MASTER'S DEGREE IN HEALTH COACHING

HEALTH COACHING SUPPORT IN DIABETES MANAGEMENT

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CERTIFICATE APPROVAL

I certify that I have read HEALTH COACHING SUPPORT IN DIABETES MANAGEMENT by Samuel NZAMURAMBAHO and that in my opinion, this work meets the criteria for approving a thesis submitted in partial fulfillment of the requirements for the award of Masters of Health Coaching at Lifestyle Prescriptions® University and has not been presented for any award.

Johannes R. Fisslinger

Date: ….. February 2023

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I Samuel NZAMURAMBAHO, hereby declare that this submission is my work and to the best of my knowledge, it contains no materials previously published or written by another person. This report is the outcome of my original action research and compiled for presentation in partial fulfillment of the requirements for the award of Masters of Health coaching.

I also declare that the intellectual content of this report is the product of my research, except to the extent that assistance from other conceptions, presentation, and linguistic expression is acknowledged.

Samuel NZAMURAMBAHO

Date: 10th February 2023.

ABSTRACT

Diabetes mellitus (Diabetes) is a chronic illness that has a significant influence on the lives and well-being of individuals, families, and communities all over the world. It is one of the causes of mortality in adults aged 20–79 years, with four million fatalities worldwide in 2017. Diabetes cost the world $727 billion in 2017 (Cho, 2018). Diabetes that is not adequately controlled can lead to complications, including damage to the heart, kidneys, eyes, nerves, and other organs.

This research was carried out in Rwanda, where no health coach clinical studies have been conducted, to explore its practicality and effectiveness in Diabetes management. In this Capstone, this research aimed to evaluate the effect of a health coaching intervention on diabetes patients' blood sugar management and self-efficacy. I explored whether health-coaching integration can support diabetic health service providers and patients especially based on root cause analysis and lifestyle medicine, and whether it will support preventing, managing, and reversing diabetes through individual and group coaching. This study aimed to enhance patients' self-efficacy in diabetes care, including medical compliance and health behavior, and to improve the indicators of diabetes, especially the value of HbA1c.

This study indicated that after three months of health coaching, the glucose level (mg/dl) decreased at a rate of 28.9% and the HbA1c level decreased by 1.4% in eight participants who successfully completed all coaching sessions. Health coaching has been demonstrated to be beneficial for both physical activity and diabetes self-management.

Keywords: Diabetes Mellitus, health coaching, lifestyle, self-efficacy, HbA1.

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LIST OF ABBREVIATIONS

DM2: Type 2 Diabetes Mellitus 1
HbA1c: Hemoglobin A1c 5
HC: Health Coaching 1
HDL: High-Density Lipoprotein 5
ICC: International Coaching Community 15
IDF: International Diabetes Federation 4
LDL: Low-Density Lipoprotein 5
LHC: Lifestyle Health Coaching 5
WHO: World Health Organization 1

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CHAPTER 1: INTRODUCTION

1.1 Background and Research Questions

According to the World Health Organization (WHO), more than 422 million people worldwide have diabetes, with 90% of cases being type 2. By 2030, diabetes is expected to become the world's sixth-greatest cause of death. In 2014 diabetes affected 8.5 % of persons aged 18 and above (WHO, 2022). In 2019 diabetes was the direct cause of 1.5 million fatalities, with 48% of all diabetes-related deaths occurring before the age of 70. Between 2000 and 2016 Diabetes caused a 5% rise in premature mortality rates (death before the age of 70). Diabetes-related premature mortality declined in high-income nations from 2000 to 2001 but then climbed from 2010 to 2016. Diabetes-related premature mortality increased in lower-middle-income nations over both eras (WHO, 2022).

Health coaching has emerged as a potential intervention for improving the quality of life and health outcomes of diabetic people. Health coaching helps the patient set objectives by assessing where they are and what action they are ready to take; it simply guides them through the process of changing their lifestyle. This study will use Lifestyle Prescriptions® health coaching approach, focusing on root cause analysis and lifestyle medicine (Fesslinger, 2018). The goal of this analysis was to establish the efficacy of health coaching in altering diabetes patients' health status and quality of life, as well as identify the elements of coaching delivery that make it most beneficial.

1.2 Problem Statement

Since the 17th century, emotional stress has been linked to the development of diabetes. Review studies have mainly focused on grief, disappointment, stress, disbelief, anger, and depression as the factors for the development of diabetes.

The number of people who are suffering from Diabetes is increasing over time, and many of them take their medications, but medication sometimes is not sufficient because of their health lifestyle. An efficacious approach to diabetes mellitus is needed to support the current therapies, or the numbers will keep increasing. In this Capstone, I used Health Coaching to find out how effective root cause health coaching is changing patients' lifestyles.

1.3 Proposed Solution

Health coaching has become a strategy used in the care and management of chronic diseases in recent decades. Health coaching is a patient-centered, patient-chosen strategy of illness management. It also improves patients' self-efficacy, self-management and a healthy lifestyle. However, Health coaching services in Rwanda are not yet involved in diabetes prevention and management.

Health coaching draws on research in behavioral medicine, positive psychology, health and coaching psychology, and sports and performance coaching to develop evidence-based health behavior change strategies and approaches. It can be used in lifestyle medicine for health promotion, prevention, early intervention, therapy, and management of chronic illnesses (Rippe, 2018).

Health coaching (HC) is focused on partnering with people in a thought-provoking and creative process that motivates them to maximize their personal and professional potential by developing awareness and empowerment to adopt healthier lifestyles (International Coach Federation, 2022). Supporting patients to evoke their compelling reasons for change and articulating a clear picture of their health objectives generates motivation (National Library of Medicine, 2018).

A universal consensus exists on key aspects that contribute to good diabetes care and the prevention of future problems. Health coaching can be an effective way to bring all of these aspects together. To begin, primary healthcare systems should include patient-centered interventions that focus not just on clinical results but also on positive lifestyle changes in order to enable long-term beneficial and durable improvements before costly treatments are required.

Oral medication or injections are not always sufficient to treat the underlying cause of chronic diseases because those illnesses are somehow connected to emotional and poor lifestyles like smoking, lack of exercise, bad food choices, and stress. It has been proven that adherence to medication and health-related lifestyle modifications are two significant and the best methods for treating chronic illness (Meg Hartley, 2014). The goal of this study was to evaluate the effectiveness of HC in helping type 2 diabetes (DM2) patients in Rwanda for the first time.

1.4 Research Aims and Objectives

This study aimed to establish the efficacy of Lifestyle Prescriptions® Health Coaching in the health status and quality of life of people living with diabetes mellitus.

