A PROJECT TO IMPROVE MEDICAL CLINIC SERVICES IN MANAGING DIABETES MELLITUS AT DISTRICT GENERAL HOSPITAL, NAWALAPITIYA.

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MSc/MD Medical Administration

This Research Project is submitted as a Partial Fulfillment of the Requirement for the Degree of Doctor of Medicine in Medical Administration to the Post Graduate Institute of Medicine, University of Colombo.

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DECLARATION

Topic of the research project:

A Project to Improve Medical Clinic Services in Managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

I declare that the work presented in the project report is the candidate's own and that no part of the project report has been submitted earlier or concurrently for any other degree.

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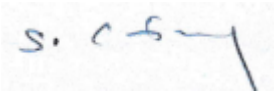
CERTIFICATION OF THE SUPERVISOR

I hereby certify that above research project report was prepared under my supervision by Dr. Y.G.A.C.Senevirathne in partial fulfillment of the requirements of the degree of Doctor of Medicine (MD) in Medical Administration by the Post Graduate Institute of Medicine (PGIM), University of Colombo.

Signature of the supervisor: 

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SYNOPSIS

Introduction: Diabetes Mellitus is one of the major chronic NCDs in Sri Lanka, with increased morbidity and mortality over past few decades. Good glycaemic control with timely screening and effective management of micro and macro vascular complications can lead to satisfactory control of diabetes. It was observed that, in the present context patients do not get the optimum care services in relation to medications, investigations or advice on lifestyle modifications. It is timely to develop the right methods and models using available policies and guidelines to provide comprehensive and patient cantered care.

Purpose: This project is aimed to assess the existing medical clinic services for diabetic patients; to design and implement an intervention care package to improve the existing medical clinic services and to evaluate the relevance, coherence, effectiveness and sustainability of the interventions at DGH Nawalapitiya.

Methodology: This was an interventional research project conducted in three phases: pre-intervention, intervention and post-intervention. Existing diabetic clinic services at DGH Nawalapitiya was assessed using quantitative and qualitative research methods during pre-intervention phase. At the end of phase one standard care delivery gaps were identified. After multi-stakeholder meetings and discussions, possible interventions were identified, prioritized and included in the intervention package, “Walk Away From the Silent Killer, Diabetes Mellitus”. The implementation process was regularly monitored by a monitoring team and any delays that existed were expedited. Finally, after completion of interventions a team evaluated the project based on criteria of relevance, coherence, effectiveness, and sustainability.

Results and Discussion: Many gaps existed in providing basic amenities for diabetic patients, in clinic layout and space arrangement, staff training, health education for patients, performing blood investigations, practicing clinical management guidelines, and screening for diabetes-related complications which many of them attended by the intervention care package successfully. With optimizing the clinic services the overall patients' experience showed significant improvement from a mean of 3.52±0.28 to 3.86±0.27. Proportion of patients who have achieved glycemic control within target values (80-130mg/dl) has increased to 72.7% from pre intervention value of 64.6%. Evaluation findings revealed that the project was relevant to the national policies, patient and institutional needs; coherent with ongoing similar projects and activities such as PSSP and NCD prevention and control programme; achieved most of the results showing the effectiveness; sustainability ensured with the administrative and technical support as well as getting the concurrences and agreement among the stakeholders.

Conclusions: Diabetic clinic service was found to be have many gaps and properly intervened by well-designed, relevant, cohered, effective, and sustainable intervention care package. It can be stated that, active administrative interventions such as infrastructure development, staff capacity building through training, process improvements, and good leadership through proper monitoring and evaluation can transform health care delivery

Recommendation: It is recommended the intervention care package to be implemented in different settings to improve diabetic care and also for other NCDs. If expected effectiveness and efficiency criteria are met, inclusion in the National NCD Prevention and Control Program is recommended for introduction in other hospitals.

Keywords: Diabetes mellitus, patient experience, patient entered care, glycemic control,

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List of Abbreviations

NCD	Non Communicable Diseases
WHO	World Health Organization
MoH	Ministry of Health
UHC	Universal Health Coverage
NMAP	National Multi-sectoral Action Plan
PMCU	Primary Medical Care Units
BH	Base Hospital
DGH	District General Hospital
HLC	Healthy Lifestyle Center
OPD	Out Patient Department
SDG	Sustainable Development Goals
T2DM	Type 2 Diabetes Mellitus
NHSL	National Hospital of Sri Lanka
CAD	Coronary Artery Disease
LMICs	Low and Middle Income Countries
KII	Key Informant Interviews
FGD	Focused Group Discussions
PI	Principal Investigator
VP	Visiting Physician
QMU	Quality Management Unit
HE	Health Education
UN	United Nations
RDHS	Regional Director Health Services
NGT	Nominal Group Technique
IEC	Information Education and Communication
TO	Technical Officer
SD	Standard Deviation
BOQ	Bill Of Quantities
CSTH	Colombo South Teaching Hospital

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CHAPTER 01; PLANNING

1.1 Introduction

World Health Organization (WHO) has defined health, "as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity"(2021). The good health of its people is a prerequisite for the satisfactory economic and social development of all countries. On the other hand, every citizen has a fundamental right to receive the highest recommended standard of health service: hence, it is a priority for all countries. Key stages in people's lives have a peculiar relationship with their health and the life-course approach is about recognizing the importance of these stages (WHO Europe, 2011). They have identified different programs for each stage: Maternal and newborn health, Child and adolescent health, Sexual and reproductive health, and Healthy Aging. All countries must therefore understand the importance of having well-structured health systems, appropriate for their settings to fulfil these health needs.

With the vision of "A healthier nation that contributes to its economic, social, mental and spiritual development" Sri Lanka has structured the health system consisting of promotive, preventive, curative, and rehabilitative services (Ministry of Health, Sri Lanka, 2021).

1.1.1 Non-Communicable Diseases (NCDs)

According to the WHO, "NCDs, also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioral factors"(WHO, 2022). There are four main types of NCDs: cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes. Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets are four main modifiable behavioral risk factors identified while hypertension, hyperglycemia, hyperlipidemia, and obesity are main metabolic risk

factors(WHO, 2022b). World Health Organization also stated that all age groups are vulnerable to NCD. However, elderly population show more susceptibility.

The global community including Sri Lanka is experiencing a demographic transition in which there is a rapid increase in the elderly population(World Bank, 2021). Concurrently, they are also experiencing an epidemiologic transition, from Communicable to Non-Communicable Diseases. Aging of the population, genetic and physiological factors, and environmental and behavioral factors such as rapid unplanned urbanization and lifestyle changes are the key factors responsible for this epidemiological transition(McKeown, 2009). This structural change in the population, has affected the needs and demands of healthcare services.

1.1.2 NCDs: Global Situation

NCDs are responsible for the death of 41 million people each year, equivalent to 71% of all deaths globally(WHO, 2022c). According to the WHO, cardiovascular diseases account for most NCD deaths, (17.9 million), followed by cancers (9.3 million), respiratory diseases (4.1 million), and diabetes (1.5 million) annually. Among them, 15 million deaths occur between the ages of 30 and 69 years. Of these premature deaths, 85% occur in low and middle-income countries(WHO, 2022d).

1.1.3 NCDs: Sri Lanka Situation

According to the national data on screening for NCDs, more than 90% of the Sri Lankan adults were estimated to have at least one of the NCD risk factors, with similar prevalence in males and females(Ministry of Health Sri Lanka, 2015a). Also, NCDs accounts for 90% of disease burden in the country(World Bank, 2022). A recent STEPS survey conducted among Sri Lankan adults between 18 to 69 years in 2021 revealed that, 48.9% of males were tobacco users(smoked/smokeless), 43.3% of males drink alcohol, 24.2% of males and 34.8% of females not engage in sufficient physical activities, and 67.8% on both gender consume less

than 5 servings of fruits or vegetables on average per day(NCD Buerau, 2022a). The survey also found that, prevalence of overweight and obesity were 39.4% and 11% respectively for both gender.

1.1.4 Global Action Plan on NCD

The global action plan for prevention and control of NCDs for 2013-2020 has been built on nine overarching principles namely; engage in life course approach, empowerment of people and communities, ensuring universal health coverage, engage in human rights approach, management of real, perceived or potential conflicts of interest, engage in equity based approach, national action and international cooperation, embark on multi-sectoral actions, and practicing evidence based strategies(WHO, 2013a). The action plan has been built upon a vision of "world free of the avoidable burden of non-communicable diseases" and directed towards the mission of "to reduce the preventable and avoidable burden of morbidity, mortality and disability due to non-communicable diseases by means of multispectral collaboration and cooperation at national, regional and global levels, so that populations reach the highest attainable standards of health and productivity at every age and those diseases are no longer a barrier to well-being or socioeconomic development"(WHO, 2013b).

One of the main objectives in the global multi-sectoral action plan is to strengthen national capacity, leadership, governance, multi sectoral action and partnerships to accelerate country response for the prevention and control of non-communicable diseases. Among the set global targets in the multi-sectoral action plan, there are two directly related to combatting diabetes mellitus: halt the rise in diabetes and obesity, and at least 50% of eligible people receive drug therapy and counselling (including glycemic control) to prevent heart attacks and strokes(WHO, 2013c).

WHO now has declared the global NCD compact 2020-2030 to accelerate the actions of the multi-sectoral plan(WHO, 2023).

1.1.5 Sri Lankan Action Plan for NCDs

Sri Lanka's policy goals, specifically those identified in the National Multi Sectoral Action Plan (NMAP) have been adapted according to the objectives and targets in the WHO NCD Global Action Plan. It has stated the objective, "to reduce premature mortality (less than 65 years) due to chronic NCDs by 2% annually in next 10 years through expansion of evidence-based curative services, and individual and community-wide health promotion measures for reduction of risk factors"(Ministry of Health, Sri Lanka, 2010a). The policy clearly shows the key strategies and interventions for primary, secondary, and tertiary care settings. Fifteen guiding principles have been included in the MSAP. They were protection of the right to health, ensuring equity and social justice, assuring affordability and sustainability to individuals and community, executing evidence-based interventions, giving equal importance of primary and secondary preventive measures, and covering the entire continuum of care, formulating culturally sensitive strategies, ensuring community and family empowerment and participation, consideration of ethical aspects in individual and community-wide interventions, developing the attitudes of care givers in being more responsive in providing individual care, adapting in to multidisciplinary and multi-sectoral approaches, maintaining the consistency with the National Health policy and other existing/relevant government policies, adoption of a life course approach, maintaining the flexibility in adopting new strategies through a phased approach, and integration into the health systems strengthening(Ministry of Health, Sri Lanka, 2010b).

Common NCDs including Diabetic Mellitus, mostly related to older people and have complex, multifactorial issues in addition to the disease itself which claim for a more accessible, acceptable, and available services. Hence, there is a need for an integrated care which is defined as "a coherent set of methods to align, connect, and increase collaboration between different administrative, organizational, service delivery and clinical levels in the care of a patient, to provide comprehensive and multidimensional treatment and care" (Monaco et al., 2020).

1.1.6 Burden of Diabetic Mellitus

Diabetic Mellitus is a major NCD which impact on individuals, families, societies, and countries. In a study reviewing data from 138 countries it has been estimated that the global diabetic prevalence in 2019 is 9.3% (i.e.463 million people) and is expected to rise to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045 which will be a remarkable uprising trend(Saeedi et al., 2019a). Further, the same study has found higher prevalence in urban (10.8%) than rural (7.2%) community. One in two people living with diabetes were not aware that they have the disease. Saeedi et al(2019a) has found the estimated global prevalence of impaired glucose tolerance to be 7.5% (374 million) in 2019 and projected to reach 8.0% (454 million) by 2030 and 8.6% (548 million) by 2045(2019a). Another study has projected that the highest percentage of increase (> 100%) of diabetes mellitus prevalence is observed in low income countries and lower middle income countries while high income countries experience an increase of 54%(De Silva et al., 2018a).

Non-Communicable Disease risk factor survey (STEPs) conducted during 2021 in Sri Lanka has found the prevalence of impaired glucose tolerance as 13%(both gender), while the figure for raised fasting blood glucose was 14.6%(NCD Buerau, 2022b). Six years ago in 2015 the same survey has found prevalence of raised fasting blood glucose or diabetes mellitus among same age category as 7.4%(Ministry of Health Sri Lanka, 2015a). Doubling of the disease prevalence within five years is an eye opener for us to revisit, rethink, and re-plan management strategies.

1.1.7 Combating Diabetes Mellitus

Sri Lankan public health system provides free diabetic care through promotive, preventive, curative, and rehabilitative services. As mentioned in the NCD policy, each level of curative settings should provide NCD care services in expected standards and quality(Ministry of Health, Sri Lanka, 2010c).

Primary care level institutions(Primary Medical Care Units and Divisional Hospitals) must be equipped with basic diagnostic facilities and medicines, also be comprised with competent staff to carryout health promotional activities and risk factor assessment, individual focused communication for risk modification, early diagnosis, treatment ensuring continuity of care, palliative care, basic emergency care, appropriate referral and back referral system that efficiently links up with secondary care(Ministry of Health, Sri Lanka, 2010d).

Secondary care level (Base Hospitals and District General Hospitals) should be able to receive the referrals and provide evidence based clinical care with the support of laboratory facilities to carryout treatment planning and complications detection, and specialists care (physicians, endocrinologists, surgeons etc.). Further, emergency treatment care units to

handle diabetic emergencies, standard inward and outpatient care with special attention to responsiveness, multidisciplinary team approach to provide comprehensive patient management were the key areas mentioned in the policy(Ministry of Health, Sri Lanka, 2010e).

In tertiary care level while providing above said services, there should available multidisciplinary, subspecialty units such as nephrology, cardiology, and ophthalmology. Also there should be efficient and effective referral management and communication system with other levels to ensure continuum of care and sustainability.

Furthermore, following and adhering to the national guidelines which has formulated by the specialist colleges and MoH, conducting periodic service need assessments at each levels and regular morbidity and mortality reviews, and continuous professional development of the staff are mentioned as key integral parts of health system improvements(Ministry of Health, Sri Lanka, 2010f).

Ministry of Health has issued a general circular (01-18/2020) that re categorization and mentioning the facilities offered in different curative health institutions(Ministry of Health, 2020).

Ministry of Health in Sri Lanka initiated Healthy Lifestyle Centers (HLC) in 2011 through the primary care level to improve the screening of NCDs including diabetes mellitus among those more than 35 years of age category in risk factor identification and early detection(Mallawaarachchi et al., 2016a). In these HLCs it was expected to establish the services such as cardiovascular risk assessment, lifestyle modification, cessation of tobacco and alcohol and referrals for specialized care for those who need. Few years later, there were challenges and deficiencies identified in terms of achieving expected results. They were underutilization of available services by the target population(specially males), shortage of

staff, poor adherence to the protocols by the staff, and lack of integration and coordination with pre-existing NCD screening services(Mallawaarachchi et al., 2016b).

Hearth et al(2019) has conducted a study to explore reasons to the underutilization of HLCs and revealed that, negative past experience with sub optimal services, client dissatisfaction and mistrust on the services provided, inability to attend during working hours compromising earnings or leave, lack of awareness among the community regarding the HLC services, lack of basic screening facilities, and resistant for screening without symptoms were the mostly prominent reasons for underutilization.

An audit conducted in a Sri Lankan tertiary level diabetic clinic to assess the standard practice, has found many deficiencies: non adherence to the clinical management guidelines, lack of special training on diabetic management for doctors, absence of structured health education and promotional programmes for patients, lack of facilities to measure HBA1c, delays in referral process for eye care, incorrect method of blood pressure measuring and foot examinations, and lack of patient examination areas with privacy were some of them(Jayawardena et al., 2007). They claimed that, overcrowding of patients, shortage of staff, and inadequate time spent per patient were the some of the root causes.

1.2 Justification

Diabetes Mellitus is one of the major NCDs which need regular medical care and lifestyle modification to prevent acute and long term complications. American Diabetic Association(2010) has mentioned that "diabetes is a chronic illness that requires continuing medical care and ongoing patient self-management education and support to prevent acute complications and to reduce the risk of long-term complications and also diabetes care is complex and requires that many issues, beyond glycemic control, be addressed". Further, Sri

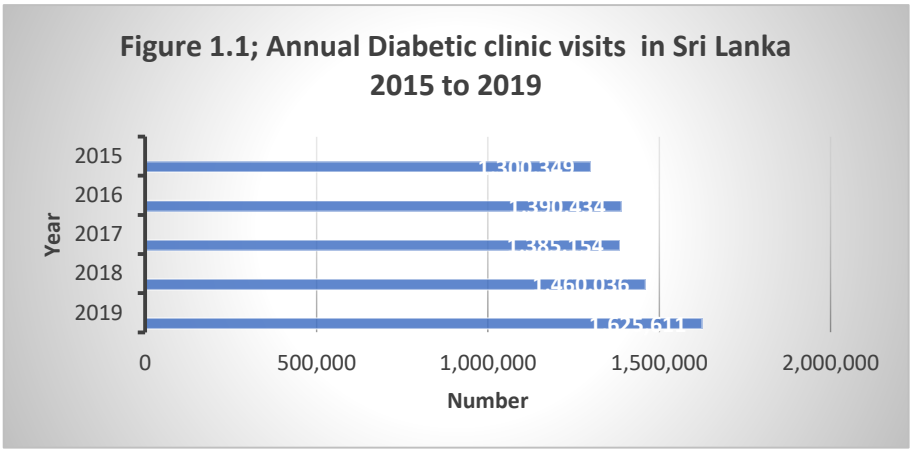
Lanka College of endocrinologists has emphasized that “screening and early detection of diabetes, proper lifestyle modifications, optimizing management according to individualized targets, overall cardiovascular risk reduction, and timely referrals will help to prevent morbidity and mortality related to diabetes which is also a major burden to our country’s economy”(Sri Lanka College of Endocrinologists, 2018).

These comments are confirmed the requirement of many interventions beyond glycemic control involving physician, patient, family, and society.

Principal investigator has an understanding of the provision of diabetic care services, in medical clinics over past few years having held administrative posts in a Provincial General hospital, a District General hospital and a District Base hospital. Despite the Ministry of Health’s initiatives to treat the disease and control the complications, many shortcomings and obstacles in the service delivery have been observed. Poorly designed clinic layout, lack of infrastructure facilities, poor responsiveness of the staff, overcrowding of the clinics, non-adherence to follow clinical guidelines, lack of functional referral system, non-availability and inaccessibility of proper health education modalities, poor clinical record system, non-availability of electronic health record system, and poor complication management are some of the main deficiencies observed.

However, analyzing 2015 to 2019 clinic visits of diabetic patients e in secondary and tertiary care hospitals clearly shows a trend of rising in numbers. (Figure 1.1)

Figure 1. 1: Annual diabetic patient clinic visits in Sri Lanka (from 2015 to 2019)



It is important to plan and implement patient centered care models with more acceptability, accessibility, and availability of services in medical clinics as it will enhance the adherence to treatment and promotive measures and in turn improve disease outcomes.

As mentioned in the NCD policy strategy for secondary care settings was, "providing evidence-based clinical management with efficient laboratory support and other ancillary services at District General and Base Hospitals, ensuring quality of care with emphasis on responsiveness, ensuring availability of multi-disciplinary teams to provide comprehensive clinical care, and implementing a referral and back referral system based on appropriate protocols"(Ministry of Health, 2009).

This project identified areas that need to be included in a standard medical clinic to provide comprehensive care for diabetic patients through a base line study. Based on the results a standard clinic model for diabetes were developed and implemented in order to improve the effectiveness of diabetic care services provided at a District General Hospital.

1.3 Objectives and Purpose of the Research Project

1.3.1 Objectives

1.3.1a General Objective

To design and implement an intervention care package to provide optimum medical clinic services to patients with Diabetes Mellitus at District General Hospital (DGH) Nawalapitiya.

1.3.1b Specific Objectives.

I. To assess the existing medical clinic services for diabetic patients at DGH Nawalapitiya.

II. To design an intervention care package to improve the existing medical clinic services at DGH Nawalapitiya.

III. To implement the intervention care package to improve the diabetic care services in medical clinic at DGH Nawalapitiya.

IV. To evaluate the relevance, coherence, effectiveness and sustainability of the interventions in improving the disease outcome of diabetic patients at DGH Nawalapitiya.

1.3.2 Purpose of the Research Project

Regardless of the preventive and promotive measures taken, it is evident that the number of diabetic patients who seek medical treatment is increasing. Most of these patients receive regular treatment from government medical clinics. It was observed that, in the present context patients do not get the optimum care services in relation to medications, investigations or advice on lifestyle modifications. If not properly managed diabetic patients are prone for complications such as diabetic nephropathy, diabetic retinopathy and related blindness, peripheral neuropathy and related chronic wounds and septicemia. The increasing

number of patients reporting with these complications warrant the need to improve provision of regular screening and management for these conditions at routine diabetic clinics and specialized clinics. Hence, there is a need to further assess and redesign medical clinics to provide optimum short and long term care.

This project aimed to assess the existing medical clinic services for diabetic patients; to design and implement the interventions to improve the existing medical clinic services and to evaluate the relevance, coherence, effectiveness and sustainability of the interventions at DGH Nawalapitiya. These interventions were carried out using the available resources and it's expected to make recommendations to rollout of the project in different settings based on the research findings.

1.4 Literature Review

1.4.1 Burden of NCDs

A review article in the New England journal of Medicine has discussed the burden of NCDs and importance of detection, prevention, and treatment. Further they have mentioned that United Nations and World health Organization have called for 25% reduction by 2025 in mortality for NCDs among the age group between 30 to 70 years(Hunter and Reddy, 2013). The same review has mentioned that NCDs will be the predominant global public health challenge of the 21st century and related health care costs will rise proportionately. They argued that effective management of NCDs and reduction of healthcare cost must be main goals of clinical medicine. Consequently Hunter and Reddy stressed the requirement of having multilevel approach that integrates policy actions, regulations, health education, and efficient health systems to achieve these goals(2013).

In a systematic analysis of global burden of disease study 2019 has revealed that the ischemic heart disease and stroke were the top-ranked causes of DALYs in both the 50–74-year and 75-years-and-older age groups(Vos et al., 2020). During last three decades, it is evident that proportion of burden due to YLDs (Years Lived with Disability) from non-communicable diseases and injuries has been increased.

Ellen Nolte and Martin McKee have discussed regarding management of NCDs in the book of “Caring for people with chronic conditions” and presented a common theme: these conditions require a complex response over an extended time period that involves coordinated inputs from a wide range of health professionals and access to essential medicines and monitoring systems, all of which need to be optimally embedded within a system that promotes patient empowerment(2009). They have claimed that health systems mostly focus on acute, curative care and was unable to meet the requirements of those with chronic diseases. Hence, NCDs continue untreated or inadequately controlled until more

serious complications occur. They also have pointed out that even with the existing NCD management models, there is often large gap between evidence based treatment guidelines and real practice.

1.4.2 NCD Countdown 2030

Bennett et al have written an article to the Lancet discussing worldwide trends in non-communicable disease mortality and progress towards Sustainable Development Goals(SDG) target 3.4: By 2030 reduce by one-third pre-mature mortality from non-communicable diseases (NCDs) through prevention and treatment, and promote mental health and wellbeing(2018). They have analyzed global deaths in 2016 and estimated that out of total deaths of 56.9 million, 71% (40.5 million) was due to NCDs. Further they have found 4% of NCD related deaths among age group younger than 30 years, 38% between 30 and 70 years, and 58% over 70 and older people. 80% (32.2 million) NCD deaths due to cancers, cardiovascular diseases, chronic respiratory diseases, and diabetes. According to their analysis lowest risk of mortality from NCDs were seen in high income countries (Asia-Pacific, Western Europe, and Australasia, and in Canada) whereas highest risk has reported in low and middle income countries (Sub-Saharan Africa, and, Central Asia and Eastern Europe). They have emphasized requirement of policies and equitable access to efficacious and high-quality preventive and curative care for acute and chronic NCDs in reducing the complications and the mortality(Bennett et al., 2018). Hence they have recommended to allocate higher percentage of budget for NCDs, to manage effectively with functional referral pathway and maintaining long-term care. They have concluded, that stating the importance of financial and political commitment and moreover strengthening of health systems to achieve SDG 3.4 targets.

1.4.3 Non Communicable Risk Factor Survey (STEPS), Sri Lanka.

With the collaboration of the WHO, ministry of health has conducted NCD risk factor survey in 2015 among 18-69 year age group population to map the prevalence of risk factors and to quantify the disease burden in the country. It was a vital study to revisit, planning, implementing, and evaluating NCD prevention and control programmes. Behavioral and biological risk factors have been assessed and regarding blood sugar levels, they have found overall, 7.4% of adults were estimated to be either having raised blood glucose or were currently on medication for diabetes - 7.3% males and 7.6% females(Ministry of Health Sri Lanka, 2015b). Further, it was found that, 22.5% of males and 38.4% of females were not engaged in physical activities as recommended by WHO (150 minutes physical activity for a week) and also only 26.9% of males and 28% of females were consumed five or more servings of fruits/vegetables per day(Ministry of Health Sri Lanka, 2015c).

Six years later in 2021, STEPS survey was conducted targeting the same category of the population to re assess the NCD risk factor prevalence. Many results have been revealed which need serious consideration: prevalence of impaired glucose tolerance has increased to 13%(both gender) and prevalence of raised fasting blood glucose has increased up to 14.6%(NCD Buerau, 2022c).

1.4.4 Prevention and Control of NCDs in Sri Lanka

In 1998, Directorate of Non Communicable Disease of the Ministry of Health was established under the administrative purview of Deputy Director General (DDG) of Medical Service I, with the purpose of planning, implementing, monitoring, and evaluating the national NCD preventive and control programme(Non Communicable Disease Bureau, 2021a). Subsequently, in 2017, NCD Bureau was established and the post of DDG/NCD was created, also human resources and financial allocations were expanded. The directorate of NCDs is the apex organization for NCD prevention and control and it has the responsibility of

implementing and monitoring the national NCD policy in the country as well as it advocates for necessary policy changes, development of strategies, and action plans for regional and central level; it is involved in monitoring and evaluation of programme all over the country with multi sectoral collaboration(Non Communicable Disease Bureau, 2021b).

The National Policy and Strategic Framework for Prevention and Control of NCDs has been launched in 2010 with the vision of "country that is not burdened with chronic non-communicable diseases, death and disability"(Ministry of Health, Sri Lanka, 2010a). National Multi-Sectoral Action Plan for the prevention and control of NCDs 2016-2020 has been built upon the policy with the involvement of technical groups, non-governmental and non-health organizations, United Nations (UN) organizations(Ministry of Health, 2016).

According to NCD bureau sources, the revised NCD policy and National Multi-Sectoral Action Plan for 2022-2027 are being drafted and finalized for final approval.

Medical officer for non-communicable disease (MO NCD) in each district under the administrative purview of Regional Director Health Service (RDHS) is the coordinating officer for programme activities in preventive and curative health settings in respective districts and technical support received from the provincial or regional consultant community physician.

1.4.5 Prevalence of Diabetes Mellitus in Sri Lanka

A study by Katulanda et al, to determine prevalence and factors associated with diabetes and pre diabetes among Sri Lankan adults aged over 20 years, has presented many key findings: the prevalence in both sex was 10.3% and 9.8% and 10.9% for male and female respectively (2008). Further, they have found that 36% of all diabetic individuals were undiagnosed, urban communities had higher prevalence than rural communities. The overall pre-diabetes

prevalence in the country was 11.5%, 13.6% in urban and 11% in rural areas. The same study has brought to light that, there were several risk groups for diabetes and pre-diabetes: elders, physically inactive persons, urban residents, and those with a family history. Based on the study findings they have projected that diabetes prevalence will increase up to 13.6% in 2030. Markedly, among every five in adult population one person either diabetic or pre-diabetic.

In another study has disclosed provincial disparity of adult diabetic prevalence aged over 18 years with 18.6% in Western and 6.8% in Uva province(Katulanda et al., 2011). Importantly, they have found dissimilarities of some socio demographic characteristics: monthly income, Body Mass Index (BMI), waist circumference, and per capita monthly expenditure were higher in Western than Uva province. Contrary to that mean physical activity level was lowest in Western province. Finally, they have concluded that adult diabetic prevalence in respective provinces, positively relate with obesity and higher monthly income level and physical activity has protective effect on diabetic.

In another more recent study has revealed that along with the changes in the socio-demographic status, the metabolic profile of the Sri Lankan adult has transformed, with a high prevalence of dysglycaemia and obesity(Somasundaram et al., 2019). With the stratified random sample in Colombo, they have found overall diabetic prevalence in the population over 18 years was 27.6%. De silva et al conducted a cross sectional study, employing a multi-stage stratified sample to explore the inequalities in the prevalence of diabetes mellitus and its risk factors in Sri Lanka; found a more consistent pro-rich distribution in females compared to males and of the risk factors in both sexes, the most consistent and significant pro-rich relationship was for high BMI and Waist Circumference(2018b). According to their findings, inadequate fruit intake is a risk factor for both male and female, where smoking puts male on risk. Subsequently, they have suggested that diabetic preventive interventions

should be focused on gender based specific factors and socioeconomic status. Among them prevention of female obesity is one of the priorities and low educated, non-skill employed males should be targeted to reduce smoke and increase fruit intake.

1.4.6 Prevalence of Diabetes Mellitus in South Asia

Historically, diabetes was considered a disease confined to developed countries and affluent people(Jayawardena et al., 2012). But, the disease is rising globally and particularly in developing countries as projected by many studies. South Asia, known as Indian subcontinent (India, Pakistan, Bangladesh, Nepal, Sri Lanka, Bhutan and Maldives) is amount to many different ethnic, linguistic, and religious groups. South Asians are known to have an increased predisposition for Type 2 diabetes and it has a major health concern in the region, with an estimated increase in the prevalence of diabetes over 151% between year 2000 and 2030(Saeedi et al., 2019b). A study revealed that diabetic prevalence among Asian population (30-64 years) was five times more than of Europeans and more Asian men than women reported having the disease(Mather and Keen, 1985).

1.4.7 Global Diabetic Prevalence

A meta-analysis has disclosed the estimated global adult diabetes prevalence of 9.3%(463 million people) in 2019 rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045(Saeedi et al., 2019b). It also revealed a comparison of high urban prevalence (10.8%) with low rural figure (7.2%) and comparative higher value for high-income country (10.4%) than low-income regions (4%). According to the findings, one in two in the population who has the diabetes didn't know that they are having the disease and global prevalence of impaired glucose tolerance was estimated as 7.5%(374 million) in 2019 and calculated to reach 8.0% (454 million) by 2030 and 8.6% (548 million) by 2045. These results clearly

shows that almost half a billion people living with diabetes worldwide and if the trend will continue as same, this number will accelerate by 25% in 2030 and 50% in 2045.

1.4.8 Prevalence of Diabetic Complications.

As diabetes mellitus is a chronic disease, and chronic hyperglycemia for many years can cause multiple micro or macro vascular diseases: Coronary Artery Disease (CAD), strokes, peripheral vascular disease, retinopathy, nephropathy, neuropathy, and diabetic foot disease. Anyhow, many patients get these complications and other metabolic risk factors even prior to diagnosis of diabetes(LeRoith et al., 2005a).

A descriptive cross-sectional study conducted among 3000 patients with T2DM attending the diabetic clinic at the National Hospital of Sri Lanka (NHSL) in 2016 and found that the prevalence of CAD, stroke, and peripheral vascular disease were 10.6%, 1.1%, and 4.7% respectively(Arambewela et al., 2018a). Further, they have revealed, the prevalence of retinopathy (26.1%), neuropathy (62.6%), nephropathy (50.8%), diabetic foot (2.6%), and Lower Extremity Amputation (1.3%). Same study has exposed the risk factors for micro vascular disease and diabetic foot to be increasing age, disease duration, and elevated HBA1C whereas age was only risk factor for macro vascular disease. Among the study participants they have found that, 80% were overweight or obese, 77.6% had hypertension, 76.7% had dyslipidemia, and 11% were smokers. Another important fact that found was male are more favor to get CAD, peripheral neuropathy, diabetic foot and low extremity amputations than females(Arambewela et al., 2018b).

Weerasuriya *et al.,* (1998a) have done a study on sample of newly diagnosed T2DM patients to determine the prevalence of complications and found, 21% of CAD, 5.6% of strokes, 4.8% of PVD, 25.1% of neuropathy, 29% of nephropathy, and 15% of retinopathy. They

have also found prevalence of risk factors among participants: hypertension in 23%, obesity in 16%, and hypercholesterolemia in 11%. Further, they have disclosed that 22% of them presented due to the symptoms, 27% were diagnosed in health screening, and 36% were diagnosed coincidentally while treating for any other illness. According to the study the researchers argued that the reasons for high prevalence of complications at the time of diagnosis were both genetic predisposition and exposure to asymptomatic hyperglycemia for longer duration and also they have stressed that, this might have implicated by poor access to adequate healthcare(Weerasuriya, 1998b).

A descriptive cross sectional study has been conducted in two hospitals in eastern province of Sri Lanka, with the participation of 200 inward diabetic patients of convenient sample to explore the prevalence of diabetic complications(Navaseelan and Judenimal, 2017a). They have summarized the findings as "of the 200 patients, 71.5% (n=149) had acquired complications of Diabetes Mellitus. Out of the 149 patients with Diabetes Mellitus complications, 108 (54%) patients were identified with diabetic wound, 87 (43.5%) with hypertension, 112 (56%) with visual complications, 66 (33%) with hyperlipidemia, 45 (22.5%) with renal impairment, 23 (11.5%) with recurrent infection; while cardiac disease, hypoglycemia, hyperglycemia are complications identified from the 36 (18.0%), 44 (22.0%), and 83 (41.5%) respondents respectively"(Navaseelan and Judenimal, 2017b).

The researches have recommended to design and develop a comprehensive health promotion strategy for diabetes mellitus and its related risk factors, and to design and implement suitable diagnostic, management and treatment protocols(Navaseelan and Judenimal, 2017c).

Since the diabetic management is multifaceted, some scholars have focused on glycemic control over the prevention of micro and macro vascular complications. LeRoith et al (2005b)

have told that, “Large-scale clinical trials have demonstrated that metabolic control achieved early in the course of diabetes substantially reduces development and progression of diabetes and the associated micro vascular complications”. Hence, achieving and maintaining tight glycemic control seemingly play pivotal role in prevention of complications.

1.4.9 Development and Implementation of Clinical Management Guidelines for DM

Ceylon College of Physicians(2018) has published the Diabetes Mellitus management guideline with the contribution of the Sri Lanka College of Endocrinologists, targeting the all medical officers engaged in diabetic patient management. The document has been formulated according to the existing international guidelines published by various professional bodies. The authors noted that guideline-based patient management decisions should be made on a case-by-case basis and supported by the clinical judgment of healthcare providers. It extensively discusses classification and diagnosis (diagnostic tests, diagnostic criteria, conformation of diagnosis, and pre-diabetes), screening for type 2 DM, clinical evaluation (history, physical examination, and investigations), and management of type 2 DM(Sri Lanka College of Endocrinologists, 2018). The disease management is focused on achieving four goals: life style modification and patients’ education, maintaining good glycemic control, management of multiple risk factors, and prevention of complications. Furthermore, this document gives the activities and management algorithms to be used to achieve the desired targets within each goal.

American Diabetic Association(2018) has developed the standards of care recommendations in managing diabetes mellitus and mainly focused on screening, diagnostic, and therapeutic actions which can be followed by the clinicians, planners, and policy makers. They have mentioned that these recommendations are not intended to challenge or preclude clinical judgment, but to augment the standard clinical care in which several sub sections given:

improving care and promoting health in populations, classification and diagnosis of diabetes, comprehensive medical evaluation and assessment of comorbidities, lifestyle management, prevention or delay of type 2 diabetes, glycemic targets, obesity management for the treatment of type 2 diabetes, pharmacologic approaches to glycemic control, cardiovascular disease and risk management, micro vascular complications and foot care, problems in older adults, children and adolescents, management of diabetes in pregnancy, diabetes care in the hospital, and most importantly diabetes advocacy in respective stakeholders.

