HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE, BEREKUM

A PATIENT / FAMILY CARE STUDY ON DIABETES MELITUS

BY

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A PATIENT / FAMILY CARE STUDY SUBMITTED TO NURSING AND MIDWIERY CONUCIL OF GHANA IN PARTIAL FULFILMENT FOR THE AWARD OF LINCENCE TO PRACTICE AS A PROFESSIONAL REGISTERED GENERAL NURSE (DIPLOMA)

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PREFACE

Nursing became professionalized after the Civil War. The Nightingale system of nurse training was adopted and offered at hospitals. Modern nursing is a profession that requires knowledge, skills and attitude. The ability to render comprehensive nursing care rests on the nurses' ability to assess the client's condition, analysis, plan, implement evaluate the effects of management on client health status using the nursing process.

It is therefore required by the Nursing and Midwifery Council of Ghana that every final year student nurse should write a patient/ family care study, in which the nursing process approach is applied. The Patient/ family care study is a detailed account of nursing care rendered to the Patient and family to meet their needs. The study is designed to give a comprehensive nursing care to both patient and family from the time of admission till when patient is finally discharged to go home, as well as follow-ups or home visits for continuity of care. The study also involves the nursing process which involves assessment of patient/ family, planning of care to be rendered, implementing the plan and evaluating care rendered to patient/ family.

The study is carried out to enable the student nurse put into practice the knowledge and skills acquired from the three year training period in school to ascertain how best the theoretical knowledge would be used to nurse patients who will come under his or her care in the near future. The study also forms part of the requirements of the Nursing and Midwifery Council of Ghana for the award of licence in General Nursing.

In this study, initials of patient are used for confidentiality.

ACKNOWLEDGMENT

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Further, I would like to extend my appreciation to my wonderful parents, for their unending emotional, moral, spiritual, and financial support throughout the period of the study.

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May God bless them Amen.

INTRODUCTION

The patient and family care study is a study conducted on patient/family using the nursing process to nursing the patient and family as an individual, taking into account all the needs of the patient, need to arrive at a desired outcome. It also takes into account of patient's psychological and social needs in planning the care.

The interaction with Mrs. A.A. and her family started on the 5th November, 2021 at 4:25pm at the Female Ward of Presbyterian Hospital, Dormaa Ahenkro, when she was admitted. She came to the ward in a wheel chair with the diagnosis of Hyperglycaemia. On admission Mrs A.A had high blood glucose level, Patient complained of excessive urinating, Patient was anxious about management of her condition, Patient complained of lack of energy in performing activities of daily living, Patient had insulin deficiency, Patient could not provide answers to some issues relating to diabetes mellitus

Patient had series of investigations including:,

1. Full blood count
2. Blood film for malaria parasite
3. Fasting blood sugar
4. Random blood sugar
5. Urine R/E
6. Blood Urea and Creatine

The following drugs were prescribe for Mrs A.A

1. Monitor random blood sugar 4 hourly
2. Continue low dose sliding scale
3. Tab Metformin 1g bd for 30days
4. Tab Glibenclamide 10mg in the morning and 5mg in the evening

She stayed on the ward for six days. With the comprehensive nursing and medical care rendered to her, she was discharged on a good condition on the 10th November, 2021 and reviewed on the 17th November, 2021 at the Out Patient-Department. Three home visits were conducted. First, second and third home visits were conducted on the 6th November, 2021, 14th November, 2021 and 20th November, 2021 respectively. The interaction with the patient ended on the last day of visit which was 20th November, 2021.

This care study comprises of six chapters as follows: Chapter one deals with assessment of Mrs. A.A. and her family. This involves collection of data about the patient to identify her problems. Chapter two deals with analysis of data. Chapter three comprises the planning phase of the nursing process and has the tabulated plan of care for the stated nursing diagnoses spanning the objective criteria, nursing orders, intervention and evaluation. Chapter four tackles the actual implementation of the care plan giving summary descriptions of activities which were undertaken from the moment of first contact with the patient at the time of admission to the ward till discharge and subsequent follow up with home visit. In chapter five, evaluation of nursing care given to the patient and her family from encounter till termination of nurse-patient relationship is discussed. Chapter six focuses on the summary and conclusion of the care study report by reviewing thematic issues that arose in the care study from admission to last home visit after discharge.

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CHAPTER ONE

ASSESSMENT OF PATIENT AND FAMILY

1.0 Introduction

Assessment is the systematic collection of data to determine the patient's health status and any actual or potential health problems (Hinkle & Cheever, 2014). It is the first stage and a vital tool in the nursing process. Assessment can be done through observations, interviewing and investigations such as laboratory results, x-ray reports and physical examination of the patient. It includes the patient's particulars, patient/family medical and surgical history, patient's socioeconomic history, patient's developmental history, patient's lifestyle and hobbies, patient past medical and surgical history, patient present medical and surgical history. It also includes admission of patient, patient and family concept of her illness, literature review on the condition from which analysis will be made to identify the patient problems and validation of data. These help the nurse to determine the health status of the patient and her family in order to plan an effective nursing care towards recovery. All information was gathered from the patient and her relatives, as well as the patient's folder.

1.1 Patient's Particulars

Patient refers to a person who is receiving medical treatment in a hospital (Hornby, 2006). Particulars is defined as details or information about a person, especially when officially recorded (McIntosh, 2013). The name of my patient is Mrs. A. A. She is a 68-year-old woman, born on 3rd, August, 1952 to Mr. K. P. and Mrs. Y. T. She comes from Aboabo No.3 a suburb of Dormaa Ahenkro in the Bono region of Ghana and currently resides at Schaffer Street (S. S) with house number DAK/SS/201. She is dark in complexion, 1.70m tall and weighs 65kg with a Body Mass Index (BMI) of 19.1kg/m^2 which clearly indicates that she is not overweight or obese. Patient is a widow; she was married to the late Mr. A. O. Patient is a

Christian who worships at the Pentecost Church. She is the first born of six children. Mrs. A. A. is a farmer. Her next of kin is her daughter in-law Mrs. A. D. who also resides at the same place as her mother in-law. She had her basic education at Aboabo Presbyterian School but stopped schooling at primary six. She did not have any form of secondary or vocational school education. She speaks only one language; Twi. Mrs. A. A is a National Health Insurance beneficiary. She has no physical impairments or disabilities. Her HAMS number is 04011/19.

1.2 Family's Medical/Surgical History

Health history is a series of questions used to provide an overview of the patient's current health status. Attention is focused on the impact of psychosocial, ethnic, and cultural background on a person's health. Information is obtained on both paternal and maternal sides of family (Hinkle & Cheever, 2014). Mrs. A. A stated clearly that her parents are deceased and they died of an unknown condition but she believed that it was as a result of old age. According to Mrs. A. A. her five siblings are alive and healthy. She indicated that they do have a family history of Diabetes mellitus. Aside from it there is no identified hereditary disorder like hypertension, sickle cell nor epilepsy. Nevertheless, patient revealed that one of her sons has mental illness which occurred as a result of head trauma. However, the relatives present during her history taking said that, periodically, they do suffer some ailments like headache, fever and abdominal pains which are treated by self-medication (using both over-the-counter drugs and traditional medicines) but if symptoms persist, they report to the hospital. Patient has been hospitalized on several occasion at Presbyterian Hospital-Dormaa largely on account of Diabetes mellitus (hyperglycaemia). All the other hospitalizations were on account of delivery. There are no known allergies in the family.

1.3 Family Socio-Economic History

Socio-economic history captures sources of support, coping styles, strengths, and fears (Bickley & Szilagyi, 2009). Mrs. A. A has a very good relationship and cohesion with her family. Socially the family is not noted for smoking or drinking alcohol. She revealed that most of her family members are into farming and some also are government employees. Family members are always ready and willing to support each other in times of financial hardships. Mrs. A. A does not depend much on her extended family for financial support but rather depends on her own income which is generated by selling her farm produce. Her family members are well known for their enormous participation in religious activities, their kindness and generosity. Mrs. A. A herself is one of the oldest members of the Women's Association at church. In terms of religious believes she revealed that, all of her family members are Christians. She revealed that most of her family members depend on National Health Insurance Scheme (NHIS) for medical care. According to Mrs. A. A. the nature of her work in the past did expose her to injuries from cutlass as well as snake bites, she revealed that she only had a few minor cuts during her active farming days. Mrs. A. A stated that she always generates a profit of more than GH cedis 1,500 from selling her cocoa produce but she made it quite clear that the profit is highly dependent on the number of cocoa bags and set price by the government. The only taboo she made mention of is the fact that the village where her farm is does not permit going to farm on Fridays and for this reason, she has advised the care taker of her farm to abide by it.

1.4 Patient's Developmental History

Development refers to the process of growth and differentiation which involves cognitive, psychosexual and psychosocial processes (Weller, 2014). Maturation is the process of developing (Weller, 2014).Growth is the progressive development of a living thing, especially the process by which the body reaches its complete physical development (Weller,

2014). The developmental history was given by patient herself as told by her mother. Mrs. A. A. indicated that her mother went through normal pregnancy of nine months' gestation without any pregnancy associated disorders and had spontaneous vaginal delivery with the help of a Traditional Birth Attendant. She was born without any congenital abnormality such as cleft lip or palate, hydrocephalus. The Bacilli Calmet Guerin (BCG) scar which proves childhood immunization against the childhood vaccine preventable diseases was not seen on her right shoulder. Mrs. A. A was breastfed for several months and was introduced to supplementary foods. She went through a normal developmental milestone. This includes sitting up at the 7^{th} month, crawling at the 10^{th} month, walking, talking and running between the ages of one and three. Mrs. A. A. around the age of twelve begun to experienced secondary sexual characteristics such as enlargement of breast, broadening of hips, growing of pubic hairs and had her menarche around the age of seventeen. She started her basic education at Aboabo Presbyterian School but stopped schooling at primary six. Patient did not have any form of secondary or vocational school education. Patient stated that she had lots of difficulties understanding what was taught in class so decided to stop schooling at an early age. Patient is a widow; she was married to the late Mr. A. O. According to Mrs. A. A she really mourned for a very long time before she could get over her husbands' eternal departure but financially, she was very secured because she inherited a vast cocoa farm from her late husband. Patient gave birth to eleven children from two marriages (six women and 5 men), two of them are deceased. Upon asking patient about the aspirations and career plans, she said she wanted to be a seamstress but her Ex-husband whom she lived in Accra with when they were married did not agree to such idea. Patient stated that she never liked the idea of divorce but her husband whom she had four children with was severely maltreating her. According to Mrs. A. A she did not go through much hardship after divorce because she had her parents to take care of her until she met her late husband. According to Mrs. A. A, her

menopause started about ten years ago. Patient indicated that she did not experience any difficulties when her menopause started.

As specified by Jarvis (2000), Erik Erikson (1902 to 1994) focused on cultural and societal influences as determinants of behaviour. Erickson was concerned with the growth of **ego,** the conscious, organized, rational part of the personality. He described eight stages of ego development that encompass the life span. Each stage is characterized by a distinct conflict, or crisis, relating to the person's physiologic maturation and to what society expects of a person at that age. According to Erik Erickson's psychosocial development which encompasses eight stages, Patient is now in her old age group where there is conflict between integrity versus despair (65 years and over), In old age, the primary developmental task becomes a reflective one. Do people feel like, when they look back on their life, that they did things the right way? That they lived the best life that they could? **(Integrity)** Or are they filled with regrets, asking themselves whether they could have made different choices that led to better opportunities **(Despair)** (Pastorino & Portillo, 2012). Patient was always talking about the fact that she is happy how her life turned out to be. Through the series of interaction, I had with her, I could clearly see that patient was someone who was very happy with the life she has had so far. I am sincerely convinced that patient is in her integrity dimension of Erickson`s psychosocial development.

1.5 Obstetric History

According to the patient she had her menarche around the age of seventeen. Mrs. A. A. has had eleven pregnancies with eleven deliveries. She always carried her pregnancies to term. Mrs. A. A. indicated that she has never committed an abortion. She gave birth to all her children through spontaneous vaginal delivery and was assisted by traditional birth attendants for all with no complications. Since patient is in her menopausal stage, she does not have her

menses any longer. She revealed that she never used any form of contraceptive be it oral or injectable to prevent herself from getting pregnant.

1.6 Patient's Lifestyle and Hobbies

Life style is defined as the pattern of daily living that an individual develops (Weller, 2014). Mrs. A. A. goes to bed around 9:00 pm, she always prays before going to bed. She wakes up at 6:30am and says her morning prayers. She maintains her oral hygiene with the use of tooth brush and tooth paste. After that she empties her bowel and takes her bath with warm water. Mrs. A. A's favourite food is fufu with groundnut soup with fish. Mrs. A. A does not have any fixated habit such as drinking, smoking, gossiping etc. For breakfast, patient mostly takes porridge with koose. She usually goes to the market on Tuesdays to buy food stuffs. Patient does the cooking herself with the help of her daughter in-law if she is around. After supper she washes the utensils. At 6:30pm to 7:00pm she brushes her teeth and takes her bath. Afterwards she stays glued to her television until she feels the urge to sleep which usually happens around 9:00pm. On Thursday evenings she attends church meetings at 7:00pm and closes at 8:30pm. On Saturdays, she has to wash her clothes and clean her room. On Sundays she gets ready for church and after church she prepares herself for the weekdays ahead. She described herself as an introvert but attends funerals and weddings on weekends. Patient has no known allergy to food or drugs. Patient cited that she mostly takes three square meals per day thus breakfast, lunch and supper. She sometimes enjoys snacks but she does so when she feels like taking it. Patient does not experience any difficulties when it comes to food preparation because her daughter in-law is always around if she needs extra hands. Her major medium of transportation is the tricycle which is popularly known as 'PRAGYA'. Through our interaction patient revealed that her major stress is the fact that she is always thinking about the wellbeing of her mentally challenged son. Patient indicated that she does a lot of singing and praying whenever she is stressed up. Patient revealed that she tends to like the

use of non-verbal communications such as eye movements to speak to her children to desist from going wrong. Patient cited that she likes honest people but dislikes violence and chaos. As a mother, she always does what best for her family and has the interest of her family at heart. Patient is an active member of the Women's Association at church. My personal impression about my patient is that, she is very calm, benevolent and generous.

