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Perception of Pre-Existing DM2 Management Among Pregnant Asian Indian Immigrants During COVID-19

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This is to certify that the doctoral study by

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Walden University
2024

Abstract

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MS, West Coast University, 2021

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

Type 2 diabetes is a chronic disease that exerts a significant burden among communities by increasing healthcare costs, reducing productivity, higher rates for premature mortality, and tangible socioeconomic burden, which overall reduces the quality of life. The purpose of the study was to explore the perception of pregnant Asian Indian immigrants regarding diabetes self-management strategies during the COVID-19 pandemic. Five women were recruited via purposive sampling from Facebook groups. Data were collected via individual interviews using Facebook groups. The health belief model was used to help understand and interpret the findings. Clarke and Braun's thematic analysis method was used to identify patterns and report themes through data of the qualitative data. The MAXQDA thematic analysis coding software was used to code and categorize the qualitative data by identifying patterns and themes of the participant interview transcripts. Major findings include: participants experienced challenges to diabetes management in general and during COVID-19; depression and anxiety negatively affected diabetes management during COVID-19; culture negatively affected response to diabetes management during COVID-19; and nuclear family structures positively affected response to diabetes management during COVID-19. Implications for positive social change include identifying gaps in diabetes self-management among the Asian Indian population and may enhance social change by educating public health professionals in the use of culturally competent approaches to promote more positive lifestyle changes among pregnant Asian Indians with pre-existing diabetes. This can result in improved quality of life for those with Type 2 diabetes.

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Section 1: Foundation of the Study and Literature Review

Introduction

Diabetes is a chronic health condition that is the eighth-leading cause of death in the United States, estimating a total of $327 billion in medical wages (Centers for Disease Control and Prevention [CDC], 2023). According to the National Diabetes Statistic Report, 37.3 million individuals in the United States have diabetes, while only 28.7 million are diagnosed with diabetes (Centers for Disease Control and Prevention [CDC], 2022). The prevalence rate of diagnosed and undiagnosed diabetes is observed highest among the 65-year-old age and older population and is the lowest among the 18-44 years of age population. The age-based prevalence rate is not specific to gender however it is present among the diagnosed and undiagnosed White, Black, Asian, and Hispanic population (Centers for Disease Control and Prevention [CDC], 2022). The burden of diabetes is a global trend that is tied to human suffering. The prevalence of Type 2 diabetes is worldwide and continues to increase as there are no signs of stabilization and is projected to peak at 7079 people/100,000 by 2030 (Khan et al., 2020).

Type 2 diabetes is a chronic disease that is characterized by an individual body's cells resisting the effect of insulin, resulting in high levels of sugar in the blood. Clinical symptoms of diabetes include frequent urination, blurry visions, starvation, numbness in hands and feet, and dry skin (Centers for Disease Control and Prevention [CDC], 2023). This type of diabetes has health outcomes such as atherosclerosis, retinopathy, neuropathy, foot damage, hearing impairment, and heart disease which are life-

threatening complications. Type 2 diabetes is the most common type of diabetes and affects all ages, genders, and ethnicities (Centers for Disease Control and Prevention [CDC], 2022). The public health impact of diabetes inflicts a burden on communities through higher medical expenses, decrease in productivity, increase in premature mortality, and palpable costs which overall reduce quality of life (American Diabetes Association, 2018). Diabetes care contributes to 1 in 4 United States dollars where individuals with diabetes have medical expenditures that are 2.3 times higher than individuals without the disease (American Diabetes Association, 2018). Diagnosed diabetes has an estimated costs of $237 billion in direct medical cost and $90 in billion costs associated with a reduction in productivity. The lost productivity among diagnosed individuals stems from difficulty working and loss in the labor force due to premature death by diabetes (American Diabetes Association, 2018). As the diagnosis of diabetes continues to rise across the globe, the growing economic cost is a substantial financial burden that has continued to increase the cost of living per person with diabetes. In Section 1, I will expand upon the background of diabetes, the prevalence of diabetes among the Asian Indian population and pregnant women, Asian Indian understanding and beliefs, and the impact of COVID-19 on self-management. I will also present the problem statement, purpose, research question, and theoretical framework for the study. Finally, I will convey the significance of my research.

Background

The supporting literature provides evidence on how Asian Indians have a lower understanding of diabetes as a disease course which ultimately lowers understanding and

application of self-management for the disease (Ledford et al., 2019). According to Lee & Yeh (2018), the prevalence rate of Asian Indians diagnosed with Type 2 diabetes is 9.6% when compared to their white counterparts which have a prevalence rate of 7.9%. The increase in prevalence rate is related to the inability to control diabetes and perform effective diabetes self-management. Self-management and control of the disease are significantly influenced by the community's cultural and practical beliefs (Koenig et al., 2012). Additionally, the global prevalence of pre-existing diabetes in women has been growing steadily raising concern for diabetes-related complications during pregnancy (Sushko et al., 2022). The surge in diabetes during a woman's pregnancy has led to an increase in maternal mortality by 75%. The incidence of perinatal complications during pregnancy for a diabetic woman poses a substantial risk to both the mother and children, including neonatal mortality, congenital abnormalities, and risk of stillbirth (Sushko et al., 2022). The COVID-19 pandemic introduced barriers and challenges to diabetes self-management behaviors due to factors such as limited accessibility to resources, resource shortage, and insufficient support from healthcare providers and educators (Kurian et al., 2021). Additionally, the COVID-19 pandemic's influence on staff shortage due to unemployment and self-isolation further exacerbated the lack of support for pregnant women with pre-existing diabetes, who were identified as a high-risk population due to severe COVID-19 complications (Kurian et al., 2021). While there has been existing research that explores how positive diabetes education and support will improve self-management (Azami et al., 2018), the impact of these public health programs has not directly been explored among pregnant Asian Indian immigrants during the COVID-19

pandemic. The study holds significance as it offers valuable insight into the educational support that is needed by pregnant Asian Indian immigrants in initiating health behavior changes related to diabetes self-management and self-care. The study will shed light on diabetes management activities and strategies among this targeted population, and identify any challenges they may have faced particularly during the COVID-19 pandemic. The analysis from the study will be instrumental in catering to the needs of the targeted population by contributing advancement of knowledge and education through the creation of healthcare interventions and programs (Sushko et al., 2022).

Problem Statement

Understanding the importance of self-efficacy and self-management of pre-existing diabetes by patients who are pregnant Asian Indian immigrants during the COVID-19 pandemic is essential to promote overall quality of life and health outcomes. Research findings show issues with self-management and self-care of Type 2 diabetes among pregnant women during the COVID-19 pandemic (Murphy, 2020). Issues with self-management of Type 2 diabetes for pregnant women heightened during the COVID-19 pandemic due to a restriction in food supplies, alteration to dietary habits, and procurement of anti-diabetic medications (Kamlesh, 2022). COVID-19 pandemic played a part on onsetting diabetes as it increased risk due to poor control measures, increased exposure to the virus, and increased vulnerabilities to the disease for the vulnerable population (Kamlesh, 2022). Research has had few studies that have been conducted on pregnant Asian Indian immigrants who have been diagnosed with pre-existing diabetes during the pandemic and how self-management strategies for the disease may be limited.

Specifically, immigrant pregnant women have a limitation on how they understand the risk of Type 2 diabetes and its impact on the fetus based on their perception and previous experiences with diabetes (Bagger et al, 2021). Additionally, studies show that the number of pre-existing diabetes in pregnancy is increasing rapidly and putting these women at a higher risk for congenital anomalies, stillbirth, and death of their fetus when compared to non-diabetic counterparts (Sushko et al., 2022). Diabetes-related pregnancies are associated with reduced quality of life, increased risk of cesarean section, pregnancy-induced hypertension, and preeclampsia. According to Vicks et al. (2022), there is a disproportionate risk in the Asian Indian population and the low rate of prediabetes and diabetes screening makes them a vulnerable population and proposes future studies target the Asian Indian population.

The existing research does not adequately focus on the pre-existing diabetes management strategies for pregnant Asian Indians immigrants. Many previous studies focus on gestational pregnancies and their effect on diabetes management however, few studies focus on pre-existing diabetes management among pregnant women for the targeted population (Sushko et al., 2022). Individuals who are predisposed with diabetes have two times the risk of COVID-19 mortality. Individuals who have the disease have comorbidities such as coexisting heart disease, frailty, kidney disease, and advanced age are more likely to have severe clinical outcomes of COVID-19 disease (Peric & Stulnig, 2020). Diabetes has been considered to be a risk factor for COVID-19 where individuals with diabetes have demonstrated a higher susceptibility to the disease because of an improper immune response. During the pandemic, diabetes patients were a significant

number of hospitalized COVID-19 patients (Peric & Stulnig, 2020). The number of hospitalized patients with diabetes was approximately 7.4% before the pandemic, however rose to 20% during the rise of the pandemic (Peric & Stulnig, 2020). While there have been studies showing evidence that positive education and support have improved overall diabetes and management (Azami et al., 2018; Young et al., 2020), the measurement and impact of these programs on pregnant Asian Indian immigrants have not been identified as a direct result. This is a significant research gap that needs to be addressed by conducting more studies on this topic among pregnant Asian Indian immigrants with pre-existing diabetes during the COVID-19 pandemic. Based on these research findings, I believe this issue affects pregnant immigrant Asian Indians with pre-existing diabetes during the COVID-19 pandemic.

Purpose of the Study

The purpose of this qualitative study was to explore the perception of pregnant Asian Indian immigrants regarding diabetes self-management strategies during the COVID-19 pandemic. There is a significant gap within the literature that emphasizes how the barriers of the COVID-19 pandemic such as shortage of resources, inadequate knowledge of the disease, social isolation, and lack of support impacted the implementation of proper self-management strategies among the targeted population (Kurian et al., 2021). The perspective of Asian Indian pregnant immigrants with pre-existing diabetes during the COVID-19 pandemic is important in understanding the challenges of self-management strategies under isolation circumstances. The perception of the Asian Indian population involving diabetes management during the COVID-19

pandemic is significant to reduce the disparities from diabetes among the targeted population while also creating culturally sensitive and effective healthcare programs and interventions.

Research Question

The main research question for this study is: What is the perception of pregnant Asian Indian immigrants living with pre-existing diabetes on the self-management of the disease during COVID-19?

The sub-questions are:

1. What are the lived experiences of immigrant and pregnant Asian Indians with pre-existing diabetes during the peak of the pandemic?
2. What are the cultural beliefs that may influence how pregnant Asian Indian immigrants manage their diabetes disease?

Theoretical Framework

The theoretical framework that guided my study is the health belief model. The health belief model was originated in the 1950s by Godfrey Hochbaum, Irwin Rosenstock, Howard Leventhal, and Stephen Kegeles who all worked in the U.S. Public Health Service (Health Belief Model, 2001). The health belief model was primarily created to help understand why there was limited participation in programs that were created for disease prevention strategies and screening tests for early detection. The health belief model originated from behavioral and psychological theories that mold around an individual's course of action (Health Belief Model, 2001). The health belief model predicts health-related behavior utilizing the belief patterns of the individual.

Individual perceptions, likelihood of action, and modifying factors are three categories that will be used to describe an individual's indication to undergo a healthy behavior (Health Belief Model, 2001). For example, individual perception refers to the individual's perceptions of the illness, such as the susceptibility, importance, and severity of the illness. Likelihood of action is a factor that refers to whether the individual will pursue the recommended health action based on weighing the benefits versus the barriers of the recommended health action (Health Belief Model, 2001). Modifying factors refers to the threats, demographic variables, and cues of action. These three factors combined will be usd to predict health-related behavior by looking through the individual's belief patterns. The health belief model uses cognitive variables present in health behavior to understand and predict health-related patterns (Health Belief Model, 2001). The health belief model guides health promotion of health behaviors for a target audience through six components: perceiving susceptibility, perceived severity, perceived benefits, perceived barriers, cues to actions, and self-efficacy (Lyons et al., 2022).

Perceived susceptibility is an individual's interpretation or perception of their vulnerability to diabetes and associated complications (Jones et al., 2015). Diabetes complications can include heart stroke, kidney disease, retinopathy, nerve damage, and myocardial infarction (Evan et al., 2021). A diabetic individual must understand and acknowledge the complications of diabetes and how it will influence their quality of life. An individual with pre-existing diabetes will begin to engage in health behavioral modifications to improve self-management activities if they form an understanding of one's susceptibility to diabetes and associated complications. Perceived severity is an

individual's judgment on the severity of diabetes (Jones et al., 2015). The severity of diabetes is influenced by additional medical conditions, lack of knowledge of the disease and management, and cultural beliefs. According to Swaleh and Yu (2020), the seriousness of a disease will be significantly misinterpreted with education, so diabetic patients who are not adequately educated on diabetes self-management may underestimate the severity of the disease. Perceived benefits are an individual's perception of the value of healthy behavior in reducing the severity of diabetes and associated diabetic complications (Jones et al., 2015). Perceived benefits of diabetes self-management will be underestimated without a fundamental education (Puri et al., 2020). Perceived barriers are an individual's perception of diabetes self-management and how obstacles such as internal and external factors will influence management. Barriers to diabetes self-management will include a lack of financial resources, inaccessibility to transportation, and childcare obligations (Washburn, n.d.). Cues to action are factors that trigger an individual to engage in behavior change and take action. Understanding the perception of diabetic patients and their overall goals and motivators will promote healthcare programs that target self-management practices (Khodaveisi et al., 2021). Self-efficacy is an individual's belief in accomplishing a task, which is affected by the individual's confidence and self-image (Washburn, n.d.). Diabetic patients who are in frequent communication with their healthcare providers and educators have a higher self-efficacy (Lee et al., 2019). These six components are used to predict how the health belief model will evaluate health-related actions and help explain the impact of demographic

factors on health behaviors patterns toward diabetes and associated complications, which will be altered through health promotion and education (Alagili & Bamashmous, 2021).