The National Health Service(NHS), Scotland has published clinical guideline for management of type 2 diabetes mellitus based on two principles: "Practicing realistic medicine" and "The Modern Outpatient"(Christopher Smith, 2019a). Modern outpatient care is patient-centered, sharing knowledge and strengthening self-management by the health care provider among community, access to decision support and their own care planning, recognizing the role of the clinical generalist while keep the consultant service for more complex patients, and strengthening the role of the community-based multidisciplinary team: practicing realistic medicine refers to "empower people and communities to take their rightful place at the center of decision making" (Christopher Smith, 2019b). Figure 02 shows the modern outpatient care model developed by NHS Scotland and gives an account on the importance of organizational arrangements (management and leadership), healthcare provider contribution, and engagement of the patient and the community.

However, Christopher Smith(2019) has stated that clinical judgments according to any guideline must be taken based on individual patient characteristics.

Figure 1. 2: NHS, Scotland Model for managing type 2 Diabetes Mellitus (The Modern Outpatient: A Collaborative Approach).

(Obtained from NHS guidelines for managing type 2 diabetes mellitus)

1.4.10 Management Approaches and Models

Many researchers have studied and tested different models and methods in effective management of NCDs in terms of improving patient satisfaction and disease outcome. One study has been performed to evaluate effectiveness of team based comprehensive care involving nursing practitioners and physicians; A group of patients with hypertension and diabetes has been randomly allocated for the study and pre and post interventional HBA1c, high density lipoprotein cholesterol (HDL), satisfaction of care and health related quality of life assessed(Litaker et al., 2003a). Consequently, they have found that there were significant improvement of satisfaction and mean HBA1c levels in patients who has been provided team based care. But at the same time there has been moderate increment of cost. Finally, they have concluded that complementary team approach with patient centered care for managing

chronic diseases even with modest incremental cost is more value than traditional practices(Litaker et al., 2003b).

In low- and middle-income countries (LMICs), the burden of non-communicable diseases is rapidly rising, overpassing the existing burden of communicable diseases and patients with diabetes living in low-income communities face unique challenges related to lack of awareness, difficulty in accessing health care systems and medications; consequently fails to achieve optimal diabetes management and prevention of complications(Karachaliou et al., 2020a). Therefore, they stressed the importance of developing and implementing of more effective care models which suit for LMICs. Further, Karachaliou *et al*.,(2020b) have emphasized that such models must focus to increase the accessibility for care, train the healthcare professionals and patients, standardize the prevention and management guidelines, and use technological innovations.

A systematic review conducted to assess the accessibility of standard evidence based diabetic care services to the people of LMICs and found that practice of auditing and benchmarking with evidence based guidelines were minimal in Asia and Middle East(Shivashankar et al., 2015a). Further, they have pointed out that, despite the high prevalence of diabetes in Asia and Middle East the evaluation of quality indicators for diabetes care was uncertain and incomplete and also the available data prove that preventive care is inadequate and the risk factor management was broadly suboptimal(Shivashankar et al., 2015). Hence, they have clearly mentioned the definite requirement of institutionalization of the diabetic care quality indicators within such settings.

In an another study conducted in China has revealed the challenges of Diabetes management and found that patient education alone is not helpful to build confidence and skills in self-management among the patients(Xing and Wang, 2022). Hence, a combination of education,

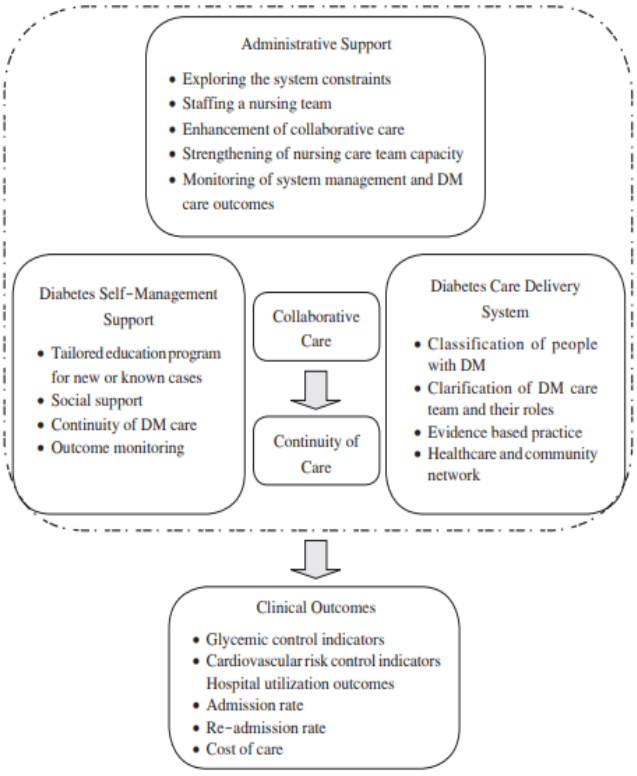
counseling, and skills training of self-management is needed sustainably. Further, Xing and Wang has proposed a comprehensive management mode consists of several models: continuum of care model, family-based participatory Tele-care model, the health belief model, multi-disciplinary joint diagnosis and treatment, all-round management model, and Diabetes support group model(2022). Of those, the Multy-disciplinary model is a type of management clinic which includes a combination of specialists care, education, nutrition, exercise, rehabilitation, ophthalmology and psychology. In the same study, they designed, developed diabetic self-management interventions and implemented among a group of diabetic patient-friends over a period of 24 weeks. They observed improvements in knowledge on healthy diet, behavior of exercise and self-monitoring, and quality of life in general. Furthermore, they observed that significant improvement of HbA1c, FBS, BMI, and health belief. Also, self-efficacy improved and depression reduced in this support group approach.

Praneetsin Chaowalaksakun et al developed a diabetic care model in a community hospital in northern Thailand with the participation of multidisciplinary healthcare providers and type 2 diabetic patients; the process consisted of four phases – planning, action and observation, reflection and revision, and model summarization(2016). They applied qualitative data collection methods such as focus group discussions, semi structured interviews, team meetings, workshops, document reviews, and observations. They explored many health system obstacles: overcrowding of clinics with patients, shortage of staff and overburdened, and undesirable working conditions for healthcare workers. Most of staff have claimed that even though they believe it should spend more time for the patient communication, they do not get adequate time with large waiting patients. Further, different population groups need to be addressed according to their unique comorbidities: obese, young, adults, disabled

people, government officers, and Buddhist monks etc. Subsequently, this study aimed to develop a model to encompass the provision of proper evidence-based guidelines, education, building self-confidence in their self-management, and promoting continuity of diabetic care(Chaowalaksakun et al., 2016). The model consisted of three distinct areas – administrative support, care delivery system, and diabetes self-management support. (Figure 02)

Figure 1. 3: A model of diabetic care in a Thailand community hospital

(Obtained from an action research article published on community hospital study in Thailand)



National Health and Medical Research Council in Australia has stated that clinical guidelines are designed to improve the quality of health care, to reduce the use of unnecessary, ineffective or harmful interventions, and to facilitate the treatment of patients with maximum chance of benefit, with minimum risk of harm, and at an acceptable cost(1999). They have also mentioned that many researches proved the potential for change and improve patient outcomes with implementing the clinical guidelines for any disease. It is a clinical decision support tool. However, Field and Lohr have told that "guidelines do not implement themselves" and if they are to be effective, their dissemination and implementation must be vigorously pursued(1992). Further, they have pointed out that without good effort and proper follow-up the time, energy and cost devoted to the guidelines' development will be wasted and potential improvements in consumer health will be lost.

1.4.11 Best Practices For Clinic Service Delivery

Planning and managing patient flow in healthcare settings is important to improve work efficiency, improve patient satisfaction and reduce stress on healthcare staff. Benjamin Fredrick(2022) describes the patient flow as the patient movement from entering to the health setting to discharge or completion of the expected care and it is a multi-dimensional concept and includes patient care, health care improvement, and available physical resources, health staff, and internal patient transferring methods. Further, in a hospital that operates with adequate patient flow, overcrowding, delays in patient care, and lapses in patient exchanges between health workers are minimized. Factors contributing to poor patient flow include complexity, limited resources, poor communication and uncertainty, inefficient scheduling and lack of communication between departments, which can be improved by introducing digital formats, team communication, and easy, efficient scheduling(Fredrick, 2022).

Rosewater(2018) told that “your focus as a doctor should ideally be on the diagnosis and treatment of your patients. However, the design and ambience of your clinic can help your patients be calm, thus making them more receptive to the treatment you provide”. The scholar has pointed out some important interior design tips for the clinics such as personalization of the clinic design related to the type of the service, creation of comfortable and attractive entrance facilities(providing free space to walk in without disturbances with furniture) placing a reception table with comfortable height to the patients to reach, creating a comfortable and large waiting area complemented by comfortable seating, displaying posters and disseminating health educational information, relaxing colors for wall and the ceiling, use of art work with soothing colors, and some indoor plants, placing the equipment not to compromise the space, and lighting adequately and appropriately the different areas(Rosewater, 2018).

Unavailability of effective appointment system for the patients in outpatient clinics increases the patient waiting time and build up long queues, also put unnecessary stress on health staff(Harper and Gamlin, 2003). There are common methods used to schedule patient appointments in outpatient departments such time-specified scheduling, top of hour scheduling, wave scheduling, modified wave scheduling, integrated scheduling, double booking scheduling, and clustering scheduling(Relatient, 2022). In wave scheduling, a group of patients comes in regular time intervals and doctors consult them in the order which they arrive.

It was observed that the traditional method of entering patient investigation results into their records was in most cases numerical entries. However, multi-point glucose profiles have been recognized in the diabetes literature as a key way for patients and doctors to analyze and interpret blood glucose control in an actionable manner(Daniel, 2014).

1.5 Plan of Implementation

1.5.1 Project Design.

An interventional research project was conducted in Medical, Diabetic, and Endocrine clinics at District General Hospital, Nawalapitiya. The project was conducted in three phases: Pre Intervention, Intervention, and Post Intervention.

1.5.2 Profile of the Study Setting.

DGH Nawalapitiya, is a secondary level curative care institution under the administrative purview of Ministry of Health. It serves over 500,000 population and geographically belongs to Pasbage Korale divisional secretariat area in Kandy district; majority of the population covered consist of rural and estate community. The hospital has a bed capacity of over 430, and over 25 consultants including many subspecialists, 105 medical officers, 220 nursing officers and other relevant categories of staff provide secondary healthcare services for the population covered by the institution.

Table 01 shows the distribution of patients treated in clinics for common NCDs at DGH Nawalapitiya during the year of 2021. Medical/diabetic clinics are named as A and B, denoting the two consultant physicians.

Table 1. 1: Distribution of Patients Treated in Clinics for Common NCDs at Nawalapitiya DGH in 2021 (Source, Medical Record Unit)

Name of the clinic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	**Total**
Medical Clinic (A)	2245	2364	1906	1356	1212	671	1356	784	1077	1072	1340	982	**16365**
Medical Clinic (B)	2391	2359	1829	1290	1050	660	1295	800	988	1002	1144	1302	**16110**
Diabetic Clinic (A)	716	608	746	644	595	356	621	325	404	535	439	455	**6444**
Diabetic Clinic (B)	815	724	772	601	552	281	526	402	361	489	411	460	**6394**
VP OPD Clinic	1139	1086	1152	1216	945	1029	1113	746	875	1026	1364	1269	**12960**
Endocrine Clinic	69	72	92	97	34	75	43	57	100	112	112	114	**977**

As shown in table 01, there were 16,365 patient visits recorded for medical clinic A while medical clinic B received 16,110 patient visits. Visiting Physician, Out Patient Department (VP OPD) clinic also received 12,960 visits. The patient visits for diabetic clinic A, Diabetic clinic B and endocrine clinic were 6444, 6394, 977 respectively.

In the year 2021 the average patient consultation visits per week was nearly 1250 for all NCDs in the hospital clinics. Medical clinics, diabetic clinics, and endocrine clinics are conducted in the same premises giving different time slots from Monday to Friday of the week. VP-OPD clinic is conducted in a separate premises in the OPD.

According to the clinic registration records over 3800 diabetic patients were followed up monthly in all clinics. Two consultant physicians responsible for the inward patient care conduct medical clinics and diabetic clinics while consultant endocrinologist and VP OPD run separate clinics.

The clinic selected for the project was the medical, diabetic and endocrine clinics and VP OPD clinic was excluded. According to the medical statistic unit, around 3100 patients registered are currently being followed up in these five clinics.

1.5.3 Project Period.

The project was conducted from 1st of January to 31st of December 2022.

1.5.4 Pre Intervention Phase

The following activities were planned to execute during the pre-intervention phase,

- Patient experience survey on clinic services and knowledge regarding the disease pathology, risk factors, complications, medical management, and prevention.
- Focused Group Discussions (FGDs) and Key Informant Interviews (KIIs) with the selected staff members to explore more insights into the service gaps.

- Facility survey to assess the human resource and infrastructure availability and service readiness in providing standard and quality clinic patient care.
- Current glycemic control level (the most recent FBS value at the time of data collection and HbA1c value) of the participants.

1.5.4.1 Study Population

There were three study populations.

1.5.4.1a Study population 1: Study Population for the Patient Experience Survey

All the Diabetic patients, registered in Medical and Diabetic clinics A and B, and endocrine clinic were taken as the study population.

Inclusion Criteria

Participants who fulfilled the following criteria were included.

- Patients with established diagnosis with type 2 Diabetes Mellitus and had completed more than six months from the first registration.
- Age ≥ 30 and <75 years.

Exclusion Criteria

Following participants were excluded

- Patients diagnosed as Type 1 diabetes mellitus.
- Patients with gestational diabetes mellitus

1.5.4.1b Study Population 2: Study Population for FDGs

All senior house officers and intern medical officers (08) attending the clinics, nursing officers (06) attached to the clinic, health education nursing officer, pharmacists (03) attached to the clinic dispensary, and staff assistants (04) attached were taken as the study population for the FGD.

1.5.4.1c Study Population 3: Study Population for KIIs

All the consultants, section chief nursing officer (Matron), supervisory nursing officers, and chief pharmacist were taken as the study population for KIIs.

Inclusion Criteria for Study Population 2 And 3

Staff members who completed more than three months of service experience in the clinic were included for FGDs and KIIs from the respective population.

1.5.4.2 Development of Study Instruments

1.5.4.2a Self-administered Questionnaire for Patients' Experience and Knowledge (SQPEK) - (Annexure I, II, III)

A structured SQPEK was developed after referring to similar literature and expert opinion. It consisted of a series of open-ended and close-ended questions. The questionnaire has three components.

Component I: Socio Demographic Data.

This component included participants' gender, age, marital status, education obtained, occupation, family history of diabetes, duration of diagnosis, smoking habits, living conditions, attendance at the clinic (mode of transportation and accompanying persons), distance traveled from home to hospital, monthly household Income, availability of

equipment and appliances (television, regular mobile phone, smartphone, refrigerator and air fryer), availability of internet access, method of preparing/obtaining daily meals, gardening (space availability and utilization) and engagement in physical exercise.

Component II: Patients' Experience.

This component collected data on different aspects of the clinic services: getting timely appointments, access to the information, respectful and good communication with the staff, availability of investigation facilities, obtaining necessary medicines, fulfilment of basic amnesties, timely referral to eye care and other services.

Component III: **Knowledge on Diabetes Mellitus**

Twenty five question items were included to assess the knowledge regarding the disease pathology, risk factors, complications, medical management, and disease prevention.

1.5.4.2a I Language of the Questionnaire

The questionnaire was developed in English and translated to Sinhala and Tamil with the help of relevant language translators. Back translation was done to English by independent translators to ensure the meaning of the original questions were retained.

1.5.4.2a II Validity and Reliability of the Questionnaire

Face validity was assessed by review of items and their measurements as well as suitability by registrars in medical administration and senior medical administrators.

Furthermore, content and construct validity and reliability were assessed along with the evaluation of the instruments by diverse team of experts consisting of medical administrators, physicians, an endocrinologist, and a statistician.

1.5.4.2a III Pretesting

The questionnaire was pretested with the participation of 20 type 2 diabetic patients (10 Tamil and Sinhalese patients each) at Endocrinology clinic, DGH Matale. Some errors were identified in terms of the meaning of few items, native language uses, and comprehension. Further, refining was done before distribute among study participants.

1.5.4.2b KII Guide - (Annexure VI)

The KIIs were planned to conduct as an in-depth data collection method to supplement the information obtained from other sources. Focus was on filling gaps in information using knowledge and experience of key personnel involved in diabetic care. The KII guide was developed in English by PI after going through literature and expert input. It was prepared under the sub sections of introduction, key questions, probing questions, closing questions, and summery(UCLA Center for Health Policy Research, n.d.). All questions were developed as open ended, unambiguous, unbiased, and neutral questions.

The question areas included were, the disease pathology, awareness on prevalence and complications of diabetes in Sri Lanka, awareness and utilization of diabetic management clinical guidelines, opinion on clinic infrastructure and facilities currently available (patient waiting area, consultation area, and drug dispensing area), clinic processes (patient registration, patient flow, consultation, performing investigations, dispensing drugs, and maintaining patients' clinical records), availability of investigation facilities, health education and counselling activities, referrals for complication screening (diabetic retinopathy, nephropathy, peripheral arterial disease, and neuropathy), drug availability for diabetes, and patient behaviors and concerns.

Further, it was planned to inquire the opinions and reasons regarding the gaps pointed out by the patients in SQPEK.

1.5.4.2c FGD Guide - (Annexure VII)

FGDs were planned as another method of in-depth data collection from staff in the clinics (diabetes, medical and endocrinology) and clinic dispensary to supplement information from other sources. The FGD guideline was developed in English by PI after literature review, using self-experience, and expert opinion. FGD guideline included different types of questions: engagement, exploration, and exit questions(George, 2021). In each area of the guideline, open ended, unambiguous, unbiased, and neutral questions were used.

The question areas used in the guideline were clinic infrastructure and facilities, awareness and utilization of diabetic management clinical guidelines, clinic processes, investigation facilities, health education and counselling activities, referrals for complication screening, drug availability for diabetes, and patient behaviors and concerns.

1.5.4.2c Check list for Facility Survey (CLFS) - (Annexure VIII)

PI developed the check list in English after going through the Diabetes Mellitus Management Guidelines published in 2018 by Ceylon College of Physicians and National Guidelines for Improvement of Quality and Safety of Healthcare Institutions published by Ministry of Health of Sri Lanka(Ministry of Health, 2010b;Sri Lanka College of Endocrinologists, 2018). It was developed to assess the readiness and service availability of the diabetic care at the clinic and looked into following aspects:

- Basic amenities such as seating facilities in the waiting area, availability of public addressing system and TV screens, provision of safe drinking water, ventilation and lighting conditions of waiting and consultation areas, sanitation facilities, and availability of examination areas with adequate auditory and visual privacy.
- Availability and use of clinical guidelines: Guideline for diabetic management (diagnostic protocols and drug management protocols), guideline for management of

cardiovascular risk factors, guideline for nutrition management, and guideline for physical activity management.

- Availability of the staff: consultants/specialists, medical officers, nursing officers, health educators, counselors, and health assistants.
- Diabetic management training received by the staff: one time or regular trainings.
- Availability and the functionality of the equipment in the clinic such as blood pressure measuring devices (mercury or aneroid), glucometers, adult weighing scale, measuring tape, height board, 10g monofilament, and ophthalmoscope.
- Availability of diagnostic facilities; Fasting Blood Sugar (FBS), HbA1c, serum creatinine, and urine albumin.
- Availability of health education and counselling facilities: patient counselling for diabetes self-management, patient counselling and education on smoking, diet, alcohol and/or physical activity, counselling and education of family members on smoking, diet, alcohol and/or physical activity, patient education for self-administration of insulin, and counselling and education of patients on foot care and eye care.
- Availability of formal referral system or facilities in the hospital for the screening of complications: retinopathy (ophthalmoscopy or slit lamp fundal examination at the diagnosis and in regular intervals), nephropathy (regular testing of urine albumin and serum creatinine), neuropathy (assessment of distal peripheral polyneuropathy), peripheral vascular disease, and cardiovascular diseases.
- Availability of essential medicines in diabetic management.

1.5.4.2d Data Extraction Sheet to Record Glycemic Control (FBS and HbA1c)

It was developed as a excel sheet to retrieve the last FBS and HBA1c value from the patients' clinical records. Of patients participating in SQPEK completion, those values were planned to be recorded.

1.5.4.3 Sampling and Sample Size Calculation

1.5.4.3a Population 01: Study Population for Patients' Experience Survey

Sample size was calculated by Raosoft online sample size calculator("Sample Size Calculator by Raosoft, Inc.," 2004).

Table 02 shows the parameters used to calculate the sample size.

Table 1. 2: Parameters used to calculate the sample size for study population 01

Margin of error	5%
Confidence level	95%
Population size	3100
Response distribution	50%
Calculated sample size	342
Non response rate	10%
Final Sample size with adjustments for non-response	342+35=377

Sampling Technique

Average attendance per clinic day for the past six months from 1st of July to 31st of December, 2021 was calculated for each selected clinic. The number of patients treated for other NCDs was excluded when calculating the average attendance of the medical clinics. Subsequently, the 377 sample was divided proportionately among those five clinics as shown in table 03.

Table 1. 3: Sample break down according to medical, diabetic, and endocrine clinic

Name of the clinic	Average attendance per clinic day	Percentage (%)	Sample breakdown
Medical clinic A	55	16%	60
Medical clinic B	54	15%	56
Diabetic clinic A	115	33%	124
Diabetic clinic B	112	32%	121
Endocrine clinic	15	4%	16
Total		**100%**	**377**

It was planned to collect data on each sample segment of the respective clinics as a convenient sample over a period of one month from 1st of June to 30th of June, 2022. The sample portion to be collected from each clinic was divided into four equal parts and planned to collect over four clinic days.

1.5.4.3b Population 2: Study Population for FGDs

Sampling Technique

A purposive sample was taken from the study population. It was planned to recruit all eight medical officers into one FGD. Three nursing officers including nurse in charge, health education nursing officer, two clinic pharmacist, and two staff assistants were included to the second FGD.

1.5.4.3c Population 3: Study Population for KIIs

Sample Technique

A purposive sample was taken from the study population. Two consultant physicians, the consultant endocrinologist, section matron, supervisory nursing officer of the clinic, and chief pharmacist were selected for KIIs.

1.5.4.4 Selection and Training of Data Collectors

A research assistant(University student), nursing officer Quality Management Unit (QMU), and Health Education(HE) nursing officer were enrolled and trained administering SQPEK.

The training was conducted for two days. In the first day the research project and its objectives were clearly explained to data collectors. Each question in the SQPEK was explained in detail to them. Then a training was conducted on selecting participants to administer SQPEK according to the inclusion criteria, obtaining informed written consent, and creating a supportive environment to the participants to fill the forms. Furthermore, they were trained on how to obtain the last FBS and HbA1c value from the clinical records of the patients selected for the experience survey. During the second day a practical exercise on filling the SQPEK and on obtaining last FBS and HbA1c was conducted.

1.5.4.5 Plan for Data Collection in the Pre Intervention Phase

Data collection plan in respective study population using developed instruments will be given in detailed action plan in page 52.

1.5.4.6 Data Analysis

Analysis was done by using descriptive analytic techniques for quantitative data and content thematic analysis for qualitative data.

1.5.4.7 Ethical Consideration

Ethical Clearance

Ethical clearance was obtained from Ethics Review Committee of Post Graduate Institute of Medicine, University of Colombo.

Administrative Clearance

Approval was obtained from the Director, DGH Nawalapitiya.

Consent

Informed written consent for SQPEK was obtained from each participant after giving and explaining an information sheet. Anyone who did not wish to participate was given the opportunity to withdraw from the study at any time.

Informed verbal consent was obtained from the each participant of KIIs and FGDs.

Confidentiality

Any data collection methods were not included personal identification details. Hence, all the date will remain anonymous. Data was stored securely and access be permitted only to PI. Data collecting forms were destroyed immediately after entering for the analysis and computer stored data was secured with the password.

1.5.4.8 Definition of Variables

Table 1.4 show the definition of the variables.

Table 1. 4: Definition of the variables

Variable	Definition
Patient experience	The range of patient interactions with the diabetes clinic services, including infrastructure facilities, care of doctors, nurses, pharmacists and other staff.
Patient knowledge	Patient knowledge of disease pathology, risk factors, complications, medical management and disease prevention in diabetes clinic.
Service readiness	Ability of the diabetes clinic to provide the desired service: trained staff, guidelines, equipment, diagnostic capacity and medicines.
Service availability	Physical presence of Diabetes care delivery Services: Health infrastructure, Key health personals and aspects of service utilization.

1.5.5 Intervention Phase

The intervention phase was planned after analyzing the data collected during pre-intervention phase. Details of the results of the pre intervention phase is given under the chapter of execution (page 65). The results of the pre intervention study was presented to a multi stakeholder group including the director, consultant physicians, endocrinologist, medical officer (planning and QMU), chief matron, nursing in-charges of the clinic, chief pharmacist, HE and QMU nursing officers. Based on the results the following gaps were identified.

I. Poorly arranged clinic layout.

II. Lack of awareness and practicing of clinical management guidelines by doctors.

III. Absence of time appointment system for routine clinic visits.

IV. Absence of formal referral system for foot care and physical activity.

V. Lack of training on foot care and physical activities among the staff.

VI. Absence of safe and clean drinking water for patients in waiting area.

VII. Absence of adequate number of toilets and cleanliness.

VIII. Overcrowding and delaying getting medicines from the clinic dispensary.

IX. Absence of health education facilities – displaying banners and educational videos.

X. Overcrowding and delaying obtaining blood samples for FBS.

XI. Unavailability of facilities for HbA1 due to reagent shortage within the hospital.

XII. Unavailability of trend reflecting blood sugar profile in the clinic book.

Based on the literature review, desk review of the clinical management guidelines published by specialist colleges, guidelines published by NCD unit, stake holder discussions and supervisor advice, the following were identified as possible interventions to fill the gaps.

I. Rearranging of the clinic layout.

II. Improving the awareness among doctors on clinical management guidelines to increase the utilization.

III. Developing a time appointment system for clinic visits.

IV. Developing a formal referral system for foot care and physical activity.

V. Conducting trainings on foot care and physical activity for the staff.

VI. Provision of safe and clean drinking water in the patient waiting area.

VII. Building an additional toilet facilities in the clinic premises

VIII. Establishing a proper cleaning practice in patients' toilets.

IX. Establishing an additional drug dispensing counter and allocating an additional pharmacist.

X. Improving health education facilities – displaying banners and playing educational videos in the patient waiting area.

XI. Establishing a proper system to get done the FBS within fasting period for each patient.

XII. Providing laboratory facilities to perform HbA1c within the hospital.

XIII. Introducing the multiple point blood glucose profile into the patient' clinic book

1.5.5.1 Selecting Intervention Package for the Project

A multi - stakeholder meeting was conducted with the participation of hospital director, consultant physicians and endocrinologist, matron, chief pharmacist, medical officer planning and QMU, one SHO from each clinic and the accountant of the hospital. Each participant expressed their views on possibility of implementing and succeeding the proposed interventions. Financial constraints, shortage of staff, and most prominently COVID 19 related issues were highlighted in the discussions. Subsequently, the feasible and practical interventions with the available human, infrastructure, and financial resources were selected and ranked using Nominal Group Technique (NGT).

Each intervention was considered according to seven prioritizing criteria: technical feasibility, administrative feasibility, financial feasibility, practical possibility, impact, time, and acceptance. The stakeholders assigned a weighted score to each domain and all seven were scored out of 100. Finally, all members gave the points for each interventions against the criteria. Average score for each interventions were calculated and obtained the ranked order.

Table 1. 5: Prioritization matrix for the possible interventions to select intervention care package

Interventions	Technical feasibility (12)	Administrative feasibility (18)	Financial feasibility (10)	Practical possibility (15)	Impact (18)	Time (13)	Acceptance (14)	Av score	Rank order
Rearranging of clinic layout.	10	18	8	13	17	11	13	**90**	**1**
Improving the awareness on clinical management guidelines among doctors	8	17	8	13	16	10	13	**85**	**3**
Developing a time appointment system for clinic visits.	10	17	6	13	18	10	14	**88**	**2**
Developing a formal referral system for foot care and physical activity.	10	15	6	12	13	6	10	**72**	**6**
Conducting trainings on foot care and physical activity for the staff	10	15	6	12	12	5	10	**70**	**7**
Provision of safe and clean drinking water.	5	11	2	7	8	8	11	**52**	**11**
Building an additional toilet facilities in the clinic premises	5	5	2	5	10	5	8	**40**	**13**
Establishing a proper cleaning practice in patients' toilets	10	12	8	9	10	10	9	**68**	**8**

Establishing an additional drug dispensing counter and allocating a pharmacist.	7	11	6	7	10	8	11	**60**	**10**
Improving health education facilities – displaying banners and playing educational videos in the patient waiting area.	10	15	6	12	15	10	12	**80**	**4**
Establishing a proper system to get done the FBS within fasting period for each patient.	8	15	8	10	14	10	10	**75**	**5**
Providing laboratory facilities to perform HbA1c within the hospital.	5	8	2	7	8	8	11	**49**	**12**
Introducing the multiple point blood glucose profile into the patient' clinic book	10	12	6	8	10	10	9	**65**	**9**

According to the ranking order following 10 interventions were selected for the intervention package.

1. Rearranging of clinic layout.
2. Developing a time appointment system for clinic visits.
3. Improving the awareness on clinical management guidelines among doctors
4. Improving health education facilities – displaying banners and playing educational videos in the patient waiting area.
5. Establishing a proper system to get done the FBS within fasting period for each patient.
6. Developing a formal referral system for foot care and physical activity.

7. Conducting trainings on foot care and physical activity for the staff
8. Establishing a proper cleaning practice in patients' toilets
9. Introducing the multiple point blood glucose profile into the patient' clinic book.
10. Establishing an additional drug dispensing counter and allocating a pharmacist.

Principal investigator developed an intervention care package putting the 10 interventions indicating the resources, responsibilities, activities, expected time duration, and administrative approval for the implementation.

1.5.5.2 Applying Theory of Change (TOC) for the Project

As noted by Stein and Valters(2012), Theory Of Change is the logical link between the activities and the outcomes that helps to enumerate for how the intended change is achieved with the planned interventions. Hence, PI applied the Theory of Change for the intervention care package to create causal pathway to the desired outcome.

Figure 1. 4: Theory of change that applying for the intervention care package and its intended results.

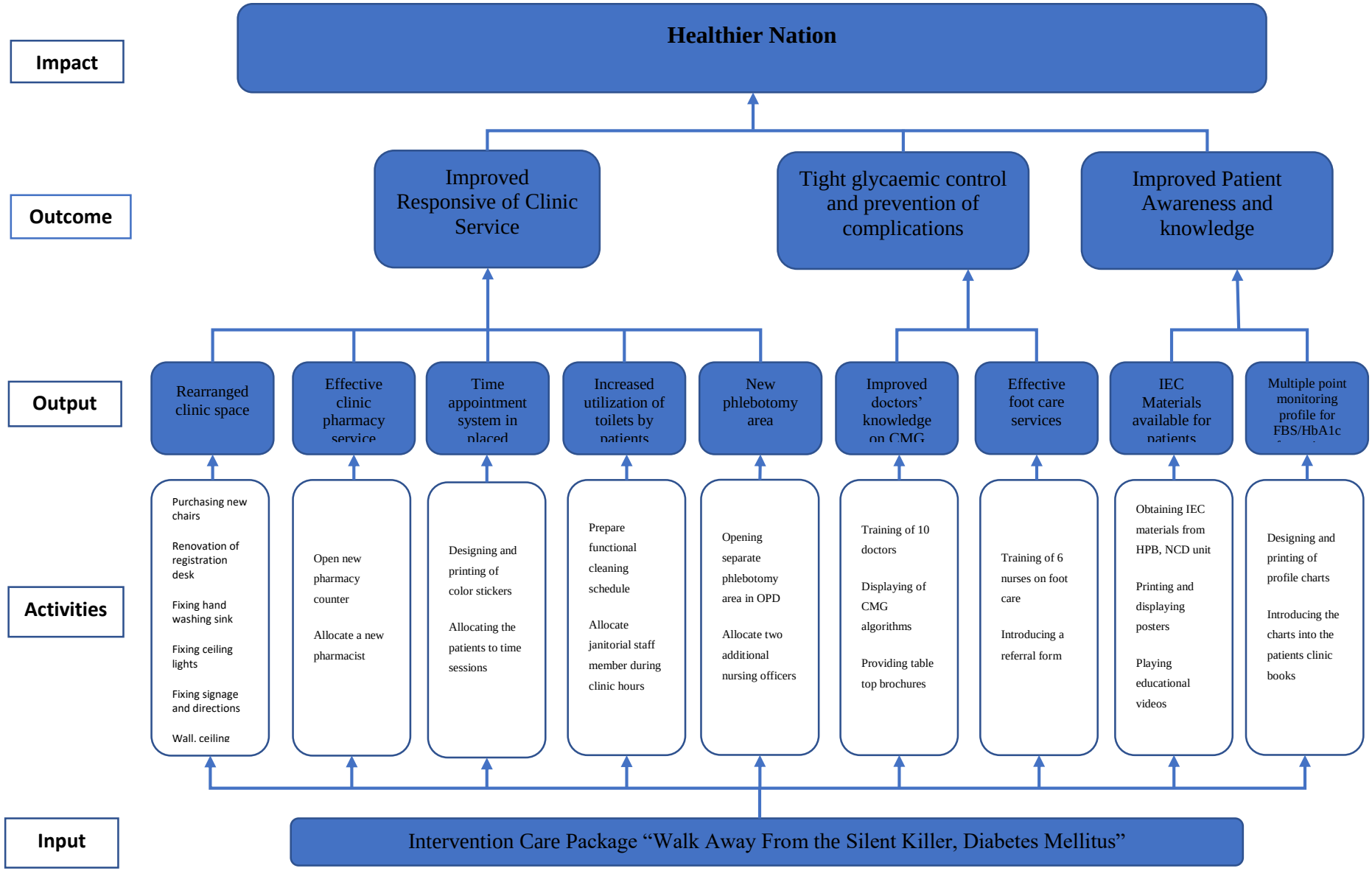


Table 1.6 shows how activities lead to the achievement of project outputs and outcomes.

Table 1. 6: Logical framework matrix of intervention care package for diabetic clinic

Results		Verifiable indicators	Baseline	Targets	Means of verification	Achievements	Assumptions and risks
Outcome 1	Improved responsive of clinic service	Mean of overall patient experience score	3.52	4.0	Patient experience survey		Patients responds correctly and appropriately
Outcome 2	Tight glycaemic control and prevention of complications	FBS /HbA1c % of patients within target glycemic control after three months of registering in the clinic	FBS 64.6% HbA1c 40.4%	80% 60%	FBS and HbA1c reading extraction sheet (Pre intervention and Post intervention) from the clinic records		Record keeping will be accurate.
Output 1	Improved utilization of patient waiting area and clinic space	Mean patient experience score on patient waiting area	3.40	4.0	Post intervention patient experience survey		all the expected activities will complete. Funds will receive as planned
Output 2	Improved patient experience and utilization of pharmacy services	Mean patient experience score on drug dispensing	3.84	4.0	Post intervention patient experience survey		No delays in civil construction works
Output 3	Reduced overcrowding of the clinic	Percentage of patients enrolled to the time appointment system	None	100%	Clinic attendance records Observation checklist		
Output 4	Number of patients trained on foot care	Mean patient knowledge on foot care	None		Patient knowledge assessment questionnaire		
Process 1	Infrastructure development to improve the clinic layout and to optimize the space utilization	Number of chairs purchased	75 chairs	111	Observation check list Procurement documents		No delay in procurement process of chairs
		Number of hand washing sink installed	01	02	Observation check list Monitoring sheet		Contractors will finish the work on time
		Number of ceiling lights fixed	10	20	Observation check list Monitoring sheet		No delays in procurement process.
		Number of directional sings	5	15	Observation check list		Designing and printing will

							take place on time
Process 2	Expanding the clinic pharmacy to open a new counter	The number of pharmacy counters	03	04	Monitoring framework		Staff will support and civil constructions will finish on time
Process 3	Develop and introducing a new time appointment system for clinic visits	Time appointment system	None	Actively functioning time appointment system	Observation checklist		Patients adhere to the appointments given
Process 4	Establish a separate phlebotomy section in the OPD sample collecting room	Number of phlebotomy stations	02	04	Observation checklist		Space and furniture will be available in the OPD sample collecting room. Matron will be able to allocate two nurses.
Process 5	Conducting awareness and training programmes for doctors and nurses on diabetic management	Number of training programmes on CMG for doctors.	None	2	Attendance records. Monitoring framework		All doctors attend the trainings and follow the CMG
		Number of training programmes on foot care for nurses.	None		Attendance records. Monitoring framework		All 6 nurses will complete the training and consultant endocrinologist will give the support to train them
Process 6	Designing and developing multiple point FBS and HbA1c	Multiple point FBS and hba1c profile	None	Available	Observation checklist		Designing and printing of the profile sheets will be done on time.

	profile for each patient						
Process 7	Obtaining, designing, printing and displaying IEC materials in the clinic.	Number of posters displayed in the patient waiting area	5	25	Observation checklist		It will be able to obtained IEC materials from HPB, NCD unit and internet. Existing TV screen will function properly.
		Average video clips play in a clinic day.	None	8	Observation checklist		
Inputs		Intervention care package with all activities and proposed action plan given in details	Not available	Availab le	Observation checklist		Funding will be available, administrative and staff support will receive to implement the package

1.5.6 Post Intervention Phase

It was planned to conduct patient experience survey using the relevant component in SQPEK. The same sample size and the same procedure were planned as in the pre-intervention phase.