Objectives:

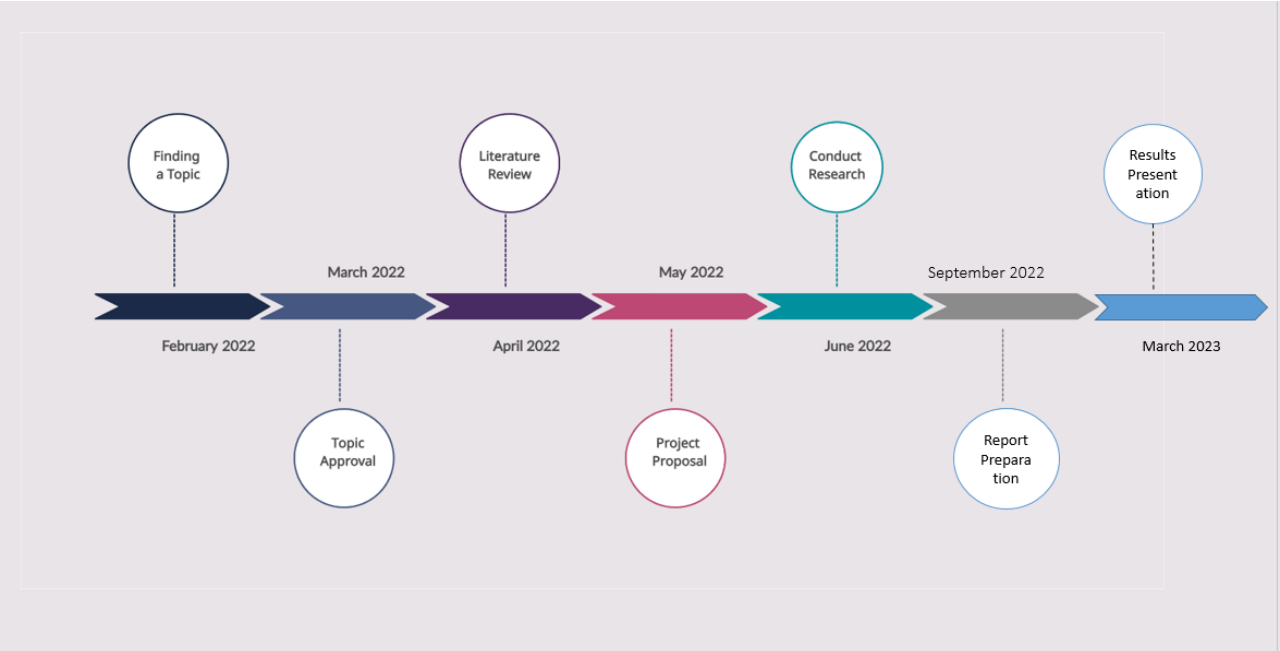
- Improve patients' physiological, behavioral and social outcomes.
- Determine if health coaching can help improve one or more of the behaviors such as nutrition, physical activity, weight management, or properly taking medication.
- Determine if health coaching can improve glycemic control and reduce glycated hemoglobin for patients with diabetes.
- Determine if health coaching can help assist with weight loss and increase the levels of motivation and personal satisfaction.

1.5 Research Questions

- What are the differential effects of Lifestyle Prescriptions Health Coaching on the health of people with diabetes mellitus in Rwanda?
- What is the level of change in diabetes patients' awareness and acceptance of Lifestyle prescription health coaching?
- What is the level of change in diabetes patients' perceptions regarding the usability and effectiveness of Lifestyle prescription health coaching?

- What are the effects of Lifestyle Prescriptions Health Coaching on diabetes mellitus?

1.6 Timeline



1.7 Conclusion

This Chapter introduced the topic of Health Coaching in Diabetes. It describes the impact of the current situation and explains the problem posed by diabetes and its management, sets out how health coaching can help to address the problem and suggests how Lifestyle Prescriptions® Health Coaching can assist in diabetes management. It sets out the timeline to conduct the research and concludes with research questions. Chapter 2 presents definitions and the current research on this topic and Chapter 3 describes the methods used to answer my research question. Finally, Chapter 4 reports the outcomes of this research project and comments on their application to the field of health coaching.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Having described the topic of this research project and the research questions I aimed to answer, here I provide definitions of the terms used in this study.

2.2 Diabetes

Diabetes is a chronic condition that occurs when the pancreas fails to generate enough insulin or when the body's insulin is ineffectively used (WHO, 2022). Insulin allows glucose to enter cells, which provides energy to all the body's cells and without it, glucose cannot enter cells. There are two main types of diabetes mellitus: Type 1, which occurs mainly in children and accounts for 10% of overall diabetes cases, and Type 2, which occurs mainly after the age of 40 and accounts for 90% of diabetes cases (Manish Kumar Maurya, 2019). In this case, insulin is secreted but in low amount and it is co-related to our lifestyle such as overeating, physical activity, the food we eat etc. There are few studies, which have examined about Health coaching and Diabetes mellitus but have had small sample sizes.

2.2.1 Type of Diabetes

Type 1 diabetes (also known as insulin-dependent, juvenile, or childhood-onset diabetes) is characterized by low insulin production and needs daily insulin injection. The body does not produce insulin if it has type 1 diabetes. Immune systems target and kill the insulin-producing cells in the pancreas. Diabetes type 1 is most commonly diagnosed in children and young adults, although it can strike anybody at any age. To stay alive, people with type 1 diabetes must take insulin every day.

The body does not generate or utilize insulin well if it has type 2 diabetes. Type 2 diabetes can strike at any age, including youth; however, it is more common in middle-aged and older adults. Type 2 diabetes is the most prevalent type, and it is caused by a combination of variables, including lifestyle choices and genetics. If a person is 45 or older, has a family history of diabetes, or is overweight, s(he) is more likely to acquire type 2 diabetes. Physical inactivity, race, and certain health issues like high blood pressure can all increase the risk of acquiring type 2 diabetes. A person with prediabetes or who has had gestational diabetes, is more likely to acquire type 2 diabetes.

Type 2 diabetes can be prevented or delayed by decreasing weight if a person is overweight and exercising for 30 minutes most days of the week (RBC, 2021). To help prevent type 2 diabetes, some patients use Metformin, a diabetic medicine (Vanita, 2018).

2.2.2 Effects of Diabetes

Diabetes can affect nearly every part of the body. Managing blood glucose levels can help avoid a slew of additional health issues that might arise after onset of diabetes. Heart illness and stroke, Nerve Damage (Diabetic Neuropathy), Foot Problems, Gum Disease & Other Dental Problems, Low Blood Glucose (Hypoglycemia), Kidney Disease, Eye Disease, and Sexual & Bladder Problems are all common diabetes complications. Your diabetic meal plan aids in blood glucose control. Moderate physical exercise on most days of the week aids with blood glucose

management. Discuss eating and physical activity plans that are ideal for you with your healthcare provider.

2.3 Insulin

Insulin is a hormone produced by the pancreas, which is a gland beneath the stomach. Insulin enables the body to utilize glucose as an energy source. Many carbohydrates contain glucose, which is a form of sugar. Insulin also aids in the regulation of blood glucose levels. Insulin tells the body to store excess glucose in the liver when there is too much glucose in the circulation. The glucose that has been kept is not released until the blood glucose levels drop. When the body is stressed or requires an extra push of energy, blood glucose levels may drop between meals.

2.4 Insulin Resistance

Insulin resistance occurs when cells in the muscles, fat, and liver do not respond to insulin and are unable to utilize glucose from the blood to generate energy. The pancreas produces extra insulin to balance. The blood sugar levels rise with time. Obesity, high blood pressure, high cholesterol, and type 2 diabetes are all symptoms of insulin resistance syndrome. One in three Americans might be affected (Dansinger, 2021). Metabolic syndrome is also another term for it.

