Respondent	Do You Own a Glucometer?	How Often Do You Check?
M1	Yes	Once or twice a week
M2	Yes	Daily
M2	No	None
M4	No	None
M5	Yes	Daily

F1	No	None
F2	Yes	Every other day
F3	No	None
F4	No	None
F5	Yes	Two or three times a week

Summary

In response to RQ1, 100% of the respondents did not know about Type 2 diabetes before their diagnosis. Ninety percent of the respondents had late diagnosis of Type 2 diabetes due to ignorance and lack of knowledge. All respondents had limited knowledge of the long-term consequences of Type 2 diabetes as data showed that 100% of respondents did not have complete knowledge these. Only 50% of respondents knew about glucometers and 90% did not know the proper use of glucometers. All 100% of the respondents did not have knowledge of diabetes care plans. All the respondents did not know the causes of Type 2 diabetes and what can be done to prevent or reduce the prevalence.

Analysis of responses from the data showed respondents had a negative attitude as explored by RQ2. This negative attitude was mainly because all 100% complained of financial challenges arising from 24 to 36 months of unpaid pension arrears, which the state government was owing to them. Ninety percent of the respondents reported they were not managing their diabetes well due to financial difficulties. All respondents also experienced negative post-retirement experiences, and this has increased their negative attitude towards Type 2 diabetes.

In exploring the belief of the respondents about Type 2 diabetes as outlined in RQ 3, the data analysis results showed that 60% expressed strong spiritual strength. Sixty

percent of the respondents also had a strong cultural belief. Forty percentage of the respondents believed in the use and potency of traditional herbal medications in treating Type 2 diabetes. Another 40% of the respondents expressed strong fetish belief.

All 100% of the respondents indicated the problem of frequent urges for urine and embarrassing leaks in response to RQ4. All male respondents complained of erectile dysfunction, which had destroyed their libido and affected their sexual life and self-esteem. The respondents' knowledge of the long-term consequences of Type 2 diabetes was also limited only to the effects they had experienced from the disease. All 100% could not identify the wide range of long-term consequences of Type 2 diabetes.

In response to RQ5. 90% of the respondents exhibited improper use of glucometers for checking their blood sugar levels. All 100% of the respondents were neither education about, nor had diabetes care plans. The knowledge of these respondents on the causes of diabetes and what could be done to prevent or reduce the prevalence was also limited. The responses showed the respondents had not been well educated about this ailment because 90% of the respondents had never had the opportunity of exposure to any formal education about Type 2 diabetes. Only 10% of the respondents was aware of the need for reading food labels.

Chapter 5 discusses how the findings of the study extended knowledge in this area. Furthermore, the findings are compared with discoveries in past studies found in the literature, discussed in Chapter 2. Chapter 5 also details the use of the theoretical framework which undergirded the study, the study's limitations, and recommendations.

The chapter ends with a discussion on the positive social change implications of the study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to explore the knowledge, attitudes, and beliefs of the population of interest—Nigerian pensioners who are members of the Abia State Chapter of the Nigerian Union of Pensioners—of Type 2 diabetes. I conducted the study to evaluate how the respondents' knowledge, attitudes, and beliefs about Type 2 diabetes affected their understanding of the causes, symptoms, control, and prevention of this disease's long-term consequences. The study's key themes also clarify the factors that affected the respondents' Type 2 diabetes-self-management activities.

I used an inductive qualitative method to conduct the study. This interpretative phenomenological approach was appropriate for exploring the phenomenon of interest and gathering information on the participants' lived experiences. The sample population for the study was made up of five men and five women. They were aged 60 years and older. I used a nonprobability purposive random sampling method to select the respondents for the study. All respondents were retirees living with Type 2 diabetes.

I collected the study data through individual telephone interviews, which I recorded alongside the notes I took during the interviews. I used a multistep process, as shown in Figure 1 in Chapter 4, for the inductive thematic analysis of the data I collected for the study. This thematic analysis method allowed me to identify patterns of meaning across the data set (see Creswell & Creswell, 2018). This sequential process of data organization and preparation, vetting and reading, open coding, categorization, theme

clusters identification, theme interpretation, and report writing provided answers to the five RQs.

The study focused on the following five RQs.

RQ1: What knowledge do pensioners at the Abia State Chapter of the Nigeria Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ2: What attitudes do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ3: What beliefs do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia have about Type 2 diabetes?

RQ4: What adverse health consequences of Type 2 diabetes do pensioners at the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia experience?

RQ5: What health education related to Type 2 diabetes do members of the Abia State Chapter of the Nigerian Union of Pensioners in Umuahia need to impact their health positively?

The findings relating to the five RQs are discussed in detail in the following sections.

RQ1. Knowledge About Type 2 Diabetes

Quotations that highlighted the respondents' lack of knowledge about Type 2 diabetes included "I had no prior knowledge or diagnosis," "I was shocked," "I never had an idea I had diabetes," and "I was shocked and devastated." A key finding of the study was that 90% of the respondents did not know about the disease until after their diagnosis was made. The inadequate knowledge the population had about Type 2 diabetes prior to their diagnosis was reflected in responses like "I had elevated blood pressure, and I was

taken to the hospital," “I came with another ailment to the hospital,” and “I had malaria, and I was taking medications for malaria." Ninety percent of the respondents could not give answers when asked about the negative long-term health consequences Type 2 diabetes could have on the health of people living with the disease. This lack of knowledge was reflected in the responses “I am not aware of any long-term consequences of diabetes Type 2,” “I do not know of any long-term consequences of diabetes,” and “Nobody told me of any long-term health effect of diabetes.”

Ninety percent of the respondents had never heard about food labels. Only 10% knew what food labels were and had ever read food labels. Sixty percent of the respondents had been given an educational pamphlet regarding Type 2 diabetes. Forty percent of the respondents had never been exposed to any teaching about Type 2 diabetes. The knowledge the respondents had about the effects of uncontrolled blood sugar was fragmented and inadequate. When asked about these effects or ailments caused by Type 2 diabetes on health, 50% mentioned erectile dysfunction, 90% mentioned frequent urination, and 60% said blurred vision.

RQ2. Attitudes About Type 2 Diabetes

The study's findings showed that the respondents had a traumatic postretirement life, which affected their attitude. This financial trauma was due to arrears of 24 to 36 months of their pensions and gratuities by states and federal governments in Nigeria. Therefore, they were frustrated, unhappy, and had developed a negative attitude to their diabetes care. Quotations illustrating this attitude include "I was depressed and sad," “I was worried and devastated,” “I am concerned about my health, and it makes me feel

worried," and “I felt bad and psychologically depressed.” The inability to buy recommended medications due to their financial constraint resulted in their developing negative attitudes to self-care for their Type 2 diabetes. The quotations illustrating this attitude include "Life gets more difficult every day,” “Non-payment of pension by the government has caused me financial difficulty,” “We are owed 24 months in pension arrears,” and “We have not received a payment since 2017.” This situation also negatively affected their diabetes care activities, including keeping to the recommended medication regimen, adhering to required feeding standards, and maintaining regular blood sugar checks.