1.7 Patient's Past Medical/Surgical History

Past medical history is a narrative or record of past events and circumstances that are or may be relevant to a patient's current state of health (MediLexicon, 2009). Mrs. A. A. never experienced any childhood illness like whooping cough, poliomyelitis, measles, tetanus, tuberculosis, and diphtheria and has not identified any allergy to drugs, animals or insects. She revealed that she usually suffers from minor ailments such as headache and common cold which she treats with over-the-counter medications. When symptoms persist or become worse, she visits a nearby hospital or clinic. Mrs. A. A. said she has never had any major accident. My patient has been hospitalized on several occasions at Presbyterian Hospital-Dormaa most of these hospitalizations were on account of Diabetes Mellitus (hyperglycaemia).

1.8 Patient's Present Medical/Surgical History

The history of the present health concern or illness is the single most important factor in helping the health care team arrive at a diagnosis or determine the patient's needs. The physical examination is helpful but often only validates the information obtained from the history. A careful history assists in correct selection of appropriate diagnostic tests (Hinkle & Cheever, 2014). Also, according to Bickley & Szilagyi (2009), History of present illness is a complete, clear, and chronologic account of the problems prompting the patient to seek care.

On 5th November, 2021 patient was apparently well when leaving home to the Out Patient Department of Presbyterian Hospital, Dormaa for review and refilling of her oral antidiabetics drugs, at 8:00am her fasting blood sugar was 21.7mmol/L for this reason the physician at the O.P.D ordered for her to be detained at the Accident and Emergency Centre for further management. She was subsequently admitted to the Female Ward on 5th November, 2021 at 4:25pm.

1.9 Admission of the Patient

Mrs. A. A. arrived on the Female Medical Ward on 5th November, 2021 at 4:25pm in a wheel chair accompanied by a staff nurse, rotational nurse and her daughter in-law. On arrival patient was fully conscious and alert. Patient had been on detention at the Accident and Emergency Centre of Presbyterian Hospital-Dormaa for some few hours with the diagnosis of hyperglycaemia in a known diabetes mellitus. It was an unplanned admission. Happening to be at the nurses' station with the nurse in-charge at the time of her arrival, I was subsequently charged with the responsibility to carry out her admission to the ward. I personally collected the patient's particulars from the accompanying staff nurse. The patient's identity was verified by mentioning her name for her to respond. She was then warmly welcomed and immediately made comfortable in a simple unoccupied bed. Her particulars such as name, sex, age, and residential address were entered into the Admission and Discharge book and the Daily Ward state. Vital signs were checked and recorded accurately as follows:

1. Temperature 36.0^{o}C
2. Pulse 65bpm
3. Respiration 21cpm
4. Blood Pressure 170/70mm/Hg

Patient weighed 65 Kg. Patient was introduced to the other patients; she was also introduced to the staffs present and was assured of the competency of the healthcare team. Hospital

policies regarding visiting periods, payment of bills and the time vital signs will be checked were explained. Patient was properly orientated to the ward environment and its annexes. Physical examination on the patient was performed from head to toe and no abnormalities were seen, Patient had a high blood glucose level, Patient complained of excessive urination, Patient was anxious about management of her condition, Patient complained of lack of energy in performing activities of daily living, Patient had insulin deficiency, Patient could not provide answers to some issues relating to diabetes mellitus.

The following treatment plan was ordered:

1. Monitor random blood sugar 4 hourly
2. Continue sliding scale
3. Tab Metformin 1g bd for 30days
4. Tab Glibenclamide 10mg in the morning and 5mg in the evening

Patient was to undertake series of investigations including:

1. Full blood count
2. Blood film for malaria parasite
3. Fasting blood sugar
4. Random blood sugar
5. Urine R/E
6. Blood Urea and Creatine

Patient looked anxious. She was reassured to allay all fears and anxiety. I reintroduced myself to patient as a final year student nurse of the Nursing and Midwifery Training College, Berekum, who would like to take her and her family for my care study. Mrs. A. A. and her daughter in-law were informed that the care study is a requirement by the Nursing and Midwifery Council of Ghana in partial fulfilment towards the award of Diploma in Registered General Nursing. I explained to the patient and her daughter in law the concept of

the patient/family care study and assured them of privacy and confidentiality. It was added that a report would be written after the entire event. Mrs. A. A. and her daughter in-law agreed to my request and promised to offer me the necessary information and assistance. I then expressed my gratitude to them. Discharge planning was initiated with the relatives; thus, they would continue the care at home once she is well. I decided to choose this patient for the study because I wanted to know more about Diabetes mellitus.

1.10 Patient's Concept of Illness

Mrs. A. A. was of the view that some conditions like epilepsy and other mental disorders can have spiritual implications. She does not know the exact cause of her condition. Patient believes that the management planned for her by the medical team will help manage her illness and prevent any complications.

1.11 Literature Review

This section deals with documented information about the condition of Mrs. A. A. which was Diabetes mellitus. Literature review of a condition gives a detailed insight into the condition.

Review of Anatomy and Physiology on the Endocrine System

The Pancreas

According to Hinkle and Cheever (2014), Disorders of the pancreas are common and include pancreatic dysfunction. An understanding of the structure and function of the pancreas is essential. The pancreas, a retroperitoneal gland that is about 12–15 cm (5–6 inches) long and 2.5 cm (1inch) thick, lies posterior to the greater curvature of the stomach (Tortora & Derrickson, 2009). It is situated in the epigastric and left hypochondriac regions of the abdominal cavity. The pancreas is a pale grey gland weighing about 60 grams (Wagh & Grant, 2014).

The pancreas consists of a head, a body, and a tail and is usually connected to the duodenum by two ducts (Tortora & Derrickson, 2009). The head lies in the curve of the duodenum, the body behind the stomach and the tail lies in front of the left kidney and just reaches the spleen. The abdominal aorta and the inferior vena cava lies behind the gland. The pancreas is both an exocrine and endocrine gland (Wagh & Grant, 2014). The head is the expanded portion of the organ near the curve of the duodenum; superior to and to the left of the head are the central body and the tapering tail. (Tortora & Derrickson, 2009).

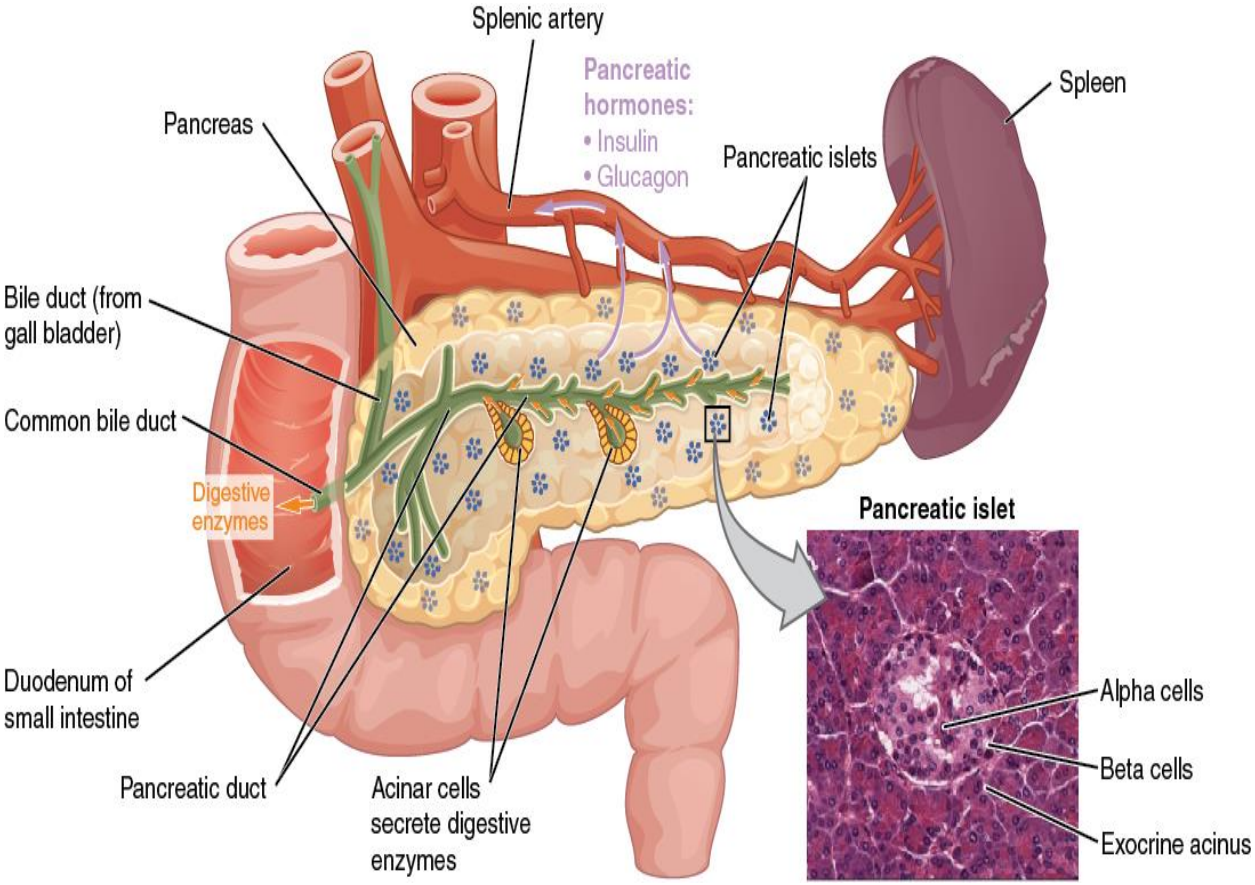

Figure 1. 1: Diagram of the pancreas

Source: (Biga, et al., 2015)

The Exocrine Pancreas

The exocrine functions include secretion of pancreatic enzymes into the gastrointestinal (GI) tract through the pancreatic duct. The function of the exocrine pancreas is to produce pancreatic juice containing enzymes, some in the form of inactive precursors, that digest carbohydrates, proteins and fats (Wagh & Grant, 2014). As in the alimentary tract, parasympathetic stimulation increases the secretion of pancreatic juice and sympathetic stimulation depresses it (Wagh & Grant, 2014).

Pancreatic juices are secreted by exocrine cells into small ducts that ultimately unite to form two larger ducts, the pancreatic duct and the accessory duct. These in turn convey the secretions into the small intestine. The pancreatic duct (duct of Wirsung) is the larger of the two ducts. In most people, the pancreatic duct joins the common bile duct from the liver and gallbladder and enters the duodenum as a dilated common duct called the hepatopancreatic ampulla (ampulla of Vater). The ampulla opens on an elevation of the duodenal mucosa known as the major duodenal papilla, which lies about 10 cm (4 inches) inferior to the pyloric sphincter of the stomach. The passage of pancreatic juice and bile through the hepatopancreatic ampulla into the small intestine is regulated by a mass of smooth muscle known as the sphincter of the hepatopancreatic ampulla (sphincter of Oddi). The other major duct of the pancreas, the accessory duct (duct of Santorini), leads from the pancreas and empties into the duodenum about 2.5 cm (1 in.) superior to the hepatopancreatic ampulla (Tortora & Derrickson, 2009).

The Endocrine Pancreas

The endocrine functions include secretion of **insulin, glucagon**, and **somatostatin** directly into the bloodstream (Hinkle & Cheever, 2014). The islets of Langerhans, the endocrine part of the pancreas, are collections of cells embedded in the pancreatic tissue. They are composed

of alpha, beta, and delta cells. The hormone produced by the beta cells is called insulin; the alpha cells secrete glucagon, and the delta cells secrete somatostatin (Hinkle & Cheever, 2014).

Insulin

A major action of insulin is to lower blood glucose by permitting entry of glucose into the cells of the liver, muscle, and other tissues, where it is either stored as glycogen or used for energy. Insulin also promotes the storage of fat in adipose tissue and the synthesis of proteins in various body tissues. In the absence of insulin, glucose cannot enter the cells and is excreted in the urine. This condition, called diabetes mellitus. The level of glucose in the blood normally regulates the rate of insulin secretion from the pancreas (Hinkle & Cheever, 2014).

Functions of Insulin

Hinkle and Cheever (2014) outline the following;

1. Transports and metabolizes glucose for energy
2. Stimulates storage of glucose in the liver and muscle (in the form of glycogen)
3. Signals the liver to stop the release of glucose
4. Enhances storage of dietary fat in adipose tissue
5. Accelerates transport of amino acids (derived from dietary protein) into cells
6. Inhibits the breakdown of stored glucose, protein, and fat.

Glucagon

The effect of glucagon (opposite to that of insulin) is chiefly to raise the blood glucose by converting glycogen to glucose in the liver. Glucagon is secreted by the pancreas in response to a decrease in the level of blood glucose (Hinkle & Cheever, 2014).

Somatostatin

Somatostatin exerts a hypoglycemic effect by interfering with release of growth hormone from the pituitary and glucagon from the pancreas, both of which tend to raise blood glucose levels (Hinkle & Cheever, 2014).

Blood supply to the Pancreas

The splenic and mesenteric arteries supply the pancreas, and venous drainage is by veins of the same names that join other veins to form the portal vein

Definition of Diabetes Mellitus

Diabetes mellitus is a group of metabolic diseases characterized by increased levels of glucose in the blood (hyperglycaemia) resulting from defects in insulin secretion, insulin action, or both (Hinkle & Cheever, 2014).

Diabetes mellitus (DM) is a syndrome of chronic hyperglycaemia due to relative insulin deficiency, resistance or both (Kumar & Clark, 2017).

Normally, a certain amount of glucose circulates in the blood. The major sources of this glucose are absorption of ingested food in the gastrointestinal tract and formation of glucose by the liver from food substances (American Diabetes Association [ADA], 2009).