2.5 Low Blood Sugar (Hypoglycemia)

Blood sugar levels change often during the day. When they drop below 70 mg/dL, this is called having low blood sugar. At this level, it needs to be brought back up. Low blood sugar is especially common in people with type 1 diabetes but even people with type 2 diabetes may experience hypoglycemia if their blood sugar levels drop too low. Knowing how to identify low blood sugar is important because it can be dangerous if left untreated. It is characterized by fast heartbeat, shaking, sweating, nervousness or anxiety, irritability, confusion, dizziness, and hunger. There are many reasons why people have low blood sugar, including taking too much insulin, not eating enough carbs for how much insulin you take, the timing of when insulin is injected, the amount and timing of physical activity, and drinking alcohol (CDC, 2022).

2.6 HbA1c

Red blood cells contain the protein hemoglobin. It is responsible for the red color of blood and for transporting oxygen throughout the body. Glycated hemoglobin, or HbA1c, is a kind of hemoglobin that has been glycated. This is what happens when your body's glucose (sugar) adheres to your red blood cells. Because your body is unable to adequately utilize sugar, more of it adheres to your blood cells and accumulates in your blood. Because red blood cells are active for around 2-3 months, the reading is performed every three months (DiABETESUK, 2022).

A high HbA1c level indicates that a blood sugar level is excessively high. This means the patient is likely to develop diabetic complications such as major eye and foot issues. The typical range for hemoglobin A1c levels in adults without diabetes is between 4% and 5.6 %. If a hemoglobin level A1C is between 5.7 and 6.4 percent, prediabetes exists and there is an

increased risk of developing diabetes. Diabetes exists if a level is 6.5% or greater (Dansinger, 2022).

Table 1: A1c and Blood Sugar *(CDC, 2021)*

A1c	Average Blood Sugar (mg/dL)
4	68
5	97
6	126
7	152
8	183
9	212
10	240
11	269
12	298
13	326
14	355

Table 2: Summary *(CDC, Diabetes Tests, 2021)*

LEVEL	HbA1C TEST	FASTING BLOOD SUGAR TEST	GLUCOSE TOLERANCE TEST
DIABETES	6.5% or Above	126mg/dl or Above	200mg/dl or Above
PREDIABETES	5.7-6.4%	100-126 mg/dl	140-199 mg/dl
NORMAL	Below 5.7%	99 mg/dl or Below	99 mg/dl or Below

2.7 Health Coaching

Health coaching is a patient-centered method of treatment delivery. Patients who get health coaching gain the information, skills, and confidence they need to manage their chronic illnesses and enhance their overall health. Patients are empowered by health coaches to take an active part in clinical interactions and self-management activities at home, work, and school, where they spend the majority of their time (Thom, 2018).

Health & Wellness Coaches work with clients who want to make self-directed, long-term changes that promote health and wellness and, as a result, improve well-being. Health and wellness coaches demonstrate unconditional positive regard for their clients and a belief in their ability to change in the course of their work, while also respecting that each client is an expert on his or her own life and ensuring that all interactions are respectful and non-judgmental (Jarvis, 2019).

People who get health coaching have the information, skills, and confidence to take a more active role in their treatment, resulting in improved personal well-being and overall health.

Health coaching has been shown to increase health-related behaviors such as medication adherence, patient activation, hospital utilization reduction, and long-term disease management.

2.8 Health Coaching Defined

Health coaches are catalysts for change. They assist and empower the patients as they achieve beneficial dietary and lifestyle changes with the help of the rest of a collaborative care team. Health coaches are highly trained experts who use their knowledge and experience to assist their patients in making such improvements. They form strong, supportive relationships with the patients, allowing them to take charge of their advancement. Health coaches help people change by empowering them to become experts in their bodies, minds, and situations (Kresserinstitute, 2022).

Health coaches are taught to listen, observe, and modify their approach to the specific requirements of their patients. To tune in to their client's experience, coaches seek signs like nonverbal communication or changes in the patient's emotions or energy.

2.9 Health Coaching Strategies

Health coaches employ a variety of tactics to assist the patients in making long-term changes (Johannes, 2018). They direct the conversation's flow by asking certain questions at specific periods and guiding the session through specific phases such as agenda formulation, exploration, planning, and closure. Coaches, in other words, assist in the coaching session.

Coaches use several broad categories of tools and techniques, such as:

- Motivational interviewing, which helps people discover their motivation and strategies for change
- Positive psychology, which teaches people to build on what’s working, rather than fixing what’s broken
- Understanding the stages of change, which allows health coaches to offer the appropriate type of support at each stage of change
- Habit formation and reversal, which supports people to create new, healthy habits and reverse unhealthy ones
- Accountability and goal setting, which helps people to stay on track and achieve their goals

A health coach's skill set is unlike that of any other health practitioner, which is why they fill a key void in our healthcare system. Clients get access to health coaches who function as advisers. They're not there to lecture; they're there to empower. This requires letting go of personal agendas and learning to listen objectively and without prejudgment. Mastering the abilities and tactics of a health coach, like any other discipline, requires time and effort (Bettencourt, 2018).

2.10 Related Research

Research into health coaching and diabetes has increased in recent years. Studies have focused on the effectiveness of using health coaching in diabetes mellitus reduction and a few Randomized Controlled Trials (RCTs) have been conducted. Many quantitative studies using health-coaching strategies for adults with diabetes have reported lower hemoglobin A1C levels and other positive outcomes including greater awareness, changing of patient lifestyles, and access to health care, but qualitative data on patients' experiences in these programs is still scarce.

I searched for articles on randomized controlled trials of health coaching interventions, targeting type 2 diabetic patients that were published in the English language from January 2005 through December 2022 on the internet, in books, and studies included in research gate and other databases.

2.10.1 Health Coaching in Diabetes: Empowering Patients to Self-Manage

According to the *Canadian Journal of Diabetes* (Durhane Wong-Rieger PhD, 2013), evidence of the effectiveness of health coaching is growing, not only in terms of patient self-efficacy, treatment adherence, and behavior modifications but also in terms of health care usage and health outcomes. Patients with diabetes had substantial increases in glycated hemoglobin levels, self-reported medication adherence, activity, stress, and health status in a randomized control study comparing health coaching to conventional care. Supporting self-management was shown to improve quality of life, clinical outcomes, health care usage, and lower emergency service use (text citation needed here). A lot of studies show that employing the phases of change to influence behavior change in diabetic patients is successful.

Additionally, a meta-analysis of studies with diabetes patients found that self-management supports improved knowledge, self-care, and metabolic control (Durhane Wong-Rieger, 2013). Similarly, the results of a systematic review found that self-management education programs improved patients' knowledge of diabetes and clinical outcomes and reduced medication use. (Rieger, 2017). Self-management support has been incorporated as an integral component of the national standards for diabetes self-management education (Beck, 2017), defined as the "ongoing process of facilitating knowledge, skill, and ability necessary for diabetes self-care" (page number needed here) . Specifically, the current standards incorporate key principles of health coaching. Standards six to nine call for developing personal strategies to address psychosocial issues and to promote health and behavior change; collaboration between patient and professional to develop plans and individualized follow-up, and measurement of goals attainment at regular intervals.