All respondents did not have access to community support in managing their ailments. There were no social support facilities in any of the surrounding communities where the respondents resided. The quotations indicating the lack of community and social support, which affected their attitude, include “There are no community resources like gyms and recreational facilities,” “No health center near the community and no access to a nearby hospital,” “No support of any kind from the community,” “I am not aware of any community resource,” and “I do not have access to any community support in managing my diabetes."

RQ3. Beliefs About Type 2 Diabetes

Ninety percent of the respondents had one form of spiritual or cultural belief about Type 2 diabetes. The strong religious belief amongst these respondents was exemplified in the following quotations “I use a powerful tool in managing my diabetes. This is my belief and my strong faith in God,” “I believe that doctors treat, but God cures,

and if you believe in Him, you will be cured," and "I am a strong Christian, and I believe in God and His healing power." Sixty percent of the respondents expressed strong religious beliefs and that God would heal them as shown in the following quotations: "God can cure diabetes," "My religious belief is a major part of my diabetes care and management," "I believe God will heal me," and "I trust God for everything."

Forty percent of the respondents believed that Type 2 diabetes could be cured by consuming herbal medications. The following quotations indicated this belief: "Use of herbal medications for diabetes cure is a common practice in this community," "I am a strong believer in culture and the effectiveness of traditional medicines," "People told me coconut water can neutralize high blood sugar," and "I believe I got this diabetes from someone I gave money who used it to do this disease to me." Ten percent of the respondents believed that Type 2 diabetes could be cured with coconut water because it neutralizes the adverse effects of high blood sugar levels on human health. A quotation supporting this finding is "I consume coconut water because it can help to reduce my sugar level."

RQ4. Adverse Health Consequences of Type 2 Diabetes

All the respondents were unaware of the wide range of negative long-term consequences of Type 2 diabetes on their health. Their knowledge in this area was limited to only the adverse health consequences diabetes had on them personally. Some of the quotations supporting these adverse health consequences were "Frequent urination," "erectile dysfunction," "constantly salivating," "swollen face and legs," "loss of strength," "blurry vision," "it affected my speech and my sight," and "it also affected

my self-esteem and my libido.” This health education deficiency regarding the respondents' inadequate knowledge of Type 2 diabetes's long-term effects was exhibited in the responses to the RQ4. Furthermore, the data showed that no respondent had a diabetes care plan to help mitigate the adverse health effect of Type 2 diabetes. The quotations supporting this finding included “I don’t know what a diabetes care plan is,” “I have never heard of a diabetes care plan," “I do not have a diabetes care plan,” and “no one has ever discussed a diabetes care plan with me.” Furthermore, the study results revealed that only 10% of the respondents mentioned that one of the serious adverse health consequences of Type 2 diabetes is the delay in wound healing. Only this respondent had any knowledge about how diabetes could result in delayed wound healing, which is a significant negative consequence of uncontrolled high blood sugar (Wound Care Centers, 2020).

RQ5. Health Education Needs of the Population

Forty percent of the respondents had never received any type of health education about Type 2 diabetes. The following quotations supported the finding “nobody ever gave me an education on this,” “no one has educated me about diabetes," “I browse the internet on my own for information on diabetes." Ninety percent of the respondents did not keep to recommended medication instructions. The following quotations support this finding “I am having problems keeping to my medication instructions,” “the cost of medications for diabetes is extremely high, and I cannot afford them," and “inability to keep to my medications is my major problem."

Also, only 10% of the respondents belonged to a diabetes care group where opportunities to learn how other people living with Type 2 diabetes manage their disease condition exist. That respondent said, “I belong to a diabetes care group in my church where we have occasional doctors' visits to give health talks to us." This situation limited their ability to interact and gain knowledge from other people living with Type 2 diabetes. The data also showed that only 50% of the respondents owned glucometers, and only 10% used the glucometer to check the blood sugar level daily. Quotations supporting this finding include “I do not own a glucometer," "I do not check my blood sugar every day," "I check my blood sugar twice a week," and "I check my blood sugar every other day." Furthermore, the data showed that 90% of the respondents were not educated on the importance of reading food labels. The only respondent who mentioned reading of food labels said, “My children read the food labels and check for sodium and carb levels of the food I eat."

Thirty percent of the respondents stated they had been experiencing constant malaria attacks since they were diagnosed with Type 2 diabetes. The quotations supporting this finding are, "I have constant malaria, which increases my blood sugar," "frequent malaria has been disturbing me,” and "constant malaria attack raises my diabetes." The respondents claimed that the non-availability of genuine drugs was one of the most challenging problems people living with Type 2 diabetes faced in Nigeria. The following quotation supported this claim "Non-availability of genuine drugs is the most challenging problem."

Interpretation of the Findings

I premised the study on the HBM. Therefore, I will interpret the findings of the research in relation to this theoretical model. The study centered on a population vulnerable to Type 2 diabetes due to their age of 60 years and older. Age is a risk factor for Type 2 diabetes and its related adverse long-term complications (Wang et al. (2018). The study population's age indicated a high perceived susceptibility to Type 2 diabetes (first construct of the HBM). No previously published studies had explored the knowledge, attitudes, and beliefs of this population of interest about Type 2 diabetes. In like manner, no previously published research had also tried to establish this population's health education needs about Type 2 diabetes. The study's findings extensively explored the knowledge, attitudes, and beliefs of this population about Type 2 diabetes. This was the basis for confirming previous studies' findings and extending knowledge, especially on this population's health education needs.

Cho et al. (2018) estimated that over 451 million people between 18 to 99 years of age lived with Type 2 diabetes worldwide in 2017. This estimate, which is expected to reach 629 million in 2045, will predominantly be made up of people aged between 65 and 99 (Cho et al. (2018). The current study population is within this age bracket of vulnerability to Type 2 diabetes. Ninety percent of the respondents in the present study were unaware they were living with Type 2 diabetes. These respondents became aware they had Type 2 diabetes when they went to medical facilities to be treated for other ailments. This lack of knowledge confirmed previous research finding that a lack of knowledge and a long period of undiagnosed diabetes contributed highly to the escalating

negative health consequences of Type 2 diabetes (Badedi et al., 2015). Furthermore, it amplified the finding by Salas et al. (2016) that late diagnosis for Type 2 diabetes increased the chances of adverse long-term health complications for adults living with the disease.

The findings showed that 100% of the respondents could not mention one or more Type 2 diabetes causes. Also, ninety percent could not answer when asked about other negative long-term health consequences of Type 2 diabetes. Furthermore, 90% of the respondents did not know the impact of Type 2 diabetes on wound healing. One of the most significant negative consequences of Type 2 diabetes is that it causes delayed wound healing, contributing to amputations on people living with the disease (Geiss, Hora, Albright, Rolka, & Gregg, 2019. Recent research findings in the United States showed that there had been an increase in lower limb amputations in recent years resulting from the long-term consequences of Type 2 diabetes (Geiss et al., 2019).