Facility survey was planned to conduct using the same checklist. Two FGDs were planned to conduct with the same participants in the pre-intervention phase to obtain the evidence of improvements and failures.

A re-examination was planned using the same data extraction sheet to compare glycemic control in selected patients. Considering the time and feasibility a sub sample from the previous participants was planned to enroll.

A knowledge assessment of patients on diabetic foot care was planned to conduct using a self-administered questionnaire (Annexure IX). The questionnaire was developed by the PI using literature and with supervisor's advice. Face validity was assessed by review of items and their measurements as well as suitability by registrars in Medical Administration and the consultant endocrinologist. Furthermore, content and construct validity and reliability were assessed along with the evaluation of the instruments by the same team of experts who participated in pre-intervention phase.

It was planned to evaluate the relevance, coherence, effectiveness and the sustainability of the intervention care package by using below mentioned evaluating matrix table 1.7. An evaluation team consisted of the hospital director, MO (NCD) Kandy District, and a Medical Administration registrar was appointed.

Table 1. 7: Evaluation matrix to assess overall progress of the project

Evaluation area	Key evaluation question	Indicator	Source of data	Responsibility
Relevance	How aligned is the project with national health policies and guidelines?	The project is aligned with the national health policies and guidelines	Desk review	Evaluation team
Coherence	How well did the interventions fit with other NCD related projects/activities in the country and the world?	The interventions fit with other NCD related projects/activities in the country and the world.	Desk review	Evaluation team
Effectiveness	1. Has the fixed-time appointment system reduced the congestion and overcrowding?		KII, FGD	Evaluation team
	2. Has the patient experience of diabetes clinic services improved since the implementation of the intervention care package?	Mean patient experience score	Patient experience survey using SQPEK	Evaluation team
Sustainability	1. Will multiple point profile charts for FBS/HbA1c be given to the patients continuously and staff adhere to practice sustainable manner?	Availability of charts	KII FGD	Evaluation team
	2. Can these nursing officers be allocated continuously to work in the phlebotomy room?	Number of nursing officers in the duty roster	KII	Evaluation team

1.5.7 Detailed Action Plan

A detailed action plan was developed to elaborate preparatory, pre-intervention, intervention, and post-intervention phases as shown in table 1.8.

Table 1. 8: Detailed action plan of the research project

Activity	expected start date	Expected end date	Responsibility /Resources	Progress
Preparatory Phase				
Preparation of pre-proposal of the project	01/06/2021	30/06/2021	PI	Approved on 9/8/2021
Preparation of a detailed proposal for the project	15/08/2021	15/12/2021	PI	Approved on 17/12/2021
Pre – Intervention Phase				
Development of study instruments	15/01/2022	30/03/2022	PI	
Obtaining ethical clearance	Submitted on 5/4/2022		PI ERC PGIM	Approved on 23/05/2022
Obtaining administrative clearance	25/05/2022		DDG/NCD Hospital Director	
Preparation for data collection-Recruiting and training of data collectors	28/05/2022	29/05/2022	PI	Completed on time
Piloting of SQPEK at DGH Matale	25/05/2022	30/05/2022	PI Director(DGH, Matale)	Completed on time
Conducting patient experience using SQPEK	01/06/2022	30/06/2022	PI Data Collector	Additional one week spent
Conducting KIIs	15/06/2022	30/06/2022	PI/Data collectors	Completed on time
Conducting FGDs	15/06/2022	30/06/2022	PI/Data collectors	Completed on time
Facility survey	07/06/2022	14/06/2022	PI/Data collector	Completed on time
Developing an intervention care package	15/06/2022	30/06/2022	PI Director Consultants	Completed on time
Intervention Phase				
Infrastructure development and rearranged clinic layout	01/07/2022	31/8/2022	PI Monitoring team	
Development of clinic pharmacy	11/07/2022	15/9/2022	PI Monitoring team	

Developing time appointment system	01/07/2022		PI Monitoring team	
Developing phlebotomy service in OPD	01/08/2022	15/08/2022	PI Monitoring team	
Training of MOs on CMG	17/07/2022	30/07/2022	PI Monitoring team	
Training of Nurses on foot care	15/07/2022	15/08/2022	PI Monitoring team	
Arranging IEC materials in waiting area	01/08/2022	30/08/2022	PI Monitoring team	
Post Intervention Phase				
Conducting post-intervention assessment	15/12/2022	15/01/2023	PI Data Collectors	
Evaluating the project	02/01/2023	14/01/2023	Evaluation team	
Preparation of the project report and submission	14/01/2023	15/02/2023	PI	

1.5.7 Budget and the Sources of Funds

A proposal was submitted by the PI to the Directorate of NCD through the hospital director for financial allocation under the National Program for Prevention and Control of Non-Communicable Diseases to obtain the funds for the projects. Furthermore, hospital development committee and well-wishers in the area agreed to provide financial assistance and other technical assistance. Table 1.8 shows the breakdown of expenditure categories with the amount spent.

Table 1. 9: Summery of budget for the interventions

Expenditure category	Unit Cost (Rs)	Multiplying factor	Cost (Rs)
Meetings and discussions			
• Stationaries	500.00 per meeting	5x	2,500.00
• Refreshments	350.00 person	15x 5 = 75	26,250.00
		8x 3 =24	8,400.00
Construction, painting, electrical of consultation and patient waiting areas			902,559.00
Construction, painting, electrical of clinic pharmacy			1,031,118.00
Purchasing of panel chairs for patient waiting area	64,000.00	9x	576,000.00
furniture for OPD sample collecting room	(Donation)		50,325.00
Allowances			
• Research assistant	20,000.00 per month	6x	120,000.00
Printing materials			
• Questionnaires	25.00 per one	700x	17,500.00
• Display banners	2500.00 per banner	10x	25,000.00
• Color stickers	5.00	4000x	20,000.00
• Direction signage			30,000.00
Transport			
• Supervisory visit by PI	2500.00 per visit	10x	25,000.00
Grand total			**2,834,652.00**

CHAPTER 02; EXECUTION

2.1 Process of Execution

The research project was executed in three phases: pre intervention phase that included the research component to identify the service delivery gaps, intervention phase in which designed interventions were implemented and post intervention phase to evaluate the effectiveness and the sustainability of the interventions.

Prior to execution, ethical clearance was obtained from the Ethics Review Committee of PGIM, Colombo and administrative approval was obtained from the hospital director.

2.1.1 Pre Intervention Phase

The patients experience survey was conducted using the Self-administered Questionnaire for Patients' Experience and Knowledge (SQPEK). Data was collected by two nursing officers and a research assistant. Patients were recruited while waiting in the waiting area prior to consultation. Patients were explained the study and the data collection procedure and were given the information sheet by the data collectors to read and ask any questions. Written informed consent was obtained after they agreed to participate in the study

Subsequently, an identification token was pinned to the cloths of consented participants. After they finished the counseling and got the medicines from the pharmacy, the data collectors identified them and accompanied them to the health education unit to fill out the questionnaire. They offered the questionnaire in preferred language and provided a pencil to fill the form. After filling the questionnaire the data collectors ensured that all the cages were filled and if they were missed they asked to complete the respective cages. Finally, the respondents were asked to fold the questionnaire and put into a box. The same day PI collected the questionnaires in the box and data enter into the software. Participants were determined according to the number to be obtained from each clinic and questionnaires were given to a maximum of thirty participants per day.

PI conducted two FGDs separately for medical officers and nursing officers, pharmacists, and health assistants at the hospital auditorium. PI moderated the FGDs and one data collector recorded the discussion using voice recorder, while the other one recorded verbatim. The PI was guided for discussion by FGD guide. The participants were informed one week in advance of the scheduled time and place of the discussion so as not to disturb the normal work. After explaining study and its proceedings verbal informed consent was obtained for participation and for recording the FGD. Discussions were held in Sinhala and were able complete within an hour. The same day PI went through the recordings and identified gaps of information. Subsequently, another round of FGDs was conducted using the same procedures. After the second round data requirement was fulfilled.

KIIs were conducted by PI with two consultant physicians, in-charge nursing officer in the clinic, chief pharmacist in clinic pharmacy, and nursing officer in health education unit. PI was guided by KII guide during the interviews. An appointment was obtained from each participants without disturbing routine work. After explaining study and its proceedings verbal informed consent was obtained for participation and for recording the KII. Finally, PI moderated the KIIs and guided by KII guide. At the same time one data collector recorded using a voice recorder and the research assistant recorded verbatim

The clinic service readiness and availability survey was conducted over two days in the second week of June using the observation checklist (CLFS). The team consisted of the PI, MO (Planning) and NO (QMU). The team assessed the readiness and availability of the basic amenities for clinic patients, equipment availability and usage, and usage of clinical management guidelines by using the checklist. And also they observed the flow of patients and how they received services and interactions at different workplaces. Further, number of nurses deployed was obtained from the section chief nursing officer and verified by the nursing duty roster. The number of medical officers allocated verified

by the relevant unit consultant. Medical officers and nurses were asked about training programs attended and confirmed by participation letters or certificates.

Sample collecting room in the OPD was visited and information was obtained from the nurse in charge regarding the attached number of nurses and their duty roster. Also, OPD laboratory was visited and details of testing facilities provided for diabetic patients were recorded. Furthermore, the health education, counseling and complication screening activities conducted in the health education unit were observed and the HE nurse was asked about the IEC materials and other support facilities available there.

The team visited the clinic pharmacy to check the availability of diabetes medications, and verified with pharmacists at indoor dispensary.

The most recent values of FBS (during the past one month) and HbA1c (during the past six months) were recorded by the data collectors from the patients' clinic books with the filling of the SQPEK. Subsequently, data was entered to an excel sheet by the research assistant.

2.1.2 Intervention Phase.

Interventions were implemented through an intervention care package developed following multi-stakeholder discussions. The estimated budget of Rs 2,835,000/= funded by Directorate of NCD, Ministry of Health, hospital development committee, and well-wishers of the area. A monitoring team consisting of PI, hospital deputy director, MO (Planning), and NO (QMU) monitored the activities of the intervention using the monitoring framework. The monitoring team conducted progress review meetings monthly to expedite the activities.

Table 2.1 shows the completed monitoring framework

Table 2. 1: Monitoring framework of implemented intervention care package.

Activity	Sub activity	Expected date of completion	Frequency of monitoring	Responsibility	Actual date of completion	Action taken to improve the progress
1. Rearranged clinic space/layout	1.1 Drawing of a new clinic layout/flow chart	30/06/2022	Once in two days	PI/Monitoring team	25/06/2022	
	1.2 Design and budget estimate(BOQ)	18/07/2022	Once in two days	PI	18/07/2022	
	1.3 Purchasing 36 (9×4) panel chairs for patient waiting area.	31/08/2022	Once a fortnight	Accountant Director	15/09/2022	Purchasing order given to the supplier on time, but he was unable to supply as expected. PI reminded the supplier through hospital director to expedite the process.
	1.4 Renovation of registration desk	31/07/2022	Once a fortnight	Accountant Monitoring team	28/07/2022	
	1.5 Wall partitioning, fixing lights, fixing a hand washing sink & installation of curtains	31/08/2022	Once a fortnight	Monitoring team	15/09/2022	Due to lack of market supply, the wash basin could not be installed as expected. Additional time given to the contractor and coordinated to buy a washing sink from PI known supplier.
	1.6 Colour washing of ceiling	17/08/2022	Once in two days	Monitoring team	15/08/2022	

	1.7 Colour washing of walls	22/08/2022	Once in two days	Monitoring team	22/08/2022	
	1.8 Installation of ceiling lights	28/08/2022	Daily	Monitoring team	25/08/2022	
	1.9 Designing of signage and direction boards	10/07/2022	Once in two days	PI	07/07/2022	
	1.10 Printing, framing and fixing of signage & direction boards	30/08/2022	Weekly	Monitoring team	15/08/2022	Couldn't print on time due to delay of service provider saying too much work. Changed the printing shop.
2. Opening new pharmacy counter	2.1 Wall partitioning, aluminium, and glass work	15/09/2022	Weekly	Monitoring team	05/10/2022	Progress review site meeting with the contractor and informed the need.
	2.2 Allocation of a pharmacist to new pharmacy counter	01/10/2022		Director	From 01/10/2022 duty roster	
3. Establishing a time appointment system for clinic patients.	3.1 Designing and printing of colour stickers of time appointments for patients' clinic books	10/07/2022	Once in two days	PI	10/07/2022	

	3.2 Allocating the patients to time sessions	Continuous activity	Weekly	Monitoring team	Continuous activity	An additional nursing officer was employed to document and allocate patients into respective time appointments.
4. Ensuring cleanliness of the clinic toilets.	4.1 Prepare functional cleaning schedule	01/08/2022	Weekly	Monitoring team	01/08/2022	
	4.2 Allocate janitorial staff member during clinic hours	01/08/2022	Weekly	Monitoring team	Continuous activity	
	4.3Supervision of the cleaning and cleanliness of the toilets.	Continuous activity	Two hourly	Overseer	Continuous activity	
5. Expansion of phlebotomy service in OPD sample collection room	5.1 Opening new two phlebotomy stations in OPD sample collecting room for diabetic clinic patients	15/08/2022	Weekly	Monitoring team	30/08/2022	Unable to start in scheduled date due to unavailability of furniture. A table and two phlebotomy chairs were purchased through a donor to function the room.
	5.2 Allocate two additional nursing officers to phlebotomy room	From 01/09/2022 as continues activity	Monthly	Director	Continues activity from 01/09/2022	
6. Training of health staff	6.1 Training of all medical officers (13) in the diabetic clinics	30/07/2022	At the end of each training session	Monitoring team	10/08/2022	Eight medical officers were trained in first session. Four intern medical officers were unable to participate due

						to workload. Then additional session was conducted.
	6.2 Training of HE and 6 nurses on foot care	15/08/2022	At the end of each training session.	Monitoring team	15/08/2022	all seven nurses completed the training
7. Improve utilization of Clinical Management Guidelines in the diabetic clinic	7.1 Designing, printing, and displaying management algorithm and protocol posters	15/08/2022	Weekly	Monitoring team	30/08/2022	Unable to complete printing work due to lack of printing materials Changed the supplier
	7.2 Printing and providing a table top reference brochure	15/08/2022	Weekly	Monitoring team	Not completed	The design could not be completed and the activity had to be suspended due to lack of funds for printing.
	7.3Designing and printing of the referral form	10/07/2022	Once in two days	PI	08/07/2022	
	7.4 Use of referral form during consultation visits	Continuous activity	Monthly	Monitoring team	Continuous activity	
8. Providing IEC materials for patient education and awareness	8.1 Obtain IEC materials from HPB, NCD unit	15/08/2022	Weekly	PI	15/08/2022	
	8.2 Designing, printing, and framing of 20 banners	30/08/2022	Weekly	Monitoring team	15/09/2022	Unable to printing and framing due to supplier delay. Later, the work was carried out by another supplier. Only 10 banners were able to prepare

	8.3 Repairing and relocating the existed TV screen	07/08/2022	Once in two days	Monitoring team	07/08/2022	
	8.4 Create a series of educational video clips (HPB, NCD and internet)	30/08/2022	Weekly	PI	25/08/2022	
	8.5 Displaying the prepared banners and playing the videos regularly.	Continues activity	Daily	QMU	Continues activity	
9. Introduction of multipoint glycaemic control charts for follow-up of patients with diabetes.	9.1 Designing and printing of profile charts	30/07/2022	Weekly	PI	30/08/2022	
	9.2 Pasting the profile charts into the patient clinic books.	Continues activity	Monthly	Monitoring team	Continuous activity	

As shown in the table 2.1 all interventions belonged to any one of designing, budget estimating, printing, civil construction, training, or process improvement. The hospital's medical record officer and a co-registrar did all the design work. After studying the existing clinic layout and space arrangement, a new design was drawn. This design was used for all changes made. Design and printing of signs and direction boards, appointment color stickers, complication screening referral form and multipoint profile charts were completed within the expected time frame. However, the educational banners and clinical management algorithm and protocol posters could not be printed and installed in time due to supplier delays. They were then printed using another printing shop.

To prepare BOQ for civil construction works assistance was taken from a Technical Officer of Regional Engineering Department who provided all the estimates on time. One contractor was awarded color washing, renovation and electrical work in the consultation area and pharmacy. As shown in the table 2.1 most of the activities were able to be completed on time. However, the pharmacy wall partitioning, aluminum and glass works could not be completed as expected and the contractor had to be given extra time to complete. Furthermore, due to market supply shortages, installation of hand wash sinks took additional time. In order to speed up the work, progress review meetings were held with the participation of the hospital director.

Panel chairs for the patient waiting area were not provided within the expected time and reminders were sent through the Director. Opening of new phlebotomy stations for diabetic patients in OPD was delayed due to lack of furniture. PI was able to start the service with a donation from a well-wisher.

As shown in the table, the training of nurses was done as expected and all participated. However, only 6 medical officers were able to attend the scheduled sessions and an additional session had to be conducted for two intern medical officers.

All diabetic clinic patients were expected to be enrolled in new time appointments within two and a half months. However, it was felt that it would take a considerable amount of time to ask the basic facts of each patient and determine the most convenient time for them to come to the clinic. Therefore, as expected, all the patients who came on the relevant day could not be given time for the next clinic day. An additional nurse was employed to speed up the process.

Design and printing of multi-point glycemic control monitoring charts were completed and pasting in patient clinic books began as expected.

2.1.3 Post Intervention Phase

The patient experience survey was conducted using the same component in the SQPEK. The same sample size was taken, and the three data collectors engaged in data collection throughout a month as in the pre-intervention phase.

Facility survey was conducted using the same check list by the PI, MO planning, and Deputy Director.

An evaluation team assessed the overall progress of the project based on relevance, coherence, effectiveness, and sustainability. Efficiency was not assessed due to time and resource constraints.

2.2 Analysis

The data analysis focused on two main sections namely Descriptive Analysis and Inference Analysis. The descriptive analysis covers the exhibition of the sample demographic features and preliminary findings in pre and post-intervention. Data was analyzed using SPSS software version 26 and would be presented via Descriptive statistics, Frequency tables, Percentage Tables, and charts. And results would discuss by percentages, mean, or median.

Qualitative data collect from KIIs and FGDs will be analyzed using inductive and deductive thematic analytic methods.

2.3 Results

Results consisted of quantitative and qualitative data analysis in the pre-intervention and post-intervention phases of the research project to improve diabetes clinic services for patients at DGH Nawalapitiya.

2.3.1 Results of the Pre-Intervention Phase

This section includes the results of the patient experience and knowledge survey, service availability and readiness survey, and glycemic control level records of diabetic patients attending the clinic. Furthermore, a thematic analysis summary of FGDs and KIIs conducted among clinic staff was included.

2.3.1a Patient experience and knowledge among diabetic clinic patients in DGH Nawalapitiya

Patient experience and knowledge were measured with the self-administered questionnaire (SQPEK). Table 2.2 shows the Socio-Demographic characteristics of the study population.

Table 2. 2: Socio-Demographic Characteristics of patients attending diabetic clinic

Demographic characteristic	Categories	Frequency	Percentage (%)
Age (Years)	30 - 45	62	18.1
	46-60	135	39.5
	61-75	145	42.4
Sex	Male	140	40.9
	Female	202	59.1
Education	No school education	23	6.7
	Primary education (G:1 – 5)	50	14.6
	Secondary education (G:6 – 13)	245	71.6
	Tertiary (Graduate or Postgrad.)	14	4.2
	Other	10	2.9
Occupation	Unemployed	198	57.9
	Employed in the Gov. sector	10	2.9
	Employed at Private sector	49	14.3
	Self-employed	39	11.4
	Retired	46	13.5
Monthly income (Rs)	< 25,000	170	49.7
	25, 000 to < 50,000	111	32.5
	50,000 to < 75,000	41	12.0
	≥ 75, 000	20	5.8
Total		**342**	**100**

The mean age of the respondents was 56.25 ±10.618 years and the median age was 55 years (IQR = 17). Approximately, 20% of the sample represented the relatively young age group of 30 to 45 years. According to table 2.2 the majority of the respondents were females (N=202; 59.1%). It was revealed that 71.6% of the respondents (N=245) had secondary education (Grade 6 - 13) and 6.7% of the respondents had no formal education through school (N=23). Employment status was assessed using five different categories and the majority (N=103; 30.1%) reported being unemployed. Based on the income distribution, most of the respondents (N= 170; 49.7%) were having less than Rs. 25,000 as monthly income and only a few respondents (N=20; 5.8%) were having more than Rs 75,000.

The distribution of family related characteristics among the respondents is shown in 2.3

Table 2. 3: Distribution of family related characteristics among the sample

Characteristic	Categories	Frequency	Percent
Marital Status	Never married	13	3.8
	Married	303	88.6
	Divorced/Widowed/Separated	26	7.6
Living status	Living alone	25	7.3
	Living with spouse only	86	25.1
	Living with children only	72	21.1
	Living with spouse and children	142	41.5
	Living with relatives other than spouse and children	17	5.0
With whom attend the clinic	Alone	283	82.7
	With the spouse	26	7.6
	With the children	28	8.2
	With other relative	5	1.5
Distance to clinic(Km)	< 1	28	8.2
	1 - 15	274	80.1
	16 - 30	28	8.2
	≥30	12	3.5
Mode of attending the clinic	Walking	19	5.6
	Own vehicle	15	4.4
	Hired vehicle (Three wheelers, Car)	23	6.7
	Bus	276	80.7
	Train	9	2.6
Total		**342**	**100**

According to the 2.3 majority (N= 303; 88.6%) of the respondents were married. Living status were also examined and revealed that the majority of respondents (N=142; 41.5%) were living with a spouse and children, while 25.1% (N= 86) were living with a spouse only, 21.1% (N = 72) living only with children. Further, we found that 82.7% (N=283) of the respondents visit the clinic alone and most of the respondents (N=276) 80.7% use the bus as their mode of transport. We observed that small number of respondents (N=28; 8.2%) come from less than a kilometer away to attend the clinic. The majority of respondents (N=274; 80.1%) reported traveling 1 to 15 km from their residences to visit the clinic.

Table 2.4 illustrates some of the disease-related factors among the respondents.

Table 2. 4: Distribution of disease related factors among the respondents

Factor	Categories	Frequency	Percentage
Family history	Having family history	227	66.4
	Not having family history	115	33.6
Years from the diagnosis	< 1 Year	45	13.2
	1 to 10 Years	159	46.5
	10 to 20 Years	112	32.7
	20 to 30 Years	16	4.7
	>30 Years	10	2.9
Smoking status	Smoking	38	11.1
	Not smoking	304	88.9
Total		**342**	**100.0**

According to the table 2.4 664% (N= 227) had family history of diabetes among first and second degree relatives and on the other hand, one third of the respondents (N=115; 33.6%) had no family history. Almost half of the respondents (N=159; 46.5%) reported that they had been diagnosed with diabetes for 1 to 10 years and another third (N=112; 32.7%) had a history of diagnosis for 10 to 20 years. The mean length of time the study participants had been diagnosed with diabetes was 10.06 (± 8.25) years.

We observed that only one in ten participants reported smoking as a habit.

Distribution of health related characteristics are showed in 2.5

Table 2. 5: Distribution of health related characteristics among participants.

Characteristic	Categories	Frequency	Percentage
Meals	Mostly cooked at home	339	99.1
	Mostly Taken from outside	3	0.9
Regular exercise	Yes	158	46.2
	No	184	53.8
Method of exercise	Walking in a path or a ground	79	23.1
	Body workouts at gymnasium	65	19.0
	Body workouts at Home	14	4.1
	No	184	53.8
Space for gardening	Yes	255	74.6
	No	87	25.4
Total		**342**	**100.0**
How the space is utilized? (N=250)	Vegetable	195	76.4
	Fruits	5	2.0
	Flower	55	21.6
Total		**255**	**100**

We observed that the majority of the respondents (N=339; 99.1%) mostly prepared their meals at home (table 2.5). Most of the respondents (N= 255; 74.6%) were having space for gardening. Among them more than two third of the respondents (N= 195; 76.4%) used the space for vegetable gardening and 21.6% (N=55) used it for growing flowers. Further, 46.2% of the respondents (N= 158) engaged in exercise activities, while more than half of the respondents (N=184; 53.8%) did not engage in exercise activities. The most common (N=79; 23.1%) exercise activity was walking on a path or ground and 19% were used to visiting the gymnasium.

The Patient's knowledge on Diabetes Mellitus in the medical clinic was assessed using twenty-five questions. The percentages of correct answers for each question is shown in table 2.6.

Table 2. 6: Distribution of correct answer percentage on diabetes among study sample

	Knowledge Assessment Questions	**Correct no (%)**
1	Diabetics should take extra care when cutting their toenails.(N=342)	327 (95.6%)
2	Eating too much sugar and other sweet foods is a cause for diabetes.(N=342)	324(94.7%)
3	Diabetes can cause loss of feeling in my hands, fingers and feet .(N=342)	322(94.2%)
4	Diabetics should have eyes examine at least once a year? .(N=342)	321(93.9%)
5	Diabetes can damage my kidneys. (N=342)	320(93.6%)
6	It is important to take your diabetes medication every day? (N=342)	319(93.3%)
7	If diabetes is properly treated, kidney disease could be prevented (N=342)	316(92.4%)
8	Frequent urination, and thirst are signs of high blood sugar. (N=342)	316(92.4%)
9	If you have diabetes, best to exercise at least 30 minutes a day, at least 5 days a week. (N=342)	315(92.1%)
10	Do you think regular exercise is important? (N=342)	310(90.6%)
11	If I am diabetic, my children have a higher chance of being diabetic. (N=342)	303(88.6%)
12	Do you think diabetes can make you blind? (N=342)	301(88.0%)
13	Cuts and abrasions of diabetics heal more slowly. (N=342)	299(87.4%)
14	Insulin injections should be kept in a normal refrigerator at temp. between $2^0 - 8^0$ (N=78)*	67(85.4%)
15	Diabetes causes sexual dysfunction. (N=342)	249(72.8%)
16	A fasting blood sugar level of 210 is not too high. (N=342)	239(69.9%)
17	Insulin can only be injected into the front of the abdomen. (N=78)*	54(69.6%)
18	The usual cause of diabetes is lack of effective insulin in the body. (N=342)	225(65.8%)
19	I'm diabetic as such do not need to be active all day. (N=342)	219(64.0%)
20	It is not important to have a glucometer in my house. (N=342)	210(61.4%)
21	Regular exercise will increase the need for insulin or other anti-diabetic medication. (N=342)	198(57.9%)

22	Kidneys produce insulin. (N=342)	195(57.0%)
23	Diabetes can be cured. (N=342)	155(45.3%)
24	Anti-diabetic Medication is more important than diet and exercise to control my diabetes. (N=342)	137(40.1%)
25	Medications taken for diabetes can damage the kidneys. (N=342)	72(21.1%)

*Questions 14 and 17 answered only by patients treated with insulin

Assuming that the above twenty-five questions would be equally weighted in assessing aggregate knowledge, the composite knowledge variable was constructed and the mean was found to be 0.76 ± 0.13. It reflects that 76% of the questions were answered correctly by the respondents.

Patient experience with the diabetes clinic service was assessed on different dimensions. The internal consistency of each item in the dimensions was measured using Cronbach Alpha and all values were found to be greater than 0.700, thus confirming internal consistency. (Table 2.7)

Table 2. 7: Distribution of value of Cronbach Alpha among patient experience items

Dimension of the Experience	Cronbach Alpha	Items
Getting appointments for the clinic and referrals	0.703	9
Experience in the clinic waiting area	0.707	7
Experience in registration/reception desk	0.942	2
Experience with nurses and health assistants	0.785	4
Experience with doctors/physicians	0.827	11
Experience at a drug pharmacy and interaction with the staff	0.766	6
Experience in receiving drugs	0.706	3
Experience regarding the information you get during the clinic visit	0.701	4
Experience in performing laboratory tests which request by the clinic	0.780	3

Table 2.8 illustrate the distribution of the percentages of responses on the dimension: "Getting appointments for the clinic and referrals"

Table 2. 8: Distribution of responses on dimension of "getting appointments"

Getting appointments for the clinic and referrals	Disagreed	Neutral	Agreed
For every clinic visit, I can get the next clinic date clearly	4.4%	7.0%	88.6%
I am given the time appointment in the particular day	68.1%	28.9%	2.9%
If needed I can get referral for eye care	3.0%	14.3%	82.7%
If needed I can get referral for foot care	62.0%	28.4%	9.6%
If needed I can get referral for nutrition advises	16.4%	59.6%	24.0%
If needed I can get referral for physical activity advises	76.6%	16.7%	6.7%
I can get the request form for my FBS testing	3.0%	31.6%	65.5%
I can get the request form for my HbA1c testing	17.9%	38.6%	43.5%

According to table 2.8, it was found that the majority of respondents agreed on sub-indicators such as "Every clinic visit, I can get the next clinic date clearly", "If needed I can get referral for eye care", "I can get request form for my FBS testing" and "I can get request form for my HbA1c testing". Conversely, they disagreed on "I am given the time appointment in the particular day", "If needed I can get referral for foot care", and "If needed can get referral for physical activity advice".

The percentage response distribution on the dimension of "clinic waiting area experience" is shown in the table 2.9.

Table 2. 9: Distribution of responses on dimension of "experience in the clinic waiting area"

Experience in the clinic waiting area	Disagreed	Average	Agreed
I have enough facilities to sit in the waiting area	72.0%	17.3%	10.7%
I'm satisfied with the cleanliness of the waiting area	0.0%	19.3%	80.7%
It has been provided with adequate ventilation facilities	5.6%	19.0%	75.4%
There are signage and directions I can easily follow in the clinic.	60.0%	31.9%	8.2%
Good toilet facilities are available near the waiting area.	55.6%	20.5%	23.9%
The area is lighted adequately	15.0%	62.9%	22.2%
Clean & safe drinking water, available in the waiting area	56.8%	36.3%	7.1%

As presented in table 2.9, it was found that most of the respondents agreed on "I'm satisfied with the cleanliness of the waiting area" and "It has been provided with adequate ventilation facilities". However, they have disagreed on "Good toilet facilities are available near the waiting area", "Clean & safe drinking water, available in the waiting area", "There are

signage and directions I can easily follow in the clinic", and "I have enough facilities to sit in the waiting area".

Responses on another two dimensions of "experience with nurses and health assistants" and "experience with doctors/physicians" are presented in table 2.10

Table 2. 10: Distribution of responses on dimensions of "experience with nurses and health assistants" and "experience with doctors/physicians"

Experience with nurses and health assistants	Disagreed	Average	Agreed
They are friendly and helpful	1.5%	7.3%	91.2%
They speak in a clearly understandable way	0.9%	19.3%	79.8%
They answer my questions	1.5%	19.9%	78.7%
They spend enough time listening to my problems and concerns	9.4%	28.7%	62.0%
Experience with doctors/physicians			
They talk about my current blood sugar value	1.5%	2.6%	95.9%
They are friendly and helpful	2.9%	2.9%	94.2%
They talk about my current blood pressure value	2.4%	4.4%	93.3%
They tell me about drug management	0.9%	12.3%	86.8%
They answer my questions clearly	1.5%	12.0%	86.5%
They spend enough time listening to my problems and concerns	5.8%	14.3%	79.8%
They speak in a clearly understandable way	2.3%	18.1%	79.5%
They talk me about the screening for complications (eye cataract, numbness of feet, chronic kidney disease)	2.3%	29.5%	68.2%
They give helpful dietary advice	5.9%	50.3%	43.9%
They give me the advice to do regular physical activities	12.0%	55.0%	33.1%
They consider my personal and family beliefs	20.1%	55.6%	24.2%

The above table 2.10 illustrates that the majority of the respondents agreed on all the aspects of the behavior of the nurses and health assistants.

Similarly the majority of the respondents were in agreement on most of the aspects considered with regard of experience with doctors/physicians. Meanwhile, half of them responded neutrally or averagely to "they give useful dietary advice", "they advise me to do regular physical activity" and "they consider my personal and family beliefs".

Table 2.11 shows the distribution of responses on the dimension of "experience at pharmacy, interaction with the staff, and receiving drugs".

Table 2. 11: Distribution of responses on dimension of "experience at pharmacy, interaction with the pharmacy staff, and receiving drugs".

Experience at a drug pharmacy & interaction with staff	Disagreed	Average	Agreed
Pharmacists advise on how to take the drugs	0.0%	7.3%	92.7%
Pharmacists advise me on how to store insulin correctly	2.6%	10.6%	86.7%
The staff is friendly and helpful to me	0.0%	14.6%	85.3%
They speak in a clearly understandable way	2.3%	15.2%	82.5%
Pharmacists adequately listen to me	1.5%	29.2%	69.3%
I can take the drugs from the counter without delay	76.9%	10.5%	12.6%
All instructions regarding dispensing are given	0.0%	12.9%	87.1%
All the drugs are packed well and labelled	5.0%	12.6%	82.4%
I receive all the prescribed drugs from the hospital pharmacy	12.3%	36.0%	51.7%

Table 2.11 shows that all the respondents agreed on all the indicator questions except the question "I can take the drugs from the counter without delay". Furthermore, slightly less than half did not admit that they received all prescribed medications from the hospital.

Table 2.12 presents distribution of responses on dimensions of "experience on health education you get during the clinic visit" and "experience in performing laboratory tests which request from the clinic".

Table 2. 12: Distribution of the responses on dimensions of "experience on health education you get during the clinic visit" and "experience in performing laboratory tests which request from the clinic".

Experience regarding the information you get during the clinic visit	Disagreed	Average	Agreed
Printed health education materials available in my preferred language	0.9%	15.8%	83.3%
Health education staff deliver the "health talks"	6.2%	53.5%	40.4%
Educational banners are displayed in the clinic	73.3%	12.6%	14.0%
There are facilities to watch health education videos	76.3%	22.2%	1.5%
Experience in getting done the laboratory tests requested in the clinic			
Facilities for FBS or PPBS testing is available within the hospital	4.4%	12.3%	83.4%
Facilities for HbA1c testing available within the hospital	57.9%	3.8%	38.3%
I can do the FBS within my fasting period	66.1%	1.5%	32.4%

As shown in table 2.12the majority of the respondents claimed that educational banners were not available and also there were no facilities to watch educational videos during the clinic

stay. Among the other two indicators, they agreed with "printed health educational materials available in my language" and were neutral with "health education staff" providing "health talks."

It was found that the majority agreed on “Facilities for FBS or PPBS testing is available within the hospital” and they disagreed on “Facilities for HbA1c testing available within the hospital” and “I can do the FBS within my fasting period”.

The mean value was used to construct the composite variable for the measurement of the experience. The overall experience was constructed based on the all dimensions. The distribution of patient experience mean score of each dimension is shown in table 2.13.