Nature of Study

I collected evidence and supportive literature for my Doctor in Public Health (DrPH) capstone project by reviewing literature that is relevant to the prevalence of diabetes among the Asian Indian population, diabetes self-management, diabetes education, and the impact of COVID-19 on diabetes management. I reviewed key evidence to justify how the COVID-19 pandemic influenced the management of pre-existing diabetes among pregnant Asian Indian immigrants. The approach for this DrPH capstone project will be a phenomenological approach to the qualitative study. A phenomenological approach was used to understand the perception and provide details about emotions, behaviors, assumptions, and characteristics of pregnant Asian Indians with pre-existing diabetes by examining the influence of the COVID-19 pandemic on self-management strategies (Tanwir et al., 2021). A phenomenological research design allowed me to understand the perception of my study population and interpret the analysis of the everyday perception of pregnant Asian Indian immigrants with pre-existing diabetes using specific uses of description, interpretation, and empathy to understand the significance of COVID-19 influences (Tanwir et al., 2021). I recruited five Asian Indian pregnant immigrant participants for structured individual interviews that will be done face-to-face or virtually. According to Creswell (2013), the sample size for phenomenological studies will range from three to 25 participants. According to Siddiqui et al. (2022), diabetes onsets in Asian Indians at a younger age when compared

to other ethnicities. The age range I interviewed was 25-55 years of age. I used thematic analysis to analyze my data. Thematic analysis is a qualitative method used to analyze data by observing for themes and patterns within the data. In thematic analysis, the researcher determines repeated verbiage from the dataset which includes interview, transcripts, etc. (Kiger & Varpio, 2020). The thematic analysis method I used is the Clarke and Braun's (2021) six stage thematic analysis method which involves coding qualitative data through identification of patterns, and then organization of themes through common topics. I used MAXQDA software to categorize themes and subthemes of the interview transcripts.

Literature Search Strategy

The detailed literature review for this study included peer-reviewed articles from 2018-2023. The database sources included Google Scholar, PubMed, Science Direct, Medline, Health Sciences: SAGE, Academic Search Complete, Psych Info, Cochrane Library, and Cumulative Index to Nursing and Allied Health (CINAHL). Professional journals for articles included: *International Journal of Nursing Studies, Journal of Infection and Public Health, Journal of Diabetes Research, Clinical Epidemiology and Global Health,* and *International Journal of Environmental Research and Public Health*. The keywords search included: *diabetes, pre-existing diabetes, Type 2 diabetes, pregnant women with diabetes, gestational diabetes, COVID-19, diabetes self-management, barriers to diabetes self-care, managing diabetes, Asian Indians, immigrants, perceptions, lived experiences, health behaviors,* and *health attitudes.* Some multiple searches and combinations used to ensure all articles were relevant and credible.

Theoretical Foundation

I used the health belief model to determine how COVID-19 impacted diabetes self-management among pregnant Asian Indian immigrants. This theoretical framework is effective in supporting and guiding the study as it has been used frequently to study individual behavior, actions, and perception in response to a health issue they are experiencing. According to Onagbiye et al. (2019), the health belief model has been used broadly to explore and guide healthy behaviors in targeted populations. The health belief model as a theoretical framework for my study was an effective model of health because it is known to be one of the most successful models in health education, with the primary focus on disease prevention and implementation of healthy behaviors to prevent chronic ailments (Shabibi et al., 2017). This model is effective when determining a relationship between adopted behaviors and health beliefs. The health belief model was applied to diabetes disease self-management because evidence has supported the promotion of self-care behaviors in individuals with diabetes (Schmidt et al., 2020; Shabibi et al., 2017; Swaleh & Yu, 2020).

The health belief model perceives the notion that the targeted population will be more likely to engage in behavioral change that promotes self-management of the disease if the participants believe that the susceptibility or severity of the disease is prominent and outweighs the barriers in self-managing the disease (Jose et al., 2020). The health beliefs and perceptions of the Asian Indian population impact how they self-manage their chronic conditions. The beliefs and perceptions of pregnant Asian Indian immigrants about diabetes and diabetes self-management may be negatively impacted by the

COVID-19 pandemic due to limited contact with healthcare resources and physicians (Jose et al., 2020). This targeted population may be more likely to engage in diabetes self-management if they perceive they are susceptible to adverse conditions and if the conditions are severe. According to the health belief model, pregnant Asian Indian immigrants who perceive a health issue as more severe are more likely to engage in behaviors to prevent the risk of the disease (Jose et al., 2020). If Asian Indians believe that health-promoting behavior will reduce susceptibility to the disease, they will be more likely to engage in that behavior and follow recommendations set by physicians and resources. Pregnant Asian Indian immigrants may also view diabetes education as a benefit that helps remove barriers to self-management and promote independence (Jose et al., 2020). The health belief model dictates that the perceived benefits must be more significant than the perceived barriers for the Asian Indian populations to engage in healthy behavioral changes that will control their diabetes (Jose et al., 2020).

Diabetes education has proven to improve the quality of life within researched populations (Lee et al., 2019). The health belief model emphasizes that health-promoting behavioral changes occur through cues of actions. Physicians, doctors, and healthcare personnel provide the cue to actions to diabetic patients. Understanding the pregnant Asian Indian immigrant's perception of diabetes promotes the creation of culturally sensitive healthcare programs and interventions to improve the self-management practices of the Asian Indian population within the community (Khodaveisi et al., 2021). The health belief model construct was used to expand on the understanding of promotional activities, awareness, and community programs/interventions that will

promote engagement of healthy behavioral changes to help the targeted population perceive their competence to successfully engage in healthy behavior (Jose et al. 2020).

Literature Related to the Key Study Concepts

Diabetes Among Asian Indians

Diabetes prevalence is a major burden in the Asian Indian community as it has become a leading public health threat for the population and has continued to have a great influence on the health of Asian Indians (Dendup et al., 2018). According to Misra et al. (2023), the highest prevalence of diabetes is observed among Asian Indians who reside in the United States. Asian Indians are disproportionately affected by diabetes, as the age-sex-adjusted prevalence of diabetes among Asian Indians is 8.3%, while the prevalence is 5.8% in Non-Hispanic Whites. Additionally, Asian Indians are likely to have higher odds ratios of reporting diagnosed diabetes when compared to Non-Hispanic Whites (Misra et al., 2023). Asian Indians are significantly more likely to suffer from diabetes-related mortality such as heart attack, kidney issues, retinopathy, and nerve damage. These diabetes-related complications are due to factors such as diet, fitness, genetics, maternal/fetal factors, body composition, unique pathophysiology, and increased cardiometabolic risk (Zhu et al., 2019). The diabetes-related mortality rate is highest in Asian Indian women at 13.2%, when compared to Chinese women at 11.9% and non-Hispanic white women at 10.4% (Shah et al., 2023). Asian Indians are seen as a vulnerable group with a high prevalence of Type 2 diabetes results from a lower body mass index compared to other ethnicity ancestral groups due to factors such as diet, fitness, genetics, maternal/fetal factors, body composition, unique, pathophysiology, and

increased cardiometabolic risk. Additionally, despite low body mass, Asian Indians have a high prevalence of diabetes when compared to Whites and Latinos (Kanaya et al., 2010). This prevalence is increased by genetic susceptibility to diabetes, which is triggered by factors such as physical inactivity and excessive intake of calories (Kanaya et al., 2010).

Asian Indian Understanding and Beliefs

Asian Indians have a significantly higher prevalence of diabetes when compared to other ethnic groups (Deol et al., 2022) caused by genetic risk factors such as obesity, insulin resistance, and abnormal lipid profiles. The self-management and control of diabetes is strongly influenced by cultural and practical beliefs. According to Koenig et al. (2012), it was reported that healthcare providers did not create culturally appropriate dietary changes for Asian Indians due to a lack of understanding. The disparity of racial and ethnic populations in diabetes remains an elevated prevalence of higher mortality rates and diabetes complications risks. Disparities in racial/ethnic groups in diabetes remain substantial, as data is scarce on the patterns of understanding how different factors influence the risk of diabetes (Zhu et al., 2019). There is limited national data available on the racial/ethnic disparities, and the contribution of different factors that will be used to mitigate and create public health intervention strategies to reduce mortality rates, and associated complications of the disease (Zhu et al., 2019). Cultural beliefs and dietary practices are heavily influenced by Ayurveda, which is commonly referred to as the natural system of medicine. Ayurveda medicine is one of the world's oldest holistic healing systems that relies on a natural approach to promote physical and mental health

The main purpose of Ayurveda medicine is to promote good health instead of combatting a disease (Sharma & Keith Wallace, 2020). Ayurveda combined with allopathic medication allows Asian Indians to have autonomy in their diabetes management. Self-management of their diabetes was based on the Ayurvedic principles that were deeply rooted in the individual's daily cultural practice (Deol et al., 2022). Ayurveda approaches towards healing and overall health are through foods such as vegetables, herbs, melons, and flour to heal overall health and used for hypoglycemia effects. However, if ayurveda and allopathic medications did not work to heal their diabetic condition, Asian Indian participants blamed their destiny and did not initiate other self-care or self-management strategies for their diabetes. Poor dietary lifestyles due to lack of access to culturally appropriate dietary advice decreased chances of self-management of the disease (Deol et al., 2022). While dietary changes such as limiting sugar, carbohydrates, and portions in their diet were implemented, Asian Indians lacked the accurate knowledge of culturally specific diabetes diet information that could be executed to manage their disease more effectively (Deol et al., 2022). The lack of knowledge regarding self-management strategies for diabetes influences the high prevalence of the disease in the Asian Indian population (Sohal et al., 2015). Barriers that inhibited the understanding of diabetes in the Asian Indian population included language/communication barriers to receiving education, inconsistency in following physician's recommendations, inconsistency in adopting a diabetic diet, and lack of physical exercise. According to Sohal et al. (2015), participants gave more preference for folk remedies and phytotherapy because of a lack of cultural adoption, which inhibited the self-management of diabetes for Asian Indians.

Language and communication were prominent barriers to receiving diabetic information and understanding information on diabetes management as Asian Indians had a reluctance to trust and use interpreters from their community. It was also reported that Asian Indian patients did not prefer the self-management of their disease and viewed it negatively (Sohal et al., 2015).

Diabetes Among Pregnant Women

Diabetes has had a globally increasing presence among women before and during pregnancy which has led to a growing problem in the occurrence of diabetes, as well as risk complications during pregnancy among women (Sushko et al., 2022). According to Kurian et al. (2021), the prevalence rate of diabetes during a woman's pregnancy is approximately 15.4%, nonpregnant individuals with diabetes were at 14%, and the prevalence rate of diabetic maternal deaths rose to 75%. Pregnant women with diabetes who were also infected with COVID-19 were at a higher risk for cesarean section which also contributed to a higher likelihood of ICU admission for the child (Kurian et al., 2021). The number of women with pre-existing diabetes in pregnancy has a growing prevalence that has led to an increase in perinatal complications. There are significantly heightened risks involved in the prevalence of women with pre-existing diabetes in pregnancy for both the mother and child, which include a higher risk of stillbirth, death within the first 7 days of life for the infant, and congenital abnormalities compared to the non-diabetic counterpart (Sushko et al., 2022). Pre-existing diabetes among pregnant women entails intensive clinical support both before and during the pregnancy to decrease diabetes pregnancy complications such as fetal death, congenital malformation,

and pre-eclampsia (Chivese et al., 2022). Besides these adverse outcomes, pre-existing diabetes among pregnant women contributes to an increased risk of obesity and a higher likelihood of glucose intolerance. The diagnosis of pre-existing diabetes during pregnancy requires a more complex and intensive level of care for both the mother and the offspring through tertiary institutions by interdisciplinary medical specialist teams, which results in a higher cost of medical expenses (Chivese et al., 2022).

Impact of COVID-19 on Diabetes

Coronavirus disease 2019 also known as COVID-19 was declared a public health emergency by the World Health Organization in 2020 (Yüce et al., 2021). This public health emergency was considered a global threat as it was an infectious disease caused by the SARS-CoV-2 virus causing a pandemic globally from 2020-2023. According to Khunti et al. (2022), a global survey reported that diabetes was the most chronic condition that was affected during the COVID-19 pandemic due to interruptions and restrictions to care. The COVID-19 pandemic had indirect adverse effects on individuals who are diagnosed with diabetes such as restricted access to routine care, restriction on new diagnoses, inability to self-manage the disease, and inaccessibility to medications. A study from the United States reported deficiencies in routine care had a 16% reduction in diabetes self-monitoring and a 17% increase in rationing of diabetes therapies (Khunti et al., 2022). Additionally, 36% of participants reported barriers to consulting with their providers for diabetes cares. The COVID-19 pandemic resulted in an increase in unemployment and loss of income, which caused diabetic patients to lose affordability of their medications, and regular self-care (Khunti et al., 2022). Quarantining, isolation, and

social distancing during the pandemic was a hardship, especially in low-income areas, that led to inaccessibility to access free medication (Khunti et al., 2022). The COVID-19 pandemic has provided barriers to diabetes self-management behaviors, amongst individuals with diabetes. Some of the perceived barriers to diabetes self-management due to the COVID-19 pandemic included shortage of resources, lack of support, inadequate knowledge regarding the disease, suffering from health problems, and negative emotions (Kurian et al., 2021). The COVID-19 pandemic created staff shortages due to self-isolation, reemployment, and illness, which provided a lack of support for pregnant women who have pre-existing diabetes. Pregnant women with diabetes were identified as a vulnerable population that had many risk complications due to the severe effects of the COVID-19 disease (Kurian et al., 2021). Pregnancy and diabetes were seen as severe risk factors for obtaining the COVID-19 disease.