This result showed the respondents' absolute lack of knowledge about Type 2 diabetes. This also confirms the findings of Alwan et al. (2017) that a lack of awareness about diabetes mellitus and its complications was prevalent amongst adults living with Type 2 diabetes.

Only 40% of the respondents had been exposed to any form of education about Type 2 diabetes. This situation negatively affected their ability to practice diabetes self-care behaviors that could have improved their health outcomes. Tachanivate et al. (2019) found that DSME enhanced diabetes knowledge and promoted positive diabetes self-care behaviors. Ninety percent of the study respondents did not know that blood sugar levels

needed to be checked and recorded daily for effective monitoring. Only 50 % of the respondents had glucometers for checking their blood sugar levels, and only 10% checked blood sugar regularly. This new finding undermined a critical aspect of diabetes self-care. Daily blood sugar monitoring is crucial to diabetes management and improved health outcomes for people living with Type 2 diabetes. Badedi et al. (2015) established that patient knowledge in diabetes self-care enhanced self-care behaviors and lowered HbA1c levels for people living with Type 2 diabetes.

Strict adherence to medication instruction is an essential aspect of diabetes care. The findings of the study showed that only 20% of the respondents kept to the medication regimen. The other 80% could not keep the medication regimen because they could not afford to purchase their prescriptions. Therefore, they could not implement any helpful self-care medication practice as the drugs were not readily available. Such irregular medication administration could not support any meaningful blood sugar control practice. Adequate blood sugar control requires strict adherence to medications and other diabetes care plans. This result supported earlier finding by Salas et al. (2016) that inadequate access to healthcare services due to financial constraints affected diabetes care and contributed to adverse long-term health consequences of people living with diabetes.

The shock, unhappiness, frustration, and sadness experienced by all the respondents on learning of their diagnosis the first was noteworthy. Such shocking revelations could impact how they managed the ailment going forward as it could have affected both their emotional and psychological response to the disease. The respondents' unpreparedness to face the extra financial burden accompanying this disease due to the

non-payment of their pensions presented an additional dilemma. The state and federal governments' inability to pay the respondents outstanding pensions ranging from 24 to 36 months exposed them to financial insecurity and constraints, making it difficult for them to procure their prescription drugs. This economic insecurity due to irregular payment of pensions, which predisposed the respondents to the first construct of the HBM (perceived susceptibility), was a significant reason for exacerbating the adverse effects of Type 2 diabetes on respondents. Therefore, this finding extended knowledge of the increasing prevalence of Type 2 diabetes amongst this group under study. Furthermore, it shed light on creating effective management of Type 2 diabetes amongst this vulnerable group.

All respondents were unaware of the range of long-term health consequences of Type 2 diabetes. Only 40% of the respondents had ever received any education about Type 2 diabetes. This high level of ignorance about Type 2 diabetes amongst the respondents contributed to the escalating prevalence and adverse health consequences amongst this population. This result confirmed the finding by Amadi et al. (2018) that lack of knowledge and inadequate health education contributed to increasing the negative health consequences of Type 2 diabetes. This perceived severity predisposed the respondents to the second construct of the HBM. This second HBM construct was evidenced by the fact that the respondents' disease condition resulted in blurry vision, frequent urination, erectile dysfunction, and other health-related long-term complications of Type 2 diabetes.

Furthermore, only one (10%) of the respondents had ever read food labels when making food choices. This respondent had family members who helped him in reading

the food labels. This result supported earlier finding by Wolde et al. (2017) that family members with higher education levels had a better understanding that promotes good diabetes care. Food labels serve as an essential guide in making educated food choices. Non-reading of food labels is a fundamentally flawed situation in diabetes care. Making educated food choices is crucial in adhering to foods that support blood sugar control because non-compliance with diet instructions contribute to poor glycemic control (Badedi et al., 2015).

The study showed that all the respondents had family members who assisted them in diabetes care. Family support is a crucial aspect of diabetes care because adult patients living with Type 2 diabetes experience improved health outcomes when family and friends attend to their changing needs (Rosland et al., 2018. Therefore, this perceived benefit (third construct of the HBM) to diabetes self-care gets more difficult as people advance in age, and that is when the need for family support plays a vital role. This third construct of the HBM applies here. It amplified the need for enhanced healthcare support, increased family and social support, improved access to better care, and improved health outcomes for this vulnerable population. The population of interest in this study fell within this population group of 60 years and older, and the data from the study findings indicated the need for family support. One of the most challenging aspects of healthcare practice by older people living with Type 2 diabetes is adjusting to the conditions created by this disease (Withnall, 2017). The result of this study supported previous research finding that healthy family and social support help adults living with Type 2 diabetes to achieve improvement in glycemic control and better health outcomes (Osuji et al., 2018).

All respondents did not have access to community support and recreational facilities to manage their diabetic condition. The lack of community support does not augur well for diabetes care. Extensive social support and community involvement promotes diabetes management, and communities are encouraged to identify and develop resources that support people living with Type 2 diabetes (CDC, 2019). Overcoming the challenges of lack of access to and need for appropriate financial, social, and community support falls within the fourth construct of the HBM (perceived barriers). The study results amplified previous research findings by Joeson et al. (2016) that low social support hurt the quality of life of people living with Type 2 diabetes. As evidenced by the study findings, the lack of social support increased the challenges of perceived barriers in managing Type 2 diabetes. It also created a high emotional burden for these respondents who were living with Type 2 diabetes.

Ninety percent of the respondents had one or more spiritual or cultural beliefs about Type 2 diabetes. Forty percent believed that Type 2 diabetes could be cured by consuming herbal medications. The belief in traditional medicines' efficacy impacted full acceptance of and adherence to modern health education and diabetes care practices. This result supported earlier finding by Adejumo et al. (2015) that cultural beliefs promoted a high level of patronage for traditional medicines. This cues to action (fifth construct of the HBM) required concerted efforts to dispel the misconceptions about Type 2 diabetes resulting from cultural beliefs and to improve knowledge and awareness about the disease. Impacting knowledge of Type 2 diabetes's long-term consequences through actions will empower adults living with Type 2 diabetes to seek necessary help and

support. It will also improve their knowledge of self-care behaviors. This is important because traditional, cultural, and religious beliefs about health issues impact the faith, belief, and acceptance of modern medical practices by people living with Type 2 diabetes (Adeo et al., 2015). A response that exemplified a strong cultural allegiance to traditional beliefs about diabetes's long-term consequences was that coconut water could neutralize the adverse effects of high blood sugar levels on people living with Type 2 diabetes. This belief, which had no scientific basis, amplified the respondents' adherence to traditional medicine rather than trust modern diabetes care practices. Giacinto et al. (2015) identified that cultural and religious beliefs limited the adaptation to modern lifestyles and acceptance of current medications for the prevention, control, and treatment of Type 2 diabetes.