However, there is a strong note of caution. According to the Health Foundation, to be truly effective, health coaching must be "normalized into existing ways of working" within health systems. Health coaching must be integrated into the overall delivery of services. The UK Diabetes Year of Care pilot program provides a compelling and comprehensive demonstration of the three core elements of integrated self-management support; namely, engaged, empowered patients working in partnership with committed healthcare professionals within an appropriate embedded in local community-based services (Durhane Wong-Rieger PhD, 2013).

2.10.2 Effectiveness of health coaching on the diabetic patient

In the Kingdom of Saudi Arabia 2019, Nashwa Mohamed Radwan conducted a study on effectiveness of health coaching on a diabetic patient. This study searched for articles on randomized controlled trials of health coaching interventions targeting type 2 diabetic patients that were published in the English language from January 2005 through December 2018 in the Cochrane, Medline, PubMed, Trip, and Embase databases. Patients in the control group received usual diabetes mellitus care, and those in the experimental group received health coaching based on usual diabetes mellitus care. The primary outcomes included Hemoglobin A1c (HbA1c) and cardiovascular disease risk factors, including systolic blood pressure, diastolic blood pressure, triglyceride, high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol, total cholesterol, and body weight. The secondary outcomes included quality of life, self-efficacy, self-care skills, and psychological outcomes (Fahad Alamri, 2019).

Health coaching intervention has a significant effect on HbA1c [mean difference (MD) = -0.35, confidence interval (CI) = -0.47, -0.22, I2 = 83%, $P < 0.001$] and HDL-C (MD = -0.50, CI = -0.93, -0.07, I2 = 10%, $P = 0.02$). The most effective strategy for health coaching delivery associated with the improvement of HbA1c was decreasing the number of sessions and increasing the duration of each session (Fahad Alamri, 2019). Mixed results were reported for the effect of health coaching on quality of life, self-efficacy, self-care skills, and depressive symptoms outcome.

Health coaching intervention has a significant effect on HbA1c and HDL-C, and the most effective strategy is decreasing the number of sessions while increasing session duration. However, these results should be interpreted with caution as the evidence comes from studies at some risk of bias with considerable heterogeneity and imprecision (Fahad Alamri, 2019).

2.10.3 A new complementary approach for diabetes management

This stratified random prospective study selected type 2 diabetes patients in Turkey (n = 186) (TR) (2010–2012) and in Denmark (n = 116) (DK) (2012–2014). Participants were assigned to HC or HE groups. Selected outcomes were HbA1c, periodontal treatment need index (CPI), health behaviors, and anthropometric measures. The study duration was 12 months (6 months' initiation maintenance, 6 months follow-up).

At baseline, there were no statistically significant differences between the HC and HE groups. Post-intervention, a reduction of HbA1c in the HC groups was observed (TR: 0.8%; DK: 0.4%, $P < 0.01$) but not in the HE groups. The HC patients had a higher reduction in CPI than the HE group ($P < 0.01$). Principal component analysis showed that HbA1c, CPI, and 'behavior change' compose one cluster in the HCTR and HETR groups. Three clusters were formed for the HCDK; respectively HbA1c and CPI, lean mass and body fat percentage, 'behavior change'.

The results indicate that HC has a greater impact on DM management and health outcomes. There is a need for common health promotion strategies with behavioral interventions such as health coaching for the management of type 2 diabetes that focus on multidisciplinary approaches including oral health (Ayse Basak Cinar, 2018).

2.11 Conclusion of chapter two

Chapter 2 included the definition, meaning, and descriptions of some technical terms to be used in this research and described Diabetes including causes, types, effects on the human body, and its treatment. It also included information from existing research on the treatment of diabetes with health coaching methodology, the methods used to do the research, and the results found.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This research was conducted in Rwanda in 2022. The study included people living with Diabetes aged between 20 and 79, living in Kigali, Rwanda who visited a medical clinic for regular diabetes mellitus checkups. Surveys have been used in prior research to identify participants who belong to a target group.

3.2 Research Approach

This study was a combination of quantitative and qualitative approaches. According to (Surbhi, 2018), qualitative research is a method of inquiry that develops understanding of the human and social sciences, to find the way people think. Quantitative research is a method that is used to generate numerical data and facts, by employing statistical, logical, and mathematical techniques.

This study employed a qualitative approach because it needed to describe the level of awareness and acceptability of using lifestyle prescription medicine on diabetes treatments. In addition, this study aimed to identify the level of usability and reliability of the proposed system to diabetes patients. This study likewise employed a quantitative approach to quantify the findings of the qualitative analysis.

3.3 Research Strategies

3.3.1 Stage 1: Preparation

In order to form a study group, a survey of patients was conducted to select those eligible for participation; distribution of information letter, invitation to participate. I held a meeting with the invited participants to discuss the research and answer their questions before the signing expression of interest form. Telephone contact with patients who were not available for the face-to-face meeting was made to explain the aims of research.

At the end, I collected eight people who agreed to work with me in this research. They signed consent forms and gave me permission to access their medical records.

3.3.2 Stage 2: Pre-Intervention Data Analysis

In this stage, I conducted an analysis of baseline data including cost, scope, and schedule. Regarding scope, I searched for the best location (site) where a meeting with the participants in Coaching Group sessions could be held. This study worked with Rwandan people who have

diabetes mellitus who were either taking their medications or not. I included the highest level of education of those chosen participants and did an assessment of the culture and common behavior of people in the region to know where to focus and what is not necessarily to include in coaching sessions.

3.3.3 Stage 3: Data Collection

Based on the screening, eligible patients were given a letter explaining the research and an envelope in which they could return their expression of interest. Patients who did not return the form within two days were contacted by phone to inquire about their desire to participate in the study. Those who returned the forms were called and had an opportunity to discuss the research and to raise any questions they had. They also got the opportunity to consider the discussion we had and the answers I provided to their questions. Those who were willing to proceed, I requested they provide me with their completed informed signed consent form, as well as their most recent medical records (HbA1c, LDL, HDL, and fasting blood glucose).

The data were collected from 10 people aged between 25 and 60. Among these people, 7 were married, one was a widow, and two were divorced. All were living in Kigali and four were taking medications. Among the 10 people, seven were Christians, which is the main religion in Rwanda, and three Muslims. The data were corrected in a period of three months and recorded before being analyzed. Two people were not able to complete due to different challenges.

3.3.4 Stage 4: Intervention

Patients in the HC group received 3–4 face-to-face sessions and 2–3 telephone calls. The timeframe for face-to-face HC sessions varied between 20 and 60 minutes, according to the patient's needs, challenges, and progress. Personal logbooks were used to record improvement toward achieving personal health goals along with colorful activity charts were given to each patient. At every session, the patients were provided with written feedback on their progress. Pictorial messages and coaching games were used to prevent any possible attrition. Here is the timetable followed to meet the study participants.