Table 2. 13: Distribution of patient experience mean score of each dimension

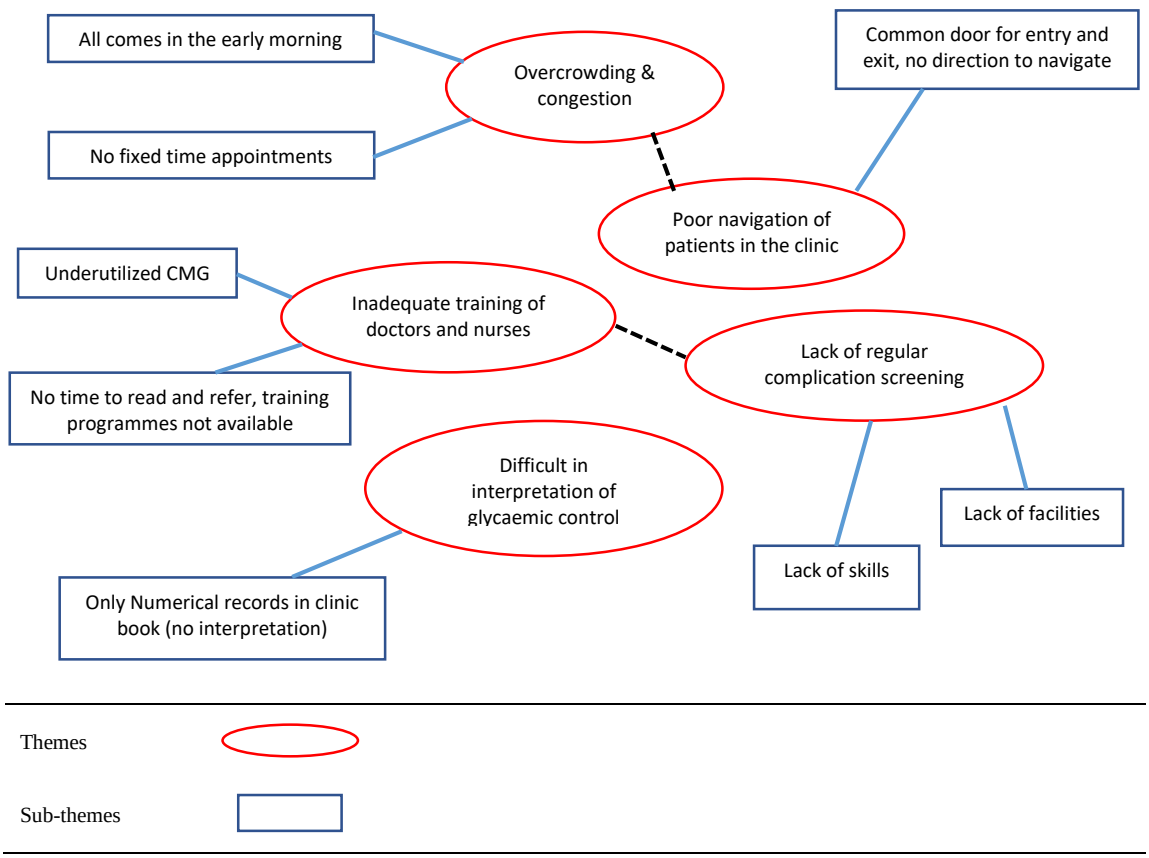
Dimension of the Experience	Min.	Max.	Mean	SD
Experience in registration/reception desk	2	5	4.14	0.625
Experience with nurses and health assistants	3	5	4.02	0.541
Experience with doctors/physicians	3	5	3.92	0.446
Experience on receiving drugs	2	5	3.84	0.565
Experience at drug pharmacy and interaction with the staff	3	5	3.67	0.425
Experience in the clinic waiting area	2	5	3.40	0.398
Experience on performing laboratory tests which request from the clinic	2	5	3.17	0.832
Experience regarding the information you get during the clinic visit	1	4	3.02	0.431
Getting appointments for the clinic and referrals	2	4	2.88	0.400
Overall Experience	**2.7**	**4.1**	**3.52**	**0.276**

The highest level of the experience score (4.14 ± 0.625) was recorded under the dimension “Experience in registration/reception desk”. The second highest of 4.02 ± 0.541 was “Experience with nurses and health assistants”. The lowest experience score was recorded as 2.88 ± 0.400 under “Getting appointments for the clinic and referrals”. The overall experience score of the respondents was 3.52 ± 0.276 (Range 2.7 to 4.1).

2.3.1b Thematic Analysis of Qualitative Data.

The recorded data of KIIs and FGDs were transcribed, coded and key themes identified. Here, more attention was paid to the reasons and explanations from the staff for the service deficiencies revealed by the patient experience survey.

Figure 2. 1: Thematic map of clinic staff experience and opinions.



"Overcrowding and patient congestion" was a prominent theme reported by many health staff members in all categories. In their long working experience, they have seen that many patients come early in the morning to get a place in the queue. In some rural areas with significant distances, buses leave on time and there is no way to catch up if you miss the morning bus. Therefore, they receive a large number of patients in the morning that they cannot handle in the clinic space. Some nurses said, "We work under stress and patients may

even receive rude words from us". And, some of them revealed that "we don't even get enough time to speak them giving necessary information and counselling".

Many comments and opinions formed another theme of "poor navigation of patients in the clinic" and revealed that they use the common door to enter and exit the consultation area. The absence of direction posts and signs has made the situation worse.

These two themes appear to contribute to unstructured patient flow and cumbersome workload.

Another theme reported was "inadequate training of doctors and nurses". Doctors have not received formal diabetes care, complication management and counseling training other than routine clinical practice in wards with consultants. Many doctors use clinical management guidelines from various sources online when in doubt. However, they realized the importance of using guidelines with easy access. Also, nurses are not trained on foot care and exercise advice.

Many doctors knew the importance of complication screening for micro vascular and macro vascular diseases. However, they are reluctant to refer the patient for health education/counseling as they are not confident about the services. Therefore, "lack of regular complication screening" was another important theme to consider.

Another important theme reported was "Difficulty in interpretation of glycaemic control" recorded in patients' clinic records. Doctors have recognized the importance of recording clinical data in the clinic book in a manner that reflects the patient's level of glycemic control to assist in the adjustment of treatments.

2.3.1c Facility survey for service availability and readiness of diabetic clinic

Assessment of service availability and service readiness for diabetes care at the medical clinic was done using the checklist and many aspects were looked at: basic amenities, practicing of clinical management guidelines, health staff, investigation facilities, health education and counselling services, and referrals for another specialties.

Basic Amenities

We noticed that some of the chairs in the waiting area were plastic and some were old wooden benches and some were unusable. All of them were placed separately and there was no proper alignment of the rows and there were about 75 usable chairs. The waiting area had adequate ceiling fans and was well ventilated as it was an open lobby. However, the consultation area was an enclosed room with glass windows and although there were a few fans, survey team felt it was not properly ventilated. Furthermore, both the waiting and consultation areas were not adequately lit and some malfunctioning light units were not replaced. Two television screens were mounted down from the ceiling in the waiting area and only one was observed to be functional. The hospital's public address system was extended to the clinic, but two speakers in the waiting area had also been removed and it appeared that it was not working properly. One water dispenser was provided for the clinic patients but it was found that it has become unusable due to lack of maintenance for a long time. It was observed that there were two patient examination areas partly separated from the consultation area without proper auditory and visual privacy. Also, doctors in the examination area did not have hand washing facilities. There was one toilet for men and one for women on the same floor as the clinic, and they were not cleaned properly.

Practicing Clinical Management Guidelines

No clinical management guideline protocols or management algorithms of any kind were observed displayed in the consultation area. Furthermore, doctors had no way of accessing printed or electronic information other than from their own smart phones.

Health Staff

Each clinic was conducted under the supervision of a consultant physician or endocrinologist. Also, it was observed that six medical officers participating each physician's diabetic clinic while only one medical officer participate in the endocrinology clinic. Also, 4 nurses and 3 staff assistants were employed and health education services were provided by the health education nurse. The team did not observe any officer providing special counseling for their mental health apart from medical treatment for diabetes.

Medical officers had not received formal training in diabetes management within a year except for two lectures delivered by a consultant endocrinologist at monthly meetings of the Clinical Society in the past six months on glycemic control and management of complications. The health education nurse, on the other hand, had only participated in an online Diabetes Educator Nurse (DENO) program a few years earlier. None of the other staff members reported receiving formal training in diabetes management.

Investigation Facilities.

A glucometer was observed to be available in the clinic to obtain emergency blood sugar reports whenever required and the hospital laboratory had testing facilities for FBS, PPBS, HbA1c, Serum Creatinine and Urine albumin. However, due to the lack of analytical chemicals, HbA1c could not be done regularly and the shortage of strips for the glucometer has made it unusable at the time of the survey.

Health Education and Counselling Services Available at the Clinic

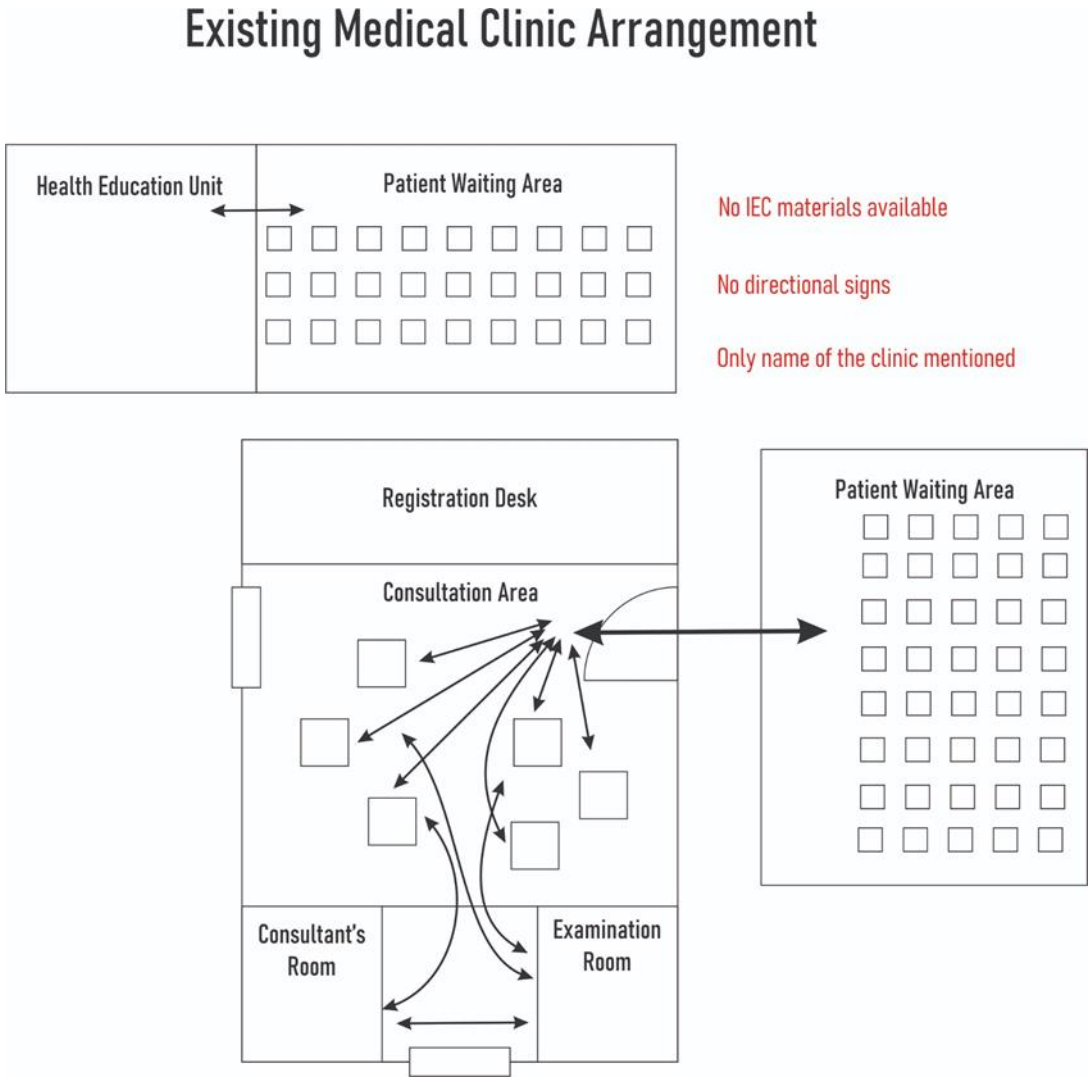
We observed that most of the health education services were provided by HE nursing officer in the HE unit. Doctor-referred patients appeared to be educated on diet, exercise, foot care, and insulin self-administration using some IEC materials. However, we did not observe the education or counseling of any of the patient's family members.

Referrals for another Specialty for Complication Screening

Initial referral for screening for retinopathy was not observed on the diagnosis of most diabetic patients. However, it was observed that when a patient required an ophthalmology consultation, it was available on the same clinic day. We couldn’t observe a formal screening for Peripheral Vascular Disease (PVD). Only foot ulcers, deformities, and callus were referred to surgical team. Furthermore, many patients were only referred for cardiac opinion when symptomatic.

Figure 2.2 shows diagrammatic visualization of the preexisted clinic layout arrangement

Figure 2. 2: Diabetic clinic layout before the interventions



2.3.1d Pre-Intervention Glycemic Control Levels of the Patients.

Most recent FBS (within 3 months) and HbA1c (within 6 months) were reported among respondents to SQPEK. Table 2.14 show the glycemic control levels of the patients attended to the diabetic clinic at pre-intervention phase.

Table 2. 14: Distribution of glycemic control values among diabetic clinic patients

Parameter	Number (%)
FBS within the target of 80 – 130 mg/dl (N=220)	142(64.6)
FBS above the upper limit of target (N=220)	78(35.4)
HbA1c below the target of 7% (N= 62)	25(40.4)
HbA1c exceed the target of 7%(N=62)	37(59.6)

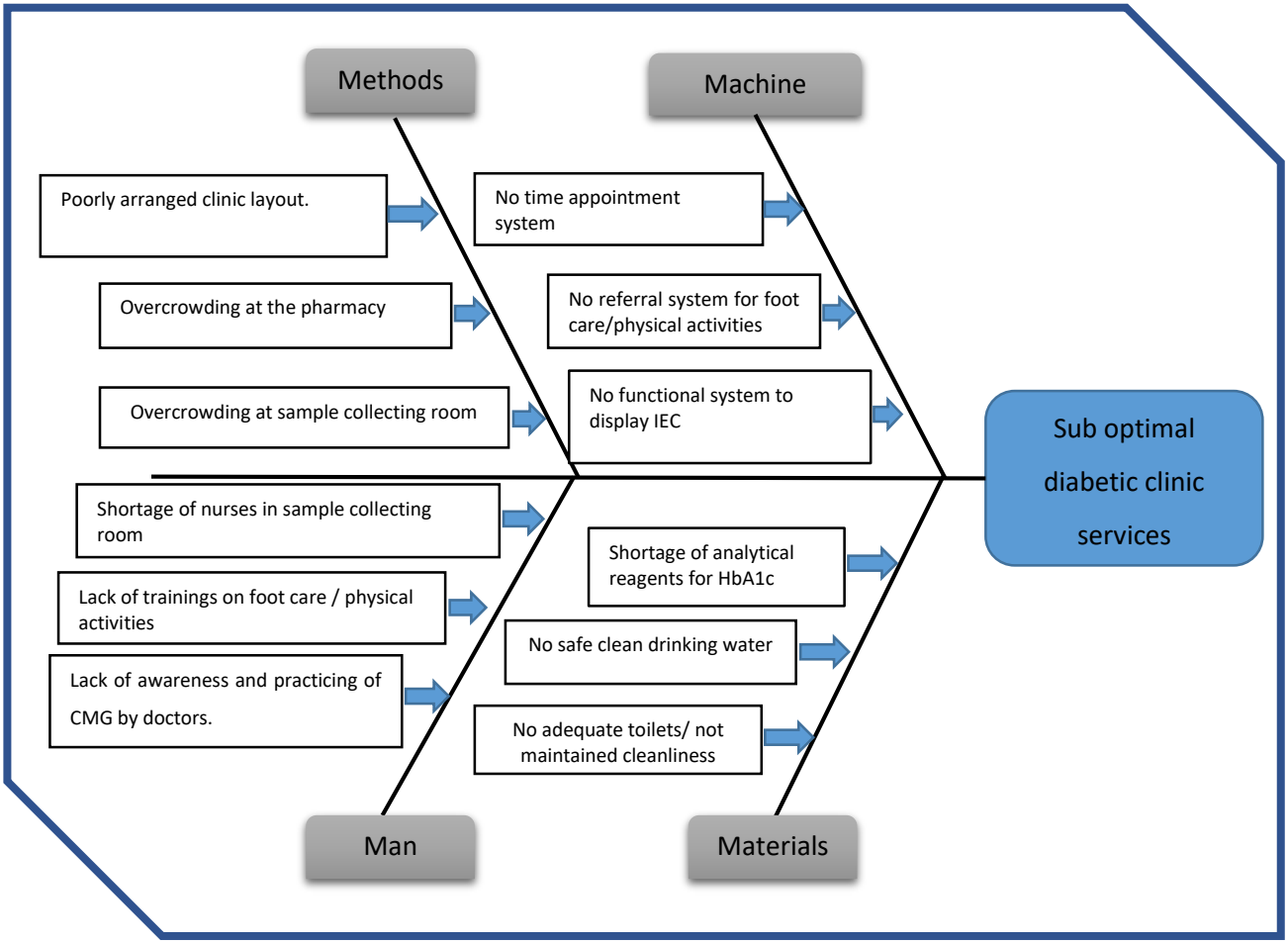
All the patients did not their FBS/HbA1c checked

According to the table 2.14 nearly one-third of patients had not controlled their FBS within the target values, and nearly 60% were unable to maintain HbA1c below the target value of 7%.

2.3.2 Intervention and Post Intervention Assessment

Many gaps in diabetes clinic service delivery were identified after the pre-intervention phase and are illustrated in the Ishikawa fishbone diagram below.

Figure 2. 3: Fish bone diagram of diabetic clinic service gaps.



After multi-stakeholder meetings and discussions, possible interventions were identified and prioritized using the priority matrix (page 43). A Theory of Change was developed to ensure that the proposed interventions were able to achieve the desired outcome (page 46). As the Theory of Change demonstrated the potential to achieve the desired outcome, the intervention package, “Walk Away From the Silent Killer, Diabetes Mellitus” was developed.

The intervention care package is given below in figure 2.4.

Figure 2. 4: Intervention care package for improvement of diabetic clinic service.

"Walk Away From the Silent Killer, Diabetes Mellitus"

Intervention Care Package for Improvement of Diabetic Clinic Services at DGH, Nawalapitiya.

Introduction

This Interventional Care Package for Diabetes Mellitus was developed as part of Nawalapitiya DGH Clinic Facility Improvement Project. The aim of this package is to provide a description of the selected interventions and build a roadmap for effective implementation.

Diabetes mellitus is a metabolic disorder that causes many micro vascular and macro vascular complications in the long term and certainly impairs quality of life. Sri Lanka's Ministry of Health has preventive and curative health settings to provide promotional, preventive, curative, rehabilitative and palliative care services for diabetes along with other non-communicable diseases. The Directorate of Non-communicable Diseases is responsible for the planning, implementation, monitoring and evaluation of the National NCD Prevention and Control Program implemented across primary, secondary and tertiary care levels.

The national policy and the strategic framework for prevention and control NCDs and National Multi Sectoral Action Plan for 2022-2027 have been revised by NCD unit in 2022. Further, many clinical management guidelines were developed by specialist colleges and Ministry of Health.

Overcrowding, poor responsiveness, underutilization of management guidelines, ineffective health education systems, and patient dissatisfaction have resulted in many substandard service delivery observed in many settings.

Nawalapitiya District General Hospital was selected as a secondary care hospital for this intervention research project to improve diabetes clinic services. During pre-interventional phase the current status of the clinic services was assessed through a facility survey, patient experience survey, key informant and focus group discussion among health staff. Many gaps were identified in terms of diagnosis, patient education and health promotion, glycaemic control, management of complications and responsiveness of services.

Objectives of the intervention care package

I. To serve as an explicit document to present identified service gaps in providing diabetic clinic services and selected interventions.

II. To serve as a tool to guide the planning and implementing the interventions.

Methodology for selection of interventions

The principal investigator developed possible interventions to fill service gaps based on the Ceylon College of Medicine Clinical Management Guidelines and the National Guidelines for Improving Quality and Safety in Health Care Institutions published by the Sri Lankan Ministry of Health. A multi stakeholder team including hospital director, consultants, doctors, hospital accountant, chief nursing officers, chief pharmacist, and nursing officers were participated in several discussions to select the best suit interventions. Using the nominal group technique, a priority matrix was developed and 10 interventions were selected for implementation.

Selected interventions

11. Rearranging of clinic layout.
12. Developing a time appointment system for clinic visits.
13. Improving the awareness on clinical management guidelines among doctors

14. Improving health education facilities – displaying banners and playing educational videos in the patient waiting area.
15. Systematization of processes in the sample collection room to perform FBS during the fasting period for each patient.
16. Developing a formal referral system for foot care.
17. Conducting trainings on foot care and physical activity for the staff
18. Establishing a proper cleaning practice in patients' toilets
19. Introducing the multiple point blood glucose profile into the patient' clinic book.
20. Establishing an additional drug dispensing counter and allocating a pharmacist.

Approval for the interventions

Administrative approval was obtained from the director of DGH, Nawalapitiya and concurrence were taken from all the stakeholders including consultant physicians and the consultant endocrinologist to implement the intervention package "Walk Away From the Silent Killer".

Resources to Implement the Care Package

Hospital director is a board certified consultant medical administrator who provides guidance and expert opinion during project planning, implementing, monitoring, and evaluation. Most importantly, the sustainability of the interventions is ensured by the active contribution of the director.

Consultant physicians and endocrinologist are engaged in conducting training and awareness programmes for the health staff. All the proposed activities will be coordinated by the Deputy Director of the Hospital along with Medical Officer (Planning) and staff of QMU.

Proposed Activities

1. **Rearranging of Clinic Space and the Layout.**

   After studying the current clinic layout, a new clinic layout map is drawn incorporating the proposed interventions. The space in the patient waiting area will be used to the maximum by rearranging chairs and by adding new chairs, thereby the effectiveness of patient flow will be improved by using signs and forward directional movements. The registration desk will be refurnished, and the doctor's consultation stations will be rearranged. The examination area shall be renovated with hand washing area provided, and the entire clinic shall be well lit and the walls shall be colour washed.

2. **Establishing an additional drug dispensing counter and allocating a pharmacist.**

   Existing clinic pharmacy will be expanded and a new counter will be created. In addition to the allocated pharmacists to the clinic pharmacy, an additional pharmacist will be placed during the diabetic clinic sessions on rotational basis from drug stores and indoor dispensary.

3. **Developing a time appointment system for clinic visits.**

   The five hour session of each clinic day from 7am to 12pm will be divided into hourly sessions and each hour will be colour coded differently. Then the five selected colour stickers will be designed and printed. Considering the convenience of the patients, one session will be given and the relevant sticker will be pasted on the front cover of the clinic book. All patients will be allocated to either session within two months. Subsequently, patients will be given an appointment on hourly basis, and only those booked within a specified hour will be issued numbers and sent to consultation.

4. **Improving the awareness on clinical management guidelines among doctors**

The Clinical Management Guideline of Diabetes Mellitus, published by Ceylon College of physicians in 2018 will be taken as the reference guide. Training of the doctors on diabetes mellitus management will be conducted with the participation of the two consultant physicians and the consultant endocrinologist.

Management guidelines algorithms and protocols will be created based on the guidelines, printed in the form of posters and banners and displayed in clinic settings. It is expected that it will be used by doctors as a decision support tool and as a quick reference aid.

5. **Developing a formal referral system and improve the services for foot care.**

Foot care advices are provided by the HE nursing officer at health education unit. Hence, functional patient referral system for doctors will be developed. A referral form will be designed, printed and given to the doctors in the consultation rooms.

In order to facilitate referral process the knowledge and practices will be improved among the nursing staff engaging in health education on foot care. Nursing officer HE and all other nursing officers in the clinic will be trained on diabetic foot care by consultant endocrinologist.

6. **Improving the availability of IEC materials in patient waiting area**

Exhibition posters and banners will be designed and printed in all three languages on risk factor management, diet, exercise, complication screening etc. These will be displayed at strategic points in the patient waiting area and the entrance and will be rotated within the clinic weekly.

Educational videos will be obtained from the Health Promotion Bureau, NCD Unit Ministry of health, and Internet.

Educational videos from the Health Promotion Bureau, NCD unit, and internet will be obtained. The selected appropriate video series will be played on the available TV screen in a weekly schedule.

In addition, IEC materials related to the foot care will be displayed/available at the strategic points.

7. **Systematization of processes in the sample collection room to perform FBS during the fasting period for each patient.**

   Regular investigation ordering process in the clinic by doctors will be institutionalized. A work load assessment will be done and if necessary, the additional nursing officers be allocated. Expediting the phlebotomy process should be expected so that every patient can be given the sample during their fasting period.

8. **Introducing the multiple point monitoring profile for blood glucose and HbA1c into the patient' clinic book.**

   Multipoint blood glucose profiles have been recognized as an important tool to analyze and interpret individual blood glucose control. It will be designed and printed an appropriate profile and be attached to the patients clinic book

9. **Establishing a proper cleaning practice in patients' toilets**

   A cleaning schedule for the clinic patient toilets will be developed and a janitorial staff member will be allocated to the clinic patients' toilets during clinic hours. Availability of all necessary cleaning materials will be checked and ensured by the quality management nursing officer.

The proposed results-focused plan of action with expected dates of completion is given below

Results		Planned start date	Planned end date	Responsibility	Budget/source of funds
Outcome 1: Improved Responsive Clinic Service					
Output 1.1 Rearranged clinic space/layout					
Activities					
1.1.1	Drawing of a new clinic layout/flow chart	15/06/2022	30/06/2022	QMU	
1.1.2	Purchasing 36 (6 × 4) panel chairs for patient waiting area.	01/07/2022	31/08/2022	Planning Unit	
1.1.3	Renovation of registration desk	01/07/2022	31/07/2022		
1.1.4	Renovation of patient examination area • Design and budget estimate(BOQ) • Wall partitioning, fixing lights, fixing a hand washing sink & installation of curtains	11/07/2022 15/08/2022	18/07/2022 31/08/2022	Technical Officer (TO)	
1.1.5	Colour washing of walls and the ceiling • Budget estimate (BOQ) • Colour washing of ceiling • Colour washing of walls	11/07/2022 15/08/2022 18/08/2022	18/07/2022 17/08/2022 22/08/2022		
1.1.6	Installing ceiling lights in consultation and patient waiting area • Budget estimating (BOQ) • Installation of lights	11/07/2022 25/08/2022	18/07/2022 28/08/2022		
1.1.7	Establishing signage and direction boards • Designing of signage and direction boards	01/07/2022	10/07/2022	QMU / Medical Record Officer(MRO)	

	• Printing, framing and fixing	01/08/2022	30/08/2022	Hospital maintenance unit	

Output 1.2 New clinic pharmacy counter with allocated pharmacist					
Activities					
1.2.1	Opening new pharmacy counter • Design and budget estimate (BOQ) • Wall partitioning, aluminium, and glass work	11/07/2022 15/08/2022	18/07/2022 15/09/2022	TO Selected contractor	
1.2.2	Allocation of a pharmacist		01/10/2022	Chief pharmacist	
Output 1.3 Functional time appointment system for allocating clinic visits					
Activities					
1.3.1	Designing and printing of colour stickers	01/07/2022	10/07/2022	QMU/MRO	
1.3.2	Allocating the patients to time sessions	15/07/2022	30/09/2022	Nurse in charge of the clinic	
Output 1.4 Properly cleaned clinic toilets					
Activities					
1.4.1	Prepare functional cleaning schedule	15/07/2022		Administrative Officer(AO)	
1.4.2	Allocate janitorial staff member during clinic hours	01/08/2022		Cleaning supervisor	
Output 1.5 Systematically functioning phlebotomy service					
Activities					
1.5.1	Opening separate area in OPD phlebotomy room for diabetic clinic patients	01/08/2022	15/08/2022	Planning Unit	
1.5.2	Allocate two additional nursing officers	01/09/2022		Chief Nursing Officer	
Outcome 2 Improved staff knowledge on diabetic management					
Output 2.1 Improved awareness on Clinical Management Guidelines of diabetes among doctors					
Activities					

2.1.1	Training of all doctors (13) in the clinics	15/07/2022	30/07/2022	Consultant Endocrinologist	
2.1.2	Designing, printing, and displaying management algorithm and protocol posters	15/07/2022	15/08/2022	QMU	
2.1.3	Printing and providing a table top reference brochure	01/08/2022	15/08/2022	QMU/HE Unit	

Output 2.2 A formal referral system for foot care and trained staff					
Activities					
2.2.1	Designing and printing of the referral form	01/07/2022	10/07/2022	QMU	
2.2.2	Introduction of the referral form to the consultation visits	15/07/2022		Nurse in charge	
2.2.3	Training of HE and 6 nurses on foot care	15/07/2022	15/08/2022	Con Endocrinologist	
Outcome 3 Improved Patient Awareness and knowledge					
Output 3.1 IEC materials available for patients' education and awareness					
Activities					
3.1.1	Obtain IEC materials from HPB, NCD unit	01/08/2022	15/08/2022	PI	
3.1.2	Designing, printing, and framing of 20 banners	01/08/2022	30/08/2022	QMU MRO	
3.1.3	Repairing and relocating the existed TV screen	01/08/2022	07/08/2022	Planning Unit	
3.1.4	Create a series of educational video clips (HPB, NCD and internet)	01/08/2022	30/08/2022	HE Unit	
Output 3.2 Multiple point monitoring profile chart for FBS and HbA1c in the patients' clinic books					
Activities					
3.2.1	Designing and printing of profile charts	15/07/2022	30/07/2022	QMU MRO	
3.2.2	Introducing the charts into the patients clinic books	01/09/2022		Nurse in charge	

The logical framework for the project was developed and completed after the interventions and shown in table 2.15.

Table 2. 15: Logical framework for the intervention care package

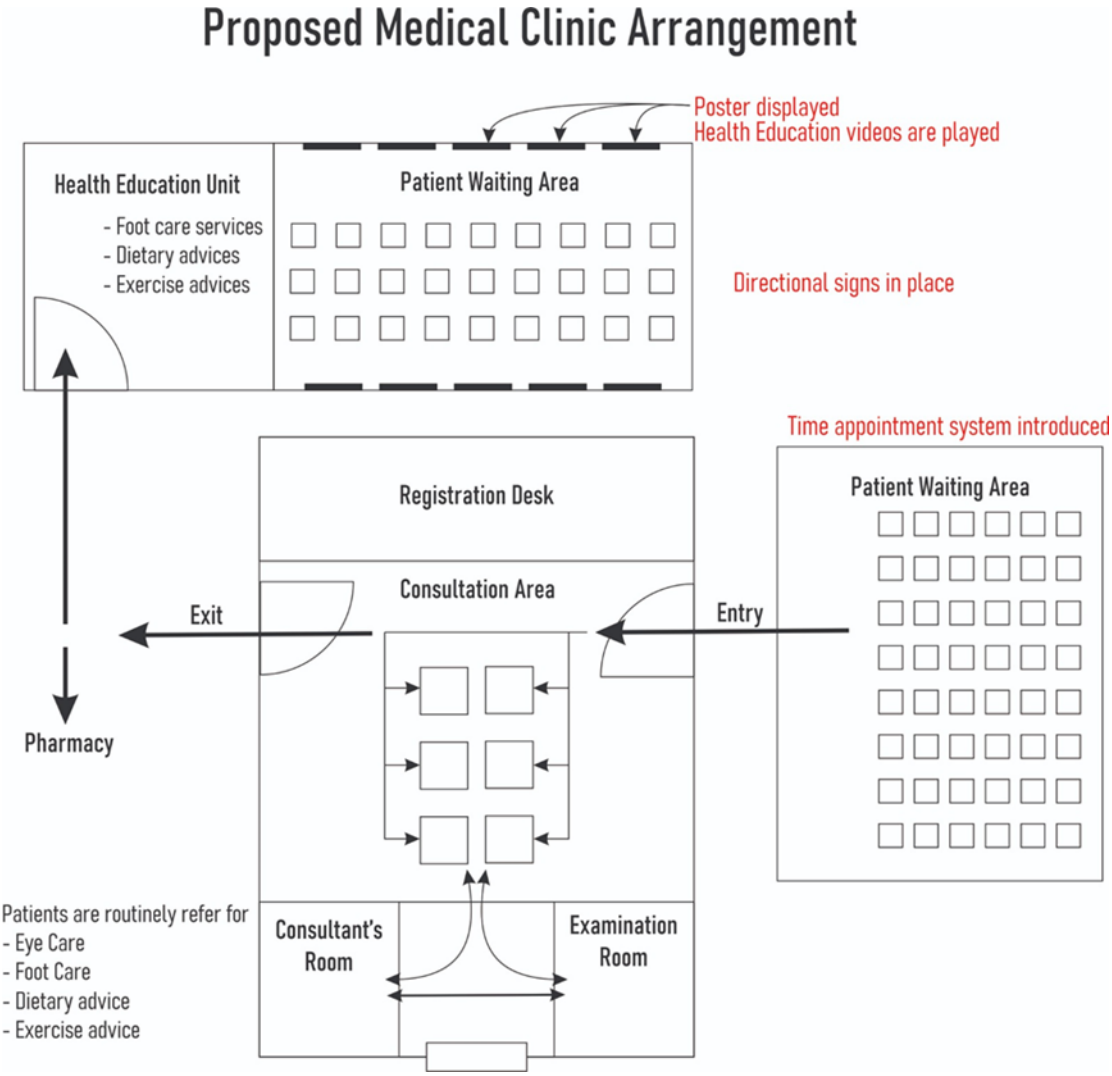
Results		Verifiable indicators	Baseline	Targets	Means of verification	Achievements
Outcome 1	Improved responsiveness of clinic service	Mean of overall patient experience score	3.52		Patient experience survey	3.86
Outcome 2	Achievement of tight glycaemic control	FBS or HbA1c % of patients in tight glycemic control after three months of registering in the clinic	FBS 64.6% HbA1c 40.4%	100% 100%	FBS and HbA1c reading extraction sheet (Pre intervention and Post intervention) from the clinic records	FBS 72.7% HbA1c (not available)
Output 1	Improved utilization of patient waiting area and clinic space	Mean patient experience score on patient waiting area	3.40		Post intervention patient experience survey	3.53
Output 2	Improved patient experience and utilization of pharmacy services	Mean patient experience score on drug dispensing	3.84		Post intervention patient experience survey	3.87
Output 3	Reduced overcrowding of the clinic	Number of patients enrolled to the time appointment system	None	continues activity	Clinic attendance records Observation checklist	
Output 4	Improved patients' knowledge on foot care	Mean patient knowledge on foot care	None		Patient knowledge assessment questionnaire	
Process 1	Infrastructure development to improve the clinic layout and to optimize the space utilization	Number of chairs purchased	75 chairs	111	Observation check list Procurement documents	purchase and provided 36 steel panel chairs
		Number of hand washing sink installed	01	02	Observation check list Monitoring sheet	one hand washing sink fixed to the patient examine area
		Number of ceiling lights fixed	10	20	Observation check list Monitoring sheet	10 LED ceiling lights were fixed
		Number of directional sings	5	15	Observation check list	10 directional signs installed

Process 2	Expanding the clinic pharmacy to open a new counter	The number of pharmacy counters	03	04	Monitoring framework	Clinic pharmacy was expanded and opened new drug counter
Process 3	Develop and introducing a new time appointment system for clinic visits	Time appointment system	None	Actively functioning time appointment system	Observation checklist	Fixed time scheduling appointment system for clinic visits introduced
Process 4	Establish a separate phlebotomy section in the OPD sample collecting room	Number of phlebotomy stations	02	04	Observation checklist	OPD sample collecting room developed to start new two phlebotomy stations for diabetic patients
Process 5	Conducting awareness and training programmes for doctors and nurses on diabetic management	Number of training programmes on CMG for doctors.	None	2	Attendance records. Monitoring framework	3 training sessions were conducted and trained all the doctors participated for patient consultation.
		Number of training programmes on foot care for nurses.	None		Attendance records. Monitoring framework	Only five nurses were attended and trained on foot care.
Process 6	Designing and developing multiple point FBS and HbA1c profile for each patient	Multiple point FBS and HbA1c profile	None	Available	Observation checklist	Designed, printed and started to attach the chart in clinic books
Process 7	Obtaining, designing, printing and displaying IEC materials in the clinic.	Number of posters/banners displayed in the patient waiting area	5	25	Observation checklist	10 new banners were designed, printed and displayed
		Average video clips play in a clinic day.	None	8	Observation checklist	4 video clips are being playing in each clinic day
Inputs		Intervention care package with all activities and proposed action plan given in details	Not available	Available	Observation checklist	

Process 1: Infrastructure development to improve the clinic layout and to optimize the space utilization.