The study's data revealed that only 10% of the respondent belonged to a diabetes care group. Therefore, it was evident from this data that the respondents did not have access to the advantages that people living with Type 2 diabetes will enjoy by belonging to such groups. Diabetes care groups provide educational empowerment and self-care support. A previous study by Withnall (2017) highlighted why people newly diagnosed with Type 2 diabetes need to join diabetes care groups. These diabetes care groups provide opportunities for people living with diabetes to learn how to accept their health situation and get used to their self-care responsibilities (Withnall, 2017). They also have access to learning new developments regarding this ailment and acquiring new knowledge through interactions with people who have been living with the disease. This self-efficacy (sixth construct of the HBM) will build self-confidence in the respondents'

ability to self-manage their diabetic situation. Furthermore, it will create access to needed care and support and motivate them to seek help. Self-efficacy will also empower them to acquire health education through networking and reap the benefits of belonging to diabetes care groups.

Limitations of the Study

I originally planned to use one-on-one interviews, followed with a focus group interview to collect the study's data. The onset of the COVID-19 pandemic made it impossible to hold one-on-one interviews or focus group sessions with the respondents. Therefore, the switch to individual telephone interviews for data collection was approved to avoid exposing the respondents to possible COVID-19 viral infection. The new data collection method limited the possibility of personal interactions with the respondents. It also limited my ability to follow up with questions that could have arisen from body language signals or unspoken words that could have been identified during one-on-one interviews. Such follow-up questions could have increased the depth of the interview. Furthermore, this study's data excluded other secondary sources of data, meta-analysis, and observations as data collection was limited to only individual telephone interviews. However, this limitation did not dilute the quality of data collected for the study.

I used a purposive convenient sampling method to select respondents for this study. This sampling method did not allow every member of the population of interest in the study to be chosen. Although this was a limitation, it provided the best avenue to reach the respondents in the study. Furthermore, the sample population was limited to only registered members of Partner Organization C. However, the findings of the study

are generalizable to other pensioners in Abia State of Nigeria. This is because the larger population of retirees in Nigeria has the same demographic characteristics as the study population.

I also did not have the opportunity to choose the most convenient interview location as I originally planned. I admonished respondents to identify places for the interview, which were private and quiet in their homes. Although I assumed this advice was complied with, I did not have the opportunity of verifying that the interview venues were private and convenient as desired. However, there were no distractions or intrusions during the individual telephone interviews that affected collecting the data.

The respondents in the study were retirees who may no longer have been active in their daily activities. Their possible low level of desire to participate in research activities could have been a limitation during recruitment. The recruitment process I conducted with the help of Partner Organization C, to which they were members, could have eliminated this possible challenge. Furthermore, the respondents were 60 years and older and presented potential physical and health challenges of sitting down for hours during the individual telephone interviews. Although the personal telephone interviews had the limitation of lack of face-to-face observation, the average interview session was 33 minutes and 38 seconds. This time frame did not present any fatigue challenge as envisaged. Also, I overcame the limitation of the elderly respondents' ability to fully understand the questions and respond with clear and precise answers by repeating the questions to help them comprehend before responding. The limitation of memory loss

that was initially envisaged for the elderly participants was not observable during the individual telephone interviews.

Recommendations

Recommendations for Future Studies

I propose four recommendations for future research. First, one interesting finding of the study was that 30% of the respondents complained that they experienced constant malaria attacks since their Type 2 diabetes diagnosis. These respondents attributed their escalating blood sugar levels to constant malarial attacks. A perusal of the literature review did not identify any information where increased blood sugar levels had any link with malaria attacks. No previous literature established any relationship between malaria and Type 2 diabetes. Therefore, I recommend that researchers do future studies to identify if a causal relationship exists between high blood sugar levels and malaria.

Second, the study's data indicated that herbal medications for treating Type 2 diabetes were common in the population of interest and similar communities. Previous research findings by Ogundele et al. (2016). indicated that such outdated cultural and traditional beliefs exacerbated the prevalence of Type 2 diabetes and its long-term complications. Therefore, I recommend that additional scientific investigations be carried out to identify the health education content/interventions that may help prevent adults living with Type 2 diabetes in culturally sensitive environments like Nigeria from the continued use of herbal medications.

The study data showed that only 20% of the respondents kept to recommended education on medication instructions. Responses revealed that 80% of the respondents

could not adhere to health education to keep to recommended medication instructions. Therefore, I recommend that a study be conducted to determine the factors responsible for nonadherence to medication health education among the Abia State Chapter of the Nigeria Union of Pensioners living with Type 2 diabetes. Understanding why pensioners do not adhere to medication instructions may help health educators refine strategies focused on adherence.

This study was conducted at the peak of the COVID-19 pandemic. The pandemic did alter the way of life of the respondents in the study entirely. It also necessitated a complete change in the methodology for collecting data for the research. Presumably, the pandemic could have affected the ability of the respondents to manage their diabetic condition. This is especially true because this COVID-19 pandemic has impeded the respondents' access to regular diabetes screening and free medical treatment, which were available to them. Therefore, I recommend that a study be conducted to determine how the COVID-19 pandemic affected Type 2 diabetes management among the Abia State Chapter of the Nigeria Union of Pensioners.

Recommendations for Future Actions

The study identified many barriers and challenges affecting the study respondents' knowledge, attitudes, and beliefs about Type 2 diabetes. The study revealed the need to empower adults living with Type 2 diabetes with increased awareness, adequate diabetes education, enhanced diabetes-related support, and better self-care practices. The findings present an opportunity for health educators to collaborate with diabetes healthcare delivery organizations in Nigeria to provide targeted services that have social change

implications at the individual and societal levels. Health educators and providers of diabetes care should create outreach to people living with Type 2 diabetes. The outreach, which could be through establishing diabetes care groups, will be an avenue for providing care and support and bridging the gap in knowledge currently existing amongst adults living with Type 2 diabetes. Such outreach will also help to create positive attitudes towards their diabetes self-care. It will be necessary to incorporate diabetes care personnel working with the Ministries of Health at the state level in this outreach. The local government's healthcare teams will attract government support and provide credibility to the group's activities.

Health educators and diabetes healthcare providers should also create individualized diabetes care plans for people living with Type 2 diabetes in line with their social, economic, and health circumstances. This should be a formal healthcare policy. A diabetes care plan is a critical aspect of diabetes management that enhances self-care and improves health outcomes. Effective diabetes care plans and decisions help set the goals for diabetes management. Such a strategy will promote knowledge about the disease, ensure strict adherence to prescribed medications, promote the ability to make educated lifestyle choices, and help them engage in guided daily physical activities.