Time Table used to meet participants

No	Names/Dates	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	MJ	P								C							GC			P						C				P		
2	KA		P								C						GC				P						C				P	
3	SM			P								C					GC					P						C				P
4	JM	P								C							GC			P						C				P		
5	JK		P								C						GC				P						C				P	
6	MG			P								C					GC					P						C				P
7	DM	P								C							GC			P						C				P		
8	MM		P								C						GC				P						C				P	

C: Call (Phone) P: Personal (Face-to-Face) GC: Group Coaching

Figure 1: Time Table used to meet participants

3.3.5 Stage 5: Data Analysis

For the patients who completed all the HC sessions, their most recent medical records were recorded. The focus was mainly on HbA1c, LDL, HDL, and fasting blood glucose. Those records, activity charts, and progress charts were used to analyze the data, make decisions, and hide the identity of the patients.

3.4 Rationale for the Methodology

Diabetes educators and nutritionists in Rwanda routinely teach diabetic patients how to calculate carbohydrate intake and even advise them to eat “low glycemic index” foods–such as whole grains and whole foods instead of refined starches–eat more vegetables, and consume less saturated fat and sugar. Most studies in Rwanda have focused on the effect of behavioral intervention on patients with type 2 diabetes who follow a healthy diet, but only a few have described specific dietary habits, such as increasing vegetables and fruits intake, decreasing carbohydrate intake, or lowering fats and oils intake. That health education alone will not be enough to change patients' habits and behaviors.

This is the reason why health coaching is more effective than health education for behavioral change and habit building, which rarely mentions adult learning theory. Since adults’ learning patterns are based on experience, they tend to build a new behavioral pattern via adjusting their old experience. Thus learner-centered and engagement-based learning is more effective than health education or counseling alone (Ching-Ling Lin, 2021). This is not to say that health education is not important. Information about nutrition is significant since it can assist patients to get proper and adequate health information, which is favorable to health coaching. However, understanding particular principles and specific consequences of dietary intervention are critical for research on behavior coaching.

Therefore, this research methodology was chosen to evaluate the usefulness of health coaching in diabetes mellitus control and to see if it can be integrated or added to the current diabetes management strategy. Future studies on dietary education and coaching for diabetic patients can build on this research and be able to offer specific intervention findings as well as describe the modifications and effects on diet contents rather than just citing a diet counseling approach and scale scores.

3.5 Data Collection Details

Data were gathered from both secondary and primary sources. Key information from this study's participants were taken from primary data sources. Doctors' technical records demonstrating changes in the health behavior of participants who engaged in this study were also primary data sources. Unstructured interviews, personal observation, group discussion, and secondary source analysis used in this study.

Personal unstructured interviews were one of the most important and helpful sources of information used. All the interviews were conducted in Kinyarwanda, and translated into English for this capstone. After completing all coaching sessions, there was an arrangement of the conversations over the phone or in-person with each participant, depending on his or her availability, and ask research participants some questions about how health coaching helped them during the time of research. The phone chat with participants who accepted this opportunity were recorded. After each group coaching session, detailed notes were taken.

The form shown in the table below was used. Records of this kind of information were recorded before and after three months of health coaching. I compared the result to draw a conclusion. Glucose (mg/dl) was taken daily and Glycated HbA1C was taken once between two and three months.

ThreeMonthsHealth Coaching

EFORE HEALTH COACHING																														
Name: **MJ**		Start					3 MONTHS HEALTH COACHING PROGRESS																							
Dates:**15/10/2021**		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Glucose:**mg/dl**	147	147	160	120	108	101	120	124	120	121	110	125	107	111	110	117	110	99	105	108	115	121	109	105	121	113	109	122	124	117	113
Glycated HbA1C	6.8	6.8																													
Medication:No/Yes	No																														
Age /Gender	47Y/F																														
Nationality	Rwandan																														
Relijion	Muslim																														
Marital Status	Married																														
Dates:**15/11/2021**		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Glucose:**mg/dl**		110	112	116	101	109	100	103	101	107	115	109	104	108	110	106	103	101	104	99	0	0	0	103	107	115	120	127	114	109	108
Glycated HbA1C																															
Medication:No/Yes	No																														
Age /Gender	47Y/F																														
Nationality	Rwandan																														
Relijion	Muslim																														
Marital Status	Married																														
Medication:No/Yes	No																														
Dates:**08/01/2022**		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Glucose:**mg/dl**	108	108	120	120	115	117	114	117	118	110	115	113	120	0	0	0	108	111	0	0	122	107	101	121	108	3 MONTHS AFTER HEALTH COACHING SUPPORT					
Glycated HbA1C	5.9																								5.9						
Medication:No/Yes	No																								End						
Age /Gender	47Y/F																														
Nationality	Rwandan																														
Relijion	Muslim																														
Marital Status	Married																														

Figure 2: Daily Patients records of Glucose and HbA1C in 3 months

3.6 Data Analysis

The information acquired from these interviews, as well as the information provided by the doctors were recorded and secured. Interview transcripts recorded phone calls, and written notes were carefully evaluated through iterative and repetitive re-reading. I was thus able to obtain a deeper understanding of each interviewee's point of view and perspective.

The data analysis dealt first with a description of the case based on the information gathered from the various participants. Second, for all participants, an analysis of comparable patterns conducted. Finally, because this research study included a number of people with varying lifestyles and levels of diabetes, it required me to look for trends for each. As a result, I was able to be able to build a solid body of evidence for this study.

3.7 Ethical Considerations

Ethical consideration is a set of ideals and standards that should be observed while dealing with human subjects. The ethical considerations make sure that no one acts in such a way that is harmful to society or an individual (Hitesh Bhasin, 2022). It prevents individuals and organizations from engaging in destructive behavior. Ethical issues are crucial, particularly in research. The ethical considerations that I examined while planning to conduct this research study are listed below.

- The research method used for the research

.

Research methods are an essential part of every study. That is why this study cooperated with the research participants to select the most appropriate time for the sessions according to their availability, and appropriate methods to use either face-to-face sessions or telephone or social media sessions, either in a group or one by one. Research participants played a big role in this part to help in finding the best method for them to conduct research. The following are the points that kept in mind when it comes to selecting a research method for research purposes.

- The approach was perfectly aligned with the study's goal.
- The procedure was not connected with any dangers due to the study method used.
- Before applying the research technique for study, its strengths and limitations were assessed.

- Consent of participants

To abide by ethical standards, participants were informed about all the activities taking part in the research and make informed consent from them before starting the research work. The information that participants are entitled to be aware of is as follows:

- Purpose of the research study
- The expected outcome of the search
- Who is going to work with them during this research study period?
- Who is funding the research project and how that funding will be used?

The reason for taking informed consent from the participants is that they must be aware of and understand what they are agreeing to. If they are aware of the research purpose, they have the chances to decide whether they want to participate in the research or not. In addition, participants are also entitled to ask for additional information if they have any doubts or become anxious in the middle of the research.

- Confidentiality

The secrecy of the information supplied by the participant is one of the most crucial ethical issues. Under no circumstances can any information relating to or submitted by participants be made available or accessed by anybody other than the researcher, according to the definition of privacy. The data is only used to keep the participants safe from outside threats.