A new clinic layout and space arrangement was developed based on quality standards as shown in figure 2.5.

Figure 2. 5: Rearranged diabetic clinic layout/space



Infrastructure development and re arrangement were carried out as per the designed layout. Seating capacity was improved with the addition of 36 modern steel panel chairs, bringing the usable total to 111. The patient examination area was renovated with new partitioning and curtains. A new hand-washing sink was installed and improved hand-washing facilities for doctors at the patient examination area. Further, 10 LED ceiling lights were fixed in patient waiting and consultation areas. Patient navigation and flow was able to support by adding new 10 directional boards.

Process 2: Expanding the clinic pharmacy to open a new counter.

The clinic pharmacy was expanded and a new counter was opened and the total number of counters increased from 3 to 4. Importantly, one additional pharmacist is allocated in the duty roster to dispense medicines for diabetic patients.

Process 3: Develop and introducing a new time appointment system for clinic visits.

Fixed time scheduling appointment system was introduced for clinic visits. Each patient is allocated a scheduled hour to attend on clinic days at their convenience. A sticker with the relevant color for the hour will be pasted in the clinic book.

Process 4: Establish a separate phlebotomy area in the OPD sample collecting room.

New furniture was provided and two new phlebotomy stations were opened in the OPD sample collection room. Also, two additional nurses allocated in duty roster.

Process 5: Conducting awareness and training programmes for doctors and nurses on diabetic management

A consultant endocrinologist conducted 2 training sessions on diabetes CMG for doctors and all doctors were able to attend. Only five nurses were attended the foot care training.

Process 6: Designing and developing multiple point FBS and HbA1c profile chart for patients.

Two separate charts were developed, printed and started to attach in the patients' clinic books.

Process 7: Obtaining, designing, printing and displaying IEC materials in the clinic.

Display banners containing health education messages for diabetic patients were obtained from HPB and placed in the patient waiting area. Most of the information is detailed and completed in 10 banners. Also, short 5- to 10-minute video clips were prepared and planned to be played in rotation during each clinic session, an average of four each day.

Outputs 1 and 2 mentioned in the logical framework were measured through mean patient experience score. Also, improved overall responsiveness of clinic services (outcome 1) was measured by overall patient experience mean score. Those value comparison with pre-intervention results shows in table

Table 2. 16: Pre-Post mean comparisons of the patient's experience

	Dimension of the Experience	Pre-Intervention		Post-Intervention	
		Mean	**SD**	**Mean**	**SD**
1	Experience in registration/reception desk	4.14	0.63	4.15*	0.49
2	Experience with nurses and health assistants	4.02	0.54	4.06*	0.54
3	Experience with doctors/physicians	3.92	0.45	3.91	0.44
4	Experience on receiving drugs	3.84	0.57	3.87*	0.60
5	Experience at drug pharmacy and interaction with the staff	3.67	0.43	4.00*	0.39
6	Experience in the clinic waiting area	3.40	0.40	3.53*	0.37
7	Experience on performing laboratory tests which request from the clinic	3.17	0.83	3.87*	0.59
8	Experience regarding the information you get during the clinic visit	3.02	0.43	3.88*	0.43
9	Getting appointments for the clinic and referrals	2.88	0.40	3.39*	0.36
	Overall Experience	**3.52**	**0.28**	**3.86***	**0.27**

**the mean score of experience is higher in post-intervention than in pre-intervention*

As shown in the table 2.16 the study found the eight patient experience dimensions improved after the intervention. Improvement of the utilization of patient waiting area and clinic space (Output 1) as measured by the mean value of the "Patient Experience in Waiting Area" dimension and has been increased from 3.40 ± 0.40 to 3.53 ± 0.37. Improvement of utilization of pharmacy services (output 2) as measured by the mean value of the "Patient Experience on Receiving Drugs" dimension and has also been increased from 3.84 ± 0.54 to 3.87 ± 0.60.

Overall responsiveness of clinic services (outcome 1) was measured by overall patient experience mean and increased from 3.52 ± 0.28 to 3.86 ± 0.27 after completion of interventions.

As shown in table 2.17 it was examined the statistical significance using two tailed t test.

Table 2. 17Table 2.17; Pre-Post mean comparisons of the patient's experience using t-test

		t-test for Equality of Means			
		t	Sig. (2-tailed)	Mean Difference	Std. Error Difference
1	Experience in registration/reception desk	-9.681	0.000*	-0.50	0.05207
2	Experience with nurses and health assistants	-2.548	0.011*	-0.13	0.05186
3	Experience with doctors/physicians	-0.185	0.854	-0.01	0.07981
4	Experience on receiving drugs	-0.565	0.572	-0.04	0.07144
5	Experience at drug pharmacy and interaction with the staff	0.056	0.956	0.00	0.05865
6	Experience in the clinic waiting area	-5.922	0.000*	-0.33	0.05541
7	Experience on performing laboratory tests which request from the clinic	-0.365	0.715	-0.03	0.07538
8	Experience regarding the information you get during the clinic visit	-15.172	0.000*	-0.86	0.05678
9	Getting appointments for the clinic and referrals	-6.724	0.000*	-0.71	0.10516

It was found that the mean score of the dimension such as "Experience in registration/reception de Experience with nurses and health assistants, Experience in the clinic waiting area, Experience regarding the information you get during the clinic visit,

Getting appointments for the clinic and referrals" has significantly improved in post-intervention at 95% significant level.

Achievement of tight glycaemic control (outcome 2) was measured by percentage of patients in the target levels of FBS and HbA1c. Pre-intervention and Post-intervention parameter comparison was shown in table 2.18.

Table 2. 18: Pre and Post-test comparison of glycemic control values among diabetic clinic patients

Parameter	Pre-test		Post-test	
	N	Number (%)	N	Number (%)
FBS within the target of 80 – 130 mg/dl	220	142(64.6)	180	131(72.7)
FBS above the upper limit of target	220	78(35.4)	180	49(27.3)
HbA1c below the target of 7%	62	25(40.4)	------	------
HbA1c exceed the target of 7%	62	37(59.6)	------	------

*HbA1c couldn't perform due to unavailability of analytic chemicals during post intervention phase.

As shown in the table 2.18 the proportion of the FBS within the target of 80 – 130 mg/dl was 64.6% in pre-intervention and it increased to 72.7% after the intervention. On the other hand, FBS was above the upper limit of the target was 34.4% before intervention and it reduced to 27.3%. To assess the significance of this change, the Z value and corresponding probability value were calculated.

The difference in the proportion was 8.23% and the Z value was 1.76, which is slightly lower than the acceptable 1.96 and the corresponding probability was 0.08%. Hence it can be stated that the percentage increase is not significant at a 95% significant level but a little bit higher error, it is significant at a 10% significant level.

Improved patients' knowledge on foot care (output 4) was measured by a self-administered questionnaire and results were showed in table 2.19.

Table 2. 19: Answer distribution of foot care questionnaire among respondents

	Questions	Correct %	Mean	SD
1	Diabetic patients should take care of their feet because minor accidents that have happened to their feet are not noticed	100.0%	1.00	0.00
2	Diabetic patients need to take extra care of their feet as wounds and infections do not heal easily	100.0%	1.00	0.00
3	Diabetic feet should be thoroughly wiped after regular washing to remove moisture	100.0%	1.00	0.00
4	Diabetic patients should check the inside of the shoes before putting them on	100.0%	1.00	0.00
5	Diabetics should always wear shoes when walking	100.0%	1.00	0.00
6	Diabetics should not clean toenails with sharp instruments	92.0%	0.92	0.27
7	Feet of diabetic patients should be checked regularly	91.0%	0.91	0.29
8	Diabetic patients should wash their feet with warm water at night	91.0%	0.91	0.29
9	The toenails of diabetic patients should be cut straight	91.0%	0.91	0.29
10	Diabetic patients should check the temperature of the water before washing their feet with hot water	82.0%	0.82	0.39

As shown in table 2.19 the study found all the diabetic patients answered accurately on five out of ten questions from 1 to 5. There are four knowledge questions from 6 to 9 where over 90% of the respondents have higher knowledge.

The mean score varies from 0 to 1 as “0” is assigned to incorrect and “1” is assigned to correct / accurate answers. Since all the 100 respondents have given correct answers to the first five dimensions in the above table the mean score was 1 and SD was 0. Whereas the mean of the rest of the five dimensions in between 0 and 1 as some of the respondents did not provided accurate answers.

CHAPTER 03; EVALUATION

3.1 Findings.

The objective of evaluating the intervention care package "Walk Away from the Silent Killer, the Diabetes Mellitus" implemented at DGH Nawalapitiya was to consider the overall progress through the four criteria of relevance, coherence, effectiveness and sustainability.

An evaluation team was appointed and it consisted of the hospital director, MO (NCD) Kandy District, and a Medical Administration registrar.

The evaluation questions are given in the evaluation matrix (page 51) and the evaluation was done by the team according to those questions and results described below.

Relevance

The evaluation team conducted a desk review of National Health Strategic Master Plan 2016-2025, the National Policy & Strategic Framework for prevention and control of chronic Non-Communicable Disease 2009 and 2022, National Multi-sectoral Action Plan for the Prevention and Control of Chronic Non Communicable Diseases 2022-2027 and WHO policies and guidelines. They have confirmed that this project would fit with the national NCD policy and it closely related to one of the strategic area: Reorient and strengthen the healthcare delivery system to provide sustainable, people centered, standardized, integrated NCD care(Directorate of NCDs, 2022). Furthermore, they found that all policies and guidelines mentioned the need to strengthen service delivery at each level to achieve UHC.

Coherence

The evaluation team conducted a desk review of the Ministry of Health's Primary Health Care System Strengthening Project (PSSP) and NCD Prevention and Control Program and identified infrastructure development, service delivery process improvement, capacity building through health staff training, improvement of investigation facilities and improvement of quality standards are compatible with this project.

Effectiveness

Key evaluation question 1 - Has the fixed-time appointment system reduced the congestion and overcrowding?

The evaluation team conducted KIIs and FGDs with the health staff of the diabetes clinic to collect their experiences regarding the clinic's starting time, ending time and patient attendance pattern in the morning. It found that staff felt comfortable in directing the patients for consultations and doctors had enough time with each patient because they were not rushing to get the next patient. However, it was found that some patients did not adhere to this method and visited during the allotted time of other patients, thus there was still a slight overcrowding.

Key evaluation question 2 - Has the patient experience of diabetes clinic services improved since the implementation of the intervention care package?

According to the pre and post patient experience survey conducted, the evaluation team observed a significant improvement of mean patient experience sore. Furthermore, they examined all interventions completed to improve various dimensions of the patient experience, pointing out the importance of considering areas that have not been addressed.

Sustainability

Key evaluation question 1 - Will multiple point profile charts for FBS/HbA1c be given to the patients continuously and staff adhere to practice sustainable manner?

The evaluation team observed the agreement of consultants and other clinicians in the design and introduction of these charts, indicating a positive sign for future adherence. Also, they were able to explore the positive attitudes of many staff members when visualizing graphical presentation of glycemic control level. Furthermore, the team found that it was possible to print charts in the hospital at minimal cost using the existing Duplo printer.

Key evaluation question 2 - Can these nursing officers be allocated continuously to work in the phlebotomy room?

The evaluation team reviewed the carder positions and available number of nursing officers in the hospital. They observed consensus among the director, chief nursing officer and nursing union representatives in the development of the OPD sample collection room, which were identified as key services to be improved. Hence, there was a mechanism to cover the duties in each day by two nursing officers in rotational basis from the staff of OPD, clinics, QMU, and infection control unit.

Evaluation Recommendations

After assessing the above criteria, the evaluation team has made the following recommendations to further enhance the achievement of the desired results of the project.

I. Patient waiting time survey during the clinic visit should be conducted in every month.
II. Monthly progress review meetings should be conducted.
III. Profile charts for FBS/HbA1c should be printed in colors to give more visual impact.
IV. Some of the uncompleted services such as providing clean drinking water for patients should be attended.

3.2 Discussion.

This research project intended to design and implement an intervention to provide optimum medical clinic services to patients with Diabetes Mellitus at District General Hospital (DGH) Nawalapitiya. Principle investigator observed that the number of diabetic patients coming for treatment in government hospitals was increasing, but many services were suboptimal. This was substantiated by the hospital clinic attendance data mentioned in figure 1.1. An audit conducted in CSTH also reported similar findings that there were no proper facilities for complication screening, no structured health educational programmes for patients, and also doctors had not received special training on diabetes(Jayawardena et al., 2007).

Health care delivery at all levels is expected to follow national policies and guidelines and adopt global best practices to plan, design and implement relevant services.

One of the key strategic area of the National NCD policy is "Reorient and strengthen the healthcare delivery system to provide sustainable, people centered, standardized, integrated NCD care"(Directorate of NCDs, 2022). Accordingly, Sri Lankan health service need to be updated to provide a sustainable, people centered, standardized and integrated NCD care.

A survey of patients who attended the clinic was carried out during pre-intervention and it revealed the following.

When considering the socio-demographic composition of patients attended to diabetes clinics, it was evident that there are more elderly citizens and of them, more than forty percent belong to the age group above 60 years. Nearly seventy-two percent were educated up to secondary level, which is a positive figure for their literacy. It is shown that the majority were not employed. More than half of the sample reported having a monthly income of less than Rs 25,000 and the prevailing high inflation and high consumer prices may have adverse effects on the general consumption pattern of these people.

Considering how they live at home, only a small number of them live alone while others live with someone closely related to them, and family support can be used positively in managing the disease. More than 80% of clinic attendees arrive by public transportation buses from distance ranging up to 15 km and also attend the clinic alone. This means that they spend considerable time and money to visit the clinic.

The study found that, more than two third of the patients had family history of diabetes and the average years from the diagnosis was 10.06±8.25. Therefore, these patients need long term plan for tight glycemic control and complication prevention. Half of patients do not exercise regularly, indicating the need to address the lifestyle modification component in addition to drug therapy.

It was found that two-thirds of the patients had space for gardening, and the majority grew vegetables. Apart from the increase in the price of vegetables in the market, this may have been due to the recent home gardening promotion programs.

The mean value of the overall patient experience before interventions was found to be 3.52±0.28. It is evident that the patients were satisfied in most of the services provided in the clinic. However, they were unhappy about the basic facilities like adequate seating facilities, clean toilet facilities, and safe drinking water in the patient waiting area. Furthermore, they have shown concern about absence of time appointments for clinic visits and delays in getting medicines from the pharmacy. Patients also did not agree that adequate health education was provided through IEC materials. The majority of patients disagreed that how foot care and physical advice was given to them and also mentioned the unavailability of direction signs to navigate in the clinic. Some of the investigation facilities such as HbA1c could not be performed in the hospital and FBS also could not be carried out timely.

These findings were also confirmed by triangulation with the KIIs and FGDs with health staff: overcrowding and congestion, poor navigation of patients in the clinic, Inadequate

training of staff, difficult in interpretation of glycaemic control, and lack of regular complication screening were the contents that came up in qualitative data analysis.

Some patient factors may influence the challenges mentioned above. Overcrowding at clinics due to lack of appointment systems, poor queue management and pharmacy delays will be exacerbated by morning patient arrivals. This may be due to the social perception of "come early in the morning" and having to travel from considerable distances by public transport services.

Harper and Gamelin(2003) have said that an effective appointment system is a critical component in controlling patient waiting times during clinic sessions, and that current waiting times are often unacceptable and stress clinic staff. Jayawardena et al (2007) has found in the audit at CSTH that the main barrier to providing optimal care to patients with DM in the public health sector was lack of resources and laboratory tests like HbA1c. Relatively simple clinical tests such as foot tests were also not performed according to the guidelines.

Another study has found that current methods of Self Monitored Blood Glucose (SMBG) and HbA1c data presentation are often suboptimal, there is increasing evidence supporting the advantages of multiple-point glucose profiles(Daniel, 2014).

In this study, a team conducted a service readiness and availability assessment that confirmed many of the above findings and also found the poor adherence to the clinical management guidelines of diabetes mellitus. In literature the scholars have discussed the poor adherence and barriers to implement clinical management guidelines: a lack of knowledge of guideline existence, complexity of guidelines, staff attitude, and lack of training, and time and resource constraints(Keiffer, 2015).

Subsequently, the intervention care package, “Walk Away From the Silent Killer, Diabetes Mellitus” was developed, implemented and the overall results were evaluated. Interventions

were monitored by an appointed monitoring team to ensure that the proposed activities were being implemented properly.

The mean overall patient experience has improved from 3.52±0.28 to 3.86±0.27.

The mean value of all dimensions included in the intervention package has improved with a significant level of 95%, except "getting medication on time from the pharmacy". This is evidenced by the fact that the duty roster of pharmacists has been disturbed by taking maternity leave by one pharmacist.

The proportion of patients within the target FBS value of 80 – 130 mg/dl has improved from 64.6% to 72.7% after completion of the interventions. On the other hand proportion of patients above the upper limit of the target was 34.4% before intervention and it reduced to 27.3%. However, the Z value calculation did not show a significant difference at 95% probability level. Achieving tight glycaemic control is one of the outcomes of this project, which may take many months to achieve.

After training the nursing officers on foot care and establishing formal referral methods for obtaining the services the effectiveness of the intervention was assessed through patients' knowledge. Out of ten questions asked five questions were answered by all the respondents correctly, and another four by more than 90%. Remaining question was also answered by more than 80% of respondents.

A team evaluated the project based on four criteria: relevance, coherence, effectiveness and sustainability. The objectives and design of the project were found to be relevant to the National Health and NCD policy, and responsive to patient and institutional needs. Furthermore, the project is consistent with interventions undertaken by other projects and activities such as the PSSP and the NCD Prevention and Control Programme. Effectiveness was evaluated to examine the extent to which desired outcomes were achieved and patients' experience of receiving clinic services showed significant improvement. It was evident that

the implementation of the appointment system has achieved its objective of reducing overcrowding and patient congestion. However, the evaluation team recommend to quantify the measurement of reduction. Sustainability of the project was evaluated by two questions. The team revealed that adequate measures have been taken to continue the provision of multiple point glycaemic control charts for patients' clinic books. Furthermore, a practical and feasible mechanism has been developed to allocate nurses to the outpatient department sample collection room to reduce overcrowding and improve the timeliness of sample collection.

Funding was obtained from the National Program for Prevention and Control of Non-Communicable Diseases and also from hospital development committee and well-wishers in the area. However, some activities had to be abandoned midway due to lack of funds, such as the design and printing of clinical management brochures.

Many infrastructure development activities in the clinic patient waiting area, consultation room, and pharmacy couldn't completed on time due to difficulties in supplying the raw materials from the markets with current economic crisis and COVID 19 pandemic situation. Importantly, there was good administrative support from the hospital director and resource persons for training and monitoring of the project found in the hospital.

Measuring changes in patients' HbA1c values would be a better outcome indicator for glycaemic control, but due to a shortage of analytical reagents in the post-intervention period, the test could not be performed for many patients.

3.3 Conclusions.

The purpose of this intervention research project was to design and implement an intervention care package to provide optimum medical clinic services to patients with Diabetes Mellitus at District General Hospital (DGH) Nawalapitiya. In accordance with the specific objectives, the following conclusions were drawn.

I. Many gaps exist in providing basic facilities for diabetic patients, in clinic layout and space arrangement, staff training, health education for patients, performing blood investigations, practicing clinical management guidelines, and screening for diabetes-related complications.

II. An intervention care package was developed to bridge the observed gaps in providing services to diabetic patients. Rearranging the clinic layout and space with improving the basic amenities, establishing time appointment system for clinic visits, providing glycemic control profile chart in the patient' clinic book, instituting an additional counter in the pharmacy, expanding the phlebotomy service in the OPD sample collecting room, conducting awareness and trainings on clinical management guideline existence and utilization, and improving foot care services were the key interventions planned.

III. The intervention care package was implemented and throughout the process the activities were monitored with a monitoring framework by a team and actions taken to expedite any delayed areas. Administrative and technical support were received from the hospital and most activities were able to complete as expected.

IV. After completion of the implementation phase the project was evaluated based on relevance, coherence, effectiveness, and sustainability. The project was relevant to the national health and NCD policies, institutional and patients' need. Also, it was

consistent with other similar projects and activities related to NCD control in the country. It was confirmed that this intervention care package improved quality of care as measured by patient experience. Furthermore, patient knowledge on disease control measures such as foot care, staff awareness of clinical guidelines and complication screening skills have been improved. Importantly, a slight improvement was observed in patients achieving glycemic control across FBS values. This outcome was only measured within three months of starting the intervention, so it may take longer to achieve high-level results.

However, some of the constraints were unavailability of laboratory reagents for HbA1c and shortage of the pharmacists to allocate in the new pharmacy counter. Also improving of some of the aspects were unattended by this project such as physical exercise trainings, patient counselling and family member awareness.

In summary, it can be stated that, active administrative interventions such as infrastructure development, staff capacity building through training, process improvements, and good leadership through proper monitoring and evaluation can transform health care delivery systems.

3.4 Recommendations

I. It is recommended to assess the diabetic clinic services in different settings using the developed study instruments, importantly patient experience must be measured with qualitative methods.

II. It is recommended the intervention care package to be implemented in different settings to improve diabetic care.

III. Some components such as time scheduling, use of CMG, and use of multipoint disease control profile charts are recommended for implementation to manage hypertension in the same and different settings.

IV. It is recommended to evaluate the effectiveness of achieving the outcome, over a longer period of time, as it takes longer to achieve high-level results such as disease control.

V. Efficiency evaluation is recommended to explore the extent to which the intervention delivers or is likely to deliver results in an economical and timely manner.

VI. If expected effectiveness and efficiency criteria are met, inclusion in the National NCD Prevention and Control Program is recommended for introduction in other hospitals.

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Annexures

Annexure I: Self-administered questionnaire for patient experience on clinic services and knowledge on diabetes mellitus. (English)

Project to Improve Medical Clinic services in managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

Questionnaire to assessing the Socio-demographic characteristics of patients

Answer the all questions. Mark (√) in relevant places and write the answers where appropriate.

	Questions	Answers	Response
01	What is your gender?		
		Male	
		Female	
02	What is your age?		
	Write in complete years as at last birthday		
03	What is your marital status?		
		Never married	
		Married	
		Divorced/Widowed/Separated	
04	What is your educational level?		
		No school education	
		Primary education (Grade 1 – 5)	
		Secondary education (Grade 6 – 13)	
		Tertiary (Graduate or Post graduate)	
		Other (If yes specify below)	
05	What is your occupation?		
		Unemployed	
		House wife	
		Employed at government sector	
		Employed at private sector	
		Self-employed	
		Retired	
06	Mention diabetic history of your family members		
		First degree relatives (Father,Mother,Sister,Brother)	
		Second degree relatives (Grandmother & father, uncle, aunt)	
		Both First and Second degree	
		No family history	
07	How long have you diagnosed as having Diabetes?		
	Write the approximate number of years and months		
10	With whom you attend to the clinic?		

09	Mention your living status.		
		Living alone	
		Living with spouse only	
		Living with children only	
		Living with spouse and children	
		Living with relatives (other than spouse and children)	
		Other (If yes specify below)	
08	Are you smoking?		
		Yes	
		No	
		Alone	
		With the spouse	
		With the children	
		With other relative	
		Other (If yes specify below)	
11	What is the mode of transport that you come to the clinic?		
		Walking	
		Own vehicle	
		Hired vehicle (Three wheeler, Car)	
		Bus	
		Train	
		Other (If yes specify below)	
12	Mention your travelling distance to the clinic from home in kilo meters (Km)		
13	What is your monthly household income		
		Less than Rs 25,000/=	
		Rs 25, 000/= to Rs 50,000/=	
		Rs 50,000/= to Rs 75,000/=	
		Rs 75, 000/= to Rs 100,000/=	
		More than Rs 100,000/=	
14	Do you have following equipment/facilities at home? (mark all the available facilities)		
		Television	
		Refrigerator	
		Air fryer	
		Mobile phone	
		Ordinary phone	
		Smart phone	
		Internet facility	

15	How to supplement your daily diet?		
		Cooking at home	
		Taking from outside	
16	Do you have space for gardening at your house?		
		Yes	
		No	
16.1	If 'yes' for above question, for what purposes you utilize the space?		
		Vegetable	
		Fruits	

		Flower	
17	Do you engage in regular exercise?		
		Yes	
		No	
17.1	If 'yes' for above question, choose your method of exercising		
		Walking in path or ground	
		Body workouts at gymnasium	
		Body workouts at Home	
		Other (specify below)	

Patient's knowledge assessment on Diabetes Mellitus in medical clinic at district General Hospital, Nawalapitiya.

Following questions are based on diagnosis, treatments, complications, and preventive measures in diabetes mellitus.

Please read each questions carefully and answer by putting (√) in relevant box.

	Questions	Yes	No
01	Eating too much sugar and other sweet foods is a cause of diabetes.		
02	The usual cause of diabetes is lack of effective insulin in the body.		
03	Kidneys produce insulin.		
04	If I am diabetic, my children have a higher chance of being diabetic.		
05	Diabetes can be cured.		
06	A fasting blood sugar level of 210 is not too high.		
07	Do you think regular exercise important?		
08	Regular exercise will increase the need for insulin or other diabetic medication.		
09	Medication is more important than diet and exercise to control my diabetes.		
10	Cuts and abrasions on diabetes heal more slowly.		
11	Diabetics should take extra care when cutting their toenails.		
12	Diabetes can damage my kidneys.		
13	Properly treated, it can prevent kidney disease.		
14	Diabetes can cause loss of feeling in my hands, fingers and feet.		
15	Frequent urination, and thirst are signs of high blood sugar.		
16	Do you think that diabetics should have eye exam at least once a year?		
17	Do you think diabetes can make you blind?		
18	Do you think that it is important to take your diabetes medication every day?		
19	Diabetes causes sexual dysfunction.		
20	It is not important to have a glucometer in my house.		
21	Insulin can only be injected into the front of the abdomen.		
22	Whenever possible, insulin injections should be kept in a normal refrigerator at temperature between 2 and 8 degrees of Celsius.		

23	If you have diabetes, it is best to exercise at least 30 minutes a day, at least 5 days a week.		
24	I'm diabetic and do not need to be active all day.		
25	Medications taken for diabetes can damage the kidneys.		

Patient experience survey on diabetic clinic services at District General Hospital, Nawalapitiya.

Please tell us how we are doing

We want to know how you feel about the care you get at our clinic. Please take a few minutes to complete this survey and then return it to us. Let us know your feelings about today's visit and any visits during the last year or so. Safe and effective care is our goal.

Please put (√) in relevant boxes.

		Strongly agree	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1	Getting appointments for the clinic and referrals					
1.1	In my every clinic visit, I can get the next clinic date clearly					
1.2	It is being given the time with the date, which I should come					
	If you have referred for any of following services, how easily got that appointment					
1.3	If needed I can get referral for eye care					
1.4	If needed I can get referral for foot care					
1.5	If needed I can get referral for nutrition advises					
1.6	If needed I can get referral for physical activity advises					
1.7	Any other (If available, specify below and rate)					
1.8	Have you got appointments for testing FBS, HbA1c	Yes				
		No				
	If yes for any of those, specify followings and rate					
		Strongly agree	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1.9	I can get request form for my FBS testing					
1.10	I can get request form for my HbA1c testing					
2	Rate your experience in the clinic waiting area					
2.1	I have enough facilities to sit in the waiting area					
2.2	It has been provided adequate ventilation facilities					
2.3	The area is lighted adequately					
2.4	I'm satisfied with the cleanliness of the waiting area					

2.5	There are signage and directions I can easily follow in the clinic.					

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
2.6	Clean and safe drinking water, available in the waiting area					
2.7	Good toilet facilities are available near the waiting area.					
3	Rate your experience in registration/reception desk					
3.1	Staff is friendly					
3.2	Staff is helpful					
4	Rate your experience with nurses and health assistants					
4.1	They are friendly and help full to me					
4.2	They speak in a language that can understand for me					
4.3	They answer my questions					
4.4	They spend enough time to listen my problems and concerns					
5	Rate your experience with doctors/physicians					
5.1	They are friendly and helpful to me					
5.2	They speak in a language that can understand for me					
5.3	They spend enough time to listen my problems and concerns					
5.4	They answer my questions clearly					
5.5	They talk about my current blood sugar value					
5.6	They talk about my current blood pressure value					
5.7	They tell me about drug management					
5.8	They give helpful dietary advices					
5.9	They give me advises to do regular physical activities					
5.10	They talk me about the screening for complications (eye cataract, numbness of feet, chronic kidney disease)					
5.11	They consider my personal and family beliefs					

		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
6	Rate your experience at drug pharmacy and interaction with the staff					
6.1	Staff is friendly and helpful to me					
6.2	Pharmacists speak in a language that can understand for me					
6.3	Pharmacists adequately listen to me					
6.4	Pharmacists give the advises on how to take the drugs					

6.5	Pharmacists advise me how to store insulin correctly (Answer only if you are on insulin)					
6.6	I can take the drugs from the counter without delay					
7	Rate your experience on receiving drugs					
7.1	I receive all the prescribed drugs from the hospital pharmacy					
7.2	All the drugs packed well and labelled					
7.3	All instructions regarding dispensing is given					
8	Rate your experience regarding the information you get during the clinic visit					
8.1	Printed materials available in my language					
8.2	Educational banners are displayed					
8.3	Health education staff deliver the “health talks”					
8.4	There are facilities to watch health education videos					
9	Rate your experience in getting done the laboratory tests requested in the clinic					
9.1	Facilities for FBS or PPBS testing is available within the hospital					
9.2	I am able to do the FBS within my fasting period					
9.3	Facilities for HbA1c testing available within the hospital					

Annexure II: Self-administered questionnaire for patient experience on clinic services and knowledge on diabetes mellitus.(Sinhala)

නාවලපිටිය දිස්ත්‍රික් මහ රෝහලේ, දියවැඩියා රෝගය පාලනය කිරීමේ වෛද්‍ය සායන සේවා වැඩිදියුණු කිරීමේ ව්‍යාපෘතිය.

රෝගීන්ගේ සමාජ ජන විකාශන ලක්ෂණ තක්සේරු කිරීම සඳහා ප්‍රශ්නාවලිය

සියලුම ප්‍රශ්න වලට පිළිතුරු දෙන්න. අදාළ ස්ථානවල (√) ලකුණු කර අවශ්‍ය තැන්වලට පිළිතුරු ලියන්න.

	ප්‍රශ්නය		**පිලිතුර**
01	ඔබේ ස්ත්‍රී පුරුෂභාවය කුමක්ද?		
		පිරිමි	
		ගැහැණු	
02	ඔබේ වයස කීය ද ?		
	පසුගිය උපදිනයේදී සම්පූර්ණ කල අවුරුදු ගණන පමණක් ලියන්න		
03	ඔබේ විවාහක/ අවිවාහක තත්ත්වය කුමක්ද?		
		කවදාවත් විවාහ වී නැත	
		විවාහකයි	
		දික්කසාද/වැන්දඹු/ වෙන්වී ඇත	
04	ඔබ ලබා ඇති අධ්‍යාපන මට්ටම කුමක්ද?		
		පාසල් අධ්‍යාපනයක් ලබා නැත	
		ප්‍රාථමික අධ්‍යාපනය (1 - 5 ශ්‍රේණියදක්වා)	
		ද්විතීයික අධ්‍යාපනය (6 - 13 ශ්‍රේණිය දක්වා)	
		තෘතියික අධ්‍යාපනය (උපාධි, පශ්චාත් උපාධි දක්වා)	
		වෙනත් (පහත සඳහන් කරන්න)	
05	ඔබේ රැකියාව කුමක්ද?		
		රැකියාවක් නොකරයි	
		ගෘහ කටයුතු	
		රජයේ රැකියාවක නිරත වෙයි	
		පෞද්ගලික අංශයේ රැකියාවක නිරත වෙයි	
		ස්වයං රැකියාවක නිරතවෙයි	
		විශ්‍රාමිකයි	
06	ඔබේ පවුලේ අයගේ දියවැඩියා රෝගය පිළිබඳ ඉතිහාසය සඳහන් කරන්න		
		පළමු පෙළ ඥාතීන් (මව,පියා, සහෝදරයා, සහෝදරී)	
		දෙවන පෙළ ඥාතීන් (ආච්චි,සීයා,නැන්දා,මාමා,බාප්ප ,පුංචිඅම්ම)	
		පළමු හා දෙවන පෙළ දෙපිරිසම	
		පවුලේ කිසිවෙකුට රෝග ඉතිහාසයක් නැත	
07	ඔබට දියවැඩියා රෝගය ඇති බවට හඳුනාගෙන ඇති කාලසීමාව කුමක්ද? **(**ආසන්න වසරවල් හා මාස ගනනින් ලියන්න.**)**		
	වසර	මාස	
08	ඔබ දුම් පානය කරනවාද?		
		ඔව්	
		නැත	

09	ඔබ ගෘහ ජීවිතය ගතකරන ආකාරය සඳහන් කරන්න.		
		තනියම ජීවත්වේ	
		කලත්‍රයා (බිරිඳ/ස්වාමිපුරුෂයා) සමඟ ජීවත්වේ	
		දරුවන් සමඟ ජීවත්වේ	
		කලත්‍රයා හා දරුවන් සමග ජීවත්වේ	
		ඥාතීන් සමඟ ජීවත්වේ(කලත්‍රයා හා දරුවන් නොවන)	
		වෙනත් (පහත සඳහන් කරන්න)	
10	ඔබ සායනයට සහභාගී වන්නේ කා සමඟද?		
		තනියම	
		කලත්‍රයා සමඟ	
		දරුවන් සමග	
		වෙනත් ඥාතියෙකු සමඟ	
		වෙනත් (පහත සඳහන් කරන්න)	
11	ඔබ සායනයට පැමිණෙන ආකාරය (ප්‍රවාහන ක්‍රමය) කුමක්ද?		
		පයින් ඇවිදගෙන	
		තමන්ගේම වාහනයකින්	
		කුලී රථයකින් (ත්‍රීරෝදය, කාරය, වෑන් රථය)	
		බස් රථයෙන්	
		දුම්රියෙන්	
		වෙනත් (පහත සඳහන් කරන්න)	
12	නිවසේ සිට සායනයට ඔබගේ ගමන් දුර ආසන්න කිලෝ මීටර ගණනින් (Km) සඳහන් කරන්න		
13	ඔබගේ පවුලේ මාසික ආදායම කොපමණද		
		රුපියල් 25,000/= ට අඩුයි	
		25,000/= සිට 50,000/= දක්වා	
		50,000/= සිට 75,000/= දක්වා	
		75, 000/= සිට 100,000/= දක්වා	
		රුපියල් 100,000/= කට වැඩියි	
14	ඔබට/ඔබගේ නිවසේ පහත උපකරණ/පහසුකම් තිබේද තිබෙන සෑම උපකරණයක් ඉදිරියෙන්ම (√) ලකුණ දමන්න		
		රූපවාහිනිය	
		ශීතකරණය	
		එයාර් ෆ්‍රයර් උපකරණය	
		ජංගම දුරකථනය	
		ගතානුගතික ජංගම දුරකථනය	
		සුහුරු (Smart)ජංගම දුරකථනය	
		අන්තර්ජාල පහසුකම	
15	ඔබ දිනපතා අහාර සපයා ගන්නා ප්‍රධාන මාර්ගය කුමක්ද?		
		නිවසේදී සකසා ගනී	
		පිටතින් ලබා ගනී	
16	ඔබගේ නිවසේ වගා කිරීමට අවශ්‍ය ඉඩ පහසුකම් තිබේද?		