Furthermore, I recommend that diabetes health educators and healthcare providers ensure everyone living with Type 2 diabetes has a glucometer. This action is crucial because daily glucometer readings help people living with Type 2 diabetes know their daily blood sugar levels. It also helps them improve diabetes self-care practices and avoid foods and lifestyles that could escalate their blood sugar levels. Finally, I recommend that

health educators and diabetes healthcare providers incorporate reading and understanding of food labels as a critical requirement in diabetes care. This recommendation is important because understanding and knowing nutritional food contents are crucial to healthy living, especially for people living with diabetes whose health outcomes depend on their food choices.

Implications

The findings of the study have social change implications at the individual and societal/policy levels. My decision to explore the knowledge, attitudes, and beliefs of the population of interest in the study was rooted in my passion for understanding issues that affect the respondents' individual self-care activities regarding Type 2 diabetes. The study is useful for implementing measures to help vulnerable individuals adopt positive attitudes towards Type 2 diabetes. This will help them to make educated lifestyle choices that will improve societal health.

The study's findings will assist in overcoming individual deficiencies in diabetes knowledge and enhancing personal diabetes awareness. Improved knowledge and increased understanding of Type 2 diabetes by individuals will create positive social change by reducing the multiple adverse long-term health complications of Type 2 diabetes. The study's findings will play an important social change role by empowering people living with Type 2 diabetes to develop positive attitudes and beliefs about Type 2 diabetes. Such positive behaviors are important in achieving improved health outcomes.

I have identified the health education needs in the study that would address the inadequate knowledge these respondents have about Type 2 diabetes. The

recommendations will help people at risk of Type 2 diabetes to adopt individual healthier lifestyles. Such healthier lifestyles will create changes in population health outcomes. The health education contents I have recommended in the study will also disabuse people living with Type 2 diabetes of the erroneous beliefs in traditional medicines' efficacy. It will encourage them to embrace modern medications for the control of high blood sugar levels. The study's findings will also amplify the need for people living with Type 2 diabetes to seek information on foods' nutritional contents based on food labels. This recommended individual-level empowerment will help them make educated food choices, avoid foods that increase their blood sugar, and improve their health situation. The individual health education interventions based on the study findings will assist people living with Type 2 diabetes to imbibe positive health behaviors, which will improve overall health in society.

The study findings highlighted that no respondent enjoyed any community support, and none had recreational facilities in the communities in which they reside. Such facilities promote healthier lifestyles and support the active aging process for adults living with Type 2 diabetes. It is hoped that policymakers in the concerned communities will provide a built-in environment and recreational facilities that will promote healthier living. Such policy changes should impact the overall health status of the society positively. Healthier lifestyles will promote efforts at preventing the early onset of complications of Type 2 diabetes. Prevention of Type 2 diabetes's early-onset complications will reduce the number of Type 2 diabetes-related hospitalizations and diabetes-related adverse health outcomes in society.

The study unearthed the grave injustice of non-payment of pension arrears being meted to retirees in Nigeria. This financial trauma has been mostly responsible for their escalating health challenges, including the inability to provide the self-care which type 2 diabetes requires. By highlighting the grave injustice of non-payment of arrears of pensions for periods ranging from 24 to 36 months, the findings will galvanize a movement aimed at redressing the situation. Pension payment is the financial entitlement of these retirees, and it is their only source of livelihood. The findings will pressure authorities to make policy changes and offset the backlog of pension arrears. Such policy changes will improve the population's financial situation, help them procure their prescribed medications, and improve their health outcomes.

Conclusion

This study was conducted to explore the respondents' knowledge, attitudes, and beliefs about Type 2 diabetes. The study also identified the key themes impacting the respondents' Type 2 diabetes-self-management activities. The study has revealed that one of the critical factors exacerbating the negative long-term consequences of Type 2 diabetes on the population of interest was their inability to provide the Type 2 diabetes medications they needed. The situation was due to 24 to 36 months of unpaid pension arrears by Nigeria's state and federal governments. This financial trauma has put the retirees living with Type 2 diabetes, who are susceptible to the disease's adverse health effects due to their age, in a more precarious health situation.

I discovered that the respondents' general feeling was that they had been abandoned to their fate by the same governments they served in their productive lifetime.

This singular factor created a negative attitude toward diabetes self-care. The financial trauma the group is experiencing must be reversed to support their active aging process and provide them a new lease of life that will create positive social change. The state and federal governments in Nigeria should redress the lag in this social responsibility. The governments should also address the lack of community support and the non-availability of recreational facilities and creating an enabling environment to improve blood sugar counts. Although Type 2 diabetes is a self-care ailment, governmental and community support plays an essential role in helping adults living with Type 2 diabetes to manage the disease condition and engage in active aging.

Type 2 diabetes is a disease that requires the ability to provide self-care, especially blood sugar monitoring and the making of educated choices in daily life activities. The lack of knowledge about Type 2 diabetes and its long-term complications, which I discovered in the study, should be addressed with the seriousness it deserves. This will improve the population's ability to provide the needed essential self-care services. In addition, the non-ownership and use of glucometers in monitoring blood sugar levels must be addressed. This will help the respondents, and every adult living with Type 2 diabetes, to make efforts at lowering blood sugar counts. The population of interest and all other adults living with Type 2 diabetes must be admonished to inculcate the habit of making educated food choices by reading food labels in their daily routines.

The recommendations I have provided are crucial to reducing the long-term complications of Type 2 diabetes. This is the only way to improve the health outcomes of the population of interest and other adults living with Type 2 diabetes. The improvement

in health resulting from the study's recommendations is critical in injecting positive social change into the population and society at large. The population's health education needs, which I have recommended in the study, will be the foundation for developing and adopting targeted health interventions for improved health outcomes for adults living with Type 2 diabetes. The findings of the study answered the five RQs I explored in the research.

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Appendix A: Flyer for Participant Recruitment

FLYER

Are you a pensioner? Are you diabetic?

Then join me as I explore the knowledge, attitudes, and beliefs of Nigerian pensioners about Type 2 diabetes. I am a student at Walden University conducting this study for my PhD dissertation.

Who can participate?

- Abia state pensioners living with Type 2 diabetes who reside in and around Umuahia.
- Pensioners who are members of the Abia State Chapter of the Nigerian Union of Pensioners who attend diabetes screening program.
- ***What will you do during the study?***
- I will ask you about your experiences and challenges with Type 2 diabetes and its complications.
- I will ask you about your knowledge and beliefs about Type 2 diabetes.
- I will ask you how you are managing Type 2 diabetes.
- I will ask you what health access you have in managing the disease.
- I will request you to tell me who is helping you in managing Type 2 diabetes.
- I will ask you to describe how diabetes affects your life.

How to contact me?

- Contact Nnawuihe Ugo Nwosu.

Date*:* To be agreed with participants after recruitment

Time: To be agreed with participants

Mode: Individual telephone interviews

Appendix B: Data Collection Instrument

Interview Questions

Good day. My name is Ugo Nwosu, and I would like to welcome you to the interview. I am grateful you found time to come to discuss this vital topic. The purpose of this interview is to explore the knowledge, attitudes, and beliefs about Type 2 diabetes among members of Abia State Chapter of the Nigerian Union of Pensioners. Therefore, your contributions as a member of this association will be invaluable. Let us begin with your information and pre-retirement life.