Current Diabetes Prevention Efforts

Current prevention efforts include healthcare coaching and increased self-efficacy for individuals with diabetes. There are several members of the healthcare team who are providing diabetes self-management through discipline-based education through healthcare professionals such as registered nurses, nutritionists, and pharmacists (Azami et al., 2018). These healthcare professionals are part of a multidisciplinary team in charge of designing a program that assists in the delivery of education and are key instructors of diabetes education. Within diabetes self-management education, nurses assist with monitoring, providing feedback, and education on the management of diabetes (Azami et al., 2018). Diabetes education programs and group classes help diabetic patients

recognize healthy lifestyle decisions, treatment regimens, adherence to medication, and help with managing the stress of their disease through guidance. Healthcare providers work with these diabetic patients to provide a more active approach to self-manage the condition and be part of a healthier lifestyle change by offering personalized support (Young et al., 2020). The National Diabetes Prevention Program (DPP) is a partnership of both private and public organizations that work together to help prevent or delay diabetes by creating evidence-based affordable and high-quality lifestyle programs to improve overall health (Centers for Disease Control and Prevention, 2023). These lifestyle change programs teach diabetic participants to make dietary changes and add physical activity into their day-to-day routine, and focus on coping skills with their condition. The program evaluation showed that the lifestyle change program helped participants lose 5%-7% of their body weight and reduced life of long-term diabetes by 60% (Centers for Disease Control and Prevention, 2023). Similar diabetes prevention programs have reached over 84 million individuals in the United States with diabetes (Ackermann & O'Brien, 2020). DPP-like programs have been translated to over 1,500 organizations; however, this represents less than one percent of the target population. There are many gaps and diabetes prevention that must be addressed to negate multiple different populations and ethnic groups within and outside of the United States (Ackermann & O'Brien, 2020).

Definitions

Asian Indians: An individual is considered Asian Indian if he/she originated from Haryana, Himachal Pradesh, Jammu, Kashmir, Punjab, Rajasthan, Delhi, Chandigarh,

Bangladesh, Bhutan, Maldives, Pakistan, Nepal, Sri Lanka within India (ClearIAS, 2023).

Blood sugar or glucose: The main sugar located in an individual's blood is produced from the food eaten. It is the primary source of energy in the body (MedlinePlus, 2023).

COVID-19: In 2020, the World Health Organization officially declared a public health emergency known as Coronavirus Disease 2019, or COVID-19 (Yüce et al., 2021). This declaration classified the infectious disease caused by the SARS-CoV-2 virus as a global threat, resulting in a worldwide pandemic that persisted from 2020 to 2023.

Diabetes: A chronic metabolic disease where blood glucose levels are higher than normal due to the body's inability to sufficiently generate insulin (MedlinePlus, 2023).

Diabetes self-management: Evolutionary process of self-care behaviors through knowledge and awareness by learning to survive and control the complex nature of diabetes (Shrivastava et al., 2013). Diabetes self-management activities include glucose monitoring, engaging in physical activities, maintaining a healthy diet, and medication adherence (Shrivastava et al., 2013).

Immigrants: An individual that comes from a country to reside permanently in a foreign country. Also referred to as international migrants (Bolt, 2019).

Isolation: Refers to segregating an individual with a contagious illness from healthy individuals (Alsharif & Quarshi, 2021).

Pre-existing diabetes: Referred to as pregestational diabetes, where an individual has diabetes before pregnancy (Preexisting diabetes, 2019).

Quarantine: Refers to an individual who was exposed to another individual with a contagious disease resulting in isolation (Alsharif & Quarshi, 2021).

Type 2 diabetes: A chronic medical condition marked by the resistance of an individual's body cells to the effects of insulin, leading to elevated levels of sugar in the bloodstream. Common clinical symptoms of this type of diabetes encompass frequent urination, blurred vision, increased hunger, tingling sensations in the hands and feet, as well as dry skin (Centers for Disease Control and Prevention [CDC], 2023).

Assumptions

Assumptions are fundamental factors that have the potential to influence the outcomes of a study and are crucial for verifying that the data collected was appropriate for the conducted analyses (PhDStudent, 2021). Surveys, questionnaires, and interview transcripts are susceptible to bias by both the researcher and respondents. As an example, a researcher may manipulate feedback or answers from respondents to present the study in a favorable light, while respondents may not always provide honest answers about their experiences to present themselves positively to the researchers (Buetow & Zawaly, 2022). Similarly, respondents are also assumed to be truthful in their feedback during the data collection (Zawaly, 2022). Additionally, some of the peer-reviewed articles were older than five years but were retained due to their seminal nature that contributed to addressing the effectiveness of diabetes self-management, rather than addressing the broader diabetic health priorities.

Scope and Delimitations

Delimitations explain the boundaries or limits within the scope of a study (PhDStudent, 2021). I focused on a specific population of Asian Indians, which have been diagnosed with pre-existing diabetes and are pregnant during the COVID-19 pandemic. Additionally, the current study focuses on a specific group of pregnant Asian Indian immigrants, so the findings of the study may not apply to other Asian Indian immigrants residing in California, United States. This study did not examine perceived benefits, perceived susceptibility, or perceived benefits to diabetes self-management, but will explore the perception of the need for special healthcare programs, the severity of diabetes, and COVID-19 impact.

Limitations

Limitations explain potential weaknesses within a study (PhDStudent, 2021). Some limitations, barriers, and challenges I addressed when conducting this study include access to participants, research bias, generalizability, and participant cooperation. Access to participants will be a limitation as certain environments or settings of the study population may be restricted due to logistical, cultural, and legal constraints (Rahman, 2016). Research bias is a challenge I addressed as a qualitative research approach may lead to unintentionally shaping the data collection and analysis to align with one's own opinions and preconceptions. Generalizability is a consideration as a qualitative research approach will allow the research to focus on specific contexts, and make it difficult to generalize the research findings to a broader population (Rahman, 2016). Reliance on respondents' accuracy is also a barrier in my study as it has validity problems. The

participants may under exaggerate how they are managing their disease or underreport the severity or frequency of their disease due to embarrassment, which creates a bias within the study (Rahman, 2016). My study focuses on a particular population and a specific group within that subset, which may be difficult to generalize to other populations as sociodemographic restrictions, socioeconomic factors, and environmental factors all play a role in inhibiting the generalization that the sample is representative of the populations resulting in a challenge for external validity (Andrade, 2018). It is difficult for the sample to be representative of the population because my study focuses on Asian Indian immigrants who were pregnant during the pandemic and their perception of self-management of diabetes (Andrade, 2018). There was a challenge of internal validity, which refers to attribution bias that may occur in my study as attribution bias refers to concluding an individual's behavior by referring to their character instead of looking at situational factors that may have caused the reaction (Andrade, 2018).

Significance

This study provided a better understanding of the support needed by pregnant Asian Indian immigrants to initiate health behavior change on how to manage diabetes. This study is significant in that findings from the study will provide insights into the self-management strategies for diabetes among pregnant Asian Indian immigrants, and the challenges the targeted population with the disease face during the COVID-19 pandemic. The potential positive social change implications of study findings will help health educators, community health workers, and providers identify gaps of knowledge within the management of diabetes among pregnant Asian Indian immigrants. Results from this

study will also help in educating public health professionals in utilizing culturally competent strategies to create more positive lifestyle changes for pregnant Asian Indians with pre-existing diabetes (Murphy, 2020). This allows professionals to use the information from the study to create interventions and educational programs to better educate pregnant Asian Indian immigrants in the management of diabetes (Sushko et al., 2022). This research also has the potential to impact positive social change for the targeted population. This is critical in reducing the burden of the disease through preventative management strategies, which will help improve the overall health of the diabetic population. The study promotes positive social change by ensuring that pregnant Asian Indian immigrants with pre-existing diabetes receive the proper healthcare interventions, and overall improve the quality of health and lifestyle through disease management. The analysis and findings from this research can be used to develop culturally appropriate programs and interventions that specifically meet the needs of pregnant Asian Indian immigrants who are suffering from pre-existing diabetes by initiating increased knowledge of disease and its associated risk factors within the social and behavioral sciences public health discipline (Sushko et al., 2022).

Summary and Conclusion

Diabetes among the Asian Indian population has become a growing burden that presents a public health challenge (Misra et al., 2023). The purpose of this qualitative study examined the perception of pregnant Asian Indian immigrants on their pre-existing diabetes self-management and how the COVID-19 pandemic impacted these self-care strategies. This study is significant in that it will provide additional information on the

perception of pre-existing diabetes among pregnant immigrants within the Asian Indian community and the influence of COVID-19 on proper self-management strategies. There is little research that identifies the gap between the perceptions of pregnant Asian Indian women about proper self-managing diabetes and factors such as income, education, access to healthcare, and physical infrastructure that are related to self-management of pre-existing diabetes during the pandemic (Sushko et al., 2022). The study featured a phenomenological approach by interviewing five participants between the ages of 25-55 years of age. Furthermore, I performed a thematic analysis to analyze the theme with face-to-face or virtual interviews. In Section 2, I describe the research design, role of the researcher, and methodology, and discussed issues of trustworthiness and ethical procedures.

Section 2: Research Design and Data Collection

Introduction

The purpose of the qualitative study is to obtain the perspectives of pregnant Asian Indian immigrants with diabetes about the importance of self-management of their disease during the COVID-19 pandemic. Diabetes self-management and self-efficacy are one of the most important aspects of diabetes medical care. Diabetic patients have been observed to make an extensive impact on the development and life span of their disease by actively participating in their efficacy and care (Shrivastava et al., 2013). Diabetes self-management seeks to lower cost efficiency for other diabetes preventive efforts, improve health outcomes, and enhance quality of life (Baroni et al., 2022). The knowledge gap in self-management among Asian Indian pregnant immigrants during the COVID-19 pandemic has been discussed very little in literature, and because self-management changed during the pandemic, I conducted an in-depth investigation into the barriers and challenges with self-management among the targeted population. For instance, the COVID-19 pandemic led to an increase in the number of hospitalized diabetic patients, decreased communication among patients and providers for diabetes self-care, and reduced self-management activities (Khunti et al., 2022). Therefore, it is important to understand the impact that the COVID-19 pandemic had on diabetes self-management among pregnant Asian Indian immigrants so that public health providers, educators, and practitioners will assist in developing diabetes management programs that target the studied population. This literature review was performed to understand the influence and impact of the COVID-19 pandemic on diabetes self-management among

the pregnant Asian Indian population. The literature review signifies evidence to support that further research is needed to investigate the impact of the COVID-19 pandemic on diabetes self-management activities among the targeted populations. The purpose of this literature review is to understand the global influence of the COVID-19 pandemic on diabetes self-care and self-management.

Research Design and Rationale

The study was conducted to better understand the perception of pregnant Asian Indian immigrants, and how they self-managed their diabetes during the COVID-19 pandemic. The findings of this qualitative research provided insight to public health leaders and policymakers to develop culturally appropriate interventions and programs that meet the needs of the targeted population. The research question for the study is "What is the perception of pregnant Asian Indian immigrants living with pre-existing diabetes on the self-management of the disease during COVID-19?" Qualitative research studies focus on extending knowledge and understanding of the world by obtaining insights from participants regarding their perceptions and experiences (Seidman, 2019). Qualitative research was chosen over quantitative research to help provide an in-depth understanding of the Asian Indian population's perception of the management of pre-existing diabetes. A qualitative research design was chosen for this study to help provide meaning to the targeted populations' experiences and perceptions of managing their disease during the time of the COVID-19 pandemic (Seidman, 2019). This type of study was chosen to understand the viewpoints of the participants and to acknowledge gaps in knowledge of current public health programs and interventions. To address the research

question, the qualitative research design I conducted is a phenomenological research approach when interviewing research participants. The phenomenological research approach is a type of research that finds meaning through the utilization of human experiences and perceptions (Tanwir et al., 2021). The phenomenological approach will focus on the experience of a phenomenon to find patterns within human experiences (Tanwir et al., 2021). This research study worked to describe the human experience at the time it occurs, which were utilized in this study to identify the participant perception of diabetes management during the time of the COVID-19 pandemic (Tanwir et al., 2021). The potential contribution of my study to public health practice is that it may alleviate the burden of Type 2 diabetes among the Asian Indian community by enhancing preventative self-management strategies to overall promote the well-being and quality of life of diabetic individuals. This study provided insight into the development of culturally tailored public health programs that will be designed to identify and address the unique needs of pregnant Asian Indian immigrants struggling with pre-existing diabetes (Sushko et al., 2022).