Incidence/Epidemiology

Diabetes is especially prevalent in the elderly; as many as 50% of people older than 65 years of age have some degree of glucose intolerance. People 65 years and older account for almost

40% of people with diabetes (Hinkle & Cheever, 2014). The International Diabetes Federation (IDF) estimated that 382 million people (8.3% of the global population) had diabetes in 2013, and estimates an increase to 592 million (10.1%) in 2035. Diabetes is generally irreversible and, although patients can lead a reasonably normal lifestyle, its late complications result in reduced life expectancy and major health costs. These include macrovascular disease, leading to an increased prevalence of coronary artery disease, peripheral vascular disease and stroke, and microvascular damage causing diabetic retinopathy and nephropathy. Neuropathy is another major complication (Kumar & Clark, 2017).

Risk Factors for Diabetes Mellitus

1. Family history of diabetes (ie, parents or siblings with diabetes): associated with a gene known as Human Leukocyte Antigen (HLA-DR3 or DR4) mostly in type 1 diabetes (Kumar & Clark, 2017).
2. Obesity (i.e., ≥ 20% over desired body weight or BMI ≥ 27 kg/m2)
3. Race/ethnicity (e.g., African Americans, Hispanic Americans, Native Americans, Asian Americans, Pacific Islanders)
4. Age ≥ 45 years
5. Previously identified impaired fasting glucose or impaired glucose tolerance
6. Hypertension (≥ 140/90 mm Hg)
7. History of gestational diabetes or delivery of babies over 9 lb.

(Hinkle & Cheever, 2014)

Classification of Diabetes Mellitus

The major classifications of diabetes according to Hinkle and Cheever (2014) are; Type 1 diabetes, Type 2 diabetes, Gestational diabetes, Diabetes mellitus associated with other conditions or syndromes.

Table 1. 1: Detailed Classification of Diabetes Mellitus

Classification	Other names	Clinical Characteristics and Clinical Implications
Type 1 (5–10% of all diabetes)	Juvenile diabetes, Ketosis-prone diabetes, Brittle diabetes, Insulin-dependent diabetes mellitus [IDDM]	1. Onset any age, but usually young (≤30 years) 2. Etiology includes genetic, immunologic, and environmental factors (eg, virus) 3. Little or no endogenous insulin 4. Need insulin to preserve life 5. Ketosis prone when insulin absent 6. Acute complication of hyperglycemia: diabetic ketoacidosis
Type 2 (90–95% of all diabetes)	Adult-onset diabetes, Maturity-onset diabetes, Ketosis-resistant diabetes, Stable diabetes, and Non–insulin-dependent diabetes [NIDDM]	1. Onset any age, usually over 30 years 2. Causes includes obesity, heredity, and environmental factors 3. Decrease in endogenous insulin, or increased with insulin resistance 4. Oral antidiabetic agents may improve blood glucose levels if dietary modification and exercise are unsuccessful 5. May need insulin on a short-term or long-term basis to prevent hyperglycemia 6. Ketosis uncommon; except in stress or infection

Table 1.1: Detailed Classification of Diabetes Mellitus Cont'd…

Classification	Other names	Clinical Characteristics and Clinical Implications
Gestational diabetes	Pregnancy induced diabetes	1. Onset during pregnancy 2. Usually in the second or third trimester 3. Due to hormones secreted by the placenta, which inhibit the action of insulin 4. Above-normal risk for perinatal complications, especially macrosomia (abnormally large babies) Treated with diet and, if needed, insulin to strictly maintain normal blood glucose levels 5. Occurs in about 2–5% of all pregnancies 6. Risk factors include obesity, age older than 30 years, family history of diabetes, previous large babies (more than 9 lb)
Diabetes mellitus associated with other conditions	Secondary diabetes	1. Accompanied by conditions known or suspected to cause the disease: pancreatic diseases, hormonal abnormalities, medications such as corticosteroids and estrogen-containing preparations. 2. Depending on the ability of the pancreas to produce insulin, the patient may require treatment with oral antidiabetic agents or insulin.

Pathophysiology of Diabetes Mellitus

Type 1 Diabetes

Insulin is secreted by beta cells, which are one of four types of cells in the islets of Langerhans in the pancreas. When a person eats a meal, insulin secretion increases and moves glucose from the blood into muscle, liver, and fat cells (Hinkle & Cheever, 2014).

Regardless of the specific etiology, the destruction of Beta cells results in unchecked glucose production by the liver and fasting hyperglycaemia. In addition, glucose derived from food cannot be stored in the liver but instead remains in the bloodstream and contribute to postprandial hyperglycaemia.

If the concentration of glucose in the blood exceeds the renal threshold for glucose usually 180-200mg/dl (9.9-11.1mmol/L) the kidney may not reabsorb all the filtered glucose. The glucose then appears in the urine (Glycosuria**)**.

When excess glucose is excreted in the urine, it is accompanied by excessive loss of fluids and electrolytes (Polyuria). This is called osmotic diuresis. Excessive loss of fluids leads to dehydration. The mouth becomes dry and thirst sensors are activated causing the person to drink increased amount of fluids (polydipsia). Because glucose cannot enter cells without insulin, energy production decreases. This decrease in energy stimulates hunger and person eats more food (Polyphagia). Despite increased food intake the subject loses weight as the body loses water and breaks down proteins and fat in attempt to restore energy sources.

Also, there is increased production of **ketone bodies** as fat break down progresses. Ketone bodies are acids that disturb the acid–base balance of the body when they accumulate in excessive amounts (Hinkle & Cheever, 2014).

Type 2 Diabetes

The two main problems related to insulin in type 2 diabetes are insulin resistance and impaired insulin secretion. Insulin resistance refers to a decreased tissue sensitivity to insulin. Normally, insulin binds to special receptors on cell surfaces and initiates a series of reactions involved in glucose metabolism. In type 2 diabetes, these intracellular reactions are diminished, making insulin less effective at stimulating glucose uptake by the tissues and at regulating glucose release by the liver (Hinkle & Cheever, 2014).

To overcome insulin resistance and to prevent the build-up of glucose in the blood, increased amounts of insulin must be secreted to maintain the glucose level at a normal or slightly elevated level. This is called metabolic syndrome, which includes hypertension, hypercholesterolemia, and abdominal obesity. However, if the beta cells cannot keep up with the increased demand for insulin, the glucose level rises and type 2 diabetes develops. Despite the impaired insulin secretion that is characteristic of type 2 diabetes, there is enough insulin present to prevent the breakdown of fat and the accompanying production of ketone bodies. Therefore, DKA does not typically occur in type 2 diabetes. However, uncontrolled type 2 diabetes may lead to another acute problem—hyperglycemic hyperosmolar nonketotic syndrome (Hinkle & Cheever, 2014).

Clinical Manifestations

As specified in Hinkle and Cheever (2014), Clinical manifestations depend on the patient's level of hyperglycemia. Classic clinical manifestations of all types of diabetes include the "three Ps":

1. Polyuria
2. Polydipsia

Note: Polyuria (increased urination) and polydipsia (increased thirst) occur as a result of the excess loss of fluid associated with osmotic diuresis (Hinkle & Cheever, 2014).

3. Polyphagia: Patients also experience polyphagia (increased appetite) that results from the catabolic state induced by insulin deficiency and the breakdown of proteins and fats (Hinkle & Cheever, 2014).
4. Fatigue and weakness
5. Sudden vision changes
6. Tingling and numbness in hands and feet
7. Dry skin
8. Skin lesions or wounds that are slow to heal
9. Recurrent infections
10. Weight loss: due to fluid depletion and the accelerated breakdown of fat and muscle secondary to insulin deficiency (Kumar & Clark, 2017).
11. Pruritus vulvae or balanitis that is due to Candida infection (Kumar & Clark, 2017).

Diagnostic Investigations

1. History and physical examination: Evidence of weight loss and dehydration may be present, and the breath may smell of ketones (Kumar & Clark, 2017).

World Health Organization diagnostic c rite ria for diabetes is as follows;

2. Fasting plasma/blood glucose (FPG > 6.4 mmol/L)
3. Random plasma/blood glucose (RPG >11.1mmol/L)
4. Haemoglobin A1c (Glycated Haemoglobin) >6.5 (48 mmol/mol)

(World Health Organization, 2017)

According to Kuma and Clark (2017), No further tests are needed to diagnose diabetes. Other routine investigations include;

5. Urine testing for protein
6. A full blood counts
7. Urea and creatine
8. Liver biochemistry and
9. Random lipids.

Management of Diabetes

The care of diabetes is based on self-management by the patient, who is helped and advised by those with specialized knowledge. The quest for improved glycaemic control has made it clear that whatever the technical expertise applied, the outcome depends on willing cooperation by the patient (Kumar & Clark, 2017).

Nutritional Therapy

Nutrition, meal planning, and weight control are the foundation of diabetes management. The most important objectives in the dietary and nutritional management of diabetes are control of total caloric intake to attain or maintain a reasonable body weight, control of blood glucose levels, and normalization of lipids and blood pressure to prevent heart disease (Hinkle & Cheever, 2014).

The diet for people with diabetes is no different from that considered healthy for everyone. To achieve this, food for people with diabetes should be:

1. Low in sugar (though not sugar-free)
2. High in starchy carbohydrate (especially foods with a low glycaemic index), i.e. slower absorption
3. High in fibre
4. Low in fat (especially saturated fat).

(Kumar & Clark, 2017)

Glycaemic Index: One of the main goals of diet therapy in diabetes is to avoid sharp, rapid increases in blood glucose levels after food is eaten. The term glycaemic index is used to describe how much a given food increases the blood glucose level compared with an equivalent amount of glucose. The effects of use of the glycaemic index on blood glucose levels and on long-term patient outcomes are unclear, but it may be beneficial (Hinkle & Cheever, 2014).

Although more research is necessary, the following guidelines may be helpful when making dietary recommendations:

1. Combining starchy foods with protein-containing and fat-containing foods tends to slow their absorption and lower the glycaemic response.
2. In general, eating foods that are raw and whole results in a lower glycaemic response than eating chopped, puréed, or cooked foods.
3. Eating whole fruit instead of drinking juice decreases the glycaemic response, because fibre in the fruit slows absorption.
4. Adding foods with sugars to the diet may result in a lower glycaemic response if these foods are eaten with foods that are more slowly absorbed.

Patients can create their own glycaemic index by monitoring their blood glucose level after ingestion of a particular food (Hinkle & Cheever, 2014).

Other Dietary Concerns

Alcohol Consumption: Patients with diabetes do not need to give up alcoholic beverages entirely, but they and health care professionals must be aware of the potential adverse effects of alcohol specific to diabetes. Alcohol is absorbed before other nutrients and does not require insulin for absorption. Large amounts can be converted to fats, increasing the risk for DKA. A major danger of alcohol consumption by the patient with diabetes is hypoglycemia, especially for patients who take insulin or insulin secretagogues (medications that increase the secretion of insulin by the pancreas). Patient teaching regarding alcohol intake must emphasize moderation in the amount of alcohol consumed. Moderate intake is considered to be one alcoholic beverage per day for women and two per day for men (Hinkle & Cheever, 2014).

Exercise

Exercise is extremely important in diabetes management because of its effects on lowering blood glucose and reducing cardiovascular risk factors. Exercise lowers blood glucose levels by increasing the uptake of glucose by body muscles and by improving insulin utilization. It also improves circulation and muscle tone. Resistance (strength) training, such as weight lifting, can increase lean muscle mass, thereby increasing the resting metabolic rate. These effects are useful in diabetes in relation to losing weight, easing stress, and maintaining a feeling of well-being. Exercise also alters blood lipid concentrations, increasing levels of high density lipoproteins and decreasing total cholesterol and triglyceride levels. This is especially important for people with diabetes because of their increased risk of cardiovascular disease (Hinkle & Cheever, 2014).

Patients on insulin or sulphonylureas should be warned that there is an increased risk of hypoglycemia for up to 6–12 hours following heavy exertion (Kumar & Clark, 2017).

Patients who have blood glucose levels exceeding 250 mg/dL (14 mmol/L) and who have ketones in their urine should not begin exercising until the urine test results are negative for ketones and the blood glucose level is closer to normal. Exercising with elevated blood glucose levels increases the secretion of glucagon, growth hormone, and catecholamine. The liver then releases more glucose, and the result is an increase in the blood glucose level (Hinkle & Cheever, 2014).

Pharmacologic Therapy

The main goal of diabetes treatment is to normalize insulin activity and blood glucose levels to reduce the development of vascular and neuropathic complications (Hinkle & Cheever, 2014).

Insulin Therapy

In type 1 diabetes, exogenous insulin must be administered for life because the body loses the ability to produce insulin. In type 2 diabetes, insulin may be necessary on a long-term basis to control glucose levels if meal planning and oral agents are ineffective. In addition, some patients in whom type 2 diabetes is usually controlled by meal planning alone or by meal planning and an oral antidiabetic agent may require insulin temporarily during illness, infection, pregnancy, surgery, or some other stressful event.

In many cases, insulin injections are administered two or more times daily to control the blood glucose level. Because the insulin dose required by the individual patient is determined by the level of glucose in the blood, accurate monitoring of blood glucose levels is essential; thus, SMBG is a cornerstone of insulin therapy (Hinkle & Cheever, 2014).

Categories of Insulin

Short-acting insulins

Insulins were historically derived from beef or pig pancreas but these have now been almost entirely replaced by biosynthetic human insulin. This is produced by adding a DNA sequence coding for insulin or proinsulin into cultured yeast or bacterial cells (Kumar & Clark, 2017). Short-acting insulins are called regular insulin (marked R on the bottle). Regular insulin is a clear solution and is usually administered 20 to 30 minutes before a meal, either alone or in combination with a longer-acting insulin. Regular insulin is the only insulin approved for IV use (Hinkle & Cheever, 2014).

Intermediate-acting insulins

Intermediate-acting insulins are called NPH insulin (neutral protamine Hagedorn) or Lente insulin. Intermediate-acting insulins, which are similar in their time course of action, appear white and cloudy. If NPH or Lente insulin is taken alone, it is not crucial that it be taken 30 minutes before the meal. However, it is important that patients eat some food around the time of the onset and peak of these insulins (Hinkle & Cheever, 2014).

Very long-acting insulins

"Peakless" basal or very long-acting insulins are approved by the FDA for use as a basal insulin—that is, the insulin is absorbed very slowly over 24 hours and can be given once a day. Because the insulin is in a suspension with a pH of 4, it cannot be mixed with other insulins because this would cause precipitation (Hinkle & Cheever, 2014).