		ඔව්	
		නැත	
16.1	ඉඩ පහසුකම් තිබේනම් වැඩියෙන් වවන්නේ මොනවාද?		
		එළවලු	
		පළතුරු	
		මල්	
17	ඔබ නිතිපතා ව්‍යායාමවල නිරත වන්නේද ?		
		ඔව්	
		නැත	
17.1	ඔබ එසේ නිරත වන්නේ නම් පහත කුමන අකාරයටද?		
		මංතීරුවක හෝ පිටිටනියක ඇවිදීම	
		නිවසේ ව්‍යායාම කිරීම	
		ජිම් එකක ව්‍යායාම කිරීම	
		වෙනත් ක්‍රමයක් (පහත සඳහන් කරන්න)	

නාවලපිටිය දිස්ත්‍රික් මහ රෝහලේ වෛද්‍ය සායනයට සහභාගිවන්නන්ගේ දියවැඩියා රෝගය පිළිබඳ දැනුම තක්සේරු කිරීමේ ප්‍රශ්නාවලිය.

පහත සඳහන් ප්‍රශ්න පදනම් වන්නේ දියවැඩියා රෝගයේ රෝග විනිශ්චය, ප්‍රතිකාර, සංකූලතා සහ නිවාරණ පියවර මතය. කරුණාකර එක් එක් ප්‍රශ්නය හොඳින් කියවා අදාළ කොටුවේ (√) යෙදීමෙන් පිළිතුරු දෙන්න.

	ප්‍රශ්නය	ඔව්	නැත
01	සීනි සහ අනෙකුත් පැණි රස ආහාර වැඩිපුර ගැනීම දියවැඩියාව වැළදීමටහේතුවකි.		
02	දියවැඩියාවට සාමාන්‍ය හේතුව වන්නේ ශරීරයේ ක්‍රියාකාරී ඉන්සියුලින් නොමැතිකමයි.		
03	වකුගඩු මගින් ඉන්සියුලින් නිපදවයි.		
04	මම දියවැඩියා රෝගියෙක් නම්, මගේ දරුවන්ට දියවැඩියා රෝගය වැළදීමට ඇති ඉඩකඩ වැඩිය.		
05	දියවැඩියාව සුව කළ හැක		

06	නිරාහාර රුධිර සීනි මට්ටම 210 යනු එතරම් වැඩි අගයක් නොවේ.		

07	නිතිපතා ව්‍යායාම කිරීම දියවැඩියා රෝග පාලනට වැදගත් යැයි ඔබ සිතනවාද?		
08	නිතිපතා ව්‍යායාම කිරීම, ඉන්සියුලින් හෝ වෙනත් දියවැඩියා ඖෂධ සඳහා ඇති අවශ්‍යතාවය අඩු කරයි.		
09	මගේ දියවැඩියා රෝගය පාලනයට ආහාර හා ව්‍යායමවලට වඩා ඖෂධ වැදගත් ය.		
10	දියවැඩියා රෝගීන්ගේ කැපුම් සහ සීරීම් තුවාල සුවවීමට වඩාත් කල්ගතවේ.		
11	දියවැඩියා රෝගීන් තම නියපොතු කැපීමේදී වැඩි සැලකිල්ලක් දැක්විය යුතුය.		
12	දියවැඩියාව නිසා මගේ වකුගඩුවලට හානි විය හැකිය.		
13	දියවැඩියාව නිසිලෙස පාලනය කිරීමෙන්, වකුගඩු රෝගය වළක්වා ගත හැකිය.		
14	දියවැඩියාව නිසා මගේ අත්, ඇඟිලි සහ පාදවල හිරි වැටීම ඇතිවිය හැකිය .		
15	නිතර මූත්‍රා කිරීමට අවශ්‍ය වීම සහ අධික පිපාසය ඇතිවීම රුධිරයේ සීනි මට්ටමවැඩිවීමේ ලක්ෂණ වේ.		
16	දියවැඩියා රෝගීන් අවම වශයෙන් වසරකට වරක්වත් ඇස් පරීක්ෂා කළ යුතු යැයි ඔබ සිතනවාද?		
17	දියවැඩියාවෙන් ඔබව අන්ධ කළ හැකි යැයි ඔබ සිතනවාද?		
18	ඔබේ දියවැඩියාවට ඖෂධ දිනපතා ගැනීම වැදගත් යැයි ඔබ සිතනවාද?		
19	දියවැඩියාව ලිංගික දුර්වලතා ඇති කරයි.		
20	මගේ නිවසේ ග්ලූකෝමීටරයක් තිබීම වැදගත් නොවේ.		
21	ඉන්සියුලින් එන්නත් කළ හැක්කේ උදරයේ ඉදිරිපස කොටසට පමණි.		
22	හැකි සෑම විටම ඉන්සියුලින් එන්නත් සෙල්සියස් අංශක 2 ත් 8 ත් අතර උෂ්ණත්වයකදී සාමාන්‍ය ශීතකරණයක් තුළ තබා ගත යුතුය.		
23	දියවැඩියා රෝගියෙක් නම් දිනකට අවම වශයෙන් විනාඩි 30ක් සතියකට දින 5ක්වත් ව්‍යායාම කිරීම සුදුසුයි		
24	මම දියවැඩියා රෝගියෙකු වන අතර දවස පුරා ක්‍රියාශීලීව සිටීමට අවශ්‍ය නැත.		
25	දියවැඩියා රෝගයට ගන්නා ඖෂධවලින් වකුගඩුවලට හානි සිදු විය හැකියි.		

නාවලපිටිය දිස්ත්‍රික් මහ රෝහලේ දියවැඩියා සායන සේවා පිළිබඳ රෝගීන්ගේ අත්දැකීම් සමීක්ෂණය.

අපගේ සේවාවන් පිළිබඳව කරුණාකර අපට කියන්න

අපගේ සායනයේදී ඔබට ලැබෙන සැලකිල්ල ගැන ඔබට හැඟෙන්නේ කෙසේදැයි දැන ගැනීමට අපට අවශ්‍යයි. කරුණාකර මෙම සමීක්ෂණය සම්පූර්ණ කිරීමට මිනිත්තු කිහිපයක් ගත කර එය අප වෙත ආපසුලබා දෙන්න. අද දින සායන වාරය සහ පසුගිය වසර හෝ ඊට වැඩි කාලය තුළ ඕනෑම සායන වාරයක් පිළිබඳ ඔබේ හැඟීම්/අත්දැකීම් අපට දන්වන්න. ආරක්ෂිත සහ ඵලදායී රෝගී සත්කාර සේවය අපගේ ඉලක්කයයි.

සියලුම ප්‍රශ්නවලට පිලිතුරු සපයන්න. ඔබගේ පිලිතුරු සඳහා අදාල කොටුවල (√) සලකුණ යොදන්න

		දැඩි ලෙස එකඟ වෙමි	එකඟ වෙමි	මධ්‍යස්ථයි	එකඟ නොවෙමි	දැඩි ලෙස එකඟ නොවෙමි
1	**සායන සහ අනෙකුත් සේවාවන් සඳහා දිනයක්, වේලාවක් ලබා ගැනීම**					
1.1	සෑම සායන වාරයකදීම මට ඊළඟ සායන දිනය ලබා ගත හැකිය					
1.2	සෑම සායන වාරයකදීම මට ඊළඟ සායන දිනයේ වේලාව ලබා ගත හැකිය					
	ඔබ පහත සඳහන් ඕනෑම සේවාවක් සඳහා යොමු කර ඇත්නම්					
1.3	අක්ෂි සත්කාර සඳහා යොමු කිරීම පහසුවෙන් ලබා ගත හැකි විය					
1.4	පාද පරීක්ෂාව සහ රැකවරණය සඳහා යොමු කිරීම පහසුවෙන් ලබා ගත හැකි විය					
1.5	පෝෂණ උපදෙස් සඳහා යොමු කිරීම පහසුවෙන් ලබා ගත හැකි විය					
1.6	ශාරීරික ක්‍රියාකාරකම් පිලිබඳ උපදෙස් සඳහා යොමු කිරීම පහසුවෙන් ලබා ගත හැකි විය					
1.7	වෙනත් ඕනෑම සේවාවක් (නිබේ නම්, පහත සඳහන් කර තක්සේරු කරන්න)					
1.8	ඔබට FBS, HBA1c පරීක්ෂා කිරීම සඳහා දිනයක්, වේලාවක් ලබා දෙන්නේද?	ඔව්				
		නැත				
	ඉහත 1.8 හි පිලිතුර 'ඔව්' නම් පහත පරීක්ෂණ සඳහා ඔබගේ තක්සේරුව ලබා දෙන්න					
1.9	මගේ FBS පරීක්ෂණය ගැන මම සෑහීමකට පත් වෙනවා					

1.10	මම මගේ HBA1c පරීක්ෂණය ගැන සෑහීමකට පත් වෙනවා					

		දැඩි ලෙස එකඟ වෙමි	එකඟ වෙමි	මධ්‍යස්ථයි	එකඟ නොවෙමි	දැඩි ලෙස එකඟ නොවෙමි
2	සායන පොරොත්තු (රැදීසිටීමේ) ප්‍රදේශය					
2.1	මට පොරොත්තු ප්‍රදේශයේ වාඩිවීමට අවශ්‍ය තරම් තරම් පහසුකම් තිබේ.					
2.2	එහි හොඳ වාතාශ්‍රයක් තිබේ.					
2.3	එම ප්‍රදේශය ප්‍රමාණවත් ලෙස ආලෝකමත් වී ඇත					
2.4	රැඳී සිටින ස්ථානයේ පිරිසිදුකම ගැන මම සෑහීමකට පත්වෙමි					
2.5	සායනයේදී මට පහසුවෙන් අනුගමනය කළ හැකි සංඥා සහ උපදෙස් ප්‍රදර්ශනය කර ඇත					
2.6	පිරිසිදු සහ ආරක්ෂිත පානීය ජලය සපයා ඇත.					
2.7	පොරොත්තු ස්ථානය අසල හොඳ වැසිකිලි පහසුකම් ඇත.					
3	පිලිගැනීමේ/ ලියාපදිංචි කිරීමේ කවුන්ටරය					
3.1	කාර්ය මණ්ඩලය ඔබට මිත්‍රශීලී ලෙස සලකයි					
3.2	කාර්ය මණ්ඩලය ඔබව සුහදශීලී ලෙස අමතයි					
4	හෙදියන් සහ සෞඛ්‍ය සහායකයින්					
4.1	ඔවුන් මිත්‍රශීලී වන අතර මට සුහදශීලී ලෙස උපකාර කරයි.					
4.2	ඔවුන් කතා කරන්නේ මට තේරෙන භාෂාවකින්ය					
4.3	ඔවුන් මගේ ප්‍රශ්න වලට නොපැකිලිව උත්තර දෙයි					
4.4	ඔවුන් මා හට සවන් දීමට ප්‍රමාණවත් කාලයක් ගත කරයි					
5	වෛද්‍යවරුන්ගේ සේවය පිලිබඳ ඔබේ අත්දැකීම් තක්සේරු කරන්න					
5.1	ඔවුන් මිත්‍රශීලී වන අතර මට සුහදශීලී ලෙස උපකාර කරයි.					
5.2	ඔවුන් කතා කරන්නේ මට තේරෙන භාෂාවකින්ය					

5.3	ඔවුන් මා හට සවන් දීමට ප්‍රමාණවත් කාලයක් ගත කරයි					
5.4	ඔවුන් මගේ ප්‍රශ්න වලට නොපැකිලිව උත්තර දෙයි					

		දැඩි ලෙස එකඟ වෙමි	**එකඟ වෙමි**	**මධ්‍යස්ථයි**	**එකඟ නොවෙමි**	**දැඩි ලෙස එකඟ නොවෙමි**
5.5	ඔවුන් මගේ වර්තමාන රුධිර සීනි අගය ගැන කතා කරයි					
5.6	ඔවුන් මගේ වර්තමාන රුධිර පීඩන අගය ගැන කතා කරයි					
5.7	ඖෂධ භාවිතය ගැන ඔවුන් මට කියාදෙයි.					
5.8	ඔවුන් පෝෂණය හා අහාර පිලිබඳ උපදෙස් ලබා දෙයි					
5.9	ඔවුන් මට නිතිපතා ශාරීරික ව්‍යායාම කිරීමට උපදෙස් දෙයි					
5.10	සංකූලතා (ඇසේ සුද ඇති වීම , පාදවල හිරිවැටීම, නිදන්ගත වකුගඩු රෝගය) පරීක්ෂා කිරීම ගැන ඔවුන් මට උපදෙස් ලබා දෙයි.					
5.11	ඔවුන් මගේ පෞද්ගලික සහ සාම්ප්‍රදයික විශ්වාසයන් සලකා බලයි					
6	ඖෂධ ෆාමසියේ කාර්ය මණ්ඩලය පිලිබඳ ඔබගේ අත්දැකීම්.					
6.1	ඔවුන් මිත්‍රශීලි වන අතර මට සුහදශීලි ලෙස උපකාර කරයි.					
6.2	ඖෂධවේදීන් මට තේරුම් ගත හැකි භාෂාවකින් කතා කරයි					
6.3	ඖෂධවේදීන් මට ප්‍රමාණවත් ලෙස සවන් දෙයි					
6.4	ඖෂධවේදීන් ඖෂධ පාවිච්චි කරන්නේ කෙසේද යන්න පිළිබඳ උපදෙස් ලබා දෙයි					
6.5	ඉන්සියුලින් නිවැරදිව ගබඩා කරන ආකාරය පිලිබඳව ඖෂධවේදීන් මට උපදෙස් දෙයි (ඔබ ඉන්සියුලින්					

	ගන්නේ නම් පමණක් පිළිතුරු දෙන්න)					
6.6	ප්‍රමාදයකින් තොරව මට කවුන්ටරයෙන් බෙහෙත් ලබා ගත හැක					
7	ඖෂධ ලබා ගැනීම පිළිබඳ ඔබේ අත්දැකීම්.					
7.1	මට නිර්දේශ කරන සියලුම ඖෂධ රෝහල් ඔසුසලෙන් ලබා ගත හැක					
7.2	සියලුම ඖෂධ හොඳින් ඇසුරුම් කර ලේබල් කර ඇත					
7.3	ඖෂධ භාවිතා කරන අකාරය පැහැදිලිව සඳහන් කර ඇත					

		දැඩි ලෙස එකඟ වෙමි	**එකඟ වෙමි**	**මධ්‍යස්ථයි**	**එකඟ නොවෙමි**	**දැඩි ලෙස එකඟ නොවෙමි**
8	සායනයේදී ඔබට ලැබෙන අධ්‍යාපනික තොරතුරු සම්බන්ධයෙන් ඔබේ අත්දැකීම්.					
8.1	අධ්‍යාපනික පත්‍රිකා මගේ භාෂාවෙන් මුද්‍රණය කර තිබේ					
8.2	අධ්‍යාපනික බැනර් ප්‍රදර්ශනය කර තිබේ					
8.3	සෞඛ්‍ය අධ්‍යාපන කාර්ය මණ්ඩලය දේශණ පවත්වයි					
8.4	සෞඛ්‍ය අධ්‍යාපන වීඩියෝ ප්‍රදර්ශනය කෙරේ					
9	රසායනාගාර පරීක්ෂණ සිදු කිරීම පිළිබඳ ඔබේ අත්දැකීම් තක්සේරු කරන්න					
9.1	FBS හෝ PPBS පරීක්ෂණ සඳහා පහසුකම් රෝහල තුළ ඇත					
9.2	මගේ නිරාහාර කාලය තුළ FBS කිරීමට මට හැකියාව ඇත					
9.3	රෝහල තුළ HBA1c පරීක්ෂණ සඳහා පහසුකම් ඇත					

Annexure III: Self-administered questionnaire for patient experience on clinic services and knowledge on diabetes mellitus. (Tamil)

நாவலப்பிட்டி மாவட்ட பொது வைத்தியசாலையில் நீரிழிவு நோயை நிர்வகிப்பதற்கான மருத்துவ கிளினிக் சேவைகளை மேம்படுத்துவதற்கான திட்டம் . நோயாளிகளின் சமூக-மக்கள்தொகை பண்புகளை மதிப்பிடுவதற்கான கேள்வித்தாள் அனைத்து கேள்விகளுக்கும் பதிலளிக்கவும்.

பொருத்தமான இடங்களில் (√) குறிக்கவும், பொருத்தமான இடங்களில் பதில்களை எழுதவும்.

	கேள்விகள்	**பதில்கள்**	**பதில்**
01	உங்கள் பாலினம் என்ன?		
		ஆண்	
		பெண்	
02	உங்கள் வயது என்ன?		
	கடந்த பிறந்தநாளின் முழு வருடங்களில் எழுதுங்கள்		
03	உங்கள் திருமண நிலை என்ன?		
		திருமணமே ஆகாதவர்	
		திருமணமானவர்	
		விவாகரத்து / விதவை / பிரிந்தவர்கள்	
04	உங்கள் கல்வி நிலை என்ன?		
		பள்ளிக் கல்வி இல்லை	
		ஆரம்பக் கல்வி (கிரேடு 1 - 5)	
		இடைநிலைக் கல்வி (கிரேடு 6 - 13)	
		மூன்றாம் நிலை (பட்டதாரி அல்லது முதுகலை)	
		மற்றவை (ஆம் என்றால் கீழே குறிப்பிடவும்)	
05	உங்கள் தொழில் என்ன?		
		வேலையில்லாதவர்	
		இல்லத்தரசி	
		அரசு துறையில் பணிபுரிபவர்	
		தனியார் துறையில் பணிபுரிகிறார்	
		சுயதொழில்	
		ஓய்வு பெற்றவர்	
06	உங்கள் குடும்ப உறுப்பினர்களின் நீரிழிவு வரலாற்றைக் குறிப்பிடவும்		
		முதல் நிலை உறவினர்கள் (அப்பா, அம்மா, சகோதரி, சகோதரன்)	

		இரண்டாம் நிலை உறவினர்கள் (பாட்டி & அப்பா, மாமா, அத்தை)	
		முதல் மற்றும் இரண்டாம் பட்டம் இரண்டும்	
		குடும்ப வரலாறு இல்லை	

07	நீங்கள் எவ்வளவு காலமாக நீரிழிவு நோயைக் கண்டறிந்துள்ளீர்கள்?		
	வருடங்கள் மற்றும் மாதங்களின் Rkhuhd எண்ணிக்கையை எழுதுங்கள்		
	கேள்விகள்	**பதில்கள்**	**பதில்**
08	நீங்கள் புகைப்பிடிக்கிறீர்களா?		
		ஆம்	
		இல்லை	
09	உங்கள் வாழ்க்கை நிலையைக் குறிப்பிடவும்.		
		தனியாக வாழ்வது	
		வாழ்க்கைத் துணையுடன் மட்டுமே வாழ்வது	
		குழந்தைகளுடன் மட்டுமே வாழ்வது	
		மனைவி மற்றும் குழந்தைகளுடன் வாழ்வது	
		உறவினர்களுடன் வாழ்வது (மனைவி மற்றும் குழந்தைகள் தவிர)	
		மற்றவை (ஆம் என்றால் கீழே குறிப்பிடவும்)	
10	நீங்கள் யாருடன் கிளினிக்கிற்குச் செல்கிறீர்கள்?		
		தனியாக	
		மனைவியுடன்	
		குழந்தைகளுடன்	
		மற்ற உறவினருடன்	
		மற்றவை (ஆம் என்றால் கீழே குறிப்பிடவும்)	
11	நீங்கள் கிளினிக்கிற்கு வரும் போக்குவரத்து முறை என்ன?		
		நடைபயிற்சி	
		சொந்த வாகனம்	
		வாடகை வாகனம் (மூன்று சக்கர வாகனம், கார்)	
		பேருந்து	
		தொடர்வண்டி	
		மற்றவை (ஆம் என்றால் கீழே குறிப்பிடவும்)	
12	வீட்டிலிருந்து கிளினிக்கிற்கு நீங்கள் செல்லும் தூரத்தை கிலோ மீட்டரில் (கிமீ) குறிப்பிடவும்		
13	உங்கள் மாத வருமானம் என்ன		
		25,000 /= க்கும் குறைவாக	
		ரூ.25,000 /= முதல் ரூ .50,000/= வரை	

		ரூ 50,000/= முதல் ரூ 75,000/= வரை	
		ரூ.75,000 /= முதல் ரூ .100,000/= வரை	
		100,000 / = க்கு மேல்	

14	வீட்டில் பின்வரும் உபகரணங்கள்/வசதிகள் உள்ளதா? (கிடைக்கும் அனைத்து வசதிகளையும் குறிக்கவும்)		
		தொலைக்காட்சி	
		குளிர்சாதன பெட்டி	
		காற்று பிரையர்	
		கைalf;f njhiyNgrp	
		சாதாரண போன்	
		திறன்பேசி	
		இணைய வசதி	
	கேள்விகள்	**பதில்கள்**	**பதில்**
15	உங்கள் தினசரி உணவை எவ்வாறு நிரப்புவது?		
		வீட்டில் சமையல்	
		வெளியில் இருந்து எடுப்பது	
16	உங்கள் வீட்டில் தோட்டம் அமைக்க இடம் உள்ளதா?		
		ஆம்	
		இல்லை	
16.1	மேற்கண்ட கேள்விக்கு 'ஆம்' எனில், எந்த நோக்கங்களுக்காக இடத்தைப் பயன்படுத்துகிறீர்கள்?		
		காய்கறி	
		பழங்கள்	
		பூ	
17	நீங்கள் வழக்கமான உடற்பயிற்சியில் ஈடுபடுகிறீர்களா?		
		ஆம்	
		இல்லை	
17.1	மேலே உள்ள கேள்விக்கு 'ஆம்' எனில், உங்கள் உடற்பயிற்சி முறையைத் தேர்ந்தெடுக்கவும்		
		பாதை அல்லது தரையில் நடப்பது	
		ஜிம்னாசியத்தில் உடல் பயிற்சிகள்	
		வீட்டில் உடல் பயிற்சிகள்	
		மற்றவை (கீழே குறிப்பிடவும்)	

நாவலப்பிட்டி மாவட்ட பொது வைத்தியசாலையில் உள்ள மருத்துவ கிளினிக்கில் நீரிழிவு நோய் குறித்த நோயாளியின் அறிவு மதிப்பீடு .

நீரிழிவு நோயைக் கண்டறிதல், சிகிச்சைகள், சிக்கல்கள் மற்றும் தடுப்பு நடவடிக்கைகள் ஆகியவற்றின் அடிப்படையில் பின்வரும் கேள்விகள் உள்ளன. ஒவ்வொரு கேள்வியையும் கவனமாகப் படித்துவிட்டு, அதற்குரிய பெட்டியில் (√) பதிவிடவும்.

	கேள்விகள்	**ஆம்**	**இல்லை**
01	அதிக சர்க்கரை மற்றும் பிற இனிப்பு உணவுகளை சாப்பிடுவது நீரிழிவு நோய்க்கு ஒரு காரணம்.		
02	நீரிழிவு நோய்க்கான பொதுவான காரணம் உடலில் பயனுள்ள இன்சுலின் இல்லாதது.		
03	சிறுநீரகங்கள் இன்சுலினை உற்பத்தி செய்கின்றன.		
04	நான் நீரிழிவு நோயாளியாக இருந்தால், என் குழந்தைகளுக்கு நீரிழிவு நோய் வருவதற்கான வாய்ப்புகள் அதிகம்.		
05	சர்க்கரை நோயை குணப்படுத்தலாம்.		
06	உண்ணாவிரத இரத்த சர்க்கரை அளவு 210 அதிகமாக		
07	வழக்கமான உடற்பயிற்சி முக்கியம் என்று நினைக்கிறீர்களா?		
08	வழக்கமான உடற்பயிற்சி இன்சுலின் அல்லது பிற நீரிழிவு மருந்துகளின் தேவையை அதிகரிக்கும்.		
09	என் சர்க்கரை நோயை கட்டுப்படுத்த உணவு மற்றும் உடற்பயிற்சியை விட மருந்து முக்கியம்.		
10	நீரிழிவு நோயின் வெட்டுக்கள் மற்றும் சிராய்ப்புகள் மெதுவாக குணமாகும்.		

11	நீரிழிவு நோயாளிகள் கால் நகங்களை வெட்டும்போது கூடுதல் கவனம் செலுத்த வேண்டும்.		
12	நீரிழிவு நோய் என் சிறுநீரகத்தை சேதப்படுத்தும்.		
13	முறையான சிகிச்சை அளித்தால் சிறுநீரக நோய் வராமல் தடுக்கலாம்.		
14	நீரிழிவு நோயால் என் கைகள், விரல்கள் மற்றும் கால்களில் உணர்வை இழக்க நேரிடும்.		
15	அடிக்கடி சிறுநீர் கழித்தல் மற்றும் தாகம் ஆகியவை இரத்தத்தில் சர்க்கரை அளவு அதிகரிப்பதற்கான அறிகுறிகளாகும்.		
16	சர்க்கரை நோயாளிகள் வருடத்திற்கு ஒரு முறையாவது கண் பரிசோதனை செய்ய வேண்டும் என்று நினைக்கிறீர்களா?		
17	நீரிழிவு உங்களை குருடாக்கும் என்று நினைக்கிறீர்களா?		
18	சர்க்கரை நோய்க்கான மருந்துகளை தினமும் எடுத்துக்கொள்வது அவசியம் என்று நினைக்கிறீர்களா?		
19	நீரிழிவு நோய் பாலியல் செயலிழப்பை ஏற்படுத்துகிறது.		
20	என் வீட்டில் குளுக்கோமீட்டர் இருப்பது முக்கியமில்லை.		
21	வயிற்றின் முன்பகுதியில் மட்டுமே இன்சுலின் செலுத்த முடியும்.		
22	முடிந்தவரை, இன்சுலின் ஊசிகளை 2 முதல் 8 டிகிரி செல்சியஸ் வெப்பநிலையில் சாதாரண குளிர்சாதன பெட்டியில் வைக்க வேண்டும்.		
23	உங்களுக்கு நீரிழிவு நோய் இருந்தால், ஒரு நாளைக்கு குறைந்தது 30 நிமிடங்களாவது, வாரத்தில் குறைந்தது 5 நாட்கள் உடற்பயிற்சி செய்வது நல்லது.		
24	நான் நீரிழிவு நோயாளி, நாள் முழுவதும் சுறுசுறுப்பாக இருக்க வேண்டிய அவசியமில்லை.		
25	சர்க்கரை நோய்க்கு எடுத்துக் கொள்ளும் மருந்துகள் சிறுநீரகத்தை சேதப்படுத்தும்.		

மாவட்ட பொது வைத்தியசாலை, நாவலப்பிட்டியில் நீரிழிவு கிளினிக் சேவைகள்

தொடர்பான நோயாளர் அனுபவ ஆய்வு .

நாங்கள் எப்படி இருக்கிறோம் என்பதை எங்களிடம் கூறுங்கள்

எங்கள் கிளினிக்கில் நீங்கள் பெறும் கவனிப்பைப் பற்றி நீங்கள் எப்படி உணருகிறீர்கள் என்பதை அறிய விரும்புகிறோம். இந்தக் கருத்துக்கணிப்பை முடிக்க சில நிமிடங்கள் ஒதுக்கி எங்களிடம் திருப்பி அனுப்பவும். இன்றைய வருகை மற்றும் கடந்த ஆண்டு அல்லது அதற்கு மேற்பட்ட வருகைகள் பற்றிய உங்கள் உணர்வுகளை எங்களுக்குத் தெரிவிக்கவும். பாதுகாப்பான மற்றும் பயனுள்ள பராமரிப்பு எங்கள் இலக்கு.

தொடர்புடைய பெட்டிகளில் (√) வைக்கவும்.

		உறுதியாக ஒப்புக்கொள்கிறேன்	ஒப்புக் கொள்கிறேன்	நடு நிலை	கருத்து வேறுபாடு	முரண்படுகிறோம்
1	கிளினிக்கிற்கான சந்திப்புகள் மற்றும் பரிந்துரைகளைப் பெறுதல்					
1.1	எனது ஒவ்வொரு கிளினிக் வருகையிலும், அடுத்த கிளினிக் தேதியை என்னால் தெளிவாகப் பெற முடியும்					
1.2	நான் வர வேண்டிய தேதியுடன் நேரம் கொடுக்கப்படுகிறது					
	பின்வரும் சேவைகளில் ஏதேனும் ஒன்றை நீங்கள் பரிந்துரைத்திருந்தால், எவ்வளவு எளிதாக அந்த சந்திப்பு கிடைத்தது					
1.3	கண் பராமரிப்புக்கான பரிந்துரை					
1.4	கால் பராமரிப்புக்கான பரிந்துரை					
1.5	ஊட்டச்சத்துக்கான பரிந்துரை அறிவுறுத்துகிறது					
1.6	உடல் செயல்பாடுகளுக்கான பரிந்துரை அறிவுறுத்துகிறது					
1.7	வேறு ஏதேனும் (கிடைத்தால், கீழே குறிப்பிடவும் மற்றும் மதிப்பிடவும்)					
		உறுதியாக ஒப்புக்கொள்கிறேன்	ஒப்புக் கொள்கிறேன்	நடு நிலை	கருத்து வேறுபாடு	முரண்படுகிறோம்
1.8	FBS, HBA1c சோதனைக்கான சந்திப்புகள் உங்களிடம் உள்ளதா	ஆம்				
		இல்லை				

	அவற்றில் ஏதேனும் ஆம் எனில், பின்வருவனவற்றையும் விகிதத்தையும் குறிப்பிடவும்					
1.9	எனது FBS சோதனையில் நான் திருப்தி அடைகிறேன்					
1.10	எனது HBA1c சோதனையில் நான் திருப்தி அடைகிறேன்					
2	கிளினிக் காத்திருக்கும் பகுதியில் உங்கள் அனுபவத்தை மதிப்பிடுங்கள்					
2.1	நான் காத்திருக்கும் இடத்தில் உட்கார போதுமான வசதிகள் உள்ளன					
2.2	போதுமான காற்றோட்ட வசதிகள் செய்யப்பட்டுள்ளன					
2.3	அப்பகுதியில் போதுமான வெளிச்சம் உள்ளது					
2.4	காத்திருக்கும் பகுதியின் தூய்மையில் நான் திருப்தி அடைகிறேன்					
2.5	கிளினிக்கில் நான் எளிதாகப் பின்பற்றக்கூடிய அடையாளங்கள் மற்றும்வழிகாட;Ljy;;கள் எனக்கு வழங்கப்பட்டுள்ளன.					
2.6	சுத்தமான மற்றும் பாதுகாப்பான குடிநீர், காத்திருக்கும் பகுதியில் கிடைக்கும்					
2.7	காத்திருப்பு பகுதிக்கு அருகில் நல்ல கழிப்பறை வசதிகள் உள்ளன.					

		உறுதியாக ஒப்புக்கொள்கிறேன்	ஒப்புக் கொள்கிறேன்	நடு நிலை	கருத்து வேறுபாடு	முரண்படுகிறோம்
3	பதிவு/வரவேற்பு மேசையில் உங்கள் அனுபவத்தை மதிப்பிடுங்கள்					
3.1	ஊழியர்கள் நட்பானவர்கள்					
3.2	பணியாளர்கள் உதவிahf cs;sனர்					
4	செவிலியர்கள் மற்றும் சுகாதார உதவியாளர்களுடனான உங்கள் அனுபவத்தை மதிப்பிடுங்கள்					
4.1	அவர்கள் நட்பு மற்றும் எனக்கு முழு உதவி					
4.2	அவர்கள் எனக்குப் புரியும் மொழியில் பேசுகிறார்கள்					
4.3	அவர்கள் என் கேள்விகளுf;கு பதிலளிக்கிறார்கள்					
4.4	என்னுடைய பிரச்சனை களையும் கவலைகளையும் கேட்க அவர் கள்					

	போதுமான நேரத்தை செல விடுகிறார்கள்					
5	மருத்துவர்கள்/மருத்துவர்களுடனான உங்கள் அனுபவத்தை மதிப்பிடுங்கள்					
5.1	அவர்கள் எனக்கு நட்பாகவும் உதவியாகவும் இருக்கிறார்கள்					
5.2	அவர்கள் எனக்குப் புரியும் மொழியில் பேசுகிறார்கள்					
5.3	என்னுடைய பிரச்சனை களையும் கவலைகளையும் கேட்க அவர் கள் போதுமான நேரத்தை செல விடுகிறார்கள்					
5.4	என்னுடைய கேள்வி களுக்கு அவர்கள் தெளி வாக பதில் சொல்கிறார்கள்					
5.5	அவர்கள் எனது தற் போதைய இரத்த சர்க்கரை மதிப்பைப் பற்றி பேசுகிறார்கள்					
5.6	அவர்கள் எனது தற் போதைய இரத்த அழுத்த மதிப்பைப் பற்றி பேசுகிறார்கள்					
5.7	மருந்து மேலாண்மை பற்றி சொல்கிறார்கள்					
5.8	அவர்கள் பயனு ள்ள உணவு ஆலோசனைகளை வழங்குகிறார்கள்					
		உறுதியாக ஒப்புக்கொ ள்கிறேன்	ஒப்புக் கொள்கிற ேன்	நடு நிலை	கருத்து வேறுபாடு	முரண்படு கிறோம்
5.9	வழக்கமான உடல் செயல் பாடுகளைச் செய்ய அவர்கள் எனக்கு ஆலோசனை வழங்குகிறார்கள்					
5.10	சிக்கல்களுக்கான ஸ்கிரீனிங் பற்றி அவர்கள் என்னிடம் பேசு கிறார்கள் (கண் புரை, கால்களின் உணர்வின்மை, நாள்பட்ட சிறுநீரக நோய்)					
5.11	என்னுடைய தனிப்பட்ட மற்றும் குடும்ப நம்பிக்கைகளை அவர்கள் கருதுகிறார்கள்					
6	மருந்து மருந்தகத்தில் உங்கள் அனுபவத்தை மதிப்பிடுங்கள் மற்றும் ஊழியர்களுடனான தொடர்பு					
6.1	ஊழியர்கள் எனக்கு நட்பாகவும் உதவிகரமாகவும் இருக்கிறார்கள்					
6.2	மருந்தாளுனர்கள் எனக்குப் புரியும் மொழியில் பேசுகிறார்கள்					

6.3	மருந்தாளுநர்கள் நான் சொல்வதை போதுமான அளவு கேட்கிறார்கள்					
6.4	மருந்தாளுநர்கள் மருந்து களை எப்படி எடுத்துக் கொள்வது என்பது குறித்த ஆலோசனைகளை வழங்குகிறார்கள்					
6.5	இன்சுலினை எப்படிச் சரியாகச் சேமிப்பது என்று மருந்தாளுநர்கள் எனக்கு ஆலோசனை கூறுகிறார்கள் (நீங்கள் இன்சுலின் பயன்படுத்தினால் மட்டும் பதிலளிக்கவும்)					
6.6	நான் தாமதமின்றி மருந்துகளை கவுண்டரில் இருந்து எடுத்துக் கொள்ளலாம்					
7	மருந்துகளைப் பெறுவதில் உங்கள் அனுபவத்தை மதிப்பிடுங்கள்					
7.1	நான் பரிந்துரைக்கப்பட்ட அனைத்து மருந்துகளையும் மருத்துவமனை மருந்தகத்தில் இருந்து பெறுகிறேன்					
7.2	அனைத்து மருந்துகளும் நன்கு பேக் செய்யப்பட்டு லேபிளிடப்பட்டுள்ளன					
7.3	விநியோகம் தொடர்பான அனைத்து வழிமுறைகளும் கொடுக்கப்பட்டுள்ளன					
8	கிளினிக் வருகையின் போது நீங்கள் பெறும் தகவல் தொடர்பான உங்கள் அனுபவத்தை மதிப்பிடுங்கள்					
8.1	எனது மொழியில் அச்சிடப்பட்ட பொருட்கள் கிடைக்கின்றன					
8.2	கல்வி பதாகைகள் காட்டப்பட்டுள்ளன					
8.3	சுகாதார கல்வி ஊழியர்கள் "சுகாதார பேச்சுக்களை" வழங்குகிறார்கள்					
8.4	சுகாதார கல்வி வீடியோக்களை பார்க்கும் வசதிகள் உள்ளன					
9	கிளினிக்கிலிருந்து கோரும் ஆய்வக சோதனைகளைச் செய்வதில் உங்கள் அனுபவத்தை மதிப்பிடுங்கள்					
9.1	FBS அல்லது PPBS பரிசோதனைக்கான வசதிகள் மருத்துவமனையில் உள்ளது					

9.2	எனது உண்ணாவிரத காலத்திற்குள் நான் FBS செய்ய முடியும்					
9.3	மருத்துவமனையில் HBA1c பரிசோதனைக்கான வசதிகள் உள்ளன					

Annexure IV: Information sheet (English, Sinhala and Tamil)

Ethics Review Committee

Postgraduate Institute of Medicine

University of Colombo

Information Sheet

Title: Project to Improve Medical Clinic services in managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

[redacted] Medical Administration attached to Post Graduate Institute of Medicine (PGIM), Colombo would like to invite you to take part in my research project titled, to Improve Medical Clinic services in managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

1. Purpose

   This research project will be conducted as a partial fulfillment of my MD in Medical Administration degree following up in PGIM, Colombo. Further, this will improve themedical clinic services at DGH Nawalapitiya and subsequently it may introduce to similar health settings.