Role of Researcher

The COVID-19 pandemic negatively impacted multiple aspects of lives within families, communities, and patients, including adverse economic consequences and a mental health toll from interruptions within social relationships and networks (Isasi et al., 2021). I joined the public health workplace during the peak of the pandemic as a case investigator for a local county, where I worked in a team that works to reduce the spread of COVID-19. As a part of a team, I was responsible for assisting with the disease

outbreak and controlling disease efforts. I did this by interviewing clients/patients and suspected contacts. My phone calls consisted of motivating patients to adhere to treatment and refer to the county's community resources as needed during this difficult COVID-19 pandemic. The impact of COVID-19 was most severe on individuals with additional chronic diseases (Peric & Stulnig, 2020). As an Asian Indian woman with numerous family members and friends who have been diagnosed with diabetes, I have been able to observe the challenges and reservations that individuals may face when it comes to self-managing their diseases. In a qualitative research study, the role of the researcher serves as the principal tool of the data collection so researchers must understand the potent dynamic and relationship between a participant and research. With this understanding in mind, I refrained from including a participant with whom I have any personal or professional relationship with for my study. According to Merriam and Tisdell (2016), it is also important to remain conscious of potential biases and explain how these biases will impact the data collection process. One bias that may have impacted this study may include participant bias, which occurs when the participants involved in the research study act unconsciously or consciously the way they believe the researcher wants them to act (Keeble et al., 2013). Participant bias occurs when participants try to mold behavior based on what they believe the researcher would want the desired result. This may occur with participants, not being honest about how they self-managed their Type 2 diabetes during the pandemic (Keeble et al., 2013). This bias or assumption will be overcome by using blinded data collection to ensure that study participants are kept unaware of their involvement in the research study. Participant bias

will also be avoided by lowering demand characteristics in the interview questions that may consciously or unconsciously nudge the participants to answer the questions in a specific manner (Keeble et al., 2013). Interviewer bias is where the interviewer may subconsciously influence the interviewee's responses. As a researcher, I have the possibility of engaging in interviewer bias which may skew the results of the research study. Interviewer bias can be avoided by ensuring a level of consistency with each participant/interviewee and through the method of bracketing (Wadams & Park, 2018). Bracketing is a method used in qualitative research studies to potentially mitigate preconceptions that may unconsciously skew the research process within the study (Wadams & Park, 2018). Bracketing includes practices that can help the researcher refrain from judgment within the research study. Bracketing may include ensuring that the interview questions are open-ended questions, using non-promoting and non-leading language, and using the Clarke and Braun thematic analysis method.

Pilot Study

A pilot study is the initial step in a research protocol. It often uses a smaller-sized sample of the targeted population and helps facilitate the modification and planning of the main study (In, 2017). A pilot study is significant in enhancing the quality of the main study by evaluating the safety of research treatment and interventions, observing potential risks/threats of recruited participants, examining randomization, and enhancing the researcher's experience and familiarity with the study's methods (In, 2017). The pilot study was independent but replicated the main study in participation selection using the inclusion criteria, recruitment of participants, the semi-structured interview protocol, and

data collection. The pilot study recruited one participant, and required that participant to complete the Demographic Survey (Appendix C), Informed Consent Form, and Interview Guide (Appendix D), similar to the main study. The pilot study did not include data analysis by the researcher. The Institutional Review Board (IRB) approval was required before the start of the pilot study.

Main Study

The main study was conducted after the completion of the pilot study. The main study will include recruitment of participants through social media advertisement (Appendix B), and signing of required documents (Appendix C), and completion of the Interview Guide (Appendix D). The main study recruited five participants to demonstrate saturation of the qualitative phenomenology research approach (Guest et al. 2006; Morse, 1994). The main study included the data analysis of the collected data through thematic analysis.

Methodology

Selection

The population of interest were Asian Indian immigrants who have been diagnosed with Type 2 diabetes and were pregnant during the COVID-19 pandemic from March 2020 – May 2023 in California, United States. The participants varied in the number of years they have been diagnosed with Type 2 diabetes. A purposive sampling population is a non-probability form of sampling in which the researcher selects participants that are most likely to yield relevant and useful information based on their experiences, characteristics, and criteria. This is a common sampling strategy used for

qualitative research as it allows identification and selection of information-rich cases to maximize use of limited resources (Palinkas et al., 2015).

Inclusion Criteria

The inclusion criteria for the potential participants are:

i) Be Asian Indian adults who originated from India

ii) Have a formal diagnosis from a healthcare professional or physician of pre-existing Type 2 diabetes

iii) Have a gestational period (pregnancy) during the COVID-19 pandemic

iv) Be an adult between the ages of 25 and 55 years.

v) Have fluency in the English language

vi) Agree to be interviewed and recorded via tape recorder or virtual Zoom/Teams recording

According to Siddiqui et al. (2022), diabetes onsets in Asian Indians at a younger age when compared to other ethnicities. The recruitment of these participants was accomplished using a purposive sampling strategy.

Sample Size

Saturation is referred to as a guiding principle that is used to assess the adequacy of sample sizes in a qualitative research study. Saturation varies with different types of qualitative research approaches so too small or too large of a population size can impact the ability of the data to provide rich and valid context on the phenomenon being studied (Hennink & Kaiser 2022). According to Creswell (2013), the sample size for phenomenological studies can range from three to 25 participants. A phenomenology

study understands the lived experiences of participants and is a process that involves a small number of participants through extensive interaction to develop trends, patterns, and relationships of meaning. According to Morse (1994) and Guest et al. (2006), six to eight interviewees are a large enough population for a homogeneous sample. The sample size for the study was five participants and provided the study with maximum variations of participant experiences and interactions.

Recruitment of Participants

Social media advertisement using the Facebook platform was used to identify the potential participants that match the inclusion criteria, using both a general Facebook posting and posting on Facebook groups. Facebook groups is a feature on the platform where individuals with similar characteristics, demographics, or issues come together to discuss related content. The recruitment strategy was to post a social media advertisement specific Facebook groups that fit the inclusion criteria of my study population. The recruitment strategy uses a more targeted approach where potential participants with pre-existing Type 2 diabetes who may fit the inclusion criteria had access to the social media advertisement regarding information about the study and my contact information. If an individual is interested, they clicked the linked consent form in the social media advertisement. The social media advertisement contained a link to the consent form and online survey. The consent form was on the first page of the online survey and the demographic form was found linked at the bottom of the consent form. Completing the demographic survey allowed me to confirm the willing participants are eligible for the study based on the inclusion criteria. The consent form also provided my contact

information (phone number and email address) to allow recipients to initiate contact if needed. According to Jeanne Salvy et al. (2020), the utilization of social media to identify participants elicited a more positive response rate and produced a more viable and appropriate sample for the study as it cost effective and yields diverse participants who could not be reached using other alternative strategies, such as targeted mailing or in person solicitation. Using targeted social media posting on a universal platform to recruit Type 2 diabetic patients helped to enable efficient recruitment methods for the research as it recruited a more randomized and controlled population for my study (Salvy et al., 2020).

Instrumentation

With qualitative research, an interview is the most common format for data collection. According to Jamshed (2014), an interview is a tool that relies on inquiring interviewees with questions to collect data. An interview is the best method used to document the perception and experience of people, and then use the collected information to provide meaning. A semi-structured interview was used to guide the study. This type of interview is an in-depth interview where participants had to answer pre-determined questions; however, as a researcher, I had the flexibility to explore additional topics that may be relevant to the participant (Jamshed, 2014). Semi-structured interviews allowed for conversational communication and will help explore the root of the topic (Ravitch & Carl, 2016). Consensus validity in research ensures there is an interdisciplinary approach that creates a structured environment in which there is expert judgment and insight within the studied field (Fink et al., 1984). To achieve consensus validity with interview

questions, I reached out to two experts in the public health field for their insight on the interview questions by sending an email explaining the purpose of the study and an attachment of the interview guide. The email asked for critique and feedback on the interview guide and how the questions can be designed to be feasible and acceptable within the targeted community.

I have developed an interview protocol for semi-structured interviews that includes my introduction to the participants, collection of participant consent, interview questions, and the conclusion for the end of the interview (See Appendix D). The questions in the interview protocol are open-ended and non-leading questions that allow the interviewer to follow up with in-depth questions based on the participant's responses. The predetermined questions were asked of all participants within the study; however, the order and verbiage of the interview questions was dependent on the flow and pattern of the conversation with each participant.

Participant indicated interest by clicking the link on the social media advertisement (Appendix B). The social media advertisement contained a link to Consent Form and a Demographic Survey (Appendix C) before the interview guide. The interview guide (Appendix D) was conducted with the participant once the participant completes the consent form link.

Data Collection

I awaited the participant to send the Demographic Survey and Consent Form found in the social media advertisement. After confirming that the participant meets the inclusion criteria from the Demographic Survey, I contacted the participant to schedule

an interview data and time. I conducted interviews face-to-face or virtually through platforms such as Zoom or Teams. Both the participants and I performed the interview in a private room in our homes. During the time of the interviews, no person had access to the interview room. I conducted the interviews by sharing the purpose of the study, the inclusion criteria, and confidentiality. Before the start of the interview, the participants had the freedom to ask any questions about the study and any other additional questions. Once all questions are answered, the interview began and the recording of Zoom meetings was initiated. Once the interview has ended, the participant were thanked for their time and provided a $25 gift card as a token of appreciation for their time. A token of appreciation was provided to each participant regardless of whether they complete the interview or not. After the completion of the interview, I performed member checking by reaching out to participants to explore the accuracy and credibility of my results based on their experiences.

After the completion of the interviews, I performed a self-debriefing of the participant interview session to identify any gaps within the collected data. Self-debriefing allows researchers to refine the line of inquiry or research question to seek alternative perceptions of the data (McMahon & Winch, 2018). I self-debriefed by listening to recorded interview sessions to improve the process of data collection. Audit trailing comprises comprehensive documentation of a research journey by chronicling a researcher's path from initial research questions to conclusions and results (Cohen & Crabtree, 2006). Audit trialing is important in furnishing a research process, verifying the dependability of data, and upholding the credibility of research findings (Cohen &

Crabtree, 2006). I also audit trailed all the collected data and notes of the research process within a journal by documenting the steps I took or have changed to showcase the credibility of the qualitative research and enhanced trustworthiness of the research. Once the data were collected from participants and self-debriefed, the participants were emailed a copy of the interview, which I confirmed their acceptance of the transcript. I secured the data in a locked private laptop that will be maintained for at least 5 years. Only I have access to the data. The results of the study were shared with each participant. Each participant received an electronic copy of their interview transcript. Additionally, the specific plan for sharing results was to draft an email that will summarize the results of the study with all participants.

Data Analysis

According to Ravitch and Carl (2016), qualitative data analysis can commence from the moment the first data point is collected. Data analysis, such as coding data and making establishing links with literature, can be performed simultaneously with the data collection. For the qualitative data analysis, I used thematic analysis to analyze my data. Thematic analysis is a simple method used to analyze qualitative data by looking for patterns and themes through text such as interview transcripts at different levels (Kiger & Varpio, 2020). Participant interview responses were categorized by the description in themes and subthemes through coding via thematic analysis coding software through MAXQDA. The thematic analysis process I used is the Clarke and Braun's (2021) process that involves: familiarization with the data, generating initial codes, identification of themes, review/refinement of themes, and assigning descriptive names to themes. The

Clarke and Braun thematic analysis approach thoroughly codes qualitative data to identify patterns and trends, forming themes.

Issues of Trustworthiness

According to Ravitch and Carl (2016), within qualitative research, the terms trustworthiness and validity are used synonymously to determine that a study's findings truthfully reflect the participant's perception and experiences. Validity refers to a study's quality and appropriateness of research methods. It is important that the study's recording and transcribing of interviews is done truthfully and accurately and observations are documented as close to the interview (Leung, 2015). A qualitative research approach ensures that validity is met through reliability, credibility, transferability, and confirmability (Leug, 2015).

The reliability of a study shows the exact replicability of the study's procedures and results (Leug, 2015). The importance of reliability within qualitative research shows consistency and stability with data collection and argued phenomena. Some approaches to maintain reliability to enhance the reliability of procedures and results are data comparison, comprehensive data utilization, and refutational analysis (Leug, 2015). Using recording devices and digital files will ensure enhanced reliability through detailed data collection. The reliability of a research study assures the trustworthiness of the study by concluding that findings are to be determined without the force of different factors or settings. Credibility (internal validity) is defined as a measure of the value of a study's findings as accurate and correct (Leug, 2015). Credibility refers to the accurate interpretation of the takeaway from the participants and refers to establishing the findings

as valuable. It is important for a research study to establish credibility as it creates an area of trustworthiness and reliability of the study and can be used to enhance the researcher's contributions to the field (Leug, 2015). Using appropriate data collection and analysis procedures will ensure clarity and transparency of the research processes and enhance overall decision-making procedures.

Transferability (external validity) refers to the extent to which the results of the study can be transferred or generalized within two different settings (Ravitch & Carl, 2016). Transferability is established within the research study and can be used to generalize the results of the study to different contexts. Transferability is important because it can enhance the researcher's contribution to the field by allowing others to modify and develop different practices based on the study's findings. To ensure transferability, it was important to provide a clear and thorough explanation of the study, which include: the study procedure, recruitment of participants, data collection, data analysis, and all additional factors about the study (Ravitch & Carl, 2016). The more descriptive and detailed the study is, the easier it will be for researchers to generalize and compare to additional contexts. Confirmability refers to the extent to which other researchers can confirm the findings of the study (Ravitch & Carl, 2016). Confirmability refers to the measure of the extent to the result findings can be cooperated by others. As a researcher, it is important to be aware of biases and how it influences confirmability (Ravitch & Carl, 2016). Confirmability is important within a research study because it can be used to establish that the data and interpretations of the results are cooperated by others and enhance reliability and trustworthiness. A researcher can enhance

confirmability by implementing triangulations and performing audits. I ensured reliability, credibility, transferability, and confirmability by performing consensus validity, immediate self-debriefing/self-reflection of my research process, and audit trailing. I collaborated with two experts within the public health field to develop an interview guide that is relevant to my study and feasible for my targeted population, self-debrief by relistening to the recorded participant interview sessions, and audit trail by documenting the entire research journey.

Ethical Procedures

Before the application of the methodology of this study, my two assigned chair members reviewed and approved the pilot study before proceeding to the IRB for approval. Any major adjustments during the pilot study were reported to my committee and the Walden University IRB. Ethical principles play an important role in moral reading and ethical decision-making in public health (Varkey, 2021). Public health professionals must contribute to the identification of ethical and moral underpinnings of the public health discipline. Some ethical considerations that I anticipated encountering in my study were autonomy, protection of privacy, and confidentiality of research participants (Varkey, 2021).