It was originally approved to be given once a day at bedtime; however, it has now been approved to be given once a day at any time of the day but must be given at the same time

each day to prevent overlap of action. Many patients fall asleep, forgetting to take their bedtime insulin or may be wary of taking insulin before going to sleep. Having these patients take their insulin in the morning ensures that the dose is taken (Hinkle & Cheever, 2014).

Rapid-acting insulins

Rapid-acting insulins produce a more rapid effect that is of shorter duration than regular insulin. Because of their rapid onset, the patient should be instructed to eat no more than 5 to 15 minutes after injection. Because of the short duration of action of these insulin analogues, patients with type 1 diabetes and some patients with type 2 or gestational diabetes also require a long-acting insulin (basal insulin) to maintain glucose control. Basal insulin is necessary to maintain blood glucose levels irrespective of meals. A constant level of insulin is required at all times (Hinkle & Cheever, 2014).

Inhaled insulin

The first inhaled insulin was withdrawn from the market in 2007 on the grounds of limited clinical demand, although lung cancer was also observed. A new formulation (Afrezza®) received FDA approval in July 2014 (Kumar & Clark, 2017).

Table 1. 2: Categories of Insulin

Time Course	Agent	Onset	Peak	Duration	Indications
Rapid-acting	Lispro (Humalog)	10-15mins	1hr	2-4hrs	Used for rapid reduction of glucose level, to treat postprandial hyperglycemia, and/or to prevent nocturnal hypoglycemia
	Aspart (Novolog)	5-15mins	40-50mins	2-4hrs	
	Glulisine (Apidra)	5-15mins	30-60mins	2hrs	
Short-acting	Regular (Humalog R, Novolin R, Iletin II Regular)	½-1hr	2-3hrs	4-6hrs	Usually administered 20–30 min before a meal; may be taken alone or in combination with longer-acting insulin
Intermediate-acting	NPH (neutral protamine Hagedorn)	2-4hrs	4-12hrs	16-20hrs	Usually taken after food
Very long-acting	Glargine (Lantus) Detemir (Levemir)	1hr	Continuous (No peak)	24hrs	Used for basal dose

Source: (Hinkle & Cheever, 2014)

Methods of Insulin Delivery

Methods of insulin delivery include traditional subcutaneous injections, insulin pens, jet injectors, and insulin pumps (Hinkle & Cheever, 2014).

Traditional subcutaneous injections: Insulin injections are self-administered into the subcutaneous tissue with the use of special insulin syringes.

Figure 1.2: Insulin syringes

Source: (Distefano, 2020)

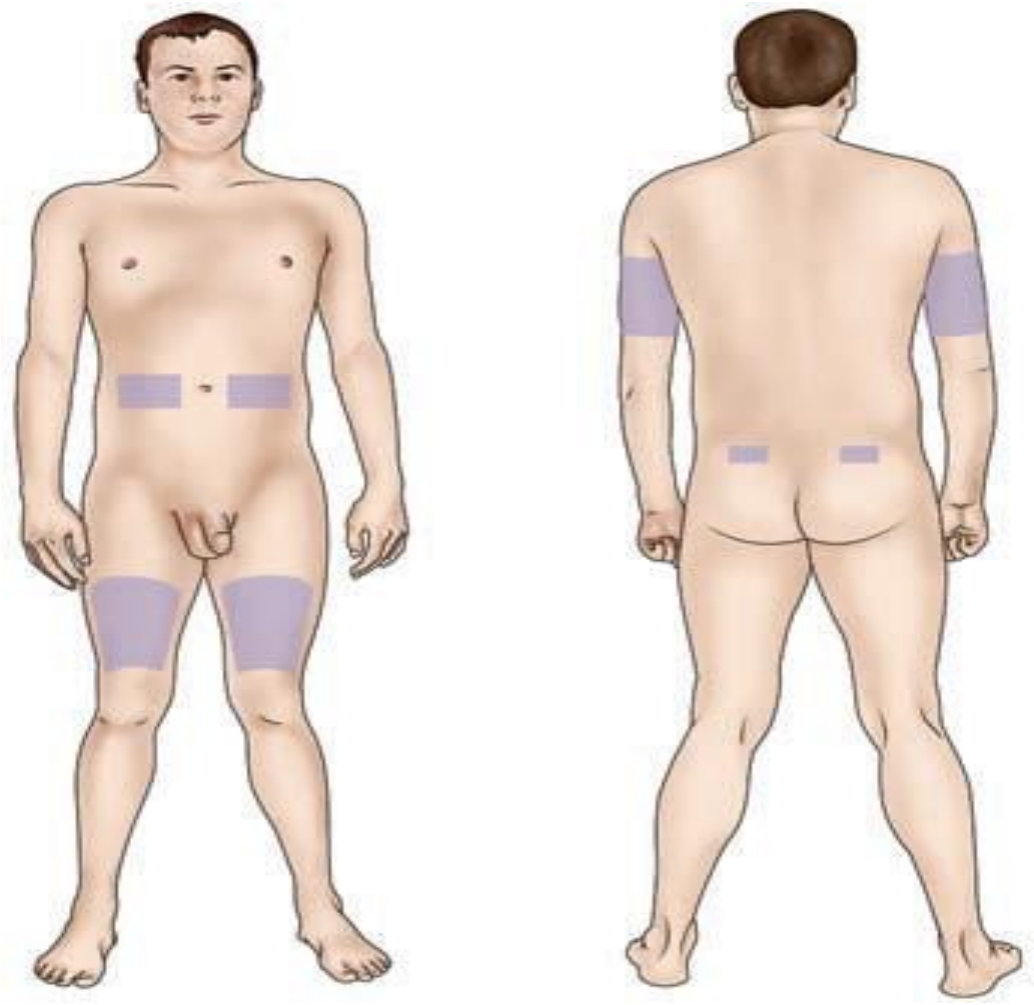

Figure 1. 2: Suggested areas for insulin injection

Source: (Hinkle & Cheever, 2014)

1. Insulin pens: Insulin pens use small (150- to 300-unit) prefilled insulin cartridges that are loaded into a pen like holder. A disposable needle is attached to the device for insulin injection (Hinkle & Cheever, 2014).

Figure 1. 3:Insulin pen

Source: (3d Molier International, 2020)

2. Jet Injectors: As an alternative to needle injections, jet injection devices deliver insulin through the skin under pressure in an extremely fine stream. These devices are more expensive and require thorough training and supervision when first used (Hinkle & Cheever, 2014).

Figure 1. 4: Insulin jet injector

Source: (Diabetes talk, 2018)

3. Insulin Pumps: Continuous subcutaneous insulin infusion involves the use of small, externally worn devices (insulin pumps) that closely mimic the functioning of the normal pancreas. Insulin pumps contain a 3-mL syringe attached to a long (24- to 42-in), thin, narrow-lumen tube with a needle or Teflon catheter attached to the end (Hinkle & Cheever, 2014).

Figure 1. 5: Insulin pump

Source: (Aleppo, 2019)

Complications of Insulin Therapy

As discussed by Hinkle and Cheever (2014), the following complications can occur as a result of insulin therapy:

1. Local Allergic Reactions: A local allergic reaction (redness, swelling, tenderness, and induration or a 2- to 4-cm wheal) may appear at the injection site 1 to 2 hours after the insulin administration.

2. Systemic Allergic Reactions: Systemic allergic reactions to insulin are rare. When they do occur, there is an immediate local skin reaction that gradually spreads into generalized urticaria (hives). These rare reactions are occasionally associated with generalized edema or anaphylaxis.

3. Insulin Lipodystrophy: Lipodystrophy refers to a localized reaction, in the form of either lipoatrophy or lipohypertrophy, occurring at the site of insulin injections.

    - ✓ Lipoatrophy is loss of subcutaneous fat; it appears as slight dimpling or more serious pitting of subcutaneous fat. The use of human insulin has almost eliminated this disfiguring complication.
    - ✓ Lipohypertrophy, the development of fibrofatty masses at the injection site, is caused by the repeated use of an injection site. If insulin is injected into scarred areas, absorption may be delayed. This is one reason that rotation of injection sites is so important. Patients should avoid injecting insulin into these areas until the hypertrophy disappears.

4. Resistance to Injected Insulin. Most patients have some degree of insulin resistance at one time or another. This may occur for various reasons, the most common being obesity, which can be overcome by weight loss. Clinical insulin resistance has been defined as a daily insulin requirement of 200 units or more.

5. Hypoglycaemia: This is the most common complication of insulin therapy and limits what can be achieved with insulin treatment. It is a major cause of anxiety for patients and relatives. It results from an imbalance between injected insulin and a patient's normal diet, activity and basal insulin requirement. The times of greatest risk are before meals, during the night and during exercise (Kumar & Clark, 2017). Symptoms develop when the blood glucose level falls below 3 mmol/L and typically develop over a few minutes, with most patients

experiencing ‘adrenergic’ features of sweating, tremor and a pounding heartbeat (Kumar & Clark, 2017).

6. Morning Hyperglycemia: An elevated blood glucose level on arising in the morning is caused by an insufficient level of insulin, which may be caused by several factors: ***the dawn phenomenon, the Somogyi effect, or insulin waning.***

    - ✓ The dawn phenomenon is characterized by a relatively normal blood glucose level until approximately 3 AM, when blood glucose levels begin to rise. The phenomenon is thought to result from nocturnal surges in growth hormone secretion, which create a greater need for insulin in the early morning hours in patients with type 1 diabetes.
    - ✓ Insulin waning is the progressive increase in blood glucose from bedtime to morning. Insulin waning is frequently seen if the evening NPH dose is administered before dinner; it is prevented by moving the evening dose of NPH insulin to bedtime.
    - ✓ Somogyi effect refers to nocturnal hypoglycemia followed by rebound hyperglycemia. Normal or elevated blood glucose at bedtime, a decrease at 2–3 AM to hypoglycemic levels, and a subsequent increase caused by the production of counterregulatory hormones

Oral Antidiabetic Agents

Diet and lifestyle changes are the key to successful treatment of type 2 diabetes, and no amount of medication will succeed where these have failed. Controlling diabetes is not just a matter of swallowing tablets, and these should never, in general, be prescribed until lifestyle changes have been implemented (Kumar & Clark, 2017). Oral antidiabetic agents may be effective for patients who have type 2 diabetes that cannot be treated effectively with medical nutritional therapy (MNT) and exercise alone (Hinkle & Cheever, 2014).

As specified by Kumar and Clark (2017); Hinkle and Cheever (2014);

1. First-Generation Sulfonylureas and Second-Generation Sulfonylureas: stimulates beta cells of the pancreas to secrete insulin. They are ineffective in patients without a functional β-cell mass, and are usually avoided in pregnancy. Example: 1st Generation; Acetohexamide, Chlorpropamide and Tolbutamide 2nd Generation; Glipizide and Glimepiride.

2. Biguanides: Inhibit production of glucose by the liver as well as increases bod tissues sensitivity to insulin. It does not affect insulin secretion, does not induce hypoglycaemia and does not predispose to weight gain. It is thus particularly helpful in the overweight. Example: Metformin

3. Alpha-Glucosidase Inhibitors: Delay absorption of complex carbohydrates in the intestine and slow entry of glucose into systemic circulation. Example: Acarbose and Miglitol

4. Meglitinides or Non-Sulfonylurea Insulin Secretagogues: Stimulate pancreas to secrete insulin. Example: Repaglinide and Nateglinide.

5. Thiazolidinediones (or glitazones): Sensitize body tissue to insulin; stimulate insulin receptor sites to lower blood glucose and improve action of insulin. Example: Pioglitazone and Rosiglitazone.

6. Dipeptidyl Peptidase-4 (DPP-4) Inhibitor: Increase and prolongs the action of incretin, a hormone that increases insulin release and decreases glucagon levels. Example: Sitagliptin and Vildagliptin.

Surgical intervention

Whole-pancreas and pancreatic islet transplantation: Transplantation of the whole pancreas or pancreatic islet is being performed on a limited population (mostly patients with diabetes who are receiving a kidney transplantation simultaneously). One main issue is weighing the risks of

antirejection medications against the advantages of pancreas transplantation (Hinkle & Cheever, 2014).

Nursing Management

Nursing management of patients with diabetes can involve treatment of a wide variety of physiologic disorders, depending on the patient's health status and whether the patient is newly diagnosed or seeking care for an unrelated health problem (Hinkle & Cheever, 2014). There are five (5) components of management of diabetes which are nutritional management, exercise, education, pharmacologic therapy, education and monitoring.

Figure 1. 6:Diagram of diabetes management

(BrainKart, 2017)

Nutritional Management

1. Meal was planned with the patient and dietician
2. Patient was provided with complex carbohydrates and simple carbohydrates in moderation.

3. Patient was encouraged to take protein from non-animal sources (legumes, whole grains) to help in the reduction of saturated and cholesterol intake.

4. High fibre intake was encouraged (soluble fibre e.g., legumes, oats and some fruits) (insoluble fibre e.g. whole grains, bread and cereals, some vegetables).

    - ✓ Soluble fibres play vital role in lowering blood glucose and lipid levels (soluble does that than insoluble)
    - ✓ Insoluble fibre increase bulk of stool and thereby preventing constipation.
    - ✓ Both type of fibres increase satiety which is helpful in weight reduction.

5. Patient was told to restrict alcohol intake (moderate consumption of alcohol)

6. Patient was told moderate use of sweeteners is acceptable.

Exercise

The following are general precautions for exercise in diabetes;

1. Use proper footwear and, if appropriate, other protective equipment.

2. Avoid exercise in extreme heat or cold.

3. Inspect feet daily after exercise.

4. Avoid exercise during periods of poor metabolic control.

5. Encourage patient to take snacks after strenuous exercise to prevent hypoglycemia.

Medication

1. Prescribed medications were administered (Insulin, antidiabetic agents) taking into consideration all the 10 rights.

2. The therapeutic and side effects of the medications were monitored.

Monitoring

1. Patient's weight was monitored daily
2. Blood glucose level and urine glucose were closely monitored.
3. Blood glucose records were assessed for patterns of hypoglycemia and hyperglycemia at the same time of day, and findings were reported to the physician.
4. Patient was closely monitored for acute and chronic complications of diabetes mellitus.
5. Patient was assessed for skin ulcers and signs of systemic infections.