1a). May I know your gender, age, and educational level?

b). *Follow up.* How has life been since your retirement? (Opening question to get the participant to relax)'

c). *Follow-up:* Are there other retirement experiences you would like to tell me?

2a). When did you know, or when were you told that you had Type 2 diabetes?

b). *Follow up:* Can you tell me the experience of how you felt when you were told that you had Type 2 diabetes?

c). *Follow up*: Are there other experiences following your diagnosis you may want to tell me?

d). *Follow up*: What has been the most challenging part of this experience since your diagnosis?

3a**).** Has anyone given you any education about Type 2 diabetes?

b). *Follow up:* Can tell me what education you have been given about type 2 diabetes?

c**).** *Follow up:* Is there any other information or education you remember about this disease you want to tell me?

4a). Can you tell me your experience and difficulties with Type 2 diabetes since your retirement?

b). *Follow up:* What are the major steps you are taking to manage your blood sugar, and what has gone well with your diabetes management?

c). *Follow up:* Can you tell me the major problems and challenges you face in managing your diabetes?

5a). Are there other family members helping you in managing your diabetes?

b). *Follow up:* Can you tell me which of your family members are helping you in managing your diabetes?

c). *Follow up:* What do these family members do to help you manage your diabetes?

6a). Are there any roles the community members where you live are playing in assisting you in managing your diabetes?

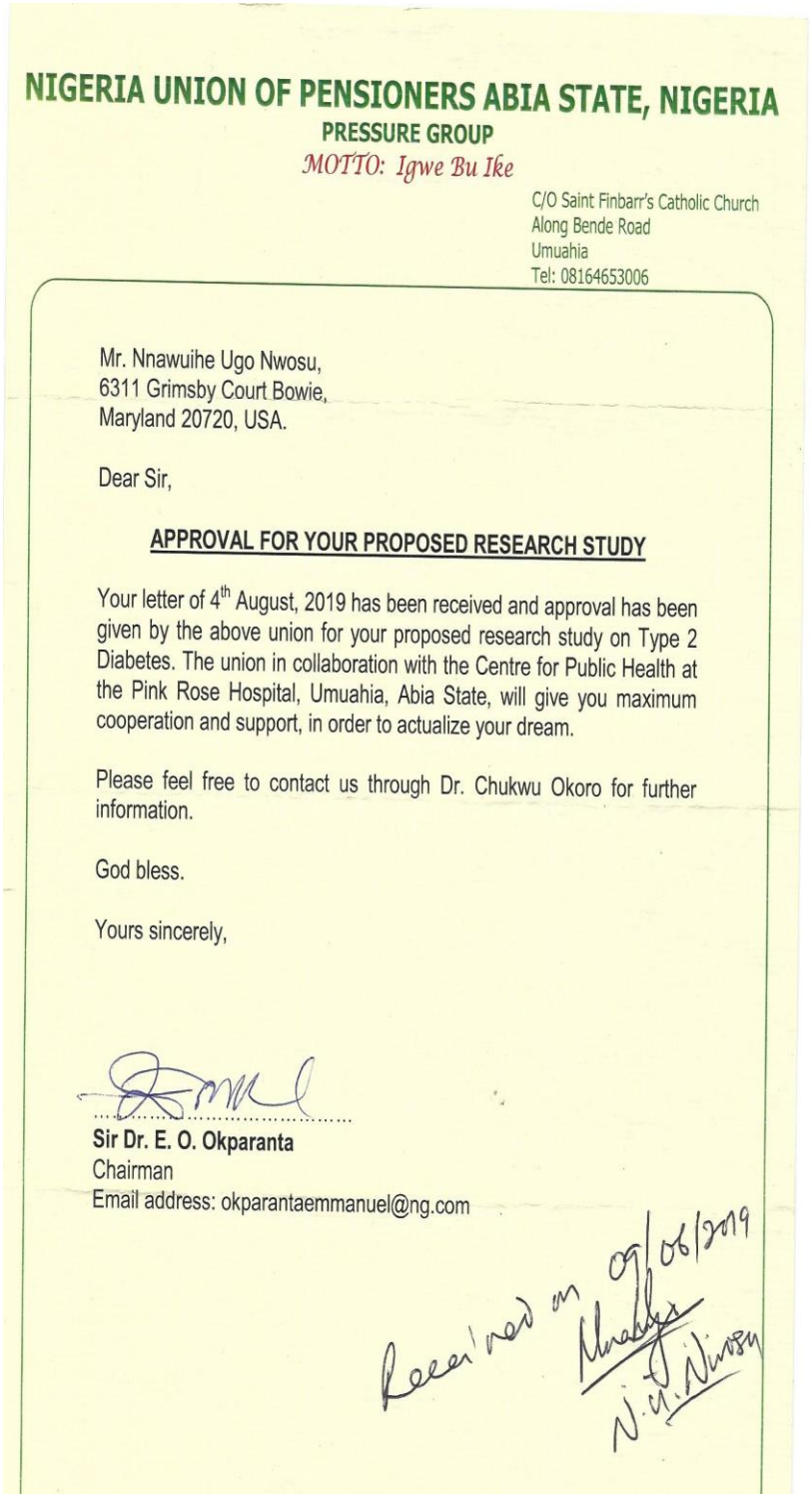
b). *Follow up:* Can you tell me with what support or resources you have access to in your community in managing your diabetes?

c). *Follow up:* Do you have more information to tell me on what resources you know are available to help you to manage diabetes?

7a). From your understanding, what do you think is the cause of Type 2 diabetes?

b). *Follow up:* What do you believe can be contributing more to this disease?
8a) Are there any things you know you can tell me about how to prevent or reduce the risk of developing diabetes?
b). *Follow up.* Are there any other health consequences diabetes has caused you?
c). *Follow up.* Are there any other long-term consequences of diabetes that you know?
d). *Follow up:* What can you tell me can be done to cure diabetes?
9 a). Are there anything else about your diagnosis and the management of Type 2 diabetes you may want to tell me?
b). *Follow up.* Are there any other things you would like to discuss about diabetes and your experience with the disease?

Appendix C: Letters of Commitment



NIGERIA UNION OF PENSIONERS ABIA STATE, NIGERIA

PRESSURE GROUP

MOTTO: Igwe Bu Ike

C/O Saint Finbarr's Catholic Church
Along Bende Road
Umuahia
Tel: 08164653006

Mr. Nnawuihe Ugo Nwosu,
6311 Grimsby Court Bowie,
Maryland 20720, USA.