Moreover, privacy ensures that no identifiable information about participants appears in research reports or other public documents. In the research papers, the individuals are always referred to as anonymous. Furthermore, I will make sure that any information or output about the participants is mentioned in such a way that no one can identify them.

When participants agreed to participate in this study, they agreed to supply just the information needed for the research. There were no questions asked that were not linked to the research study. Participants had the right to withdraw from the study at any time and for any reason.

3.8 Conclusion of chapter three

In this chapter, I discussed the method I used to conduct my research on Health Coaching methodology in Diabetes treatments. It also describes how the data were collected before analysis.

CHAPTER 4: RESULTS AND DISCUSSION

4.1. Introduction

Diabetes mellitus remains among one of the diseases that kills many people each year and is considered to have no cure or vaccine. There are medicines that the patients can take to increase the Haemoglobin but the cost of these drugs, such as droperidol, are expensive which causes the cost to manage diabetes to be high as stated by WHO in 2020. The purpose of this study was to evaluate the effect of a health coaching intervention on diabetes patients' blood sugar management and self-efficacy.

This study was conducted with 2 male and 8 female patients, and the coaching was made both remotely on phone and face-to-face in coaching groups, randomly assigned into three groups. All patients underwent were given a similar amount of time both on calls and face to face combined. There were no exclusion criteria in selecting the sample, this study included people from the same city of Kigali, from different religions and some were taking medications. All patients received standardized coaching. During coaching time, the patients continued to take daily their medications for those who were taking them, their Glucose (mg/dl) level was taken daily and Glycated HbA1C was taken once between two to three months.

This study used statistical control methods and interpreted the findings in a cautious manner, since we were unable to access a database of the population to assess if our sample was statistically different from the public. The only significant differences between the intervention and control groups at baseline were education level and the length of diabetes treatment in Kigali; both of these differences were non-significant in repeated analyses. Therefore, we may conclude there may not have been a substantial selection bias in this study for the group.

4.2. Results

Among participants, three of them were between 45-50 of age, one of them was 25 Years old and four were between 50 and 55. There were two males and six female participants. Three patients were taking diabetes mellitus medications and five patients were not taking medications. The groups did not differ significantly in age, weight, height, ASA status, or doses of drugs for those who were taking them.

This study showed that among the eight people who successfully completed all coaching sessions, Glucose level (mg/dl) reduced at the rate of 28.9**%;** for HbA1c the reduction was estimated at 1.4**%**.This positive results was achieved after three months of health coaching. Both physical activity and self-efficacy of diabetes self-management were shown to benefit from health coaching. About weight loss this study has shown that among 8 patients participated in the research, their weight were decreased by 4 to 6 Kgs in three months.

The following is the graphs show the reduction of HbA1c for every patient who participated in this research.