Patient Education

1. Patient and family's readiness to learn were assessed
2. Patient was educated on the disease condition including;
    - ✓ Basic definition of diabetes
    - ✓ Normal and target blood glucose levels
    - ✓ Effect of insulin and exercise
    - ✓ Effect of food and stress
3. Patient was educated on diet to take and importance of dietary restrictions
4. Patient was educated on how to monitor blood glucose
5. Patient was thought how to self-administer prescribed insulin if need be.
6. Patient was educated on how to recognize and prevent acute complication such as hypoglycemia and immediate steps to take during hypoglycemia (Commercial sugar or life savers or hard candies, fruit juice or regular soda).
7. Patient was educated on when and how to contact the physician

8. Patient was educated on the importance of reviews.

Foot Care Tips

1. Patient was educated to inspect the feet every day by looking at the bare feet for cuts or swelling, checking for temperature changes.
2. Patient was educated to wash the feet in warm water every day and should not soak the feet.
3. Patient was educated to use pumice stone to smooth corns and calluses.
4. Patient was educated to wear comfortable shoes that fit well and should inspect the inside of the shoes each time.
5. Patient was educated to keep blood flowing to the feet by wiggling the toes and moving the ankles up and down for 5 minutes, 2 or 3 times a day.

Personal hygiene

1. Body hygiene is done by giving an assisted bed bath twice daily with warm water, soap, sponge and towel to prevent offensive odour and to remove microorganisms from the skin.
2. Bony prominences, which are prone to be sore, are well cared for by treating the area to prevent bedsore.
3. Soiled bed linens are also changed when dirty or wet to prevent bad odour and harboring of microorganisms.
4. Oral hygiene was also done twice daily with toothpaste and toothbrush. This was done to prevent oral offensive smell and to prevent the harboring of micro bacteria.
5. Patient's hands and feet were cared for by using warm water and trimming the nails with nail clippers, washing and filling the nails.
6. Patients feet were cleaned, dried, lubricated with lotion (but not between toes).

Rest and sleep

1. A quiet environment was provided by reducing noise to allow patient to get enough rest.
2. Windows were opened to allow ventilation.
3. Visitors were also restricted to allow patient gets enough rest and sleep.
4. Bed is being made free from creases and cramps by straighten the bed linen. Warm beverages were served.
5. Warm bath was given with warm water, soap, sponge and towel in order to relax patient and to induce sleep.
6. Teach patient rest and relaxation techniques e.g., guided imagery

Prevention of DM

Diabetes Prevention Program Research Group reported that type 2 diabetes can be prevented with appropriate changes in lifestyle (Hinkle & Cheever, 2014).

1. Weight reduction through dietary modifications.
2. Avoid or take alcohol in moderation.
3. Physical activity of moderate intensity

Acute Complications of Diabetes

There are three major acute complications of diabetes related to short-term imbalances in blood glucose levels: hypoglycemia, DKA, and hyperglycemic hyperosmolar nonketotic syndrome, which is also called hyperglycemic hyperosmolar syndrome or state (Hinkle & Cheever, 2014).

1. Hypoglycemia: Hypoglycemia occurs when the blood glucose falls to less than 50 to 60 mg/dL (2.7 to 3.3 mmol/L), because of too much insulin or oral hypoglycemic agents, too little food, or excessive physical activity. Hypoglycemia may occur at any time of the day or night. It often occurs before meals, especially if meals are delayed or snacks are omitted.

- ✓ In mild hypoglycemia, as the blood glucose level falls, the sympathetic nervous system is stimulated, resulting in a surge of epinephrine and norepinephrine. This causes symptoms such as sweating, tremor, tachycardia, palpitation, nervousness, and hunger (Hinkle & Cheever, 2014).
- ✓ In moderate hypoglycemia, the drop in blood glucose level deprives the brain cells of needed fuel for functioning. Signs of impaired function of the CNS may include inability to concentrate, headache, lightheadedness, confusion, memory lapses, numbness of the lips and tongue, slurred speech, impaired coordination, emotional changes, irrational or combative behavior, double vision, and drowsiness (Hinkle & Cheever, 2014).

In severe hypoglycemia, CNS function is so impaired that the patient needs the assistance of another person for treatment of hypoglycemia. Symptoms may include disoriented behavior, seizures, difficulty arousing from sleep, or loss of consciousness (Hinkle & Cheever, 2014).

2. Diabetic Ketoacidosis DKA is caused by an absence or markedly inadequate amount of insulin. This deficit in available insulin results in disorders in the metabolism of carbohydrate, protein, and fat. The three main clinical features of DKA are
   - ✓ Hyperglycemia
   - ✓ Dehydration and electrolyte loss
   - ✓ Acidosis
3. Hyperglycemic hyperosmolar nonketotic syndrome (HHNS) is a serious condition in which hyperosmolarity and hyperglycemia predominate, with alterations of the sensorium (sense of awareness). At the same time, ketosis is usually minimal or absent. The basic biochemical defect is lack of effective insulin (ie, insulin resistance). Persistent hyperglycemia causes osmotic diuresis, which results in losses of water and electrolytes. The clinical picture of HHNS is one of hypotension, profound dehydration (dry mucous membranes, poor skin

turgor), tachycardia, and variable neurologic signs (eg, alteration of sensorium, seizures, hemiparesis) (Hinkle & Cheever, 2014).

Long-Term Complications of Diabetes

Over time, chronic hyperglycemia causes a variety of serious complications in persons with diabetes. These involve the circulatory system, eyes, kidneys, skin, and nerves. Most of the complications involve either the large blood vessels in the body (macrovascular complications) or the tiny blood vessels, such as those in the eyes or kidneys (microvascular complications) (Williams & Hopper, 2015).

Macrovascular Complications

Circulatory System

1. Atherosclerosis and arteriosclerosis faster than the general population.
2. Hypertension
3. Strokes: High blood glucose can also affect platelet function, leading to increased clotting
4. Heart attacks
5. Peripheral vascular disease

Note: The risk of cardiovascular disease and strokes is two to four times more common in persons with diabetes than in the general population (Williams & Hopper, 2015).

Microvascular Complications

6. Eyes: Small blood vessels can become diseased, eventually leading to retinopathy in most patients with diabetes (Williams & Hopper, 2015). Retinopathy involves damage to the tiny blood vessels that supply the eye. Small hemorrhages occur, which can cause blindness if not corrected (Williams & Hopper, 2015).

7. Kidneys: Nephropathy is caused by damage to the tiny blood vessels in the kidneys. Up to 40% of patients with diabetes develop some degree of nephropathy (Williams & Hopper, 2015). The kidney may be damaged by diabetes in three main ways: glomerular damage, ischaemia resulting from hypertrophy of afferent and efferent arterioles and ascending infection (Kumar & Clark, 2017).

Nerve Complications

8. Diabetic Neuropathies: Another complication of diabetes is neuropathy, which is damage to nerves as a result of chronic hyperglycemia. Neuropathy can cause numbness and pain in the extremities, erectile dysfunction (impotence) in men, sexual dysfunction in women and gastroparesis (delayed stomach emptying) (Williams & Hopper, 2015).

Infection

9. Recurrent infections: Persons with diabetes are prone to infection for several reasons. If injuries occur, healing may be slow because of impaired circulation. There may not be enough blood supply to heal the wound or fight an infection. For the same reason, it may be difficult for IV antibiotics to reach an infected site, and topical antibiotics may be preferable. In the presence of hyperglycemia, white blood cells (WBCs) become sluggish and ineffective, further reducing the body's ability to fight infection (Williams & Hopper, 2015).

Foot complication

10. Diabetic foot: The combination of macrovascular disease, neuropathy, and risk for infection makes patients with diabetes prone to foot problems. Consider the patient who has no feeling in his or her feet because of neuropathy. If the patient has a foot injury, it may not be felt right away. Vascular disease will prevent a good blood supply from preventing infection and promoting healing. If infection sets in, it is slow to resolve and may progress to necrosis and gangrene (Williams & Hopper, 2015).

1.12 Validation of Data

Validation is the extent to which a measure, indicator, or a method of data collection possesses the quality of being sound or true as far as it can be judged (Weller, 2014). All the information gathered from the patient was found to be true after comparing with information obtained from patient's relative through series of interviews. Also, the patient's folder provided the information to confirm the data collected. The information from the literature review also confirmed the data gathered. After collecting all this information, I realized that the data collected were similar and so considered valid for the study. Also during home visit some information like house number was verified to be true.

CHAPTER TWO

ANALYSIS OF DATA

2.0 Introduction

Analysis is a statistic that measures differences among group means and uses a statistical technique to equate the groups under study in relation to another given variable (Weller, 2014). This chapter deals principally with analysis of data collected in chapter one. It comprises of all the information collected from the patient's medical history, nursing interventions, laboratory investigations and literature review of the condition. In data analysis, critical and logical study with arrangement is done about an object under study. This is an approach to help in the interpretation of data which were collected in chapter one as mentioned earlier on. Areas to be analysed under this chapter consist of:

1. Diagnostic investigations
2. Causes
3. Clinical features
4. Treatment
5. Complications
6. Patient strength
7. Patient problems
8. Nursing diagnosis

2.1 Comparison of Data with Standards.

Information which was analytically obtained from patient are compared to what is standardized in literature in other to solicit for more understanding about patient course of treatment and their effectiveness in patient's improvement.

A. Diagnostic Investigation\Test

Diagnosis is the determination of the nature of a disease and Test is defined as an examination or trial. Investigation refers to procedures performed to establish a diagnosis, to monitor a person's

health, disease or the effectiveness of treatment (Weller, 2014). Investigations which were carried out on Mrs A.A. during her period of hospitalization compared with literature;

Table 2. 1: Comparison of Test Done to Literature

Test outlined in literature review	**Test Carried out on patient**
1. History and physical examination	1. History was taken and physical examination was done which revealed significant weight loss
2. Fasting blood glucose	2. Fasting blood glucose was checked every morning
3. Random blood glucose	3. Random blood glucose was monitored
4. Glycated haemoglobin	4. Glycated haemoglobin was not done
5. Urine testing	5. Urine R/E was done
6. Full blood count	6. Full blood count was done
7. Urea and electrolytes	7. Blood urea and creatine was done
8. Liver biochemistry	8. Liver biochemistry was not done
9. Random lipids	9. Random lipid was not done
10. Blood film for malaria parasite was not in literature review	10. Blood film for malaria parasite was done

With reference to the table glycated haemoglobin, liver biochemistry, random lipids were not carried out because the diagnoses were arrived at and confirmed by history and physical examination, fasting blood glucose, random blood glucose, full blood count and urine routine examination.

Table 2. 2: Results of Diagnostic investigations carried Out on Patient

Ordered Date	**Specimen**	**Investigations**	**Results**	**Normal values**	**Interpretation**	**Remarks**
05/11/2021	Blood	**Full Blood Count** Haemoglobin	11.8g/dL	**Males:** 14 g/dL - 16.0g/dL **Females:** 11.3 g/dL - 15.3g/dL	Normal	No treatment given
		Red Blood Cell	$4.8x10^{12}$/L	**Males:** 3.0 $x10^{12}$/L - 5.9 $x10^{12}$/L **Females:** 2.50 $x10^{12}$/L - 5.50 $x10^{12}$/L	Normal	No treatment given
		White Blood Cell	$8.1x10^{9}$/L	4.0 $x10^{9}$/L - 12.0 $x10^{9}$/L	Normal	No treatment given
05/11/2021	Blood	Urea	3.2mmol/L	1.67 mmol/L - 8.2 mmol/L	Normal	No treatment given
		Creatinine	94.6umol/L	57.0umol/L - 97.0umol/L	Normal	No treatment given
05/11/2021	Blood	Blood film for malaria parasite	Negative	Negative	Normal	No treatment given

Table 2.2: Results of Diagnostic investigations carried Out on Patient

Ordered Date	**Specimen**	**Investigations**	**Results**	**Normal values**	**Interpretation**	**Remarks**
05/11/2021	Urine	**Urine R/E** Appearance	Hazy	Clear	Abnormal	*Patient was encouraged on liberal intake of fluids *Insulin and Oral antidabetics were given
		Colour	Straw	Colourless	Normal	No treatment given
		Urine pH	5.0	4.6-8.0	Normal	No treatment given
		Urine glucose	Positive (+++)	Negative	Abnormal	Insulin and Oral antidiabetics were given
		Protein	Negative	Negative	Normal	No treatment given
		Ketones	Negative	Negative	Normal	No treatment given

B. Causes of Patient's Condition

With references to the literature review on the risk factors of diabetes mellitus include age ≥ 45year, race, Obesity and hypertension. Among these risk factors Mrs A.A had age more than 45 years and family medical history of diabetes mellitus. Therefore this could be the cause of her condition.

C. Clinical Features/ Signs and Symptoms

Table 2. 3: Clinical Features of Mrs. A. A. Compared with those in the Literature Review

Clinical Features in Literature Review	**Clinical Features Exhibited by Patient**
1. Polyuria	1. Patient complained of polyuria
2. Polydipsia	2. Patient complained of polydipsia
3. Polyphagia	3. Patient did not complain of polyphagia
4. Fatigue and weakness	4. Patient complained of fatigue and weakness
5. Sudden vision changes	5. Patient did not experience sudden vision changes
6. Tingling and numbness in hands and feet	6. Patient did not experience tingling and numbness in hands and feet
7. Dry skin	7. Patient skin was not dry
8. Skin lesions or wounds that are slow to heal	8. Patient had no skin lesions or wound
9. Recurrent infection	9. Patient showed no signs of infection
10. Weight loss	10. Patient said her weight has reduced significantly.
11. Pruritus vulvae	11. Patient did not experience pruritus vulvae

The above comparison indicates that the patient's condition was truly diabetes mellitus disease since most of her exhibited signs and symptoms appeared in literature.

D. Specific Medical Treatment Given to Patient

According to Weller (2018), Treatment refers to the mode of dealing with a patient or disease. Mrs. A. A. was managed medically with the aim of controlling her blood sugar level.