2. Voluntary participation

   Your participation in this study is voluntary. You are free to not participate at all or to withdraw from the study at any time despite consenting to take part earlier. There will be no loss of medical care or any other available treatment for your illness or condition to which you are otherwise entitled. If you decide not to participate or withdraw from the study you may do so at any time.

3. Duration, procedures of the study and participant's responsibilities

   This study will be conducted over a period of six months from 1st of June to 30th of November 2022. If you volunteer to participate in this study, we will ask you to do the following:

   a. We will ask you to fill a questionnaire comprising of your socio demographic data, yourexperience at clinic visits, and your knowledge on Diabetes Mellitus.
   b. You will need to read the questions carefully and complete as to best of your knowledge.

4. Potential benefits

   Participation in this study may benefit you/others by improving the Diabetic care services at medical clinic. Eventually, your disease condition will be treated well and your health status will be improved.

5. Risks, hazards and discomforts

   There are no risks, difficulties arising due to participation in this study other than thefilling of the questionnaire during your routine clinic visit.

6. Reimbursements

   You will not be paid for participating in this study.

7. Termination of study participation

   You may stop participating in this study at any time (with no penalty or effect on medical care or loss of benefits). Please notify the investigator as soon as you decide to withdraw your consent.

8. Confidentiality

   Confidentiality of all records is guaranteed and no information by which you can beidentified will be released or published. These data will never be used in such a way that you could be identified in any way in any public presentation or publication without your express permission.

9. Clarifications

   If you have questions about any of the procedures or information please feel free to ask anyof the persons listed

below.

If you have any clarification, concerns, or complaints related to this research project, you maycontact the Ethics Review Committee, Postgraduate Institute of Medicine, University of Colombo.

ERC Office Address: Ethics Review Committee, Postgraduate Institute of Medicine, Universityof Colombo, 160, Prof. Nandadasa Kodagoda Mawatha, Colombo 07.
Telephone: 0112-689266 (between 9am and 4pm on working days)Email:
erc@pgim.cmb.ac.lk

ආචාර ධර්ම සමාලෝචන කමිටුව
වෛද්‍ය පශ්චාත් උපාධි ආයතනය
කොළඹ විශ්වවිද්‍යාලය

තොරතුරු පත්‍රිකාව

නාවලපිටිය දිස්ත්‍රික් මහ රෝහලේ දියවැඩියා රෝගය පාලනය කිරීමේ වෛද්‍ය සායන සේවා වැඩිදියුණු කිරීමේ වාහපෘතිය .

මම, කොළඹ , වෛද්‍ය පශ්චාත් උපාධි ආයතනයට (PGIM) අනුබද්ධව වෛද්‍ය පරිපාලන ශාස්ත්‍රපති පශ්චාත් උපාධිය හදාරන (රෙජිස්ට්‍රාර්), වෛද්‍ය ඩබ්.ජී.ඒ.ඩී. සෙනෙවිරත්න වෙමි. නාවලපිටිය දිස්ත්‍රික් මහ රෝහලේ දියවැඩියා රෝගය පාලනය කිරීමේ වෛද්‍ය සායන සේවා වැඩිදියුණු කිරීම සඳහා වන මගේ පර්යේෂණ වාහපෘතියට සහභාගී වන ලෙස ඔබට ආරාධනා කිරීමට කැමැත්තෙමි.

1. අරමුණ

මෙම පරීක්ෂණ අධ්‍යයනයේ අරමුණ වන්නේ, නාවලපිටිය දිස්ත්‍රික් මහ රෝහලේ දියවැඩියා රෝගය පාලනය කිරීමේ වෛද්‍ය සායන සේවා වැඩිදියුණු කිරීමේ වාහපෘතියක් සඳහා ආකෘතියක් සකස් කිරීම සහ ක්‍රියාත්මක කිරීමයි. කොළඹ විශ්වවිද්‍යාලයේ, වෛද්‍ය පශ්චාත් උපාධි ආයතනයේ මගේ වෛද්‍ය පරිපාලය පිළිබඳ ශාස්ත්‍රපති උපාධිය සම්පූර්ණ කිරීම සඳහා මෙම පරීක්ෂණ වාහපෘතිය ක්‍රියාත්මක කෙරේ.

2. ස්වේච්ඡා සහභාගීත්වය

මෙම අධ්‍යයනයට ඔබගේ සහභාගීත්වය ස්වේච්ඡාවෙන් සිදු වේ. කලින් සහභාගී වීමට කැමැත්ත පළ කර තිබියදීත්, කිසියම්හේතු සහභාගී නොවීමට හෝ කිසිදු අවස්ථාවක අධ්‍යයනයෙන් ඉවත් වීමට ඔබට නිදහස ඇත. ඔබගේ රෝගී තත්ත්වය හෝ තත්ත්වයන් සඳහා නිතිවන වෛද්‍ය ප්‍රතිකාර හෝ වෙනත් සහනයක අහිමිවීමක් සිදු නොවේ. ඔබ අධ්‍යයනයට සහභාගී නොවීමට හෝ ඉවත් වීමට තීරණය කරන්නේ නම්, ඔබට කිසිදු අවස්ථාවක එය කළ හැක.

3. කාලසීමාව, අධ්‍යයනයේ ක්‍රියා පටිපාටි සහ සහභාගිවන්නන්ගේ වගකීම

ජුනි 1 සිට නොවැම්බර් 30 වන තෙක් කාලයක් පුරා සිදු නෙරේ. ඔබ මෙම අධ්‍යයනයට සහභාගී වීමට ස්වේච්ඡාවෙන් ඉදිරිපත් වන්නේ නම්, පහත සඳහන් කරුණු අවධානයට ගන්නා ලෙස අපි ඔබෙන් ඉල්ලා සිටිමු.

a. ඔබගේ සම්පත ජනවිකාස දත්ත, සායන වාර්තා වල ඔබගේ අත්දැකීම් සහ දියවැඩියා රෝගය පිළිබඳ ඔබේ දැනුම ඇතුළත් ප්‍රශ්නාවලියක් පුරවන ලෙස අපි ඔබෙන් ඉල්ලා සිටිමු.

b. ඔබ හොඳින් දන්නා පරිදි ප්‍රශ්න හොඳින් කියවා සම්පූර්ණ කළ යුතුය.

4. ලැබියහැකි ප්‍රතිලාභ

මෙම අධ්‍යයනයට ඔබගේ දායකත්වය ලබාදීම තුලින්, ඔබට හා අනෙක් අයට ලබාදෙන දියවැඩියා සායන පහසුකම් වැඩි දියුණු කළ හැක. අවසානයේදී, ඔබේ රෝගී තත්ත්වයට හොඳින් ප්‍රතිකාර කළ හැකි අතර ඔබේ සෞඛ්‍ය තත්වය වැඩිදියුණු විනු ඇත.

5. අවදානම්, අන්තරායන් සහ අපහසුතාවයන්

ඔබගේ සුපුරුදු සායනික චාරය අතරතුර, මෙම ප්‍රශ්නාවලී සම්පූර්ණ කිරීමට අමතර කාලයක් ගතවීම හැර ඔබට මෙම අධ්‍යයනයට සහභාගී වීම නිසා ඇතිවන වෙනත් අවදානම්, දුෂ්කරතා නොමැත.

6. මුල්‍ය ප්‍රතිපූර්ණය

මෙම අධ්‍යයනයට සහභාගී වීම සඳහා ඔබට කිසිදු ගෙවීමක් කරනු නොලැබේ.

7. අධ්‍යයනයට සහභාගිවීම අවසන් කිරීම

ඔබට ඕනෑම වේලාවක මෙම අධ්‍යයනයට සහභාගී වීම නැවැත්විය හැකිය (වෛද්‍ය ප්‍රතිකාර සඳහා බලපෑමක් නොමැතිව හෝ ප්‍රතිලාභ අහිමි වීමකින් තොරව). ඔබ ඔබේ කැමැත්ත ඉල්ලා අස්කර ගැනීමට තීරණය කළ විගස විමර්ශකයාට දන්වන්න.

8. රහස්‍යභාවය

සියලුම වාර්තාවල රහස්‍යභාවය සහතික කෙරෙන අතර ඔබව හඳුනාගත හැකි කිසිදු තොරතුරක් මුද්‍රා හැරීම හෝ ප්‍රකාශ කිරීම සිදු නොකෙරේ. ඔබේ ප්‍රකාශිත අවසරයකින් තොරව ඕනෑම වාර්තාවක් ඉදිරිපත් කිරීමක හෝ ප්‍රකාශනයකදී ඔබව කිසිදු ආකාරයකින් හඳුනා ගත හැකි ආකාරයෙන් මෙම දත්ත කිසිවිටෙක භාවිතා නොකෙරේ.

9. පැහැදිලි කිරීම

ඔබට කිසියම් ක්‍රියා පටිපාටියක් හෝ තොරතුරක් පිළිබඳව ප්‍රශ්න ඇත්නම් කරුණාකර පහත සඳහන් කර ඇති ඕනෑම අයෙකුගෙන් විමසීමට කටයුතු කරන්න.

[redacted]

ඔබට මෙම පර්යේෂණ ව්‍යාපෘතියට අදාළ කිසියම් පැහැදිලි කිරීමක්, කරුණුදැක්වීමක් හෝ පැමිණිලි තිබේ නම්, ඔබට කොළඹ විශ්වවිද්‍යාලයේ වෛද්‍ය පශ්චාත් උපාධි ආයතනයේ ආචාර ධර්ම සමාලෝචන කමිටුව හා සම්බන්ධ විය හැක.

ERC කාර්යාල ලිපිනය: ආචාර ධර්ම සමාලෝචන කමිටුව, වෛද්‍ය පශ්චාත් උපාධි ආයතනය, කොළඹ විශ්වවිද්‍යාලය, 160, මහාචාර්ය නන්දදාස කෝදාගොඩ මාවත, කොළඹ 07.

දුරකථන: 0112-689266 (වැඩකරන දිනවල පෙරවරු 9 සිට සවස 4 දක්වා)

විද්‍යුත් තැපැල: erc@pgim.cmb.ac.lk

நெறிமுறைகள் மறுஆய்வுக் குழு
முதுகலை மருத்துவ நிறுவனம்
கொழும்பு பல்கலைக்கழகம்
தகவல் தாள்

தலைப்பு: நாவலப்பிட்டி மாவட்ட பொது வைத்தியசாலையில் நீரிழிவு நோயை நிர்வகிப்பதற்கான மருத்துவ இளினிக் சேவைகளை மேம்படுத்துவதற்கான திட்டம் .

நான், டாக்டர் கொழும்பில் உள்ள முதுகலைப் பட்டதாரி மருத்துவ நிறுவனத்தில் (PGIM) இணைந்த மருத்துவ நிர்வாகப் பதிவாளர் ஒய்.ஜி.ஏ.சி.செனவிரத்ன , நாவலப்பிட்டி மாவட்ட பொது வைத்தியசாலையில் நீரிழிவு நோயை நிர்வகிப்பதற்கான மருத்துவ சிகிச்சைச் சேவைகளை மேம்படுத்துவதற்கான எனது ஆராய்ச்சித் திட்டத்தில் பங்கேற்க உங்களை அழைக்க விரும்புகின்றேன்..

1. **நோக்கம்**

   கொழும்பில் உள்ள PGIMஐத் தொடர்ந்து மருத்துவ நிர்வாகப் பட்டப்படிப்பில் எனது MD பட்டத்தின் ஒரு பகுதியான நிறைவாக இந்த ஆராய்ச்சித் திட்டம் நடத்தப்படும். மேலும், இது DGH நாவலப்பிட்டியில் உள்ள மருத்துவ இளினிக் சேவைகளை மேம்படுத்தும், அதன்பின் இது போன்ற சுகாதார அமைப்புகளை அறிமுகப்படுத்தலாம்.

2. **தன்னார்வ பங்கேற்பு**

   இந்த ஆய்வில் நீங்கள் பங்கேற்பது தன்னார்வமானது. முன்னதாக பங்கேற்க சம்மதித்தாலும், எந்த நேரத்திலும் பங்கேற்காமல் இருக்கவோ அல்லது படிப்பில் இருந்து விலகவோ உங்களுக்கு சுதந்திரம் உள்ளது. உங்கள் நோய் அல்லது நிலைக்கு நீங்கள் தகுதியுடைய மருத்துவ கவனிப்பு அல்லது கிடைக்கக்கூடிய வேறு எந்த சிகிச்சையும் இருக்காது. படிப்பில் பங்கேற்க வேண்டாம் அல்லது விலகுவது என நீங்கள் முடிவு செய்தால், எந்த நேரத்திலும் அவ்வாறு செய்யலாம்.

3. **காலம், ஆய்வின் நடைமுறைகள் மற்றும் பங்கேற்பாளரின் பொறுப்புகள்**

ஜூன் 1 முதல் நவம்பர் 30 , 2022 வரை ஆறு மாத காலத்திற்கு நடத்தப்படும் . இந்த ஆய்வில் பங்கேற்க நீங்கள் முன்வந்தால், பின்வருவனவற்றைச் செய்யும்படி உங்களைக் கேட்போம்:

a. உங்கள் சமூக மக்கள்தொகை தரவு, கிளினிக் வருகைகளில் உங்கள் அனுபவம் மற்றும் நீரிழிவு நோய் குறித்த உங்கள் அறிவு ஆகியவற்றை உள்ளடக்கிய கேள்வித்தாளை நிரப்புமாறு கேட்டுக்கொள்வோம்.
b. உங்கள் அறிவுக்கு எட்டியவாறு கேள்விகளை கவனமாகவும் முழுமையாகவும் படிக்க வேண்டும்.

4. **சாத்தியமான நன்மைகள்**

இந்த ஆய்வில் பங்கேற்பதன் மூலம் மருத்துவக் கிளினிக்கில் நீரிழிவு பராமரிப்பு சேவைகளை மேம்படுத்துவதன் மூலம் நீங்கள்/மற்றவர்கள் பயனடையலாம். இறுதியில், உங்கள் நோய் நிலை நன்கு சிகிச்சை அளிக்கப்பட்டு, உங்கள் உடல்நிலை மேம்படும்.

5. அபாயங்கள், ஆபத்துகள் மற்றும் அசௌகரியங்கள்

தவிர இந்த ஆய்வில் பங்கேற்பதால் ஏற்படும் அபாயங்கள், சிரமங்கள் எதுவும் இல்லை

உங்கள் வழக்கமான கிளினிக் வருகையின் போது கேள்வித்தாளை நிரப்புதல்.

6. **திருப்பிச் செலுத்துதல்**

இந்த ஆய்வில் பங்கேற்பதற்காக உங்களுக்கு ஊதியம் வழங்கப்படாது.

7. படிப்பில் பங்கேற்பதை நிறுத்துதல்

நீங்கள் எந்த நேரத்திலும் இந்த ஆய்வில் பங்கேற்பதை நிறுத்தலாம் (அபராதம் அல்லது மருத்துவ கவனிப்பு அல்லது பலன்கள் இழப்பு). உங்கள் ஒப்புதலை திரும்பப் பெற முடிவு செய்தவுடன், விசாரணையாளரிடம் தெரிவிக்கவும்.

8. இரகசியத்தன்மை

அனைத்து பதிவுகளின் இரகசியத்தன்மை உத்தரவாதம் மற்றும் நீங்கள் அடையாளம் காணக்கூடிய எந்த தகவலும் வெளியிடப்படாது அல்லது வெளியிடப்படாது. உங்கள் வெளிப்படையான அனுமதியின்றி எந்தவொரு பொது விளக்கக்காட்சி அல்லது வெளியீட்டிலும் நீங்கள் எந்த வகையிலும் அடையாளம் காணக்கூடிய வகையில் இந்தத் தரவு ஒருபோதும் பயன்படுத்தப்படாது.

9. தெளிவுபடுத்தல்கள்

ஏதேனும் நடைமுறைகள் அல்லது தகவல்களைப் பற்றி உங்களுக்கு கேள்விகள் இருந்தால், கீழே பட்டியலிடப்பட்டுள்ள நபர்களிடம் தயங்காமல் கேட்கவும்.

[redacted]

இந்த ஆராய்ச்சித் திட்டம் தொடர்பான ஏதேனும் தெளிவுபடுத்தல், கவலைகள் அல்லது புகார்கள் இருந்தால், நீங்கள் கொழும்பு பல்கலைக்கழகத்தின் மருத்துவ முதுகலை நிறுவனம், நெறிமுறைகள் மறுஆய்வுக் குழுவைத் தொடர்பு கொள்ளலாம்.

ERC அலுவலக முகவரி: நெறிமுறைகள் மறுஆய்வுக் குழு, முதுகலை மருத்துவ நிறுவனம், கொழும்பு பல்கலைக்கழகம், 160, பேராசிரியர் நந்ததாச கோதாகொட மாவத்தை, கொழும்பு 07.

தொலைபேசி: 0112-689266 (வேலை நாட்களில் காலை 9 மணி முதல் மாலை 4 மணி வரை)

மின்னஞ்சல்: erc@pgim.cmb.ac.lk

Annexure V: Consent forms (English, Sinhala, and Tamil)

Ethics Review Committee

Postgraduate Institute of Medicine
University of Colombo

Consent Form

Title of the research:

Project to Improve Medical Clinic services in managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

To be completed by the participant (Please tick the appropriate box)

	Yes	No
1. Have you read the information sheet? (Please keep a copy for yourself)	☐	☐
2. Have you had an opportunity to discuss this study and ask any questions?	☐	☐
3. Have you had satisfactory answers to all your questions?	☐	☐
4. Have you received enough information about the study?	☐	☐
5. Do you understand that you are free to withdraw from the study at any time, without having to give a reason and without affecting your future medical care?	☐	☐
6. Sections of your medical notes, including those held by the investigators relating to your participation in this study may be examined by other research assistants. All personal details will be treated as strictly Confidential. Do you give your permission for these individuals to have access to your records?	☐	☐
7. Have you had sufficient time to come to your decision?	☐	☐
8. Do you agree to take part in this study?	☐	☐

Who explained you about the study: .....

Signature of the participant: t..... Date.....

Full name: .....

To be completed by the investigator/ person obtaining consent

I have explained the study to the above participant and he/ she has indicated her willingness to take part in this study.

Signature of Investigator: ..... Date: .....

Full name: .....

ආචාර ධර්ම සමාලෝචන කමිටුව

වෛද්‍ය පශ්චාත් උපාධි ආයතනය

කොළඹ විශ්වවිද්‍යාලය

කැමැත්ත ප්‍රකාශ කිරීමේ පෝරමය

පර්යේෂණයේ මාතෘකාව:

නාවලපිටිය දිස්ත්‍රික් මහ රෝහලේ දියවැඩියා රෝගය පාලනය කිරීමේ වෛද්‍ය සායන සේවා වැඩිදියුණු කිරීමේ ව්‍යාපෘතිය .

සහභාගිවන්නා විසින් සම්පූර්ණ කිරීමට (කරුණාකර සුදුසු කොටුව සලකුණු කරන්න)

	ඔව්	නැත
1. ඔබ තොරතුරු පත්‍රිකාව කියවා තිබේද? (කරුණාකර ඔබ වෙනුවෙන් පිටපතක් තබා ගන්න)	☐	☐
2. මෙම අධ්‍යයනය ගැන සාකච්ඡා කිරීමට සහ ප්‍රශ්න ඇසීමට ඔබට අවස්ථාවක් ලැබී තිබේද?	☐	☐
3. ඔබගේ සියලුම ප්‍රශ්න වලට සතුටුදායක පිළිතුරු ඔබ සතුව තිබේද?	☐	☐
4. අධ්‍යයනය පිළිබඳ ප්‍රමාණවත් තොරතුරු ඔබට ලැබී තිබේද?	☐	☐
5. හේතුවක් දැක්වීමකින් තොරව සහ ඔබේ අනාගත වෛද්‍ය ප්‍රතිකාරවලට බලපෑම් නොකර ඕනෑම වේලාවක අධ්‍යයනයෙන් ඉවත් වීමට ඔබට නිදහස ඇති බව ඔබට වැටහෙනවාද?	☐	☐
6. මෙම අධ්‍යයනයට සහභාගිවන ඔබේ වෛද්‍ය සටහන් ඇතුළුව වෙනත් වාර්තා විමර්ශකයින් හෝ පර්යේෂණ සහයකයින් විසින් පරීක්ෂා කළ හැක. සියලුම පුද්ගලික තොරතුරු දැඩි ලෙස රහසිගත ලෙස සලකනු ලැබේ. මෙම පුද්ගලයින්ට ඔබගේ වාර්තා වෙත ප්‍රවේශ වීමට ඔබ ඔබගේ අවසරය ලබා දෙනවාද?	☐	☐
7. ඔබේ තීරණයට පැමිණීමට ඔබට ප්‍රමාණවත් කාලයක් තිබේද?	☐	☐
8. මෙම අධ්‍යයනයට සහභාගී වීමට ඔබ එකඟද?	☐	☐

අධ්‍යයනය ගැන ඔබට පැහැදිලි කළ පුද්ගලයා : ....

සහභාගිවන්නාගේ අත්සන : ....

සම්පූර්ණ නම: ....

කැමැත්ත ලබා ගැනීමෙන් පසු විමර්ශකයා විසින් සම්පූර්ණ කළ යුතුය

මම ඉහත සඳහන් අයට අධ්‍යයනය පිළිබඳව පැහැදිලි කළ අතර ඔහු/ඇය මෙම අධ්‍යයනයට සහභාගී වීමට කැමැත්ත දක්වා ඇත.

විමර්ශකයාගේ අත්සන : ....

සම්පූර්ණ නම: ....

நெறிமுறைகள் மறுஆய்வுக் குழு
முதுகலை மருத்துவ நிறுவனம்
கொழும்பு பல்கலைக்கழகம்
ஒப்புதல் படிவம்

ஆய்வின் தலைப்பு:

நாவலப்பிட்டி மாவட்ட பொது வைத்தியசாலையில் நீரிழிவு நோயை நிர்வகிப்பதற்கான மருத்துவ கிளினிக் சேவைகளை மேம்படுத்துவதற்கான இட்டம்.

பங்கேற்பாளரால் முடிக்கப்பட வேண்டும் (தயவுசெய்து பொருத்தமான பெட்டியைத் டிக் செய்யவும்)

	ஆம்	இல்லை
1. தகவல் தாளைப் படித்தீர்களா? (தயவுசெய்து உங்களுக்காக ஒரு நகலை வைத்திருங்கள்)	☐	☐
2. இந்த ஆய்வைப் பற்றி விவாதிக்க மற்றும் ஏதேனும் கேள்விகளைக் கேட்க உங்களுக்கு வாய்ப்பு கிடைத்ததா?	☐	☐
3. உங்கள் எல்லா கேள்விகளுக்கும் திருப்திகரமான பதில்கள் கிடைத்ததா?	☐	☐
4. ஆய்வைப் பற்றிய போதுமான தகவல்களைப் பெற்றுள்ளீர்களா?	☐	☐
5. எந்த நேரத்திலும், எந்தக் காரணமும் கூறாமல், உங்கள் எதிர்கால மருத்துவச் சேவையைப் பாதிக்காமல், படிப்பிலிருந்து விலகிக் கொள்ள நீங்கள் சுதந்திரமாக இருக்கிறீர்கள் என்பது உங்களுக்குப் புரிகிறதா?	☐	☐
6. இந்த ஆய்வில் நீங்கள் பங்கேற்பது தொடர்பான புலனாய்வாளர்களிடம் உள்ள உங்கள் மருத்துவக் குறிப்புகளின் பிரிவுகள் மற்ற ஆராய்ச்சி உதவியாளர்களால் ஆராயப்படலாம். அனைத்து தனிப்பட்ட விவரங்களும் கண்டிப்பாக ரகசியமாக கருதப்படும். இந்த நபர்கள் உங்கள் பதிவுகளை அணுகுவதற்கு உங்கள் அனுமதியை வழங்குகிறீர்களா?	☐	☐
7. உங்கள் முடிவுக்கு வர உங்களுக்கு போதுமான நேரம் இருக்கிறதா?	☐	☐
8. இந்த ஆய்வில் பங்கேற்க ஒப்புக்கொள்கிறீர்களா?	☐	☐

ஆய்வைப் பற்றி உங்களுக்கு விளக்கியவர்:

.....

பங்கேற்பாளரின் கையொப்பம்: t.....

தேதி..... .

முழு பெயர்: .....

புலனாய்வாளர் / நபர் ஒப்புதல் பெறுவதன் மூலம் முடிக்க வேண்டும்

மேற்படி பங்கேற்பாளருக்கு நான் ஆய்வை விளக்கியுள்ளேன், மேலும் அவர்/அவள் இந்த ஆய்'வில் பங்கேற்க விருப்பம் தெரிவித்திருக்கிறார்.

புலனாய்வாளரின் கையொப்பம்: .....

நாள் : ..... .

முழு பெயர்: .....

Annexure VI: Key Informant Interview (KII) guide

A Project to Improve Medical Clinic Services in Managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

KEY INFORMANT INTERVIEW GUIDE

Category	Date (dd/mm/yy)	Interview number

To be completed by the interviewer

1. Introduction

Diabetes Mellitus is a one of the major NCDs which need regular medical care and patient self-management to prevent acute and long term complications. Diabetic care is complex and multifaceted, requires many interventions beyond glycemic control involving physician, patient, family, and society. Healthcare workers play key role in providing the optimum care; knowledge on the disease itself and its management, attitudes towards to achieve maximum benefits to the patients, and their practices to fulfill the expected standard care are the important components in a clinic setup. Information that obtained from you will facilitate to establish a standard clinic facility in DGH, Nawlapiyiya to serve the needy community.

You have been identified as a key informant and your support in answering some questions related to the subject is very much appreciated.

READ THE INFORMED CONSENT FORM TO THE RESPONDENT(S) AND REQUEST PERMISSION TO RECORD THE KII. Permission Granted ☐

1.1 What is your current position? (WRITE THE RESPONSE BELOW)

1.2 What is your current place of work or unit? (WRITE THE RESPONSE BELOW)

1.3 What is your engagement with the diabetic/medical/endocrine clinic? How long? (READ THE RESPONSES BELOW AND CHECK ALL THAT APPLY)

☐	a. Consultant	☐ yrs.
☐	b. Supervisor	☐ yrs.
☐	c. Co-worker	☐ yrs.
☐	d. Assistant	☐ yrs.
☐	e. Other (Specify……)	☐ yrs.

2. Diabetes mellitus as a chronic NCD

2.1 In your opinion what are the major risk factors for Diabetes Mellitus (DM)?

2.2 What are the main type of DM?

2.3 What are the main complications of DM?

2.4 What is the current prevalence of the disease and the complications in Sri Lanka?

3. Clinical Management guidelines

3.1 Are you aware/knowledgeable on newest DM management guidelines and protocols?

3.2 In your opinion, how much important using diagnostic, treatment, and complication managing guidelines for clinic patients?

3.3 Are you using diagnostic, treatment, and complication management guidelines at present in the clinic?

4. Clinic infrastructure and facilities

4.1 What is your opinion regarding patient waiting area, consultation rooms, and drug dispensing areas?

4.2 What do you feel about the facilities provided at patient waiting area?

4.3 What do you feel about the arrangement of consultation rooms?

5. Clinic Process

5.1 In your opinion what do you feel the way clinic is conducting?

5.2 What do you think regarding patient registration, giving appointments, consultations, performing investigation, and dispensing drugs?

5.3 What do you think regarding patient flow during clinic visits?

5.4 What do you think about the clinical records given to the patients?

5.5 Have you anything more to say on overall clinic process?

6. Investigation facilities

6.1 In your opinion what are the investigation facilities available for the clinic patients and how they get it done?

6.2 What are the problems you have encountered in investigation procedures?

6.3 If necessary any improvement, what is your opinion?

7. Health education and counselling

7.1 In your opinion what are the modes of health education and counselling on DM available in the clinic?

7.2 What do you feel about the staff, facilities, and methods using for those activities?

7.3 What is your opinion regarding counselling on insulin injection, diets, exercise, smoking and alcohol, foot care, and eye care?

8. Referral methods

8.1 What is the current practice of referring patients for screening of retinopathy, nephropathy, peripheral arterial disease (PAD), and neuropathy?

8.2 How would you refer patients with foot ulcers for surgical opinion?

8.3 If need any improvements, what would you suggest?

9. Drug availability and dispensing

9.1 What is your opinion regarding the drug availability in the dispensary and it's continues supply?

9.2 What do you think about the current practice of drug dispensing in the counters?

9.3 Do the pharmacists able to give necessary information to the patients?

9.4 Do you think any improvement necessary for the dispensing system?

10. Patient behaviors and concerns

10.1 Have you any idea regarding patient's perspectives and concerns regarding overall clinic services?

11. Summary

11.1 Could you summarize the key problems in the care services in the clinic for diabetic patients and your most appropriate recommendations?

Thank you

Annexure VII: Focus Group Discussion guide

A Project to Improve Medical Clinic Services in Managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

FOCUS GROUP DISCUSSION GUIDE

Category	Location	Date (dd/mm/yy)	FGD number

To be completed by the moderator

Introduction and Consent

Diabetes Mellitus is a one of the major NCDs which need regular medical care and patient self-management to prevent acute and long term complications. Diabetic care is complex and multifaceted, requires many interventions beyond glycemic control involving physician, patient, family, and society. Healthcare workers play key role in providing the optimum care; knowledge on the disease itself and its management, attitudes towards to achieve maximum benefits to the patients, and their practices to fulfill the expected standard care are the important components in a clinic setup. Information that obtained from you will facilitate to establish a standard clinic facility in DGH, Nawalapitiya to serve the needy community.

- Participation in this discussion is free and there is no obligation to respond, you can stop at any point.
- No personal data will be shared with others and the information provided will be analyzed anonymously and used confidentially.
- Your views are valuable and important and will contribute to improve the diabetic clinic facilities in DGH, Nawalapitiya. Our group discussion will last around 45-60 minutes.

READ THE INFORMED CONSENT FORM TO THE RESPONDENTS AND REQUEST PERMISSION TO RECORD THE FGD. Permission Granted ☐

May I begin now?

Question Guide

1. Clinic infrastructure and facilities

I. What is your opinion regarding patient waiting area, consultation rooms, and drug dispensing areas?

II. What do you feel about the facilities provided at patient waiting area?

III. What do you feel about the arrangement of consultation rooms?

2. Clinical Management guidelines

I. Are you aware/knowledgeable on newest DM management guidelines and protocols?

II. In your opinion, how much important using diagnostic, treatment, and complication managing guidelines for clinic patients?

III. Are you using diagnostic, treatment, and complication management guidelines at present in the clinic?

IV. Did the clinical guideline protocols and algorithms display in the clinic?

3. Clinic process

I. In your opinion what do you feel the way clinic is conducting?
II. What do you think regarding patient registration, giving appointments, consultations, performing investigation, and dispensing drugs?
III. What do you think regarding patient flow during clinic visits?
IV. What do you think about the clinical records given to the patients?
V. Have you anything more to say on overall clinic process?

4. Investigation facilities

I. In your opinion what are the investigation facilities available for the clinic patients and how they get it done?
II. What are the problems you have encountered in investigation procedures?
III. If necessary any improvement, what is your opinion?

5. Health education and counselling

I. In your opinion what are the modes of health education and counselling on DM available in the clinic?
II. What do you feel about the staff, facilities, and methods using for those activities?
III. What is your opinion regarding counselling on insulin injection, diets, exercise, smoking and alcohol, foot care, and eye care?

6. Referral methods

I. What is the current practice of referring patients for screening of retinopathy, nephropathy, and neuropathy?
II. How would you refer patients with foot ulcers for surgical opinion?
III. If need any improvements, what would you suggest?

7. Drug availability and dispensing

I. What is your opinion regarding the drug availability in the dispensary and continues supply?
II. What do you think about the current practice of drug dispensing in the counters?
III. Do the pharmacists able to give necessary information to the patients?
IV. Do you think any improvement necessary for the dispensing system?

8. Patient behaviors and concerns

I. Have you any idea regarding patient's perspectives and concerns regarding overall clinic services?

Annexure VIII: Check list for facility survey

1. **Basic amenities**

Are following facilities/ services available for the medical / endocrinology / clinic patients?

	Availability/Number	Remarks
Seating facilities in waiting area		
Public addressing equipment		
Video/LCD screens to watch health educational programs		
Drinking water source		
Ventilation equipment (Fans/Air conditioners)		
Lighting condition • Waiting area • Consultation area		
Sanitation facilities		
Room with auditory and visual privacy for patient consultations		

2. **Management guidelines**

Are following guidelines available/displayed in the clinic?

	Availability/Number	Remarks
Guideline for diabetic management • Diagnostic protocols • Drug management protocols		
Guideline for management of cardiovascular risk factors		
Guideline for nutrition management		
Guideline for physical activity management		

3. **Human resource**
Are following health staff available in the clinic?

	Number available	Number expected to be available
Consultants/specialists		
Medical officers		
Nurses		
Health educators		
Counselors		
Health assistants		

Mention the training details of the staff on Diabetes management.

	Regularly trained	Trained one time only	Not trained	Remarks
Medical Officers				
Nurses				
Health educators				
Counselors				
Health assistants				
Others (Specify)				

4. **Basic equipment**

Are following equipment available? Mention their functionality.

Equipment	Number of functional devices available	Number of devices out of service/ awaiting repair	Remarks
Blood Pressure Measuring Devices (BPMD)	Total	Total	
Give the breakdown	Mercury BPMDs: Aneroid BPMDs: Automatic BPMDs:	Mercury BPMDs: Aneroid BPMDs: Automatic BPMDs:	
Glucometers			
Adult weighing scale			
Measuring tape			
Height board/ Stadiometer			
Ophthalmoscope			

5. **Investigation facilities.**

Are following investigation facilities available for clinic patients?

	Availability within the hospital	Remarks
Blood Sugar		
Urine protein		
HBA1c		
Serum Creatinine		
Others (Please specify)		

6. **Health education and counselling services available at the clinic**

Are following services available?

	Availability (Yes/No)	Remarks
Patient counselling for diabetes self-management		
Patient counselling and education on smoking, diet, alcohol and/or physical activity		
Counselling and education of family members on smoking, diet, alcohol and/or physical activity		
Patient education for self-administration of insulin		
Counselling and education of patients on foot care and eye care		

7. **Referrals for other specialty**

Are following referral facilities for screening of complications available?

	Same day referrals (Yes/No)	Appointment in another day	Remarks
Eye referral			
Cardiology referral			
Surgical referral			
Others (Please specify)			

Annexure IX: Foot care knowledge assessment questionnaire

Foot care knowledge assessment questionnaire for diabetic patients attending the medical clinic at DGH Nawalapitiya.