Three months Health Coaching progress for all eight patients

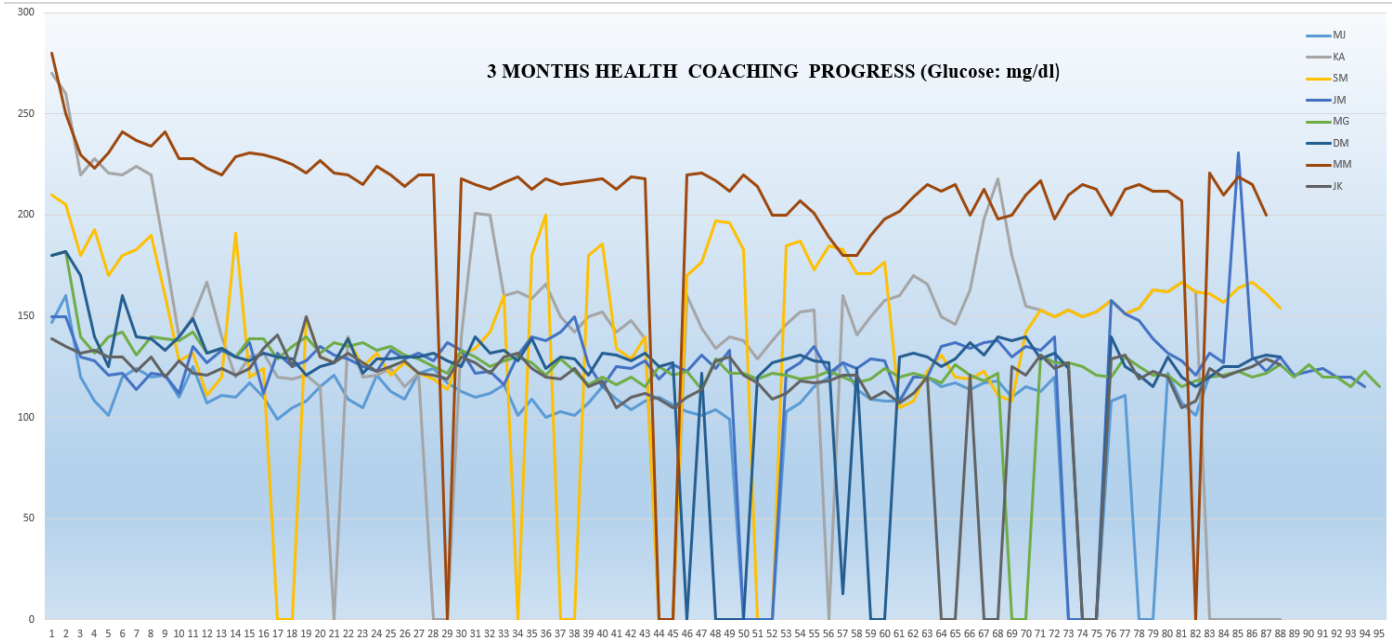


Figure 3: HbA1c Reduction rate for eight patients

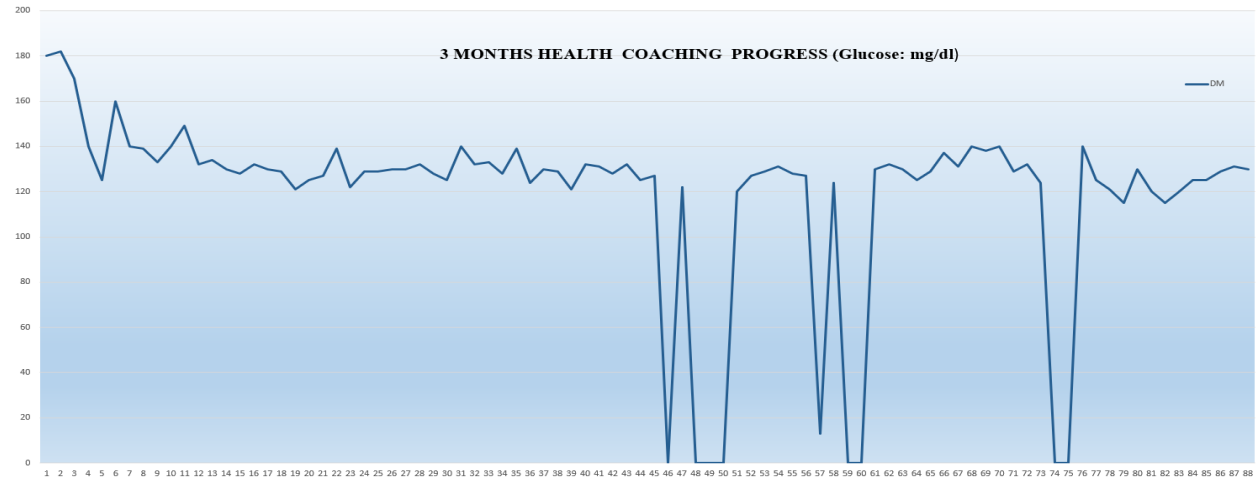


Figure 4: HbA1c Reduction rate for DM



Figure 5: HbA1c Reduction rate for JK

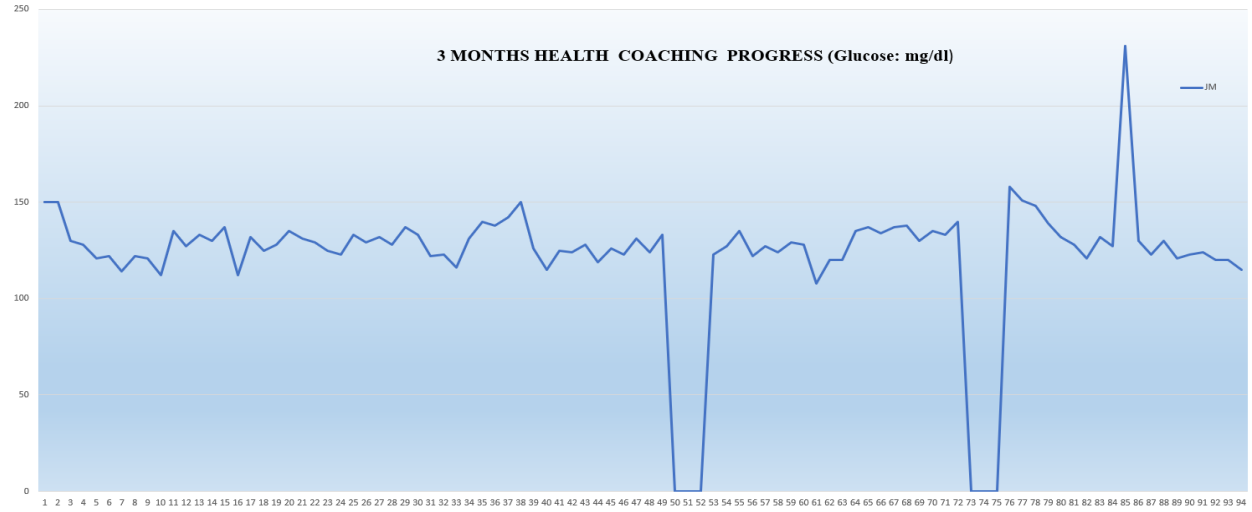


Figure 6: HbA1c Reduction rate for JM



Figure 7: HbA1c Reduction rate for KA



Figure 8: HbA1c Reduction rate for MG

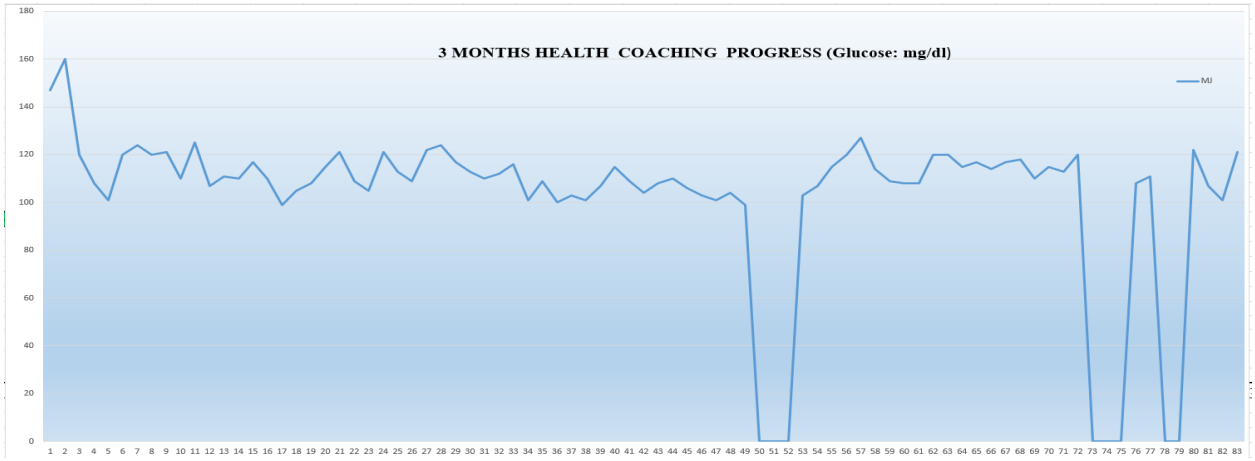


Figure 9: HbA1c Reduction rate for MJ

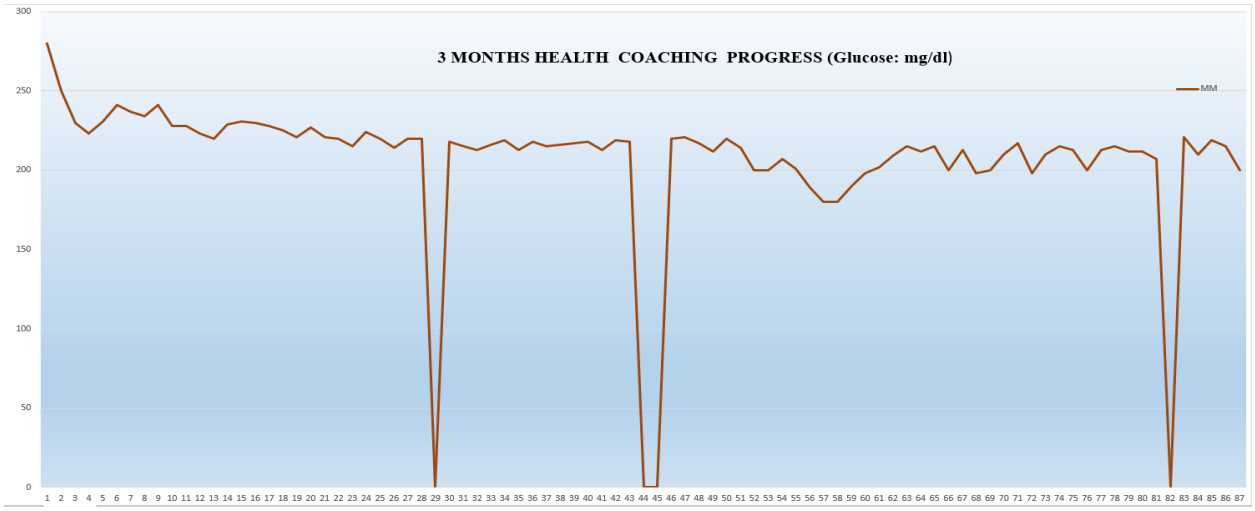


Figure 10: HbA1c Reduction rate for MG

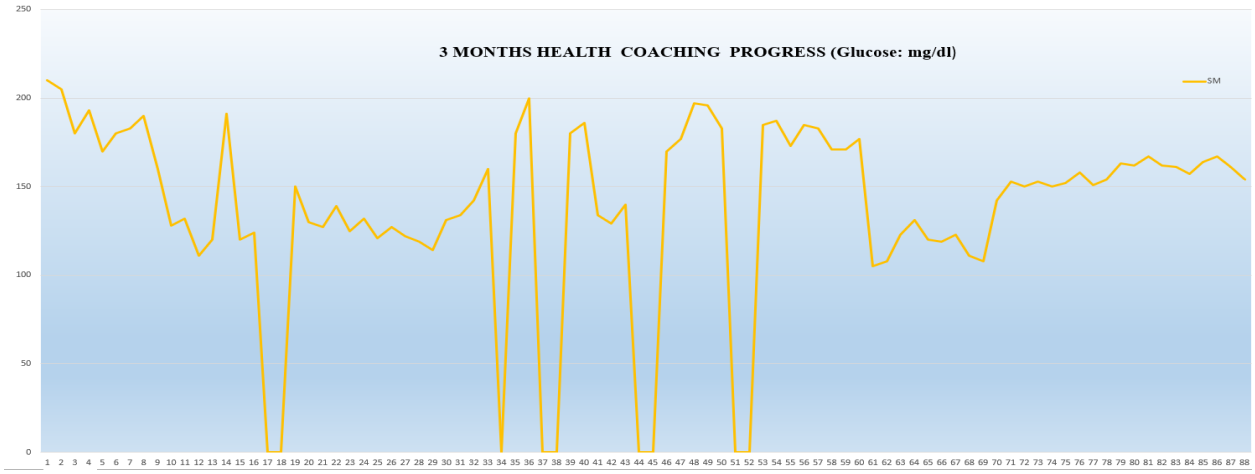


Figure 11: HbA1c Reduction rate for MM

Below is the table showing how glucose was reduced for each patient at the end of all coaching sessions.

Hemoglobin (HbA1C) reduction for each patient in three months of coaching.

Names	Start HbA1C Test	End HbA1C Test	Change	Evaluation comments Level
MJ	**6.8%**	**5.9%**	0.9%	From Diabetes to Prediabetes
KA	**8.26%**	**6.1%**	2.16%	From Diabetes to Prediabetes
SM	**8.40%**	**6.4%**	2%	From Diabetes to Prediabetes
JM	**6.5%**	**5.6%**	0.9%	From Diabetes to Normal
JK	**6.5%**	**5.9%**	0.6%	From Diabetes to Prediabetes
MG	**8.1%**	**6.7%**	1.4%	Still to Diabetes but reduced
DM	**7.50%**	**6.8%**	0.7%	Still to Diabetes but reduced
MM	**13%**	**10.2%**	2.8%	Still to Diabetes but reduced

In conclusion, Lifestyle Prescriptions Health Coaching reduced the incidence of diabetes mellitus in this sample, and the level of Glucose (mg/dl) and Glycated HbA1C was gradually reduced for all patients as shown in the above graphs and table. For all eight people 50% of them changed from Diabetes level (HbA1C >6.5%) to Prediabetes level (HbA1C>5.7% and HbA1C<6.4%), 12.5% of them changed to Normal level (less than 5.7%) and 37.5% diabetes level reduced by at least 1.6% of HbA1C.

Further study is needed to determine if, when health coaching continues, patients will be able to stop the medication. In addition, the results show that this approach has more effect on people who do not take medications than those who do. This finding is important because there are some regulations that the person who are taking medications can not follow because it is not recommended by their doctors.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

A qualitative and contextual research design was used to find the effect of Lifestyle Prescriptions® Health Coaching to the life of patients with diabetes mellitus. The objective of this study was to establish the efficacy of Lifestyle Prescriptions® Health Coaching on the health status and quality of life of people living with diabetes mellitus in Kigali, Rwanda.

5.2. Overall conclusion

By incorporating patient self-empowerment aimed at improving better lifestyles among type 2 diabetes patients, the current study assesses the impact of health coaching on lowering the severity of diabetes mellitus in Kigali. There were considerable improvements in HbA1c. In both of the HC groups, there was a noticeable behavioral improvement. An objective indicator of a change in lifestyle behavior is HbA1c. The main current method for measuring and tracking long-term glycaemic management in diabetes is the routine monitoring of HbA1c readings, which are done in clinical settings. For patients to be able to adjust their behavior to maintain or lower their HbA1c levels, knowledge, attitude, and motivation are the three factors that matter most. The HC groups improved their lives in the current study in accordance with the much higher improvement.