Dear Sir,

APPROVAL FOR YOUR PROPOSED RESEARCH STUDY

Your letter of 4th August, 2019 has been received and approval has been given by the above union for your proposed research study on Type 2 Diabetes. The union in collaboration with the Centre for Public Health at the Pink Rose Hospital, Umuahia, Abia State, will give you maximum cooperation and support, in order to actualize your dream.

Please feel free to contact us through Dr. Chukwu Okoro for further information.

God bless.

Yours sincerely,

.....

Sir Dr. E. O. Okparanta
Chairman
Email address: okparantaemmanuel@ng.com

Received on 09/08/2019

PINK ROSE HOSPITAL LTD

No. 4 Enyiukwu Road Extension/172 Aba Road (Stapol Junction), Umuahia, Abia State

08037446884

cfineatlantic@yahoo.co.uk

Our Ref: PRH/AP/716/142/23 *Your Ref:*..... *Date:* 4th September, 2019

Nnawuihe Ugo Nwosu

6311 Grimsby Court,

Bowie, Maryland 20720

USA

Dear Sir,

RE: APPROVAL OF PROPOSED RESEARCH STUDY AMONG THE IDENTIFIED DIABETICS THAT ATTENDS OUR REGULAR DIABETIC SCREENING CLINIC

This is to convey the approval of your request to conduct a research on the identified diabetics from CENTRE FOR PUBLIC HEALTH regular diabetic screening program in PINK ROSE HOSPITALS

The ethical guideline will be in line with the Health Research Ethic Committee of Abia State, Nigeria.

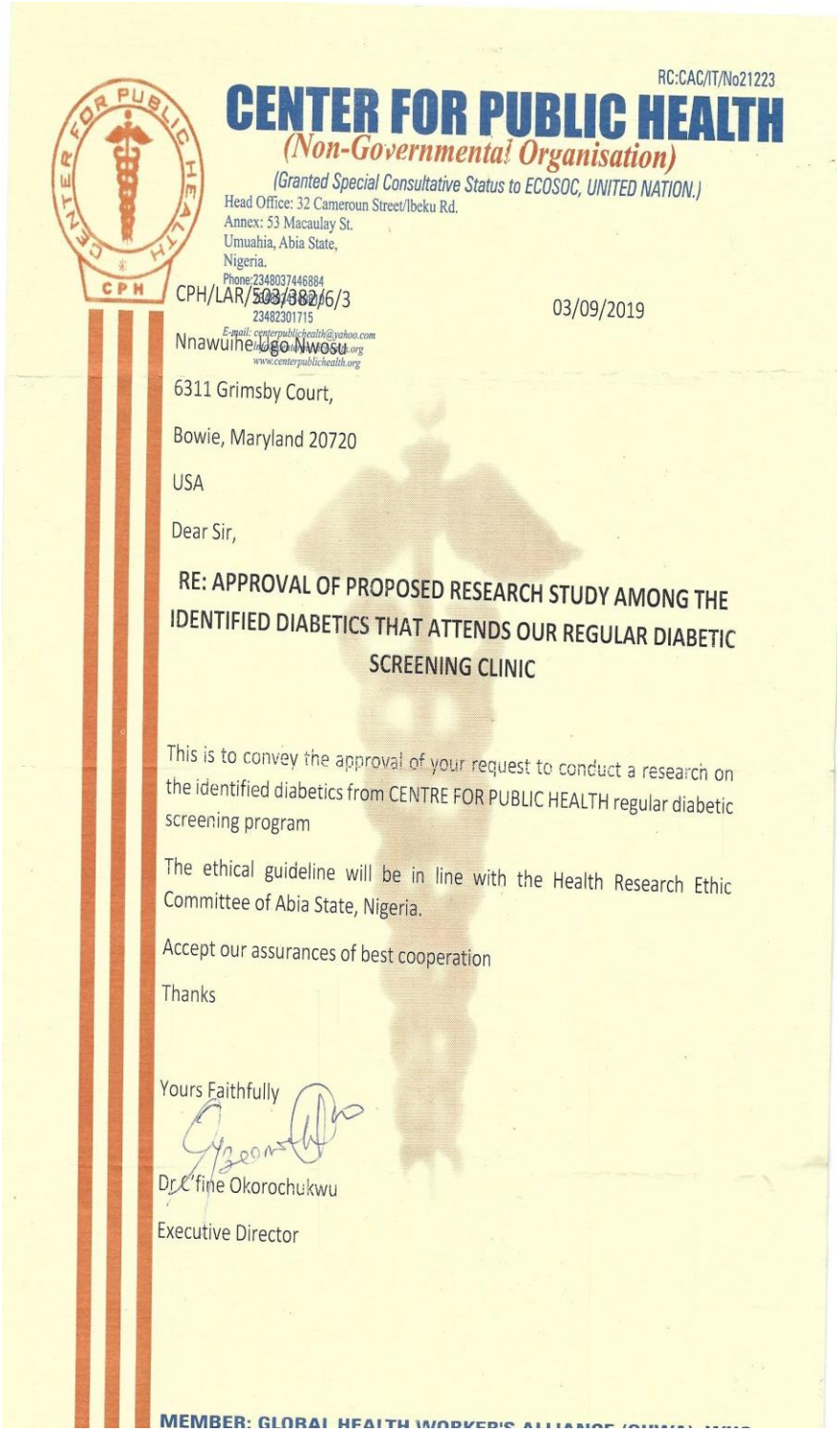
Accept our assurances of best cooperation

Thanks

Yours Faithfully

Mr John Ochi

Clinical Director



RC:CAC/IT/No21223

CENTER FOR PUBLIC HEALTH

(Non-Governmental Organisation)

(Granted Special Consultative Status to ECOSOC, UNITED NATION.)

Head Office: 32 Cameroun Street/Ibeku Rd.
Annex: 53 Macaulay St.
Umuahia, Abia State,
Nigeria.
Phone:2348037446884
23482301715
E-mail: centerpublichealth@yahoo.com
www.centerpublichealth.org

CPH/LAR/503/382/6/3

03/09/2019

Nnawuihe Ugo Nwosu

6311 Grimsby Court,

Bowie, Maryland 20720

USA

Dear Sir,

RE: APPROVAL OF PROPOSED RESEARCH STUDY AMONG THE IDENTIFIED DIABETICS THAT ATTENDS OUR REGULAR DIABETIC SCREENING CLINIC

This is to convey the approval of your request to conduct a research on the identified diabetics from CENTRE FOR PUBLIC HEALTH regular diabetic screening program

The ethical guideline will be in line with the Health Research Ethic Committee of Abia State, Nigeria.

Accept our assurances of best cooperation

Thanks

Yours Faithfully

Dr C'fine Okorochukwu

Executive Director

MEMBER: GLOBAL HEALTH WORKER'S ALLIANCE (GHWA), WHO

GOVERNMENT OF ABIA STATE OF NIGERIA

Ministry of Health

P.M.B. 7215, Umuahia, Abia State

Our Ref: AB/MH/AD/904/T.177

Your Ref:.....

Date: 27th August, 2019.