	Question	Yes	No
01	Diabetic patients should take care of their feet because minor accidents that have happened to their feet are not noticed		
02	Diabetic patients need to take extra care of their feet as wounds and infections do not heal easily		
03	Feet of diabetic patients should be checked regularly		
04	Diabetic patients should wash their feet with warm water at night		
05	Diabetic patients should check the temperature of the water before washing their feet with hot water		
06	Diabetic feet should be thoroughly wiped after regular washing to remove moisture		
07	The toenails of diabetic patients should be cut straight		
08	Diabetic patients should check the inside of the shoes before putting them on		
09	Diabetics should always wear shoes when walking		
10	Diabetics should not clean toenails with sharp instruments		

දියවැඩියා රෝගීන්ගේ පාද රැකවරණය පිළිබඳ දැනුම පරීක්ෂා කිරීමේ ප්‍රශ්නාවලිය.

	ප්‍රශ්නය	ඔව්	නැත
01	දියවැඩියා රෝගීන්ට පාද වලට සිදුවන සුළු අනතුරු නොදැන නිසා පාද ගැන සැලකිලිමත් විය යුතුය.		
02	දියවැඩියා රෝගීන්ගේ තුවාල සහ ආසාදන පහසුවෙන් සුව නොවන නිසා පාද ගැන සැලකිලිමත් විය යුතුය.		
03	දියවැඩියා රෝගීන්ගේ පාද නිතිපතා පරීක්ෂා කළ යුතුය.		
04	දියවැඩියා රෝගීන්ගේ පාද උණුසුම් වතුරෙන් රාත්‍රියට සෝදා පිරිසිදු කළ යුතුය		
05	දියවැඩියා රෝගීන්ගේ පාද උණුසුම් වතුරෙන් සේදීමට පෙර එහි උණුසුම පරීක්ෂාකර බැලිය යුතුය		
06	දියවැඩියා රෝගීන්ගේ පාද නිතිපතා සේදීමෙන් පසු හොඳින් පිස දමා තෙතමනය ඉවත් කළ යුතුය		
07	දියවැඩියා රෝගීන්ගේ පාද වල නියපොතු කෙළවර කෙලින් සිටින සේ කැපිය යුතුය		
08	දියවැඩියා රෝගීන් පාවහන් පැළඳීමට පෙර පාවහන් ඇතුලත පරීක්ෂාකර බැලිය යුතුය		
09	දියවැඩියා රෝගීන් පාවහන් ඇවිදීමේදී සැමවිටම පාවහන් පැලඳිය යුතුය		
10	දියවැඩියා රෝගීන් තියුණු උපකරණ වලින් පාදයේ නියපොතු පිරිසිදු නොකළ යුතුය		

Annexure X: Detail proposal approval letter from the PGIM, Colombo

Postgraduate Institute of Medicine

University of Colombo, Sri Lanka

PGIM/AC/10/MD.MA

03 February 2022

[redacted]

MD MEDICAL ADMINISTRATION - DETAILED RESEARCH PROPOSAL

Your project proposal titled "**A Project to Improve Medical Clinic services in managing Diabetes Mellitus at District General Hospital, Nawalapitiya.**" has been reviewed.

I wish to inform you that the Board of Study in Medical Administration at its meeting held on **17 December 2021** having considered the comments/ recommendations made by the reviewers, decided that your **project proposal is acceptable** for the research project prescribed for MD Medical Administration Examination.

Yours sincerely,

Dr. Pandula Siribaddana
Senior Lecturer/PGIM
For Director/PGIM

CC: 1. Chairman/Secretary, Board of Study in Medical Administration
2. PF.

General Office: 160, Prof. Nandadeva Kodagoda Mawatha, Colombo 07, Sri Lanka. **Tel:** +94 11 2686758/2686261 **Web:** www.pgim.cmb.ac.lk

Director Tel: +94 11 2688649/2697758 Fax: +94 11 2697757 Email: director@pgim.cmb.ac.lk

Academic Branch Tel: +94 112687806/2687511 Fax: +94 11 2687050 academic@pgim.cmb.ac.lk

Exam. Branch Tel: +94 11 2683467/2696258 Fax: +94 11 2687803 exam@pgim.cmb.ac.lk pgimint@pgim.cmb.ac.lk

Library Tel: +94 11 2671047 Fax: +94 11 2687050 library@pgim.cmb.ac.lk

Medical Education Resource Centre Tel: +94 11 2689266 Fax: +94 11 2689268 merc@pgim.cmb.ac.lk

Annexure XI: Ethical approval letter from ERC of PGIM, Colombo

ETHICS REVIEW COMMITTEE

POSTGRADUATE INSTITUTE OF MEDICINE

UNIVERSITY OF COLOMBO, SRI LANKA

ERC/PGIM/2022/027
23.05.2022

[redacted]

Title: Project to Improve Medical Clinic services in managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

Investigator – Dr. Y.G.A.C Seneviratne (MBBS, MSc)
Supervisor – Dr. (Mrs.) S.C Wickramasinghe (MBBS, MSc, MD)

Thank you for submitting the above research proposal. I am pleased to inform you that the study was approved by the ERC at its meeting held on 25.04.2022 after reviewing following documents submitted by you.

Document	Version No.	Date of Submission
Project protocol	1.0	31.03.2022
Study Instruments-English	1.0	31.03.2022
Study Instruments-Sinhala	1.0	31.03.2022
Study Instruments-Tamil	1.0	31.03.2022
Information Sheet & Consent Form-English	1.0	31.03.2022
Information Sheet & Consent Form-Sinhala	1.0	31.03.2022
Information Sheet & Consent Form-Tamil	1.0	31.03.2022

The approval is valid until one year from the meeting date stated above. You may make a written request for renewal/extension of the validity, along with the submission of a progress report.

Please note that you are required to inform the ERC about the following:

- Any unanticipated events involving potential risks to study subjects.
- Any deviations in protocols
- Any changes to the documents listed above.

You are required to submit the final report to the ERC/PGIM with the following declaration:

"The research was conducted in accordance with the proposal for which approval was granted by the ERC of PGIM" within three (03) months upon the completion of the study.

Thank you.
Yours sincerely,

Dr Pandula Siribaddana
Secretary-ERC/PGIM

Address: 160, Prof. Nandadasa Kodagoda Mawatha, Colombo 07, Sri Lanka.
Web: www.pgim.cmb.ac.lk **Email:** ercl@pgim.cmb.ac.lk
Tel: +94 11 2689268 **Fax:** +94 11 2689268

Annexure XII: Administrative approval letter from DDG/NCD

Telephone) 0112669192, 0112675011
) 0112698507, 0112694033
) 0112675449, 0112675280

Fax) 0112693866
) 0112693869
) 0112692913

e-mail) postmaster@health.gov.lk

website) www.health.gov.lk

සුවසිරිපාය
சுவசிரிபாய
SUWASIRIPAYA

සෞඛ්‍ය අමාත්‍යාංශය
சுகாதார அமைச்சு
Ministry of Health

My No.) DDG / NCD / I / 02 / 2022

Your No. :)

Date) 25/05/2022

[redacted]
Registrar
Medical Administration

Project to Improve Medical Clinic services in Managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

As per your rquest along with the detailed proposal approval letter (PGIM/AC/10/MD.MA) and ethics approval letter(ERC/PGIM/2022/027) from PGIM, Colombo, herewith I am granting the administrative approval to conduct the above-mentioned research project as a requirement to fulfill the degree of Doctor of Medicine in Medical Administration, Post Graduate Institute of Medicine, University of Colombo.

You are hereby to adhere to the directives given by the Board of Study in Medical Administration and the Ethics Review Committee of the PGIM in conducting all stages of the research project.

Administrative approvals from the relevant heads of institutions of the study setting should be obtained before conducting the study and should adhere to their institutional rules and regulations.

S. C. Wickramasinghe
....
Dr. S.C Wickramasinghe
Deputy Director General NCD

Dr. S. C. Wickramasinghe
Deputy Director General (NCD)
Ministry of Health, Nutrition & Indigenous Medic

385, Rev. Baddegama Wimalawansa TheroMawatha, Colombo 10, Sri Lanka

Annexure XIII: Administrative approval letter from the director in DGH Nawalapitiya

දිස්ත්‍රික් මහ රෝහල - නාවලපිටිය

DISTRICT GENERAL HOSPITAL- NAWALAPITIYA

සෞඛ්‍ය අමාත්‍යාංශය - MINISTRY OF HEALTH - சுகாதார அமைச்சகம்

මගේ අංකය
My No : - DGHN/MC/2022/01
எனது இல

දිනය :
Date: 30/05/2022
திகதி :

[redacted]
Registrar in Medical Administration

Approval of Intervention Research Project in the Medical Clinic.

Project title: A Project to Improve Medical Clinic Services in Managing Diabetes Mellitus at District General Hospital, Nawalapitiya.

Implementation of a project to improve the services available in the medical clinic for diabetic patients is highly appreciated. It will enhance the capacity and capabilities of the clinic services to provide better care for the community.

As per your request made along with the approved detail proposal (PGIM/AC/10/MD.MA) and ERC approval letter of PGIM, (ERC/PGIM/2022/027) this is to inform that permission and approval granted to conduct the project.

....
Director
DGH, Nawalapitiya

Dr. C. Janaka K. Somaratne
Consultant in Medical Administration
Director
District General Hospital
Nawalapitiya

Vision - A Perfect Patient Care Filled With Human Kindness

Telephone 054-2222261 Fax 054-2222264 0542222264 email nawalapitiyadgh@gmail.com 054-2222411

Annexure XIV: Appointment letter of trainer for training health staff

දිස්ත්‍රික් මහ රෝහල - නාවලපිටිය
DISTRICT GENERAL HOSPITAL- NAWALAPITIYA
සෞඛ්‍ය අමාත්‍යාංශය - MINISTRY OF HEALTH - சுகாதார அமைச்சகம்

මගේ අංකය
My No - DGHN/MC/2022/02
எனது இல

දිනය :
Date: 01/06/2022
திகதி :

Dr Gayani Samarasighe
Consultant Endocrinologist

Appointed as a resource person to conduct training programme for health staff.

As per the earlier discussion, you are hereby informed that you have been appointed as the trainer to conduct training sessions for the following categories of staff on topics related to management of type 2 diabetes. The project: Improving the medical clinic services for diabetic patients at DGH, Nawalapitiya.

Staff category 1: Medical officers
Topic: Clinical Management Guidelines of Type 2 DM

Staff category 2: Nursing officers
Topic: Foot care on Diabetic Patients

Dr. C. Janaka K. Somaratne
Consultant in Medical Administration
District General Hospital
Nawalapitiya

Director

දැක්ම - මිනිසා දයාවෙන් යුතු පරිපූර්ණ රෝගී සත්කාර සේවාවක්
- பண்பு நிறைந்த சுறுசுறுப்பான சேவை.. முழு முழுமையான வாழ்வு சேவை
Vision - A Perfect Patient Care Filled With Human Kindness

Telephone 054-2222261 Fax
දුරකතනය 054-2222264 ෆැක්ස් 0542222264 විද්‍යුත් තැපෑල
nawalapitiyadgh@gmail.com
தொலைபேசி 054-2222411

Annexure XV: Participation attendance sheet of nursing officers for foot care training session.

Training session: Foot care on Diabetes Mellitus for Nursing Officers.

Venue: Hospital Auditorium

Date: 09/07/2022

	Name	Signature
01	Mrs. P.W.D.E.R.W. Magammana	
02	Mr. M.M.F. AROOSHIYA	
03	K.A.D.V. Munasinghe	
04	Mrs. S.D.S.J. Priyadarshika	
05	Mr. P.D.N.K. Perera.	
06	D.M.N.K. Bandaramenike.	
07	S.P.M. Dissanayaka	
08	M.F. Kanaldeen	
09	K.P.S. ADIKARI	
10	T.S. Thotawaththa..	
11		

Annexure XVI: Letter to allocate nursing officers for sample collecting room in the OPD

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DISTRICT GENERAL HOSPITAL- NAWALAPITIYA
සෞඛ්‍ය අමාත්‍යාංශය - MINISTRY OF HEALTH - சுகாதார அமைச்சகம்

මගේ අංකය
My No - DGHN/MC/2022/03
எனது இல

දිනය :
Date: 30/08/2022
திகதி :

Chief Nursing Officer
DGH Nawalapitiya

Allocating of nursing officers OPD sample collecting room

This is to inform you that two nursing officers should be allocated to the OPD sample collecting room from September duty roster to facilitate and streamline the timely collection of blood sample from diabetic patients.

Further, as per the agreement, it is advised to allocate required nurses from OPD, QMU, Infection Control Unit and other clinics on rotational basis.

In the future, pennanent placement of nurses should be done after new recruits arrive.

Director

Dr. C. Janaka K. Somaratne
Consultant in Medical Administration
Director
District General Hospital
Nawalapitiya

දැක්ම - මානව දයාවෙන් යුතු පරිපූර්ණ රෝගී සේවාවක් සේවාවක්
குறிக்கோள் - மனித நேயம் கருணையுடன் கொண்ட முழு முழுமையான வாழ்நாள் சேவை
Vision - A Perfect Patient Care Filled With Human Kindness

Telephone 054-2222261 Fax email
දුරකතනය 054-2222264 ෆැක්ස් 0542222264 විද්‍යුත් තැපෑල
nawalapitiyadgh@gmail.com
தொலைபேசி 054-2222401 தொலைநகல் மின்னஞ்சல்

Annexure XVII: Standard Of Procedure (SOP) to implement clinical management guidelines of diabetes mellitus.

	Quality Management Unit, DGH Nawlapitiya	SOP Number	QMU/CMG 01
		Implementation date	01/08/2022
		Last reviewed	
		Approval	Director

Dr. C. Janaka K. Somaratne
Consultant in Medical Administration
District General Hospital
Nawalapitiya

Standard Operating Procedure (SOP) for Implement Clinical Management Guidelines in Medical Clinic for Managing Diabetes Mellitus – DGH Nawalapitiya.

1. Purpose

This Standard of Procedure document is aim to improve the utilization of diabetic management clinical guidelines in the Medical clinic. Clinical guidelines are tools for clinicians to improve their clinical decision-making process and standardize care (translate scientific findings to practice).

2. Scope

This SOP is intended for all clinicians to follow the latest diabetes management guidelines for diagnosis, treatment and referral of patients.

3. Prerequisites

- Knowledge on clinical practice guidelines
- Available simplified CGs within the clinic

4. Responsibilities

The consultant physicians, endocrinologist, and medical officers will responsible for ensuring to follow the CGs during the clinic.

5. Procedure

Conformation of diagnosis according to the criteria
A comprehensive clinical assessment should be carried out at the first encounter
Plan for

- Life style modification and patient education
- Maintenance of good glycemic control
- Multiple risk factor management
- Prevention of complications

6. Reference

Clinical practice guidelines 2018, Sri Lanka College of Endocrinologists

Annexure XVIII: Letter to obtain the IEC materials from the HPB

[redacted]

Registrar in Medical Administration,

PGIM, Colombo

10/07/2022

Director,

Health Promotion Bureau,

No 02, Kinsey Road,

Colombo 08.

Dr. Upeka / IEC unit

Dr. B. K. R. Batuwanthudawe
Director (H. E & P) Acting
Health Promotion Bureau
No.02, Kynsey Road,
Colombo 08.

Dear Sir,

Requiting Information Education and Communication (IEC) Materials for Diabetic Patients.

I m a post graduate trainee in Medical Administration, MD part II. I'm conducting an interventional research project in District General Hospital, Nawalapitiya to improve clinic services for diabetic patients.

Health promotion and education have been identified as required components to improve as a part of interventions.

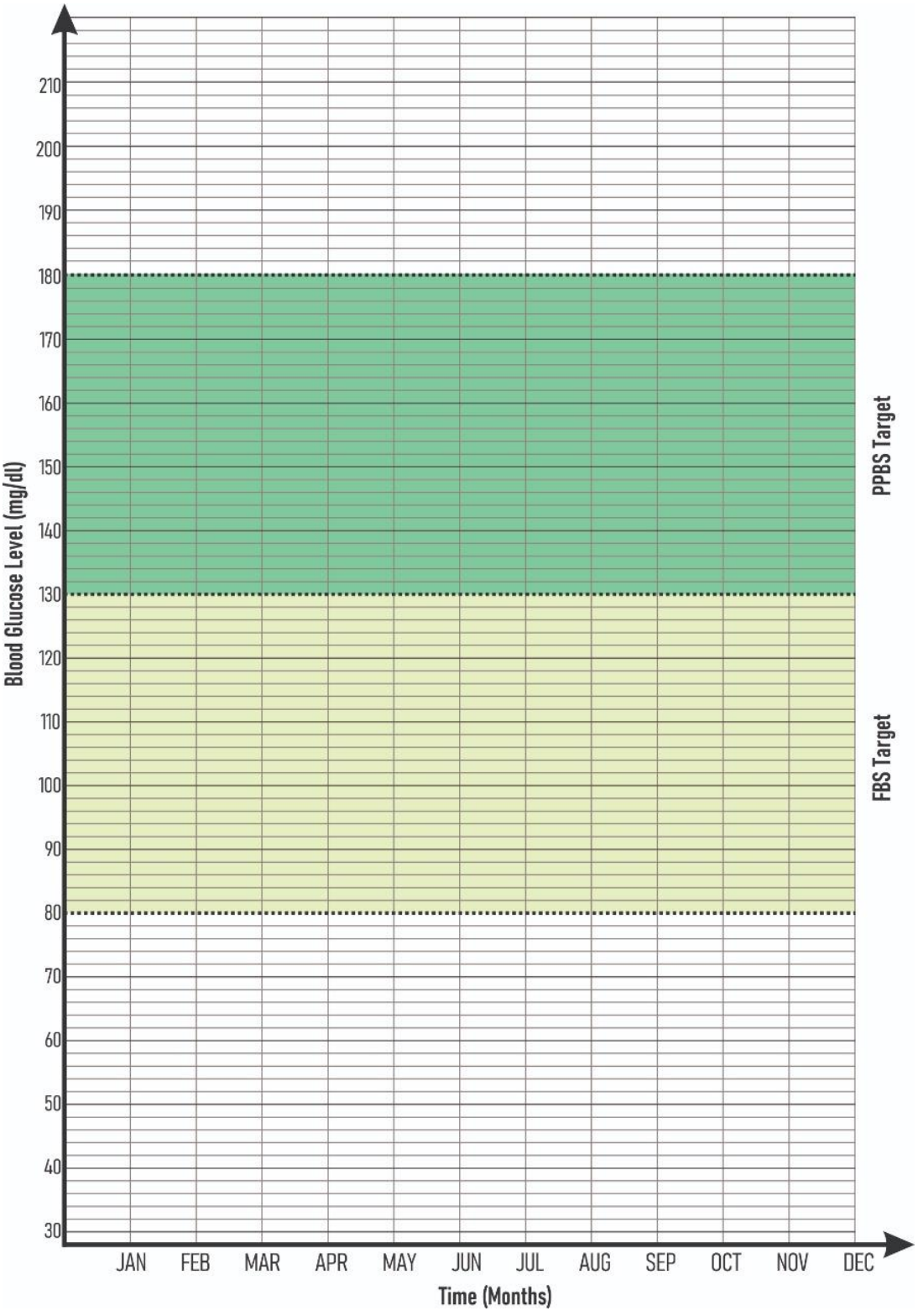
I would be grateful if you would authorize to obtain relevant materials (Posters, Banners, Hand bills, booklets, and videos) from IEC development & exhibition unit.

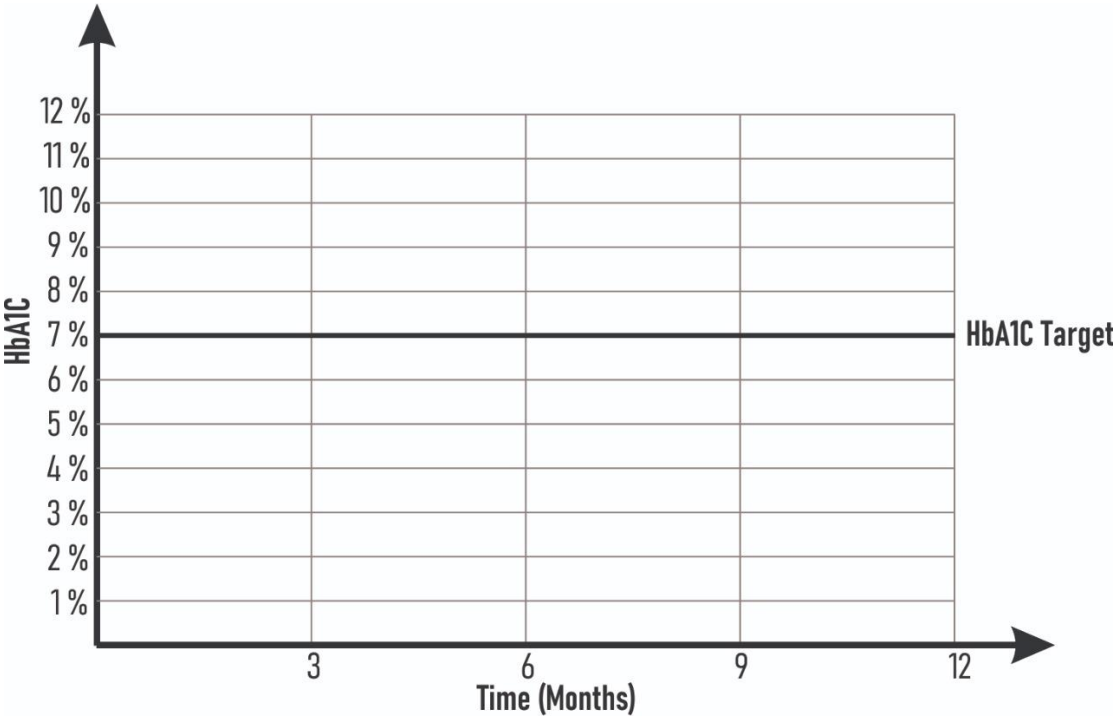
Thank you,

Yours faithfully

[redacted]

Annexure XIX: Multiple point glycemic control profile charts for FBS & HbA1c



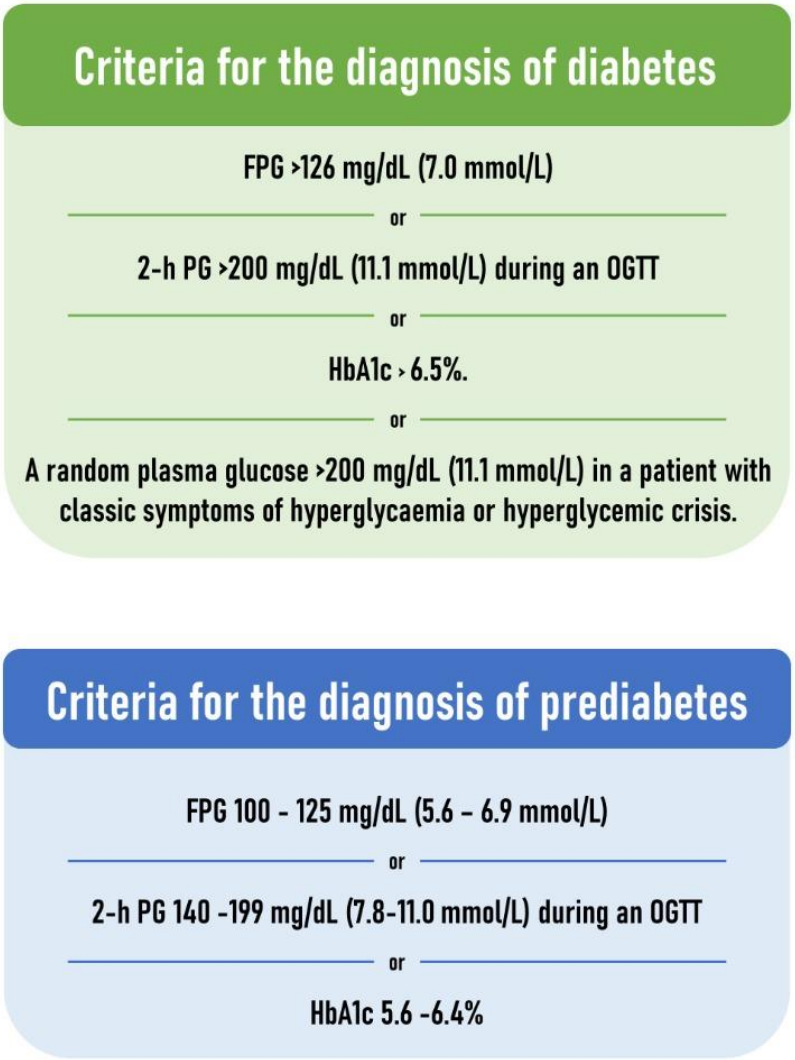


Annexure XX: Time scheduling with color codes (Samples)


C
D
D
C
E
C
686A
Mrs Hauwa ummah
J.A.SON


C
D
D
C
256 C 203 A
Mrs M. Begam
MC 2342/10
9.00a - 10.00a
04/02/2011

Annexure XXI: Clinical Management Guideline algorithms and flowcharts



Risk factors for Type 2 Diabetes, in addition to South Asian origin

Overweight and obese (BMI > 23 kg/m2)

or

Physical inactivity

or

First-degree relative with type 2 diabetes

or

History of gestational diabetes or
a women who delivered a baby weighing >3.5 kg

or

History of prediabetes (IGT or IFG or A1c 6.0 to 6.4%)

or

Presence of CV risk factors :
- Hypertension (>140/90 mmHg or on therapy for hypertension)
- HDL cholesterol level 250 mg/dl

or

Women with polycystic ovary syndrome

or

Other clinical conditions associated with insulin resistance
(e.g. severe obesity, acanthosis nigricans)

Walk Away from the silent killer - Diabetes

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மாவட்ட பொது வைத்தியசாலை - நாவலப்பிட்டி

District General Hospital - Nawalapitiya

Clinical Evaluation - patient with diabetes

History

- **Age of onset and details of first presentation**
  e.g. asymptomatic, hyperglycaemic emergency, laboratory results
- **Presence of other comorbidities:**
  hypertension, dyslipidaemia, ischaemic heart disease, dental diseases
- **Family history**
- **Psycho-social history**
- **Eating patterns, nutritional status**
- **History of smoking, alcohol consumption**
- **Review of previous treatment regimens management problems and complications**
  - Blood sugar records, HbA1C records
  - Hyperglycaemic emergencies: frequency, severity, and cause
  - Hypoglycemia episodes, awareness, and frequency and causes
  - Microvascular complications: retinopathy, nephropathy, and neuropathy (sensory, autonomic including sexual dysfunction)
  - Macrovascular complications: coronary heart disease, cerebrovascular disease, and peripheral vascular disease
  - Patient's attitudes and evidence of self management

Physical Examination

- **Height, weight and BMI**
- **Acanthosis nigricans, insulin injection sites**
- **Blood pressure with postural measurements, peripheral pulsations** esp. dorsalis pedis and posterior tibial pulses
- **Fundoscopic examination**
- **Presence/absence of ankle reflexes, sensations including pain, proprioception, vibration, and monofilament sensation**

Investigations

- **Fating lipid profile**
- **Serum creatinine and estimated GFR**
- **Urine albumin-creatinine ratio**
- **Thyroid function test in T1DM, dyslipidaemia**
- **HbA1C if not done during past 3 months**

Walk Away from the silent killer - Diabetes

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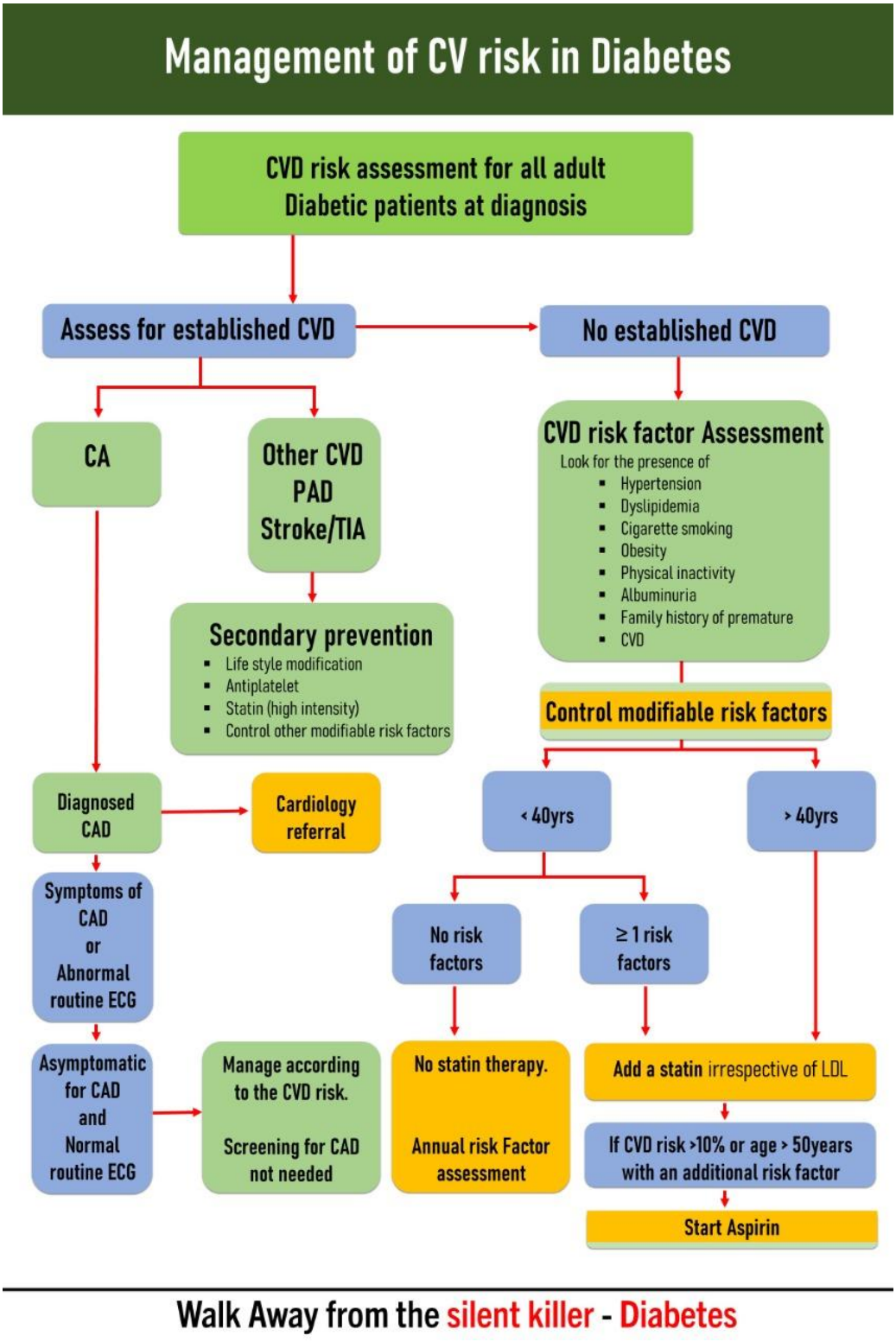
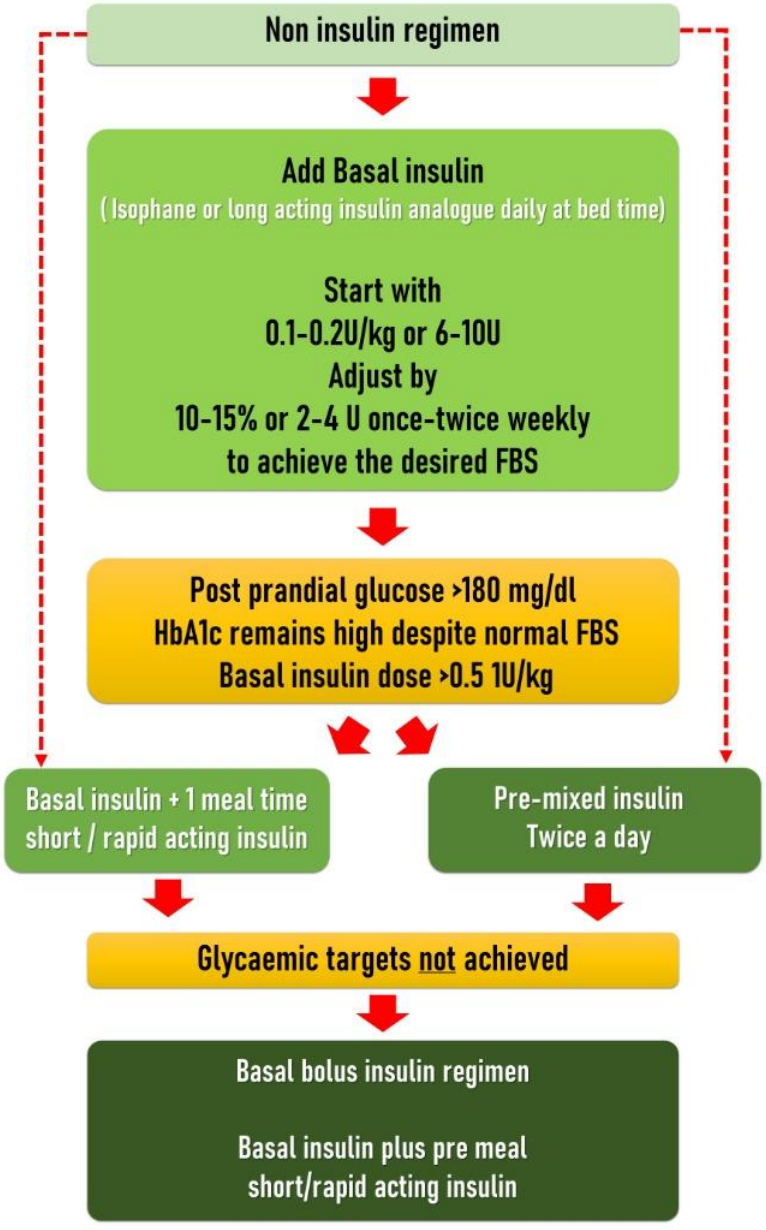
மாவட்ட பொது வைத்தியசாலை - நாவலப்பிட்டி

District General Hospital - Nawalapitiya


Management of CV risk in Diabetes
CVD risk assessment for all adult Diabetic patients at diagnosis
Assess for established CVD
No established CVD
CA
Other CVD PAD Stroke/TIA
CVD risk factor Assessment
Look for the presence of
Hypertension
Dyslipidemia
Cigarette smoking
Obesity
Physical inactivity
Albuminuria
Family history of premature CVD
Secondary prevention
Life style modification
Antiplatelet
Statin (high intensity)
Control other modifiable risk factors
Control modifiable risk factors
Diagnosed CAD
Cardiology referral
< 40yrs
> 40yrs
Symptoms of CAD or Abnormal routine ECG
No risk factors
≥ 1 risk factors
Asymptomatic for CAD and Normal routine ECG
Manage according to the CVD risk.
Screening for CAD not needed
No statin therapy.
Annual risk Factor assessment
Add a statin irrespective of LDL
If CVD risk >10% or age > 50years with an additional risk factor
Start Aspirin
Walk Away from the silent killer - Diabetes

Sequential insulin strategy in TYPE 2 DM



Walk Away from the silent killer - Diabetes

Annexure XXII: Donation letter of furniture for OPD sample collecting room

SENTARA
HOSPITAL
NAWALAPITIYA
Taking your Health to Heart

25/08/2022

Director
District General Hospital
Nawalapitiya

Dear Sir,

Donation of the Furniture for Out Patient Department

We would like to inform you that we are very happy to provide the necessary furniture to set up a sample collection centre in the Outpatient Department. Further, we have paid Damro Showroom at Nawalapitiya for the following items of furniture. They will deliver the goods within the next week.

DAMRO office table 01	19,975/=
DAMRO office chairs 02	30,350/=

We greatly appreciate the service, the hospital provides to the community and also glad we could able to contribute.

Thank You.

Yours faithfully,

Director/Manager

SENTARA HOSPITAL
No. 08 B, Theater Road,
Nawalapitiya.
054 2222581 / 076 8003002