This is the first health coaching study trial conducted in Rwanda. The study indicated that a 3-month health coaching by a professional coach reduced HbA1c in a group of type 2 diabetes patients by ~0.68%. An effective method to improve diabetic patients to control their condition on their own can be health coaching. In light of this study's shortcomings, further research with better study designs is required to establish the value of health coaching for diabetes patients.

5.3. Strengths and Limitations

This study has many strengths. First, a coach has acquired skills and expertise in health coaching, ensuring good coaching. The bulk of health coaching research has not addressed the training features and/or competence evaluations of its coaches, and some studies have included persons who were new to coaching after only a few hours of training. Second, the finding that just one participant did not finish all scheduled coaching sessions may indicate the patients' high level of coaching competence or the high quality and efficacy of coaching that the patients deemed acceptable. Excellent coaching may really aid with medical communication with patients, therefore this should reduce the probability of patient withdrawal. Future research might be based on the study's limitations. Because of the possibility of selection bias, the quasi-experimental approach in this study decreased the quality of the findings.

In light of this finding, I limited the analysis of the effects of coaching on other behaviors since I only used physical activity as a measure for health behaviors in this study. However, individuals may choose to modify a number of other behaviors. Additionally, the participants' behavior change objectives may be linked to the coaching program's efficacy.

However, there has not been much research done on how various goals affect outcomes, so this may be a topic for future study.

5.4. Recommendations

In order to enhance medical quality and the prevention and treatment of diabetes mellitus, we advise conducting additional health coaching research for future applications in Rwanda. It may still be a regional hospital or a medical center as the major testing site in the medium run because Rwanda's present chronic illness management is still mostly centered in hospitals above the regional hospital level and is therefore unsuitable for implementation in primary care facilities. Despite having a varied nature, coaching interventions are valuable to add to Rwanda's diabetes treatments. Health coaching services can be integrated into outpatient clinics or provided as part of a health education program in general. As a result, additional health coaching research is required to strengthen the application of diabetic health coaching and the development of other health coaching disciplines in Rwanda.

I recommend future studies on health coaching in Rwanda use additional hospitals, randomize participants at the hospital level, or apply randomization after screening prospective eligible patients before enrolling them.

5.4. Final Conclusion

In addition to the current standard diabetes treatment in Rwanda, this study found that three months of health coaching has a strong probability of being an effective strategy to improve HbA1c and self-management. Based on the limitations and strengths of this study, we suggest that more studies with designs that yield higher-quality evidence for the role of health coaching in diabetic patients are needed in Rwanda.

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consideration%20is%20a%20collection,from%20indulging%20in%20vicious%20conduct.

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