The following drugs were used in the treatment of the condition:

1. Continue sliding scale (Insulin dosage depends on level of glucose)
2. Tab Metformin 1g bd for 30days
3. Tab Glibenclamide 10mg in the morning and 5mg in the evening for 30days
4. Intravenous normal saline 0.9% 2litres for 24 hours.

Table 2. 4: Treatment Given to Patient as Compared with Literature Review

Treatment as in literature review	**Treatment given to my patient**
1. Insulin therapy	1. Insulin was ordered (sliding scale)
2. Sulfonylureas	2. Tab Glibenclamide was given
3. Biguanides	3. Tab Metformin was given
4. Alpha-Glucosidase Inhibitors	4. None was ordered for patient
5. Meglitinide	5. None was ordered for patient
6. Thiazolidinediones	6. None was ordered for patient
7. Dipeptidyl Peptidase-4 (DPP-4) Inhibitor	7. None was ordered for patient
8. Whole-pancreas and pancreatic islet transplantation	8. No surgical treatment was given

From the above table, comparison of drugs in the literature review with drugs given to patient, the treatments given to patient were in line with the literature.

Table 2. 5: Pharmacology of Drugs Administered to Patient

Date	**Drug**	**Dosage/ Route of Administration (Literature)**	**Dosage/ Route of Administration Given to Patient**	**Classification**	**Desired Effect**	**Actual Action Observed**	**Side Effect/ Remedies**
05/11/2021	Metformin hydrochloride	**Dosage,** initially 500 mg once daily for at least 1 week, dose to be taken with breakfast, then 500 mg twice daily for at least 1 week, dose to be taken with breakfast and evening meal Maximum dose: 2g daily **Route** Oral	**Dosage** 1g bd for 30days **Route** Orally	Biguanides	Metformin exerts its effect mainly by decreasing gluconeogenesis and by increasing peripheral utilization of glucose.	Patients' blood glucose returned to normal levels	Abdominal pain, decreased appetite, Diarrhoea, Nausea, Vomiting None of these side effects were observed.

Table 2.5: Pharmacology of Drugs Administered to Patient Cont'd…

Date	**Drug**	**Dosage/ Route of Administration (Literature)**	**Dosage/ Route of Administration Given to Patient**	**Classification**	**Desired Effect**	**Actual Action Observed**	**Side Effect/ Remedies**
05/11/2021	Glibenclamide	**Dosage** Initially 5 mg daily, adjusted according to response, dose to be taken with or immediately after breakfast; maximum 15 mg per day **Route** Oral	**Dosage** 10mg in the morning and 5mg in the evening for 30days **Route** Orally	Sulfonylureas	The sulfonylureas act mainly by augmenting insulin secretion	Patients' blood glucose returned to normal levels	Appetite decreased, gastrointestinal discomfort, metallic taste None of these side effects were observed.

Table 2.5: Pharmacology of Drugs Administered to Patient Cont'd…

Date	**Drug**	**Dosage/ Route of Administration (Literature)**	**Dosage/ Route of Administration Given to Patient**	**Classification**	**Desired Effect**	**Actual Action Observed**	**Side Effect/ Remedies**
05/11/2021	Intravenous normal saline (0.9%)	Amount depends on patient's fluid and electrolyte level and age as well as by doctor's prescription.	**Dosage** 2 litres in 24 hours **<u>Route</u>** Intravenously	Isotonic solution of sodium chloride	To correct fluid and electrolyte imbalance	Patient's body fluids and electrolytes were raised	Oedema, over hydration, hypocalcaemia. None of these side effects were observed.

E. Complications

With reference to the complications listed in the literature review such as hypoglycemia, diabetic ketoacidosis, hyperglycemic hyperosmolar nonketotic syndrome etc., Mrs. A. A. exhibited no complications prior to her admission into the ward nor throughout the period of hospitalization which resulted in her early recovery. Patient did not develop any complications because of the early seeking of medical help and prompt management given to her throughout her period of hospitalization.

2.2 Patient/Family Strengths

Strength refers to the ability to do things that need lot of physical or mental effort (McIntosh, 2013). The following strengths were observed in my patient and family during their period of hospitalization.

1. Patient was willing to follow diabetic therapeutic regimen
2. Patient was able to estimate the volume and frequency of urination
3. Patient verbalized her state of anxiety
4. Patient was able to sit up in bed unassisted
5. Patient understood the importance of insulin or oral antidiabetic agents in glucose uptake and utilization.
6. Patient was ready to know more about diabetes mellitus

2.3 Patient's Health Problems

Problem is defined as a situation, person that needs attention and needs to be dealt with or solved (McIntosh, 2013). From the data collected during assessment, the following health problems were noticed on patient:

1. (05/11/2021) Patient had a high blood glucose level
2. (05/11/2021) Patient complained of excessive urination
3. (05/11/2021) Patient was anxious about management of her condition
4. (06/11/2021) Patient complained of lack of energy in performing activities of daily living
5. (05/11/2021) Patient had insulin deficiency
6. Patient could not provide answers to some issues relating to diabetes mellitus (06/11/2021)

2.4 Nursing Diagnosis

According to NANDA International, nursing diagnosis is a clinical judgment concerning a human response to health conditions/life processes, or vulnerability for that response, by an individual, family, group, or community (Herdman & Kamitsuru, 2014).

1. Risk for unstable blood glucose level related to lack of adherence to diabetes management regarding dietary intake and medication management (05/11/2021)
2. Risk for fluid volume deficient related to polyuria (05/11/2021)
3. Anxiety related to fear of inability to manage diabetes (05/11/2021)
4. Fatigue related to decreased metabolic energy (05/11/2021)
5. Imbalanced nutrition (less than body tissue requirements) related to insulin deficiency (05/11/2021)
6. Deficient knowledge related to unfamiliarity with drug therapy, dietary precautions, and exercise for promoting normoglycemia (06/11/2021)

CHAPTER THREE

PLANNING FOR PATIENT/FAMILY CARE

3.0 Introduction

Planning is the third stage of nursing process in which the nurse and the patient together consider the goals to achieve in meeting the patient's identified actual or potential problems in meeting the daily life and produce an individual care plan (Weller, 2014). For effectiveness to be achieved, nursing care must go through assessment, analysis, diagnosis, planning, implementation and evaluation. In this process the nurse formulates strategies required to eliminate or decrease patient's health problems. Relatives of the patient are also included in the planning of patient care. The main purpose of planning is to help identify the nature of approach necessary to be employed in providing holistic care to a patient.

3.1 Objectives/Outcome Criteria for Patient/ Family Case Study

1. Patient would have a stable blood glucose level within normal range throughout the period of hospitalization as evidenced by;
    a. Nurse recording a blood glucose level of 3.4mmol/L – 6.4mmol/L as FBS.
    b. Patient reporting resolved fatigue and weakness
2. Patient fluid volume would be maintained throughout the period of hospitalization as evidence by;
    a. Patient verbalizing absence of symptoms of dehydration such as normal production of urine.
    b. Nurse observing patient skin snaps rapidly back to normal position when pinched
3. Patient would be relieved from anxiety within 24 hours as evidenced by;
    a. Patient verbalizing that she is no longer anxious

b. Nurse observing patient demonstrate understanding of diabetes management

4. Patient energy level will be restored within 48 hours of hospitalization as evidenced by;
    a. Patient verbalizing decrease in level of fatigue
    b. Nurse observing patient display improve ability to participate in daily activities.
5. Patient will gain adequate knowledge on diabetes mellitus within 24 hours of hospitalization as evidenced by;
    a. Patient verbalizes knowledge of drug therapy, dietary regimen and the role of exercise in promoting normoglycemia.
    b. Nurse observes patient demonstrate full understanding of drug, exercise and diet therapy by answering related questions correctly

Table 3. 1: **NURSING CARE PLAN FOR PATIENT**

DATE/ TIME	NURSING DIAGNOSIS	OUTCOME CRITERIA	NURSING ORDERS	NURSING INTERVENTION	DATE/ TIME	EVALUATION
05/11/2021 4:25pm	Risk for unstable blood glucose level related to lack of adherence to diabetes management regarding dietary intake and medication management.	Patient will have a stable blood glucose level throughout the period of hospitalization as evidenced by; 1. Nurse recording a blood glucose level less than 6.4mmol/L (FBS) 2. nurse recording a blood glucose level of 3.4 – 6.4 mmol/l	1. Assess blood glucose level before meals and at bed time 2. Assess for signs of hypoglycaemia 3. Assess patients' peripheral perfusion to detect macroangiopathy 4. Encourage patient to adhere to the therapeutic regimen. 5. Administer prescribed insulin therapy 6. Instruct patient to take oral hypoglycemic medications	1. Blood glucose level of patient was monitored before meals and at bed time 2. Patient was frequently assessed for changes in mentation, apprehension, erratic behavior, trembling, slurred speech, staggering gait, and seizure activity. 3. Assessment of capillary refill, temperature, peripheral pulses, colour, and sensation were done to detect possible macroangiopathy 4. Patient was encouraged to adhere to the therapeutic regimen including diet and medications 5. Insulin was administered as prescribed. 6. Patient was to take her oral hypoglycaemic agents whiles at home	10/11/20 11:30am	Goal fully met as evidenced by; 1.Nurse was able to record a glucose level of 6. 4mmol/L 2. patient reporting resolve fatigue and weakness

NURSING CARE PLAN FOR PATIENT CONT'D…

DATE/ TIME	NURSING DIAGNOSIS	OUTCOME CRITERIA	NURSING ORDERS	NURSING INTERVENTION	DATE/ TIME	EVALUATION
05/11/20 4:30pm	Risk for fluid volume deficient related to polyuria	Patient fluid volume would be maintained throughout the period of hospitalization as evidence by; 1. Patient verbalizing normal production of urine 2. Patient verbalizing absence of symptoms of dehydration such as normal production of urine and weakness.	1. Assess patient's history related to duration or intensity of symptoms such as excessive urination. 2. Monitor vital signs 3. Monitor intake and output of fluid 4. Weigh patient daily 5. Serve prescribed medications 6. encourage patient to drink plenty of fluid in response of thirst sensation	1. Patient history regarding excessive urination was gathered focusing on the frequency of urination. 2. Vitals signs were monitored 4 hourly 3. Intake and output was monitored for a period of 24 hours. 4. Patient was weighed every morning. 5. Prescribed oral anti diabetics and IV fluids were served appropriately.	10/11/20 11:30am	Goal fully met as evidenced by; 1. Patient verbalized normal production of urine 2.Nurse observing patient skin snaps rapidly back to normal position when pinched

NURSING CARE PLAN FOR PATIENT CONT'D…

DATE/ TIME	NURSING DIAGNOSIS	OUTCOME CRITERIA	NURSING ORDERS	NURSING INTERVENTION	DATE/ TIME	EVALUATION
05/11/21 4:35pm	Anxiety of the patient related to fear of inability to manage diabetes	Patient would be relieved from anxiety within 24 hours as evidenced by; 1. Patient verbalizing that she is no longer anxious 2. Nurse recording a blood glucose level of 3.4mmol/L – 6.4mmol/L as FBS	1. Reassure patient 2. Assess patients' level of anxiety 3. Investigate the patient's prior efforts to manage the diabetes care regimen. 4. Assess for factors that may negatively affect success with following the regimen. 5. Determine the patient's knowledge about the symptoms, causes, and management of diabetes mellitus.	1. Patient was told that measures would be put in place to help manage the condition. 2. Her level of anxiety was assessed based on how well she was interacting with the nurses. 3. Previous efforts made by patient to manage her condition was investigated 4. Negative factors affecting her diabetic management were assessed 5. Patients knowledge regarding symptoms, causes, and management of diabetes mellitus were assessed	06/11/21 4:35pm	Goal fully met as evidenced by; 1. Patient verbalized that she is no longer anxious 2. nurse observing patient demonstrating understanding of diabetes management

NURSING CARE PLAN FOR PATIENT CONT'D…

DATE/ TIME	NURSING DIAGNOSIS	OUTCOME CRITERIA	NURSING ORDERS	NURSING INTERVENTION	DATE/ TIME	EVALUATION
05/11/21 4:40pm	Fatigue related to decreased metabolic energy	Patients energy level will be restored within 48 hours of hospitalization as evidenced by; 1. Patient verbalizing increase in energy level 2. Nurse recording a blood glucose level of 3.4mmol/L – 6.4mmol/L as FBS	1. Reassure the patient that her energy would be restored 2. Discuss with the patient the need for activity plan 3. Alternate activity with periods of rest and sleep 4. Administer hypoglycemic agent 6. Assist patient in performing activities of daily living	1. Patient was reassured that her energy for daily activities will be restored. 2. Daily activity was planned with patient. 3. Rest and sleep periods were allowed after each activity. 4. Patient was assisted in performing some activities of daily living	07/11/20 4:40pm	Goal fully met as evidenced by 1. Patient verbalized an increase in energy level 2. patient reporting resolve fatigue and weakness

NURSING CARE PLAN FOR PATIENT CONT'D…

DATE/ TIME	NURSING DIAGNOSIS	OUTCOME CRITERIA	NURSING ORDERS	NURSING INTERVENTION	DATE/ TIME	EVALUATION
06/11/21 8:20am	Deficient knowledge related to unfamiliarity with drug therapy, dietary precautions, and exercise for promoting normoglycemia	Patient would gain adequate knowledge on diabetes mellitus within 24 hours of hospitalization as evidenced by; 1. Patient verbalizes knowledge of drug therapy, dietary regimen and the role of exercise in promoting normoglycemia. 2. Nurse observes patient demonstrate full understanding of drug, exercise and diet therapy by answering questions correctly	1. Assess the patient's health care literacy 2. Teach the patient the importance of following a diet plan. 3. Teach signs, symptoms, and reasons for hyperglycemia 4. Educate patient on her prescribed drugs. 5. Explain the role that exercise has in patients with DM. 6. Educate patient on the various precautionary measures when exercising	1. Health literacy of patient was assessed (language, reading, comprehension). 2. Patient was taught to follow a diet plan that is consistent in complex carbohydrates, low in fat, and high in fiber. 3. Patient was educated on that hyperglycemia can occur with increased food intake, infection or stress and was taught to recognize signs and symptoms such as a (polydipsia, polyuria, polyphagia, fatigue, fruity smelling breath) 4. Patient was educated on the dosage, storage and timing of her prescribed drugs 5. Patient was educated that exercise helps decrease insulin resistance at site of muscle receptors. 6. Patient was told not to exercise during periods of poor metabolic control.	07/11/20 8:20am	Goal fully met as evidenced by 1. Patient verbalized knowledge of drug therapy, dietary regimen and the role of exercise in promoting normoglycemia. 2. Nurse observed that patient demonstrated full understanding of drug by answering questions correctly

CHAPTER FOUR

IMPLEMENTATION OF PATIENT/FAMILY CARE PLAN

4.0 Introduction

The implementation phase of the nursing process involves carrying out the proposed plan of nursing care. The nurse assumes responsibility for the implementation and coordinates the activities of all those involved in implementation, including the patient and family, other members of the nursing team, and other members of the health care team, so that the schedule of activities facilitates the patient's recovery (Hinkle & Cheever, p. 2019). This chapter gives a vivid account of the nursing care that was rendered to the patient/family from the day of admission until discharge based on the health problems identified. It also deals with follow up visits/home visits to ensure continuity of care.