Participants in my study were provided with complete information about the study, specifically what the study enables and how the study would be conducted via participant interviews. This created a positive environment and a climate of trust with the study's participants by actively communicating with the participants regarding the purpose of the research, and what was expected of the participants within the research

study (Varkey, 2021). I addressed any questions or hesitations that the participants may have and acknowledge any areas of uncertainty. All participants completed informed consent. The participant decided whether to enroll in the study. All participants were informed that participation is voluntary. I provided autonomy by informing participants they will have the right to withdraw from the research at any given time. I protected the confidentiality of participants by not including the names or personal identifiers of the participants during the data collection. All data collected were confidential. All participants were provided a token of appreciation regardless of whether they complete the interview or not or decide not to participate.

Summary

Qualitative research is a naturalistic approach that allows the researcher to collaborate with others to examine experiences or perceptions of a phenomenon (Tanwir et al., 2021). I refrained from having any relation with a participant and avoid participant/interviewer bias by asking open-ended and non-leading questions. Validity is the study's appropriateness of research methods and is established through credible research and communication (Ravitch & Carl, 2016). This section discussed research design and rationale, methodology, issues of trustworthiness, and ethical procedures. In Section 3, I discuss data collection and analysis, and the results of the study.

Section 3: Presentation of the Results and Finding Sections

Introduction

The purpose of this study was to understand the perception of pregnant Asian Indian immigrant with pre-existing diabetes on the management of their diabetes during the COVID-19 pandemic. The perception of the Asian Indian population regarding diabetes self-management is critical to meet barriers of culturally competent approaches for effective health care and initiate positive health behavior changes. This chapter presents the results of interviews with five Asian Indian immigrants diagnosed with pre-existing diabetes. The interview process allowed the targeted population to share their personal experiences, thoughts, and perceptions about diabetes self-management during the COVID-19 pandemic. This section includes a description and discussion of the: pilot study, main study, participant setting and demographics, data collection, and data analysis processes using the MAXQDA thematic analysis coding software. The themes and evidence of trustworthiness of this research are also discussed with the summary of results.

Pilot Study

The pilot study was conducted on March 10th, 2024, with one woman that was recruited through a Facebook group. The purpose of the pilot study was to improve the quality of the main research study by assessing the safety and quality of the interview questions, addressing any methodological issues, and familiarizing my experience with the qualitative research approach. The participant responded to a social media advertisement, which contained a link to the consent form. The participant indicated her

consent to participate by sending back a response to the demographic survey link that was located on consent form. Once it was confirmed that the participant met the inclusion criteria, an interview data and time were set virtually. During the interview, I explained the purpose and significance of the study. All the interview questions were trialed for viability and clarity. The pilot study participant did not have any discomfort, confusion, or apprehension with answering the questions. The pilot study interview was audio recorded and sent to my committee member for review and feedback. The committee member sent the following recommendations: initially avoid leading questions to allow participants to spontaneously express important themes, use general prompts for specific topics mentioned by participants, and conclude the interview with an open-ended question to capture any additional insights. The recommendations were implemented in the main study interview process. The study questions remained unchanged for the main study participants. The pilot study did not include data analysis as it was used to enhance my personal experience and familiarity with the interview questions and process.

Setting and Demographics

The main study was conducted from March 11th, 2024 – March 31st, 2024. There was a total of five participants recruited from two different Facebook groups. The main study participants responded to the social media advertisement, which contained a link to the consent form. The participants indicated their consent to participate by sending back a response to the demographic survey link that was located on consent form. All participants met the inclusion criteria through the demographic survey and were contacted through email to confirm an interview date and time. An initial phone

conversation was initiated with all five participants for introductions, remind participants of the study's purpose and significance, and discuss any questions or concerns the participants may have. The research setting was performed virtually for all five participants on the Zooms platform. Both the participants and I performed the interview in a private room in our homes with no one else in attendance physically or virtually. The participants were reminded of their right to withdraw at any time without repercussions and that the interview would be recorded through the Zoom's platform.

Participant confidentiality and anonymity were maintained in the research study where each participant was assigned a numerical code based on the order of their interview. A document contained the participant's personal identifiers (first/last name and contact information) and their assigned numerical code, which was stored on a password protected laptop. Only I had authorized access to the document on the password protected laptop. The participants provided demographic information that included: age, marital status, nationality, length of diagnosis, and children status (See Table 1). The five participants in this study were from between ages 28 and 37, and their years of living with Type 2 diabetes ranged from 3 years to 7 years. The five participants in this study were from between ages 25 and 45. Four out of five of the participants (80%) were married and five out of five of the participants had children under the age of 18 living in their household. All five participants were of Indian nationality, and living in California at the time of the study.

Table 1

Selected Study Participant Demographics (N=5)

Participant	Age	Length of diagnosis	Marital status	Nationality	Children under age of 18
P1	36	7 years	Married	Indian	Yes
P2	28	5 years	Married	Indian	Yes
P3	31	5 years	Divorced	Indian	Yes
P4	34	3 years	Married	Indian	Yes
P5	37	7 years	Married	Indian	Yes

Data Collection

Each interview lasted 20-30 minutes, with an average of 25 minutes. There was sufficient time for the participants to discuss their perception and experience with diabetes management and for me gain any clarification on unclear information. Interviews were recorded on the Zoom platform, which notifies everyone on the call that both the recording and transcription have started. The recorded interviews were uploaded and manually transcribed to a personal password-protected computer. During the interview, a journal was used to take notes on participant's facial expression, hand motions, physical movement, and on topics highlighted by the participant. A $25 gift card was provided to all five participants as a token of appreciation at the end of the interview. All participants received a $25 gift card via email. The email was initially provided when the participant submitted their demographic survey. I composed personalized email to all participants expressing my gratitude for their time and contribution to my research study. I attached the gift card to the email and explained that it was a gesture of thanks for their valuable insights to my study. The interview transcription and recording were self-debriefed and checked for accuracy. Member checking was performed post interview to

explore credibility and accuracy of my results based on participant experience. One form of member checking was conducted immediately after data collection of participant's responses. Participants were sent copies of their interview transcripts to review and clarify their statements. Additionally, a summary of each participant's interview was provided, allowing participants to provide any additional dialogue or feedback. There was no additional dialogue or feedback offered from participants. Once member checking was complete, a final electronic copy of the interview was sent to each participant via email accordingly.

According to Hennink and Kaiser (2022), data saturation in qualitative research is reached when collection of data ceases to produce any new information to initiate conclusions and emerging themes. Saturation is reached when there is no further novel or additional information within the data collection. Data saturation demonstrates content validity and ensures that the data collected has comprehensively captured the diversity and depth of the studied issues (Creswell, 2013). The interview guide included open and closed ended questions which prompted participants free flow of comments about their experiences. Additionally, the concluding interview question allowed participants to add any final thoughts or novel information about their perception regarding the studied issues. I conducted interviews with five participants until no original information was elicited.

Data Analysis

Data analysis was conducted by digitally recording the interviews from the five participants in the study. The recording was manually transcribed, which involved

listening to each interview audio four times and reviewing the interview transcript three times before being uploaded to the MAXQDA software. MAXQDA is a qualitative data analysis software that is designed to support researchers with computer assisted mixed methods and qualitative data by transcribing, classifying, and coding data (Madea, n.d.). The transcribed qualitative data was imported into the MAXQDA software to extract important themes based on word frequency. The following steps were taken using the Clarke and Braun's (2021) thematic analysis approach: familiarization with the transcript data, generation of initial codes, organizing codes into themes, reviewing/defining themes, and reporting findings. I followed a systematic approach by initially performing line-by-line coding on each interview transcript in MAXQDA. Line-by-line coding entails assigning descriptive codes to each meaningful portion of text to capture emerging topics (Thomas & Harden, 2008). Following the line-by-line coding, I used the MAXQDA software to organize and manage the coded segments of text by reviewing of all codes. Once I thoroughly coded and recoded all the interview transcripts, I began to develop themes by grouping related codes, based on shared characteristics, into broader categories. Additionally, a reflective journal was kept to examine my thoughts on emerging themes to overall add to the robustness of the research. Once the themes were developed, MAXQDA allowed discovering patterns through visualizations such as word clouds, code maps, theme maps, code frequency tables, and code lines across all interview transcripts (MAXQDA, n.d.). I ensured that the coded themes aligned to the perspectives of the participants. Throughout the data analysis process, I consulted with my committee members to provide their valuable guidance to direct methodological

decisions and refine coding process. After thematic analysis was thoroughly reviewed, data analysis was finalized once committee members authorized it.

Evidence of Trustworthiness

To ensure the study's evidence of trustworthiness, I established reliability, credibility, transferability, and confirmability. All participants were informed that the interview will be recorded so I could self-debrief the conversation after the interview. Credibility was established in the study through clarification of any unclear elements during the interview process. Additionally, I performed member checking after the interview to ensure accuracy of my results based on the participant's experiences. The transferability was established by providing research context, interview setting, sample size, participant demographics, and interview procedures. Dependability of the study was established by collaborating with public health educators/coordinators to review the interview guide during its development to reduce bias during the data collection process. Additionally, a pilot study was conducted to aid in the modification and planning of the main study. All the interview questions underwent a pilot study to guarantee clarity. The confirmability of the study was established by analyzing the qualitative data promptly after data collection. To mitigate interviewer bias, bracketing was used to maintain objectivity by reflecting on my own beliefs and consciously setting them aside, prioritizing the participant's experiences and voice, and identifying my own assumptions. This approach was used during the interview by asking open-ended questions, using non-leading language, using attentive listening strategies by taking notes, paraphrasing the

participant's statements, using nonverbal cues (head nodding, eye contact), and allowing the participants to express themselves without any interruptions

Categories and Themes

Overall, six emerging themes were developed from participants' interview responses. Based on words and phrases, categories and themes are presented in Table 2. Table 2 illustrates the categorization of codes prior to theme development. Table 3 presents the frequency and references of the themes and subthemes. The six emerging themes are: (a) diabetes management; (b) pregnancy and diabetes management; (c) challenges in diabetes management during COVID-19; (d) psychological impact of COVID-19; (e) cultural impact; and (f) familial influence. Subthemes of challenges in diabetes management during COVID-19 include: economic constraints, implementation of virtual healthcare resources, restriction on physical exercise, and limited healthcare access.

Table 2

Categories & Themes

Category	Themes
Initial Diagnosis Seriousness of Disease Management Medications	Diabetes Self-Management
Disease Management during pregnancy Dietary Changes Monitoring Sugar Levels Increase in Physical Activity Educational Classes Weekly Nurse Calls Dietician	Pregnancy and Diabetes Self-Management

	Challenges in Diabetes Management during COVID-19
Financial Distress Food Disparity	Economic Constraints
Virtual Appointments Educational Classes Dietician Consultation	Implementation of Virtual Healthcare Resources
Social Distancing Guidelines Masking Guidelines Lockdown of gyms	Restriction on Physical Exercise
Limited doctor availability Medication Disparity	Limited Healthcare Access
Fear, Stress, Anxiety Unknown State of Pandemic	Psychological Impact of COVID-19
Positive social support Negative social support	Familial Influence
Holistic/Natural Remedies Religious dietary restrictions	Cultural Impact

Table 3

Frequency and References of Themes and Subthemes

Themes	Interviews	References
Diabetes Self-Management	5	18
Pregnancy and Diabetes Self-Management	5	29
Challenges in Diabetes Management during COVID-19	4	14
Economic Constraints	2	4
Implementation of Virtual Healthcare Resources	5	13
Restriction on Physical Exercise	4	9
Limited Healthcare Access	4	15
Psychological Impact of COVID-19	5	17
Familial Influence	4	12
Cultural Impact	3	11

Emerging Themes

Six themes emerged from MAXQDA software using the participant's interview transcripts. The results revealed six core themes from the interview responses: (a) diabetes management; (b) pregnancy and diabetes management; (c) challenges in diabetes management during COVID-19; (d) psychological impact of COVID-19 ; (e) cultural impact; and (f) familial influence. The themes addressed the research question and aligned with the interview questions. The research question of the study was "What is the perception of pregnant Asian Indian immigrants living with pre-existing diabetes on the self-management of the disease during COVID-19?" The interview questions addressed the perceptions and experience of the targeted population on the impact of COVID-19 on their Type 2 diabetes management.

Theme 1: Diabetes Management

The first theme focused on understanding the participant's diabetes management strategy before their pregnancy. Three out of the five participants admitted to not recognizing the seriousness of the disease. Participants expressed to a lack of self-care and lack of education of the disease. Participant 5 said "I didn't know how to manage my diabetes really well when I was first diagnosed. I didn't take it seriously at all." Comparably, Participant 1 mentioned "I definitely lacked how serious it is and taking that into consideration prior to pregnancy." One of five participants discussed attending annual checkups with her primary doctor where she was informed she was borderline diabetic. Despite her early health warning, Participant 4 ignored the health advise and continued her unhealthy dietary habits, which lead to her Type 2 diabetes diagnosis. Participant 4 said, "I want to say for about five years before I was actually diagnosed with diabetes on my annual checkups, my doctors would say, 'Hey, you're borderline diabetic, you're borderline diabetic.' And I didn't take it seriously."

Two out of five participants began to immediately educate and manage their diabetes after their initial diabetes diagnosis. Participant 3 said, "I made sure to physically exercise at least 3x a week, start a healthier diet, and ensure that I check my sugar levels at least 2x a day." Participant 1 mentioned that she began to incorporate physical exercise into her daily routine and modified dietary habits as a treatment plan to self-manage diabetes. Participant 1 said, "Yeah, also with physical activity, I started going to the gym and working out more by just getting a membership." One out of five participants mentioned beginning her own research on diabetes and self-management to

understand their health condition better to, create lifestyle changes, and explore different management options beyond what was initially recommended by their doctors. Participant 3 mentioned,

> The research I did was to learn how I can manage my own diabetes. My doctor provided me with a lot of good information about how I can manage my diabetes but when I found out I was diabetic, I also started to do some research on my own which really helped me understand how I can track my own diabetes and my own sugar levels.