Health Research Ethics Committee

c/o Department of Public Health/Disease Control

234 (0) 803 537 9453.

Notice of Full Approval

Re: Exploring Knowledge, Attitudes and Beliefs of Nigerian Pensioners about Type 2 Diadetes

Name of Researcher: **Nnawuihe Ugo Nwosu**

Address: 6311 Grimsby Court

Bowie, Maryland 20720, USA.

Date Application received: 19th August, 2019.

Date Approval given: 26th August, 2019.

NOTIFICATION OF FULL APPROVAL FOR RESEARCH

This is to inform you that the research described in the submitted protocol titled as above has been reviewed and given full approval by the Health Research Ethics Committee domiciled in the Abia State Ministry of Health.

The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code.

Please note that the Committee may pay compliance visit(s) to the site of your study without prior notice.

Finally, a copy of the completed work should be deposited in our library.

Best wishes.

Dr OnyechereNwokocha

Chairman, HREC.

Appendix D: Debriefing Statement

Debriefing Statement

Study Title: The title of the study we just completed is "Exploring Knowledge, Attitudes, and Beliefs of Nigerian Pensioners about Type 2 Diabetes."

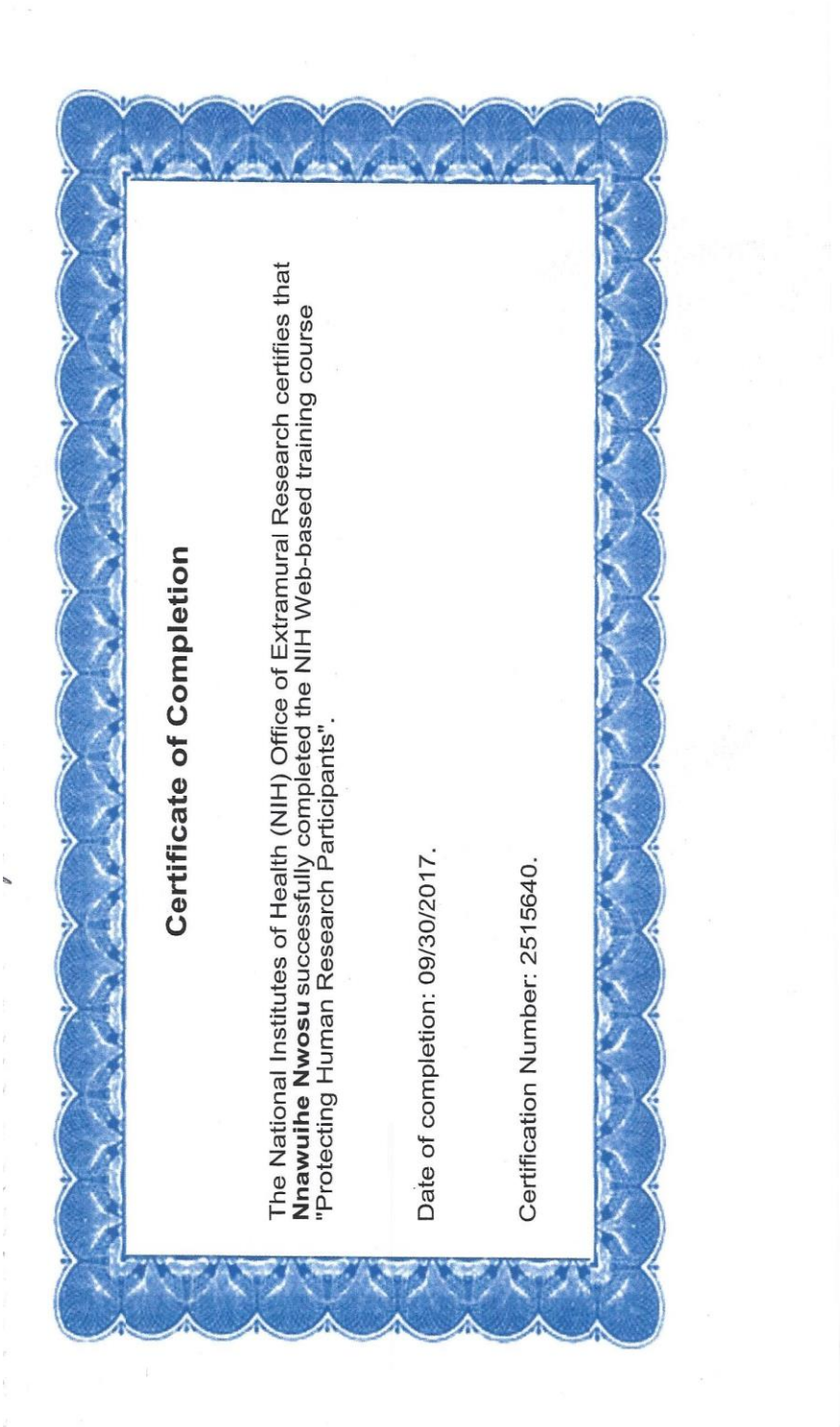
My name is Nnawuihe Ugo Nwosu and my phone numbers are [redacted] and [redacted]. I want to thank you for participating in the study which we did to evaluate how the knowledge, attitudes, and beliefs of pensioners in Umuahia impact their understanding of the causes, symptoms, control, and prevention of the long-term consequences of Type 2 diabetes.

I want to assure you there was no deception involved in the study as all essential elements were explained at the beginning. However, anyone who has a change of mind now and wishes to discontinue participation by having his or her perspectives withdrawn from the recordings is free to do so. The wish will be honored, and such recordings will not be used in analyzing, interpreting, and discussing the findings of this study. The study results will be available upon request and anyone who wishes to obtain more information on the study can reach the researcher at [redacted] or [redacted]. In addition, anyone who feels any distress after this study should reach out to [redacted] on [redacted] for help. Once again, that you for being part of this study.

Nnawuihe Ugo Nwosu

(Researcher)

Appendix E: Study-Related Certifications



Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Nnawuihe Nwosu** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 09/30/2017.

Certification Number: 2515640.

Certificate of Completion

This is to certify that

Nnawuihe Nwosu

has been awarded this certificate for successful completion of:

Customer Service in Public Health - Part I (On-Demand Webcast)

Hours of Instruction: 2.00 *Completed On:* March 13, 2017

MICHIGAN
Public Health Training Center

SCHOOL OF PUBLIC HEALTH
OFFICE OF PUBLIC HEALTH PRACTICE
UNIVERSITY OF MICHIGAN

Certificate of Completion

This is to certify that

Nnawuihe Nwosu

has been awarded this certificate for successful completion of:

Customer Service in Public Health - Part II (On-Demand Webcast)

Hours of Instruction: 1.00 *Completed On:* March 30, 2017

MICHIGAN
Public Health Training Center

SCHOOL OF PUBLIC HEALTH
OFFICE OF PUBLIC HEALTH PRACTICE
UNIVERSITY OF MICHIGAN