4.1 Summary of Actual Nursing Care Rendered to Patient/ Family

The actual nursing care rendered to patient and her family started on the day of admission, 5th November, 2021 to the time care was terminated on 20th November, 2021. The management of patient and her family was planned to meet their physiological, emotional, spiritual and physical needs. Whiles on admission, routine nursing actions, for example, oral care and medication administration were done and the necessary documentations were also carried out.

4.1.1 First Day of Admission (5th November, 2021)

Mrs. A. A. arrived at the Female Medical Ward on 5th November, 2021 at 4:25pm in a wheel chair accompanied by a staff nurse, rotational nurse and her daughter in-law. On arrival patient was fully conscious and alert. Patient had been on detention at the Accident and Emergency Centre of Presbyterian Hospital-Dormaa for some few hours with the diagnosis of hyperglycaemia in a known diabetes mellitus. It was an unplanned admission. Happening to

be at the nurses' station with the nurse in-charge at the time of her arrival, I was subsequently charged with the responsibility to carry out her admission to the ward. I personally collected the patient particulars from the accompanying staff nurse. The patient's identity was verified by mentioning her name for her to respond. She was then warmly welcomed and immediately made comfortable in a simple unoccupied bed. Her particulars such as name, sex, age, and residential address were entered into the admission and discharge book and the daily ward state.

On admission at 4:25pm, assessment revealed that patient was not fully adhering to her diabetes management hence a nursing diagnosis of Risk for unstable blood glucose level related to lack of adherence to diabetes management regarding dietary intake and medication management was formulated. An objective was therefore set so that patient would have a stable blood glucose level throughout the period of hospitalization. The following interventions were carried out; blood glucose level of patient was monitored before meals and at bed time, patient was frequently assessed for changes in mentation, apprehension, erratic behavior, trembling, slurred speech, staggering gait, assessment of capillary refill, temperature, peripheral pulses, color, and sensation were done to detect possible macroangiopathy, patient was encouraged to adhere to the therapeutic regimen including diet and medications, insulin was administered as prescribed and patient was to take her oral hypoglycaemic agents whiles at home.

At 4:30pm, patient complained of excessive urination for this reason a nursing diagnosis of Risk for deficient fluid volume related to polyuria was formulated. An objective was set to help restore and maintain patient's fluid volume throughout the period of hospitalization. The following interventions were carried out; patients' history regarding excessive urination was gathered focusing on the frequency of urination, vital signs were monitored 4 hourly, patient

was weighed each and every morning and prescribed oral anti diabetics and Intravenous fluids were served appropriately.

At 4:35pm, patient manifested a feeling of apprehension as she was not cooperating with care hence a nursing diagnosis of Anxiety related to fear of inability to manage diabetes was made. An objective was set to relieve patient from anxiety within a period of 24 hours. The following interventions were carried out; patient was told that measures would be put in place to help manage the condition, her level of anxiety was assessed based on how well she was interacting with the nurses, previous efforts made by patient to manage her condition was investigated, negative factors affecting her diabetic management were assessed, financial resources of patient for healthcare was assessed and patients knowledge regarding symptoms, causes, and management of diabetes were assessed.

At 4:40pm, patient reported that she was feeling fatigued hence a nursing diagnosis of Fatigue related to decreased metabolic energy was formulated. An objective was set to restore patient's energy level within 48 hours of hospitalization. The following interventions were carried out; patient was reassured that her energy for daily activities would be restored, daily activity was planned with patient, rest and sleep periods were allowed after each activity. Adequate ventilation was provided during activity periods, patient was assisted in performing some activities of daily living, oral hypoglycaemic agent (Glibenclamide and metformin) were also administered. Later in the evening patient was assisted to take her bath. She took her supper around 5:30pm which was Ampesi and Kontomire stew. At 6:00pm, vital signs were checked and recorded as indicated in the appendix. As part of the nursing actions to relieve anxiety client watched television whiles lying on her bed. At 10pm, random blood sugar as well as vital signs were checked and recorded as indicated in the appendix and due medications were served. Patient was made comfortable in bed and she slept around 10:30pm.

4.1.2 Second Day of Admission (6th November, 2021)

On the second day of admission as I went to the ward to continue with my nursing care to my patient, Her due medications had been served and her vital signs as well as her fasting blood glucose and weight had already been checked and recorded at 6am as indicated in the appendix. Patient was assisted to perform her personal hygiene and her bed was straightened to make it free from creases and crumps. At 7:30am, patient took porridge without sugar as breakfast,

At 8:20am patient was engaged in an interaction and it was realized that patient had less knowledge on her condition. The nursing diagnosis formulated was Deficient knowledge related to unfamiliarity with drug therapy, dietary precautions, and exercise for promoting normoglycemia. An objective was set to enable patient gain adequate knowledge on diabetes mellitus within 24 hours of hospitalization. The following interventions were carried out; health literacy of patient was assessed (language, reading, comprehension), patient was taught to follow a diet plan that is consistent in complex carbohydrates, low in fat, and high in fiber, patient was educated on that hyperglycemia can occur with increased food intake, infection or stress and was taught to recognize signs and symptoms such as a (polydipsia, polyuria, polyphagia, fatigue), patient was educated on the dosage, storage and timing of her prescribed drugs, patient was educated that exercise helps decrease insulin resistance at site of muscle receptors and patient was told not to exercise during periods of poor metabolic control.

At 9am, patient was reviewed by the medical team and the plan was to continue treatment and also to see the nutritionist for nutritional counseling. I gave my patient and her relatives a prior notice that I would want to go and see them and their house and permission was granted after they gave me the direction to their house, I took their contact as such. I embarked on my first home visit this day and that was to know my patient’s residence and the environment in

which she lives, verify the information given to me as well as to identify the risk factors such as familial tendency.

Her 2pm vital signs were checked and recorded in the afternoon as indicated in the appendix. She ate water melon in the afternoon after which she slept for a while. At 5pm, she was served with her evening meal. Patient took her bath afterwards. Her 6pm vital signs were checked and recorded as shown in the appendix. Patient was then engaged in an interaction geared towards deepening her understanding about her disease condition.

At 4:35pm, an evaluation of the set objective on 6th November, 2021 to help relieve patient from anxiety within 24 hours was done. Goals were fully met as patient verbalized that she is no longer anxious and nurse observed that patient demonstrated understanding of diabetes management.

At 10pm, her due medications were served, her vital signs as well as her random blood sugar was checked and recorded as shown in the appendix. Patient slept around 10:20pm.

4.1.3 Third Day of Admission (7th November, 2021)

On the third day of admission patient was assisted in maintaining her oral hygiene, she had her bath and emptied her bowel. Report from the night nurses read that she was able to sleep well upon the measures put in place. Her due medications were served and her vital signs as well as her fasting blood glucose and weight had already been checked and recorded at 6am as indicated in the appendix. At 7:50am, she was assisted and encouraged to take about 500mls of brown porridge which was sugar free.

At 8:20am, evaluation of the set objective on 6th November, 2021 to help patient gain adequate knowledge on condition was done. Goals were fully met as patient verbalized knowledge of drug therapy, dietary regimen and the role of exercise in promoting

normoglycemia and nurse observed that patient demonstrated full understanding of drug, exercise and diet therapy.

During the ward rounds at 9:30am, patient made no new complains so the medical team ordered for treatment to continue.

At 4:00pm, evaluation of the set objective to restore patient's energy level within 48 hours of hospitalization was done. Goals were fully met as patient verbalized an increase in energy level and nurse observed that patient displayed improved ability to participate in activities.

In the evening, she took rice and stew around 5:30pm for supper. She stayed glued to the ward Television afterwards watching the news and other programs as well.

At 10pm, her due medications were served, her vital signs as well as her random blood sugar was checked and recorded as shown in the appendix. Patient went to bed around 10:30pm.

4.1.4 Fourth Day of Admission (8th November, 2021)

Mrs. A. A. was seen in bed in good health and was responding to treatment given. The usual routine nursing care was provided and documented in the nurses' notes. At 7:45am, Patient took brown porridge with koose for breakfast. Patient gave no new complains per my conversation with her, likewise during ward rounds. Current treatment being given was to be continued.

At 2pm, vital signs were checked and recorded as indicated in the appendix. Patient ate Ampesi with garden eggs stew. Afterwards, patient slept for a while and woke up around 5:00pm. At 6:00pm vital signs were checked and recorded as indicated in the appendix.

At 10pm, her due medications were served, her vital signs as well as her random blood sugar was checked and recorded as shown in the appendix. Patient went to bed around 10:30pm.

4.1.5 Fifth Day of Admission (9th November, 2021)

I went to continue the nursing care rendered to my patient at 7:35am. Patient woke up feeling strong and better. Report from night nurses indicated that patient was able to sleep well. I greeted her, she responded with a cheerful facial expression. I was inquisitive enough to ask why she had put up a smiley face. Upon asking, patient said that she feels grateful to have special nursing care rendered to her over the past few days since she was admitted.

Her due medications had been served and her vital signs as well as her fasting blood glucose and weight had already been checked and recorded at 6am as indicated in the appendix. Patient performed her personal hygiene and her bed was straightened to make it free from creases and crumps.

At 7:50am, patient had brown porridge with koose for breakfast. During the ward routine rounds, treatment was to be continued and discharge to be considered the following day.

At 10pm, her due medications were served, her vital signs as well as her random blood sugar was checked and recorded as shown in the appendix. Patient slept around 10:30pm.

4.1.6 Day of Discharge/Sixth Day of Admission (10th November, 2021)

I went to continue the nursing care rendered to my patient at 7:00am. Patient woke up feeling strong and better. Her due medications had been served and her vital signs as well as her fasting blood glucose and weight had already been checked and recorded at 6am as indicated in the appendix. The report from the night nurse read that patient had a sound sleep at night.

Patient maintained her personal hygiene; her bed linen was change and replaced. The bed was laid nice nicely making sure it was free from creases and cramps.

At 7:40am, evaluation of the set objective on 6th November, 2021 to restore and maintain patient's nutritional status throughout the period of hospitalization was done. Goals were

fully met as patient was able to ingest appropriate amount of nutrients and nurse monitored patients' blood glucose level.

At 11:30am, an evaluation of the set objective on 5th November, 2021 so that patient would have a stable blood glucose level throughout the period of hospitalization was done. Goals were fully met as patient was able to record a glucose level of 4.9mmol/L and nurse observed that patient adhered to diabetic management.

At 11:30am, an evaluation of the set objective on 5th November, 2021 to restore and maintain patients' fluid volume was done. Goals were fully met as patient verbalized polyuria is no more and nurse observed that patient had acceptable levels of urine output.

Her daughter in-law was informed and the bill was assessed to be paid. An amount of thirty-two Ghana Cedis for medications which was not covered by National Health Insurance Scheme was paid. I called the nutritionist through the ward phone to come and see my patient before she leaves for home. I together with the nutritionist provided Mrs. A. A. and her daughter in-law with a clear and understandable education on how she should live her life, creating an awareness on her diets and how important it is in the management of Diabetes mellitus. Patient was informed to come for review on 17th November, 2021 at the main OPD. The need to continue with medications were emphasized and review date was stretched on. I assisted in packing patient's belongings, did disinfection of patient bed and locker to enhance infection prevention. At exactly 12:00pm, patient and relative left the ward. Patient and the family bade the ward inmates and staff goodbye. I accompanied them to the hospital entrance; said goodbye and also informed them that I would be coming to their house to check on her.

4.2 Preparation of Patient/Family for Discharge and Rehabilitation.

Preparation for discharge commenced from the time of admission at the hospital, at 4:25pm on 5th November, 2021 till the last day of visit, 20th November, 2021. The patient and family were informed that staying in the hospital was for a temporal period of time. Education of patient and family on the causes, clinical features and management of diabetes mellitus were reemphasized. This was aimed at helping the patient and relatives in the provision of adequate care. Prior to patient discharge, health education was given to the patient and relatives on the importance of diet and avoiding over the counter medication, should neither smoke nor drink alcohol. Patient was encouraged to take in food rich in the essential food nutrients. Patient was also told to exercise more often. Patient and her family were also educated on the need to maintain personal and environmental hygiene to help improve immunity. A great emphasis was made on the need to continue with medication and to report to the hospital if any problem does occur. Patient was informed to come for review on Tuesday 17th November, 2021. Necessary information was recorded into the admission and discharge book as well as the ward state.

4.3 Follow Up / Home Visit / Continuity of Care

Home visit is a visit made by a health professional to a patient's home, usually with face-to-face contact between the health professional and the patient, less commonly between health professional and the patient's family.

Home visits were done before and after patient's discharge. It is friendly but a purposeful visit to patient home. Health educations were given and the need for the prevention of complication was reemphasized. It provided a good account on the causes and predisposing factors of patient's illness.

4.3.1 First Home Visit (6th November, 2021)

First home visit was made on 6th November, 2021 on Friday while patient was still on admission. I gave a prior notice to my patient and other family members and they willingly gave me the permission. The purpose of this visit was to know patient's residence and the environment in which she lives, verify the information given to me as well as to identify the risk factors such as familial tendency and stresses that can lead to her condition and to identify patients nearest health facility for possible referral.