All five participants mentioned taking metformin as medication to reduce sugar levels the liver releases to help regulate insulin in their body.

Theme 2: Pregnancy and Diabetes Management

The second theme focused on the self-management strategies that participants implemented during their pregnancy and the COVID-19 pandemic. Upon discovery of their pregnancy, all five participants discussed prioritizing their diabetes management diligently to protect their baby's health. Participant 2 mentioned, "But during pregnancy, because I had the concern of the baby and the diabetes, I went on walks more often. I would go on walks like two or three times a day, both short walk or longer walks." Participant 1 also mentioned being more conscious of monitoring blood sugar levels between each meal during her pregnancy to manage her diabetes. Participant 1 mentioned, "I did check my sugar levels every day. I was a lot more mindful during pregnancy for my baby. I did that about four or five times a day before every meal."

Three out of five participants discussed attending classes on how to successfully manage their Type 2 diabetes throughout their pregnancy. Participant 5 said,

> They offered a couple classes. It depended on how many times you wanted to take it. I think I took it about two times a month just to be educated on all the new things that were being added and needed to be taken.

These classes were offered by their OBGYN during their routine checkups. Two out of five participants received weekly calls from a nurse to review blood sugar levels, insulin dosage, diet management and overall pregnancy experience. Participant 4 said,

> Every Monday I would get a call and we would go over my numbers, my sugar numbers, and they would base it off of that if I had to go up or down on my insulin or if I was doing good. And then just based on my numbers, the nurse would know if I had a good week or a bad week.

Two out of five participants were connected to a dietician who provided them personalized nutritional guidance by developing meal plans and monitoring dietary needs throughout their pregnancy. The two participants found collaborating with a dietician to be beneficial for their overall heath and baby's health. Participant 3 said, "My doctor referred me to a dietician that could help me manage my diet during my pregnancy as I had conveyed that that was my biggest fear throughout my pregnancy." Similarly, Participant 2 mentioned, "I did get to get in touch with the dietician, so I think that helped me because she also helped me figure out what kind of foods I should be eating and what I should stay away from."

Theme 3: Challenges in Diabetes Management During COVID-19

The third theme focused on challenges that participants encountered when it came to managing their diabetes during the pandemic. All participants indicated challenges in their diabetes management midst the pandemic through limited healthcare access, restriction on physical exercise, the adaptation to virtual healthcare resources, and economic challenges. Four out of five participants discussed experiencing restricted access to in-person prenatal care appointments, reduced availability of prenatal support, limited prenatal supplies, and fear of potential exposure during the COVID-19 pandemic. Participant 1 said, “I didn’t really feel like I had the best quality being provided to me for taking care of me or my baby at that time.” Additionally, Participant 1 mentioned,

> There was this one time where I ran out of the supplies: the needles, needle tips, and the alcohol wipes. It was hard for me to get access to those, and I didn't want to give myself injections without them. So, I didn’t really understand what pharmacy to go to or which pharmacies to go to grab the medication supplies.

Participant 3 said, “I was even scared that I would run out of my medication and insulin and would have no way to get a refill at the nearest pharmacy.”

In terms of restricted access to in-personal prenatal care appointments, Participant 1 said:

> Once the doctors and providers and the staff themselves started having COVID and they went around and everybody was getting sick at one point, they had to minimize appointments throughout the weeks because no one would be available to cover them as well, which is understandable in their shoes. But I wasn't even

> able to get a transfer provider. I wasn't able to see another OBGYN in their place. They were just canceling our appointments on appointments.

Participant 2 mentioned, "I think I just tried to manage what I could on my own, but I obviously needed guidance. It was definitely harder to get into the doctor's office." Participant 3 mentioned,

> But when I got pregnant, which was around November, and the doctor that I was currently seeing was on vacation at that time. So, he wasn't due to come back in another three weeks. So, I was not able to make any appointments during that time. And then when he did come back, we were able to get a virtual appointment during that time. I think that was where I had the difficulty of just obtaining an appointment.

Participant 5 said, "And also I feel like a lot of the doctor's office did have limited times to visit too, because I believe they were dealing with a lot of COVID patients."

In terms of fear of potential exposure during COVID-19 pandemic, Participant 2 also said, "It was a little bit more difficult. I felt like it was difficult to get into a doctor's appointments and just that fear of being out in public or going to the doctors, you might contract COVID from that." Participant 5 said, "One of my biggest fears was getting COVID, especially while pregnant and just visiting the doctor's office was a fear that I had." Four out of five participants also expressed limitation on their ability to be physically active throughout their pregnancy due to COVID-19 guidelines. Participant 1 said, "The gyms started closing, so I wasn't able to continue my physical activity, and it

wasn't the safest environment for me outside. I don't live in the safest neighborhood." Participant 3 mentioned, "I did not want to go outside or go on walks because I was scared to catch COVID-19 during my pregnancy so I did not get to be physically active as much as I would have liked." Participant 4 said, "Overall, like I mentioned, it affected the physical activity that I would do. I did not like to go outside as often because I really did not like to wear a mask."

All five participants expressed adapting to virtual healthcare resources during the pandemic. Participant 1 said, "Based on what they were saying, I think a lot of the doctors just wanted to do telehealth appointments and they started minimizing how many appointments they were giving to people." Additionally, she said, "Everything just slowly got transferred over to virtual classes. And so, it kind of did give me a hard time getting used to not being in person with someone sitting there and having a face-to-face conversation with them." Participant 2 mentioned, "Yeah, they had telehealth appointments available. So instead of in place of going to the doctor's actually seeing them, they just offered it over Zoom or it was just over the phone." Participant 3 said, "When I was finally able to talk to my doctor regarding some questions I had on diabetes, I did the appointment virtually. I was glad to have the appointment virtually as I was really fearful of going in-person." Participant 5 mentioned, "So I did take those classes and those were super informative and they were also virtual, so I didn't have to go in person. So, they held a lot of benefit in for me."

Two out of five participants experience economic and nutritional constraints from the COVID-19 pandemic. Participant 1 said, "I did start eating unhealthy again because it

was easier for me to participate in eating the food that was made at home with the financial stuff." Additionally, Participant 1 said:

> So, with my husband losing his job and being cut back on pay, the benefits from the government helped out a little bit. But then it was kind of hard to run a household full of four plus people and then a baby on the way.

Participant 3 said,

> I was even trying to stock up on baby food, wipes, and just some canned food items for myself in case we were isolated inside our homes at that time. It was really a scary time just because it was unknown what would happen and I was scared that I was not eating or exercising enough for my baby.

Other challenges in diabetes management that participants faced during the pandemic included the unknown from the pandemic, consummation of unhealthy foods, and masking guidelines. Participant 3 said, "I think the most challenging thing about the pandemic would be the unknown. I was really hesitant to go out at that time due to COVID." Participant 1 said, "I wasn't really going out to go get groceries anymore. It was kind of just groceries coming from the Indian market. So, it was just constantly being home and more so it increased my stress at that time." Similarly, Participant 3 said, "Overall, I did not go to the grocery stores as much as I wanted. There were a lot of scares at that time of the pandemic where there was not enough groceries or necessities." In terms of masking, Participant 4 said, "More towards the end when it was just more difficult for me to walk, I felt a little bit more shortness of breath because of the mask." Similarly, Participant 5 said,

> So also managing my pregnancy and diabetes was hard during COVID because of the masks. It was hard breathing, so incorporating the mask itself made it even harder, but I knew that it was a way to stay healthy and prevent COVID virus, but it was really uncomfortable.

Theme 4: Psychological Impact of COVID-19

The fourth theme involved the psychological impact participants experiencing while managing their DM2 amidst the COVID-19 pandemic. All five participants experienced either anxiety, fear, or stress when managing their Type 2 diabetes during their pregnancy amidst COVID. Participant 1 said, “Then there was all this anxiety regarding the vaccinations. If we should be getting vaccinations or not and if down the road, what it meant for our babies.” Participant 1 also said, “So it just felt like there was a lot of restrictions during that time. It increased a lot of my stress and anxiety, which obviously wasn't good for the baby.” Participant 3 said,

> I was going through a tough time mentally and I also had a lot of stress and anxiety on if I was taking the right precautions. It was also hard being away from my family during this time. I felt really lost and depressed during my pregnancy and knowing that I could not go visit my family or have them visit me when I needed them was tough.

Participant 4 said:

> I feel like that took a strain on my mental health because I had been trying to conceive for so long that I wanted as much support as I could get. My family

> wasn’t there for me the entire pregnancy. I really did want them there during checkups and birth like my mom, but unfortunately that was not the case.

Participant 5 mentioned, “I did deal with a lot of depression and anxiety because some of the times I did feel alone. I feel like if COVID wasn't there, a lot of the communications I would have been with my doctor.”

Theme 5: Cultural Impact

The fifth theme explored the influence of culture on diabetes management. Three out of five participants expressed that their diabetes self-management was strongly impacted by Indian cultural and practical beliefs and dietary choices. Participant 1 said,

> They (family) tried to manage my diabetes more so in a holistic way again. I had to start finding a balance between dealing with the traditions and the cultures and the requirements with all the holistic pathways that were being told. They wanted them to try remedies like turmeric, water, bay leaf teas, herbal remedies, and just the natural routes.

Participant 1 discussed struggling to take metformin and insulin during her pregnancy, due to the Indian cultural stigma on medication intake. She mentioned:

> Normally in minority cultures and cultures of the Asian root, it's not really looked at in a very positive light. It's more so seen as something's wrong with you. It kind of makes you put yourself in a position that makes you feel that something is wrong and it's not just your health that's in question, it’s you.

Participant 2 mentioned,

> Yeah, I think just another thing in terms of culture is kind of the lack of exercise/dietary changes and push towards traditional Indian remedies. I made food for my in-laws and they all had different tastes so it was difficult to stray from the typical Indian foods that I would make. I am used to making food with a lot of butter and oil for my in-laws so it was hard to make sure that I stay on a healthier diet.

Comparably, Participant 5 said,

> Yeah, so Indian food, they're usually really super oily, and they're heavy in spice and cream. So that's what I ate a lot of my pregnancy, and it was really difficult to manage my diet even though I would request my family members to make food that wasn't fried and oily.

Theme 6: Familial Influence

The sixth theme focused on the positive and negative familial influence on diabetes management among participants during the COVID-19 pandemic. Four out of five participants discussed how familial support impacted their diabetes management strategies. Participant 1 said, "So initially it was a lot of denial (with the diabetes diagnosis) with the family pressure and everything. They didn't want medications. They wanted me to just solely base it off just increasing activities." Additionally, Participant 1 struggled to remain physically active due to objections from her family regarding her choice of attire for the gym. Contrastingly, Participant 2 said, "My husband's super supportive and of course he wanted me to be healthy and he wanted the baby to be healthy, so he got right on board with everything with the dietary changes we wanted to

make." Participant 2 also mentioned educating her family on dietary modifications to improve their overall health. Participant 4 said, "My family did I kind of want to say cater to me and cater to my diabetes by making sure that I had something (food) that was healthy for me."

Summary

The five participants in this research study, focusing on pregnant Asian Indian immigrants living in California with DM2, offer insight on their experiences with managing their disease during the COVID-19 pandemic. During the interviews, the participants revealed their efforts with managing their diabetes while navigating their pregnancy amidst the COVID-19 pandemic. There were six themes that emerged from the interview responses: diabetes management, pregnancy and diabetes management, challenges in diabetes management during COVID-19, psychological impact of COVID-19, cultural impact, and familial influence. Participants discussed their initial approaches to managing their Type 2 diabetes and compared it to their strategies during their pregnancy midst the pandemic. Two out of five participants immediately began to take manage their diabetes diagnosis by implementing dietary changes and physical exercise in their lifestyle.

However, all participants emphasized prioritizing their diabetes management during their pregnancy to safeguard the health of their baby. Three out of five participants mentioned attending diabetes management classes at the start of their pregnancy, while two out of five participants collaborated with dieticians to develop personalized nutrition plans. Participants discussed obstacles such as limited access to prenatal care

appointments, reduced availability in medical supplies, and fear of the COVID-19 virus as factors they faced when self-managing their diabetes amid the pandemic. Four out of five participants experienced restricted access to in-person appointments due to healthcare provider shortages and COVID-19 safety guidelines. Furthermore, all participants discussed adapting to virtual healthcare educational resources, in which two out of five participants voiced as a challenge in communication and adjustment. Participants expressed feelings of stress, fear, and anxiety exacerbated by the unpredictability surrounding the COVID-19 virus and limited social interactions. Issues about vaccination safety and familial support weighed heavily on participants, affecting their mental health being during pregnancy. While two out of five participants received encouragement and assistance from their families, one participant endured resistance and denial regarding their condition. Three out of five participants described how Indian cultural norms practices, such as holistic remedies and dietary preferences, affected their approach to diabetes self-management. This influence of holistic remedies and dietary preferences was heavily driven by participant's family members.

Section 4 will delve into the connection among the six themes identified through data collection and data analysis. It will include interpretations on the findings, limitations of the study, implications of social change, and recommendations for future research studies.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

The purpose of this study was to gain understanding of the experiences and perceptions of pregnant Asian Indian immigrants regarding diabetes self-management strategies during the COVID-19 pandemic. It was important to conduct this current study as there is little research on our understanding of pre-existing diabetes is perceived among pregnant immigrants in the Asian Indian community and how COVID-19 affects their ability to manage it effectively. Analysis of the data revealed following themes: (a) diabetes management, (b) pregnancy and diabetes management, (c) challenges in diabetes management during COVID-19, (d) psychological impact of COVID-19, (e) cultural impact, and (f) familial influence as factors that influenced daily self-management of the disease on the targeted population. Key findings from this study can be used to educate public health professionals such as health educators, providers, and policy makers in using culturally competent approaches to promote lifestyles changes among pregnant Asian Indians with pre-existing diabetes. The study was of qualitative nature and included a phenomenology strategy. Phenomenology explores daily lived experiences and interactions based on their own personal narration (Anderson & Kirkpatrick, 2016).

Key Findings

Five pregnant pre-diabetic Asian Indians immigrants living in California agreed to participate in the study by answering questions about their experiences with DM2 during the COVID-19 pandemic. The participants delved into their challenges and successes with managing their pregnancy and DM2 during the pandemic. Two out of five

(40%) participants actively made healthy lifestyles changes after their initial diabetes diagnosis. All five participants discussed prioritizing their diabetes to guarantee the safety of their baby through diabetes management strategies. Three out of five (60%) participants began to manage their diabetes during their pregnancy by attending educational classes on diabetes management. Only two out of five (40%) successfully managed their diabetes by collaborating with a dietician that monitor their nutritional intake and blood sugar levels. All participants discussed challenges with diabetes management during the COVID-19 which included limited healthcare access, restriction on physical exercise, adaptation to virtual healthcare resources, and nutritional challenges. 80% of participants admitted to experiencing inaccessibility to in-person appointments with their physicians during their pregnancy, and overall difficulty accessing prenatal support and supplies. Additionally, participants (80%) had a fear of exposure to the COVID-19 virus, which limited physical exercise and grocery runs. All participants emphasized their experience in accommodating to virtual healthcare resources through telehealth appointments and virtual diet consultations. All five participants described the psychological impact such as stress, anxiety, and fear they experienced throughout their pregnancy amidst the pandemic. Participants emphasized the involvements of both familial support and cultural beliefs that influenced their diabetes self-management. Three out of five (60%) participants highlighted the impact of Indian culture on dietary decisions through holistic and herbal remedies. Four of five (80%) participants shared a strong familial influence on their experiences managing diabetes during their pregnancy. However, only two participants shared a positive and

supportive familial influence through encouragement of daily exercise and a healthier diet during the pregnancy.

The health belief model helped emerge themes from the participant's response that drew focus on the importance of using culturally competent approaches to promote lifestyles changes among pregnant Asian Indians with pre-existing diabetes. The key findings are found through the emerged themes: (a) diabetes management, (b) pregnancy and diabetes management, (c) challenges in diabetes management during COVID-19, (d) psychological impact of COVID-19, (e) cultural impact, and (f) familial influence.

Sample Population

The sample population was a total of five Asian Indian immigrants with Type 2 diabetes in California. All five participants were of Indian origin, where three originated from Punjab, one from Jammu, and one from Nepal. The prevalence rate of Asian Indians with Type 2 diabetes is 8.3%, which is highest in those who reside in the United States (Misra et al., 2023). Asian Indians are a vulnerable population that are susceptible to Type 2 diabetes, resulting from a reduced body mass index. According to Shah et al., 2023, this vulnerability is caused by factors that involve dietary habits, physical fitness, and genetic predispositions. In this study, all five participants discussed no dietary restrictions or consistent physical activity prior to their diabetes diagnosis. The participants in this study were diagnosed with diabetes more than three years ago. Additionally, all participants within this study were pregnant during the COVID-19 pandemic between the dates March 11, 2020 and May 11, 2023.

Interpretations of the Findings

Diabetes Management

Diabetes self-management is an essential treatment strategy for achieving positive health outcomes (Cahn et al., 2018). This entails adhering to a strict dietary regimen, engaging in physical activities, taking prescribed diabetes medications, and monitoring blood sugar levels to improve overall diabetes health outcomes. The Asian Indian participants in this study discussed their initial self-management strategies after being diagnosed with DM2. Two out of the five participants reported that their physicians cautioned them of being pre-diabetic prior to their diagnosis of diabetes. All participants reported on having limited knowledge of diabetes self- management. These findings are consistent with Deol et al., 2022, who mentioned that the lack of knowledge of self-management strategies for diabetes contributes to the elevated prevalence of the disease amongst the Asian Indian population. Three out of five participants expressed a lack of seriousness and self-care during the initial diagnosis. Sohal et al. (2015) discussed the impact of limited education and the inconsistency in following the physicians recommendations are barriers which have led to the high likelihood of the disease in the targeted population. All participants were prescribed metformin during their initial diabetes diagnosis and all took their prescribed medication. According to Hu et al. (2014), the intake of prescribed diabetes medication is a prominent aspect of diabetes management regimen.

Pregnancy and Diabetes Management

Pregnant women with pre-existing diabetes composes a heightened risk for other chronic diseases and complications during their pregnancy (Kurian et al., 2021). These high-risk pregnant women have a higher likelihood of prenatal complications, increased risk of obesity, and likelihood of glucose intolerance, which requires a higher level of intensive care for the mother and offspring. All participants emphasized immediately prioritizing their diabetes management to protect their unborn child by attending diabetes management classes, consulting with a dietitian, encouraging healthy diet habits, monitoring their blood sugar levels regularly, and incorporating physical exercise into their daily routine. Participants began to manage their diabetes during pregnancy by attending offered educational classes on management, monitoring their sugar levels daily, increasing in physical activity, collaborating with dieticians, and attending weekly calls with nurses for blood glucose monitoring and diet management conversations. These findings are consistent with Chivese et al. (2022), who emphasized the practice of self-care/self-management of diabetes to reduce prenatal complications and promote the optimization of glycemia. Chivese et al. encouraged the idea of diabetic self-care activities, such as self-glucose monitoring, strict diet regiments, and consistent weekly exercise to prevent the complications of diabetes throughout the pregnancy.

Challenges in Diabetes Management during COVID-19

According to Yüce et al. (2021), the COVID-19 pandemic was a global outbreak declared by the World Health Organization from 2020-2023 that the economy, healthcare systems, and daily lives of individuals. Diabetes was seen as the most prevalent and

chronic condition affected during the COVID-19 pandemic because of the restricted access to routine care and the inaccessibility to medications (Khunti et al., 2022). During the COVID-19 pandemic, participants reported challenges with managing their diabetes alongside their pregnancy through limited access to healthcare, restriction on physical exercise, implementation of virtual healthcare services and economic constraints. These findings are consistent with the idea from Khunti et al (2022) that stated that the COVID-19 pandemic created obstacles in diabetes self-management due to the lack of support from healthcare providers, in adequate knowledge regarding the disease, inaccessibility to medications, and restricted access to routine care. Participants faced challenges with limited availability to in-person prenatal appointments. OBGYN and doctor appointments were scarce throughout the COVID-19 pandemic due to prioritization of resources for the COVID-19 response, strained healthcare systems that targeted COVID-19 patients, and lockdown restrictions that minimized essential appointments (Gatt et al., 2023). Kotlar et al. (2021) noted that temporary closure of outpatient clinical sites due to stay-at-home order restricted many pregnant women from routine maternal and reproductive care in a timely manner. One participant in the current study discussed facing challenges with limited access to supplies to manage her diabetes such needles, needle tips, alcohol, and more. It is important to have sanitary needles and needle tips when administering insulin shorts to prevent infections, minimize pain of the insulin injections, and reduce contamination. Mohseni et al. (2021) discussed the shortage of medications, drugs, and medical equipment during the pandemic contributed by national supply and distribution issues. Economic implications of the pandemic influenced the availability of self-

monitoring tools and essential supplies for diabetic patients. All participants expressed negative emotions of fear and distress of exposure to the COVID-19 virus while attending their prenatal care visits. Frontline healthcare workers had a high risk of infection due to personal exposure to patients with the disease COVID-19, which limited the number of healthcare providers available to care for the increasing number of patients and illnesses (Nguyen et al., 2021). Additionally, Khunti et al. (2021) emphasized that the COVID-19 pandemic created staff shortages due to self-isolation, reemployment, and illness, which provided a lack of support for pregnant women who have pre-existing diabetes. Participants also reported restriction to their physical activities due to social distancing measures, closure of facilities such as gyms and parks, and masking guidelines. According to Park et al. (2022), the findings have shown that the COVID-19 pandemic was correlated with significant decreases in physical activity, such as walking, and mobility, which overall had a negative impact on an individual's ability to engage in physical exercise. Masking guidelines made it difficult for participants to engage in physical activity as it restricted airflow, and limited amount of oxygen intake. All participants highlighted their adaptation to virtual healthcare resources through telehealth appointments and virtual diet consultations. Shaver (2022) mentioned that the state and use of telehealth increased to assess and provide patients with healthcare resources and consultations virtually. The COVID-19 pandemic restricted several aspects of healthcare; however, the implementation of telehealth medicine was used to provide equitable healthcare resources and consultation by reaching patients remotely during the recurrent surges of the COVID-19 disease. Participants endured economic constraints, including

unemployment and financial difficulties that rose from the pandemic. At the height of the COVID-19 pandemic, there was an increase in the loss of employment which led to many individuals and families and losing their income. The lockdown challenged families and individuals that did not have the financial means to necessary medications, healthy food options, and medical supplies such as masks or PPE (Mohseni et al., 2021).

Psychological Impact of the COVID-19

The COVID-19 pandemic significantly heightened levels of anxiety, stress, and fear for individuals by introducing disruptions in social and daily life, and financial/economic uncertainty. All five participants in the current study discussed the mental distress the COVID-19 pandemic caused them during their pregnancy. Participants experienced anxiety and fear of the unknown surrounding the impact of COVID, coupled with the concerns for their health and their child's health, exacerbated by the limitations of the current healthcare support. Cai et al (2020) discussed how the effects of the COVID-19 pandemic resulted in short-term depressive symptoms and mental health issues. Psychological influence of COVID-19 was noticed higher and longer for COVID-19 survivors and their family members. One participant expressed fear regarding the COVID-19 vaccination and struggled to determine the vaccine's safety and effectiveness for her and her unborn baby. Murugran et al. (2021) proposed that factors that contributed to the vaccine's safety concerns included it's short span development, limited researched data, and reported vaccine symptoms.

Cultural Impact

Cultural beliefs and traditions can heavily influence how a community manages their illness. Participants in the current study discuss their struggles with adhering to medical orders of metformin intake and insulin injection for their diabetes management, but instead focus on holistic remedies such as intake of turmeric water, and bay leaves. According to Sharma and Keith Wallace (2020), within the Asian Indian community, holistic healing methods are the natural treatment for addressing a disease and promotion of both physical and mental health. While participants followed holistic remedies suggested to them by their family members, participants still adhered to their physician's recommendations and took prescribed diabetic medications. Participants discussed struggling with abiding to their dietary regimens due to the types of foods in the Asian Indian heritage. Participants expressed incorporating dietary changes such as limiting sugar, carbohydrates, and portions in their diet were implemented, but they lacked the accurate knowledge of culturally specific diabetes diet information to manage their disease more effectively. Common cultural Indian food and ingredients such as ghee (clarified butter), cream, red chili powder, flour, fried food, and high levels of sodium contribute to the community's unhealthy dietary habits. These findings align with Deol et al. (2022), who reported inadequate dietary lifestyles due to lack of access to culturally appropriate dietary advice. Additionally, Deol et al. discussed that nutritional intake of foods such as vegetables, herbs, melons, and flour are foods that heal overall health and are used for hypoglycemia effects among diabetic patients, instead of the intake of their traditional Asian Indian foods. Two participants discussed catering to family dietary

preferences, instead of divulging time into making their own healthy meals. Deol et al. emphasized that since Indian women are traditionally responsible for meal preparation for their entire family, they rarely have the capacity to manage their sugar levels and diabetes properly.

Familial Influence

Family support plays a prominent role for Asian Indians diagnosed with diabetes. An important finding in the current study was that a majority participants (80%) discussed receiving a strong network of assistance from family members, but one participant's family did not support their lifestyle changing for managing their diabetes. Deol et al. (2022) mentioned that Asian Indian families insufficient knowledge and understanding about diabetes led to inadequate support, further hindering diabetes management. On the other hand, Hu et al. (2014) highlighted the importance of family in diabetic interventions as it is linked with improvements in eating habits and engagement in physical activity.

Limitations of the Study

The study was limited to pre-existing diabetic Asian Indian immigrants in California that were pregnant during the COVID-19 era. The findings of this study can only be applied a specific population and limits generalizability due to the small sample size of five participants. The sample participants were limited to individuals in two Facebook groups communities for pregnant and diabetic Asian Indians residing in California. The reliance on purposive sampling instead of random sampling can introduce biases as this study takes the experiences and perceptive of five participants which may

not adequately represent the experiences and perspective within the broader Asian Indian immigrant community. The sample was constrained to Asian Indian immigrants that voluntarily choose to participant as interviewees in the study. The sample populations was also only inclusive to Asian Indian immigrants that spoke English fluently. Non-English Asian Indian immigrants may have had different experiences with self-managing their diabetes and pregnancy during the pandemic but non-English participants were not captured in this study. The study explored diabetes management strategies during the COVID-19 pandemic in Asian Indians with Punjabi, Jammu, and Nepali descent, restricting its generalization to other Asian Indian subgroups in California. The phenomenology approach also limited the accuracy of participant's responses. Due to internalized feelings of embarrassment or shame, participants may have underreported severity of their disease or fabricated their disease management strategies. Lastly, I was the only person present conducting the interviews and analyzing the data so the study's findings should be approached with caution, as the consistency of the interpretations may not be fully captured or generalized beyond the sampled members. As the sole interviewer, it is possible that I could have misinterpreted or missed some relevant information shared by the participants.

Recommendations

This study explored diabetic Asian Indian immigrants perception of diabetes management during the COVID-19 pandemic. The strength of the qualitative nature of the study gathered the rich personal experiences and interactions of pregnant participants with Type 2 diabetes during the COVID-19 period. Although the findings do not reflect

the standard experience of a pregnant Asian Indian immigrant, it allows for the generalization of challenges attributed by diabetes self-management that the targeted population may face. A future study could increase its sample size among the targeted population to fully incapsulate the complexities of shared experiences and perceptives within a broader community, enhancing generalizability. The objective of the study was to capture insights into the perception of pregnant diabetic Asian Indian immigrants in California, emphasizing the significance of cultural belief systems in diabetes management. The findings of the study aim to enable providers, health educators, and community health workers to identify gaps of knowledge in diabetes management among the Asian Indian community. The current study participants had an average age of 33 years old and three Asian Indian subgroups. A future study could include a younger or older Asian Indian population from diverse Asian Indian subgroups to gain a thorough understanding of knowledge, challenges, and influences facing the target population. Additionally, future studies can explore perceptions of Asian Indian immigrants within rural and urban parts of the United States to capture all health beliefs and barriers with diabetes self-management. The current study found that participants obtained knowledge of diabetes, its complications, and management strategies after their diagnosis. Future exploration on addressing knowledge of diabetes and self-management among the general Asian Indian community are essential. All participants discussed prioritizing their diabetes management more closely during their pregnancy to protect the health and well-being of their unborn baby. Organized community initiatives focusing on diabetes management education for future or expecting mothers may be valuable for pregnant

Asian Indian individuals. Participants in the current study addressed challenges they encountered during family celebrations with adhering to their dietary plans. Participants expressed the importance of educating their family members on diabetes and self-management to improve lifestyle changes and adopt primary intervention for diabetes. It will be beneficial to provide family members with diabetes education and self-management programs to alleviate the burden diabetic members may experience in adapting to lifestyle changes and managing the progression of the disease. Additionally, the educational programs can also decrease the risk of developing diabetes by adopting healthier dietary habits and incorporating regular physical exercise.

Implications for Professional Practice and Social Change

By 2045, the world-wide prevalence of diabetes is projected to increase to 700 million (Misra et al., 2023). The dynamic increase in diabetic members will require a transition in healthcare delivery to incorporate cultural frameworks into diabetes cares and cater to diverse ethnic groups. Organizations such as the American Diabetes Association, Diabetes Advocacy Alliance, and Centers for Disease Control should advocate healthcare professionals to undertake efforts to create culturally appropriate care for all diabetic individuals. The health belief model was used as a framework for the current study because the findings can be used to implement and guide changes within disease prevention programs and help promote healthcare resources within a community. The use of this framework within the study can help to emphasize and understand interpersonal influences, behavioral factors, biological factors, and situational factors to provide a wide range of healthcare services to minority groups. The findings from the

study using the health belief model can implicate social change by encouraging the involvement of culturally competent interventions and educational programs for Asian Indian immigrants living in the United States. Health educators, community health workers, and policy makers can utilize the findings from the study to create a positive social change for encouraging diabetes management amongst the targeted population. Through the foundation of limited studies and programs that are culturally specific, the findings from the study can help pregnant Asian Indian immigrants with pre-existing diabetes to improve quality of health and lifestyle through educational programs that help to promote diabetes self-management. There are limited studies regarding pregnant Asian Indian immigrants and their experiences with diabetes self-management during the COVID-19 pandemic. Cultural beliefs, pregnancy, and COVID-19 played a big factor and how pregnant Asian Indian immigrants were able to self-manage their diabetes. The findings of the study can be used to provide culturally competent care to the targeted population, but also ensure that in future epidemics and pandemics, this targeted population has access to healthcare resources and diabetes self-management care that will not inhibit their lifestyle and improve their overall health. This findings emphasize the importance of providing healthcare resources and providing education on diabetes self-management to pregnant Asian Indian immigrants to provide for a better quality of life for themselves and their children.

Conclusion

The current study explored the perception of pregnant Asian Indian immigrants regarding diabetes self-management strategies during the COVID-19 pandemic. A semi-

structured interview protocol was used to collect information on the experiences of five diabetic participants that were pregnanct during the COVID-19 pandemic. The survey was administered over 3 weeks in March 2024, and data were analyzed using MAXQDA. Findings from the current study demonstrate that healthy diabetic behaviors of participants are triggered by the presence of their pregnancy prognosis but can be improved through educational programs and familial support during the pandemic. Diabetes is a disease that impacts an entire family. Immigrant families that come from foreign countries to the United States especially have a difficulty learning and understanding the complexity of diabetes and diabetes self-management. Asian Indian immigrants may have difficulty securing concrete support from their families and healthcare resources due to inadequate knowledge regarding diabetes self-management. In times like the COVID-19 pandemic, it can be difficult for the immigrants to understand the risk of their disease and reach out to the appropriate healthcare resources that can help improve their quality of life. The COVID-19 pandemic had a prominent impact on diabetes self-management, specifically among high risk populations such as pregnant Asian Indian immigrants. This study emphasizes how the pandemic exacerbated existing challenges and introduced new barriers which includes inaccessibility to healthcare services, interruptions in routine care, financial strains, and increased psychological impacts. Additionally, the study highlights the existing gaps in the healthcare system for managing pre-existing diabetes among pregnant immigrants in the Asian Indian community. Therefore, developing and integrating culturally diverse disease management strategies and outreach approaches within public health programs can

significantly influence better health outcomes and create real social change for minority groups living within the United States.

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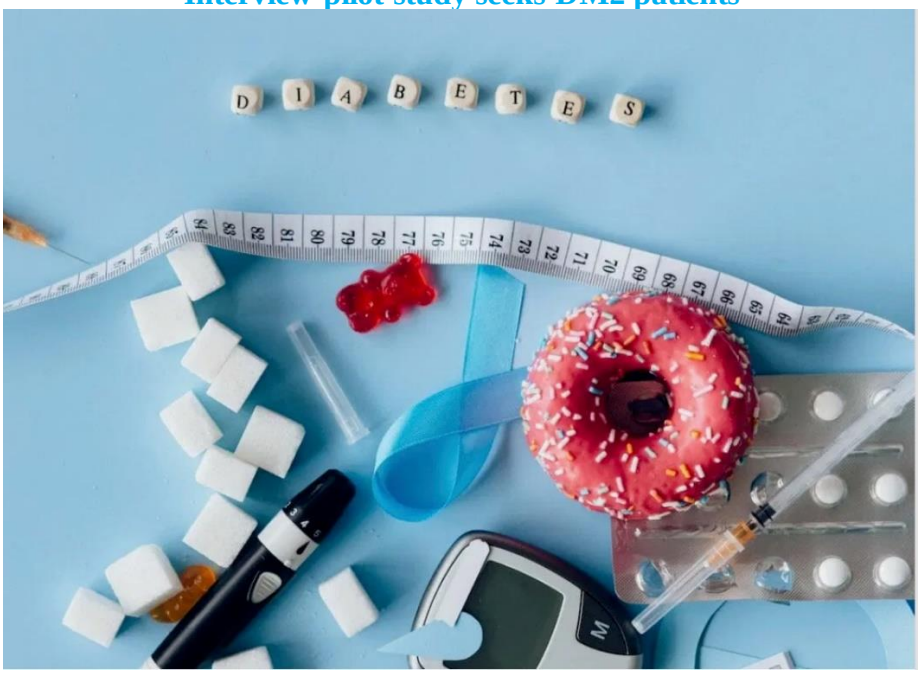
Appendix A: Pilot Study - Social Media Adverstisement

Interview pilot study seeks DM2 patients



There is a new pilot study about the experiences of women that discusses diabetes self-management strategies during the COVID-19 pandemic that could help public health professionals better understand and promote positive lifestyle changes among DM2 patients. For this study, you are invited to describe your experiences managing your pre-existing diabetes.

About the study:

- One 30-60 minute video interview that will be audio recorded (no videorecording)
- You would receive a $25 Visa gift card as a thank you
- To protect your privacy, the published study will not share any names or details that identify you

Volunteers must meet these requirements:

- Be an Asian Indian adult who originated from India
- Have a formal diagnosis of pre-existing from a healthcare professional or physician for Type 2 diabetes
- Have a gestational period (pregnancy) during COVID-19 pandemic
- Be an adult within ages of 25-55 years
- Be fluent in the English language

This interview is part of the doctoral study for Sanya Bedi Grewal, a DrPH student at Walden University. Interviews will take place during March 2024.

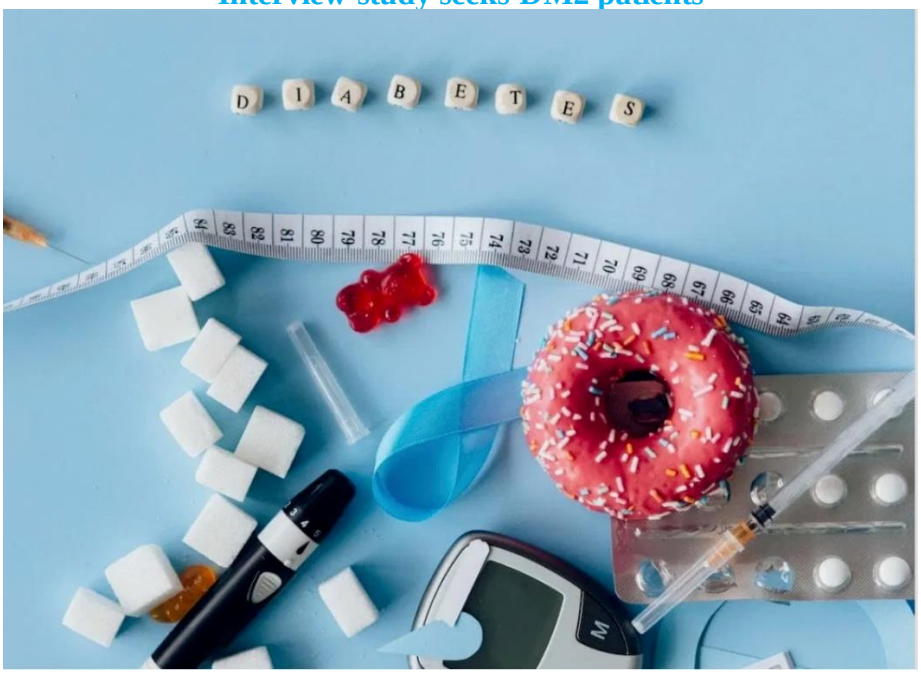
If you wish to volunteer, please click the link below to go to the Consent Form and Demographic Survey:

Click Here

You are welcome to forward this invitation to others who might be interested

Appendix B: Social Media Adverstisement

Interview study seeks DM2 patients



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Appendix C: Demographic Survey

1. Are you fluent in the English language?
    1. Yes
    2. No
2. Where were you born? From what country and state?
3. Please select the category that includes your age
    1. Under 18
    2. 18-24
    3. 25-34
    4. 35-44
    5. 45-54
    6. 55-64
    7. 65 or above
4. What is your marital status?
    1. Single (Never Married)
    2. Married
    3. Divorced
5. Do you currently have children under the age of 18 living in your household?
    1. Yes
    2. No
6. Have you been formally diagnosed with Type 2 diabetes by a physician, doctor, or healthcare professional?
    1. Yes
    2. No
7. When were your first diagnosed with Type 2 diabetes?
8. Are you the first in your family to be diagnosed with Type 2 diabetes?
    1. Yes
    2. No
9. Were you pregnant during the COVID-19 pandemic (from March 11, 2020 - May 11, 2023)?
    1. Yes
    2. No

Appendix D: Interview Guide

Hello, my name is Sanya and I am a graduate student at Walden University pursuing my Doctorate in Public Health. The focus of my research will center on the perceptions of pregnant Asian Indian immigrants with Type 2 diabetes and the influence of COVID-19 on their self-management strategies. I would like to express my gratitude for your participation in my study. The insights and findings from this interview will be used for my doctorate study. This interview will follow a semi-structured format, which means there will be predetermined questions, however the interview is open to discussion based on participant's responses. All participation is voluntary and can be stopped at any given time during the interview. The interview will be recorded, so I can self-debrief the conversation after the interview. During the interview, I will be jotting down some notes. Feel free to ask questions or seek clarification during any point of the interview. Please note that there are minimal risks associated with our conversation. The interview will be recorded; however, all responses will be kept confidential. To protect your identity, I will assign a numerical code instead of using your name. Once the interview has ended, the interview transcript will be emailed to you. I will follow up after the interview to perform member checking by reaching out to you after the interview to explore the accuracy and credibility of my results based on your experiences. Parts of the interview can be disregarded based on your preference. The interview recordings will be locked in a private computer and contain up to five years. Do you have any questions or concerns before beginning the interview?

Research Question: What is the perception of pregnant Asian Indian immigrants living with pre-existing diabetes on the self-management of the disease during COVID-19

Interview Questions:

1. Tell me about your experience with managing your diabetes during the COVID-19 pandemic and pregnancy.

Probing will occur during the response to question 1 above. The following prompt questions will be asked if the content is not covered in the response to the opening question.

2. How did you manage your DM2 and what were your successes and challenges when managing your disease during the COVID-19 pandemic?
3. Could you expand on how you managed your diagnosis based on your background and where you grew up?
4. Can you describe the self-management strategies you utilized for managing your Type 2 diabetes before and during the pandemic?
5. Tell me about how you feel about the way you have been managing your type 2 diabetes.

6. Tell me about your experiences with health personnel when seeking health advice for Type 2 diabetes related issues during the COVID-19 pandemic.
7. Tell me how did pregnancy play a role in your management of Type 2 diabetes.
8. Tell me about factors that played a role in promoting or inhibiting the self-management of your Type 2 diabetes during the pandemic.

Thank you for the taking the time to answer my questions. Regardless of completing the interview, you will receive an email with a token of appreciation for your time ($25 gift card). Additionally, do I have permission to contact for follow up questions if needed?