A visit was made from Dormaa Presby Hospital to an area in Dormaa town called Dormaa ABB where patient resides. The purpose of this visit was to know my patient's residence and the environment in which she lives, verify the information given to me as well as to identify the risk factors such as familial tendency and stresses that can lead to her condition. To enable me know patients nearest health facility for possible referral and validation of patient data. Myself and patient's daughter in-law left Dormaa Presby Hospital around 2:10pm and alighted at S. S. at exactly 2:25pm. We met her landlady on arrival. The general surrounding of the house was tidy which I congratulated them for. They live in a 5-bedroom house built with blocks, not painted and roofed with aluminium sheets and is wired correctly with electricity power, had windows. Their source of water is from the pipe bone water which occasionally does not flow. However, they have some big containers which was well covered. They had a neat bathroom and toilet facilities, a storage room and corridor. I educated her on the need to open the windows to promote proper ventilation. They have a dustbin with a well-fitting lid in which they dump their waste materials and it is emptied every morning into Zoomlion waste-truck. Observations made in patients' room revealed well-furnished hall with television set, sound system, a ceiling fan, bed, couch and a wooden center table, it was very neat and well organized and they were applauded for that. Mrs. A.A.'s daughter in-law was educated on the need to practice good environmental and personal health and also

encouraged them to continue to keep their home and surroundings clean. I reassured Mrs. A. A.'s daughter in law of competent nursing care and that she would be well very soon. I had an extensive interaction with the Landlady and through that I was able to confirm most of the information I had been given by Mrs. A. A. No identifiable factor to patient's condition was made during the visit. I advised the children in the house to ensure good personal hygiene since they are the most vulnerable group in the house, also stressed on the importance of the parents providing mosquito nets for their children. We left her house at 3:10pm and got to the hospital at 3:25pm.

No identifiable factor to patient's condition was made during the visit. She thanked me and assured me that she would ensure that all what I said would be done before I come for my next home visit. We left the residence at 3:00pm and got to the hospital at 3:26pm. Comments made on the condition of the house, education and recommendations were repeated to Mrs. A. A. and she also promised to do everything in her power to ensure that all the recommendations are done. I identified on the first home visit that patient's house was not very far from Presbyterian Hospital Dormaa and for that reason I informed one community health nurse about handing over the patient to her and she agreed.

4.3.2 Second Home Visit (14th November, 2021)

This visit was made on 14th November, 2021. I made this visit to find out how patient was doing and to see if she was following her treatment regimen and also to remind the patient of the review date which was Tuesday 17th November, 2021.

On assessment patient windows were opened as they were educated to do. The environment was neat and they were commended for that. The importance of taking drugs as ordered was reinforced to patient and family. Education on good nutrition was stressed on to help protect patient and family from any diseases.

Patient and family were thanked for their cooperation and permission was sought to leave. I promised them of another visit which would be my last. Patient's daughter in-law escorted me to the road side where I bordered a taxi to my house.

4.3.3 Review (17th November, 2021)

On Tuesday 17th November, 2021 patient and her daughter in-law were met at the Out-Patient Department of Presbyterian Hospital Dormaa at 9:00am looking cheerful and lovely as noted from facial expression. I accompanied them to do encounter thus register patients name into the hospital system. The vital signs were checked and recorded as follows;

Temperature	36.2ºC
Pulse	66bpm
Respiration	18cpm
Blood pressure	120/70mmHg
FBS	5.2mmol/L

At the Out-Patient Department, patient was seen by the medical officer at consulting room 1. Upon assessment by the doctor, Mrs. A. A. was healthy. Patient did not have complains. She was told not to hesitate to report to the hospital if she should encounter any health problem. She was encouraged to adhere to the diet and medication therapy and also to always report for her monthly review. She was also encouraged to practice personal and environmental hygiene to protect herself from getting diseases. Patient was assured of a third home visit. I then accompanied them to the hospital entrance where they left for their home.

4.3.4 Third Home Visit (20th November, 2021)

The main reason for conducting the third home visit was to: Assess the general condition of patient and family, reinforce the need to comply with treatment regimen and finally terminate care.

On the said date, I set off early Friday afternoon around 12:00pm with my KTM Moto bike. I passed by Presbyterian Hospital Dormaa to inform the second in charge of the emergency unit about what we had previously discussed since the main in charge was not around and so he accompanied me to patient's house. When we got there, we were welcomed and offered seats. The purpose of this visit was to terminate care since patient was in good health and also was adhering to the treatment regimen. I introduced the community health nurse to the patient and her relatives. Patient and family were doing well as they looked cheerful and had no complains. After series of conversation, I handed over patient to the in charge. Mr. F. G. commended me for good work done and accepted to continue the care of Mrs. A. A. at home. The environment was tidy as there was neither rubbish nor stagnant water around. I however stressed on the importance of regular check-ups and to seek prompt medical attention whenever they fall sick and rather than relying on self-medication.

I asked about patient's drugs and it was found that she had been taking her medications and the recommended diet had also been adhered to. After interacting with patient and family for a while, I reemphasized on health educations that had been given to them already. Since it happened to be my last day of therapeutic relationship with patient and family, I terminated my care and thanked them for their cooperation which made my study a success. Again, patient and her family expressed their gratitude by showing how grateful they were to me for the support and care given to them. I eventually sought permission to leave and bid them the final farewell.

CHAPTER FIVE

EVALUATION OF CARE RENDERED TO PATIENT AND FAMILY

5.0 Introduction

Evaluation in simple terms is the outcome of nursing actions against the anticipated goals and it is the final step in the nursing process (Hinkle & Cheever, 2018). The chapter gives information about the statement of evaluation, amendment of nursing goals and the termination of the care rendered to my patient and family.

5.1 Statement of Evaluation

Throughout the period of admission, six health problems were recorded and objectives were set to solve them. Below is the summary of the interventions carried out and to what extent the goals were met.

a. Patient maintained a stable blood glucose

On 5th November, 2021 at 4:25pm, assessment revealed that patient was not fully adhering to her diabetes management hence a nursing diagnosis of Risk for unstable blood glucose level related to lack of adherence to diabetes management regarding dietary intake and medication management was formulated. An objective was therefore set so that patient would have a stable blood glucose level throughout the period of hospitalization. The following interventions were carried out; blood glucose level of patient was monitored before meals and at bed time, patient was frequently assessed for changes in mentation, apprehension, erratic behavior, trembling, slurred speech, staggering gait, and seizure activity, assessment of

capillary refill, temperature, peripheral pulses, color, and sensation were done to detect possible macroangiopathy, patient was encouraged to adhere to the therapeutic regimen including diet and medications, insulin was administered as prescribed and patient was to take her oral hypoglycaemic agents whiles at home.

On 10th November, 2021 at 11:30am, an evaluation of the set objective on 5th November, 2021 so that patient will have a stable blood glucose level throughout the period of hospitalization was done. Goals were fully met as patient was able to record a glucose level of 6mmol/L and nurse observed that patient adhered to diabetic management.

b. Patient fluid volume was restored and maintained

On 5th November, 2021 at 4:30pm, patient complained of excessive urination for this reason a nursing diagnosis of Risk for deficient fluid volume related to polyuria was formulated. An objective was set to help restore and maintain patient's fluid volume throughout the period of hospitalization. The following interventions were carried out; patient's history regarding excessive urination was gathered focusing on the frequency of urination, vital signs were monitored 4 hourly, Intake and output was monitored for a period of 24 hours, patient was weighed each and every morning and prescribed oral anti diabetics and IV fluids were served appropriately.

On 10th November, 2021 at 11:30am, an evaluation of the set objective on 5th November, 2021 to restore and maintain patient's fluid volume was done. Goals were fully met as patient verbalized polyuria is no more and nurse observed that patient had acceptable levels of urine output.

c. Patient was relieved from anxiety

On 5th November, 2021 at 4:35pm, patient manifested a feeling of apprehension as he was not cooperating with care hence a nursing diagnosis of Anxiety related to fear of inability to manage diabetes was made. An objective was set to relieve patient from anxiety within a period of 24 hours. The following interventions were carried out; patient was told that measures will be put in place to help manage the condition, her level of anxiety was assessed based on how well he was interacting with the nurses, previous efforts made by patient to manage her condition was investigated, negative factors affecting her diabetic management were assessed, financial resources of patient for healthcare was assessed and patients knowledge regarding symptoms, causes, and management of diabetes were assessed.

On 6th November, 2021 at 4:35pm, an evaluation of the set objective on 5th November, 2021 to help relieve patient from anxiety within 24 hours was done. Goals were fully met as patient verbalized that he is no longer anxious and nurse observed that patient demonstrated understanding of diabetes management.

d. Patient energy for daily activities was restored

On 5th November, 2021 at 4:40pm, patient reported that he was feeling fatigued hence a nursing diagnosis of Fatigue related to decreased metabolic energy was formulated. An objective was set to restore patient's energy level within 48 hours of hospitalization. The following interventions were carried out; patient was reassured that her energy for daily activities will be restored, daily activity was planned with patient, rest and sleep periods were allowed after each activity. adequate ventilation was provided during activity periods, patient was taught how to perform deep breathing exercises and instructed to do so and patient was assisted in performing some activities of daily living.

On 7th November, 2021 at 4:40pm, evaluation of the set objective 5th November, 2021 to restore patient's energy level within 48 hours of hospitalization was done. Goals were fully

met as patient verbalized an increase in energy level and nurse observed that patient displayed improved ability to participate in activities.

e. Patient nutritional status was restored and maintained

On 6th November, 2021 at 7:40am, Patient had high blood glucose indicating she is deficient of insulin and therefore the tissues are not getting their required nutrients for daily metabolism hence the nursing diagnosis of Imbalanced nutrition (less than body tissue requirements) related to insulin deficiency was formulated. An objective was set so that patient's nutritional status will be restored and maintained throughout the period of hospitalization. The following interventions were carried out; patient's dietary pattern and intake was assessed to determine deficits and deviations from therapeutic needs, patient was weighed daily, recommended food nutrients were taken into account when meal was planned with patient, patient was told to exercise regularly to help in glucose utilization by the tissues, patient was referred to the dietician for further assessment and medications were served as prescribed.

On 10th November, 2021 at 7:40am, evaluation of the set objective on 6th November, 2021 to restore and maintain patient's nutritional status throughout the period of hospitalization was done. Goals were fully met as patient was able to ingest appropriate amount of nutrients and nurse monitored patients' blood glucose level.

f. Patient gained adequate knowledge on her diseases condition

On 6th November, 2021 at 8:20am patient was engaged in an interaction and it was realized that patient had less knowledge on her condition. The nursing diagnosis formulated was Deficient knowledge related to unfamiliarity with drug therapy, dietary precautions, and exercise for promoting normoglycemia. An objective was set to enable patient gain adequate

knowledge on diabetes mellitus within 24 hours of hospitalization. The following interventions were carried out; health literacy of patient was assessed (language, reading, comprehension), patient was taught to follow a diet plan that is consistent in complex carbohydrates, low in fat, and high in fiber, patient was educated on that hyperglycemia can occur with increased food intake, infection or stress and was taught to recognize signs and symptoms such as a (polydipsia, polyuria, polyphagia, fatigue), patient was educated on the dosage, storage and timing of her prescribed drugs, patient was educated that exercise helps decrease insulin resistance at site of muscle receptors and patient was told not to exercise during periods of poor metabolic control.

On 7th November, 2021 at 8:20am, evaluation of the set objective on 6th November, 2021 to help patient gain adequate knowledge on condition was done. Goals were fully met as patient verbalized knowledge of drug therapy, dietary regimen and the role of exercise in promoting normoglycemia and nurse observed that patient demonstrated full understanding of drug, exercise and diet therapy.

5.2 Amendment of the Nursing Care Plan

Despite the numerous problems identified, with the individualized comprehensive nursing care and support from other members of the health team and co-operation of Mrs. A. A. and family, all of the goals set were fully met. The care plan was therefore not amended.

5.3 Termination of Care

Care of patient and family ended on the 20th November, 2021 which was my last home visit. This ended the interaction between the health team and Mrs. A. A and her family. The preparation for termination started on day of admission through discharge, review to the third home visit. During these periods, patient and family were educated on various topics. I congratulated the family for the care they had rendered to Mrs. A. A. They were thanked for

their co-operation and patient was handed over to a community health nurse. They were told that now that Mrs. A. A. health had been restored, the care for her has officially ended. I informed them of my desire to visit them unofficially whenever I had the opportunity. They were happy and noted that they would miss my care and would strictly adhere to all instructions given to them. It was a moment to remember when I told them of my intention to leave. There was no separation anxiety as patient and the relatives had enough psychological preparations from the day of admission till discharge but it was still difficulty bidding them farewell. So we thanked them and bade them farewell, we left there around 12:24pm and got to the hospital at exactly 12:52pm.

CHAPTER SIX

SUMMARY AND CONCLUSION

6.0 Introduction

Summary is a comprehensive and usually brief abstract, recapitulation, or compendium of previously stated facts or statements. Conclusion is something that you decide when you have thought about all the information connected with the situation (Weller, 2018).

This is the last step of the patient/family care study which entails the student's personal appreciation of the therapeutic relationship with the patient as well as the use of the nursing process.

6.1 Summary

Mrs. A.A. is a 68-year-old woman was admitted to the Female Medical ward through the Accident and Emergency Centre of Presbyterian Hospital, Dormaa on the 5th November, 2021 at 4:25pm. Patient had been on detention at the Accident and Emergency Centre of Presbyterian Hospital-Dormaa for some few hours with the diagnosis of hyperglycaemia in a known diabetes mellitus. Patient was assisted in maintaining her personal hygiene, rest and sleep, nutrition, and exercises were also ensured.

The following treatment plan was ordered:

5. Monitor random blood sugar 4 hourly
6. Continue low dose sliding scale
7. Tab Metformin 1g bd for 30days

8. Tab Glibenclamide 10mg in the morning and 5mg in the evening

Patient had series of investigations including:

7. Full blood count
8. Blood film for malaria parasite
9. Fasting blood sugar
10. Random blood sugar
11. Urine R/E
12. Blood Urea and Creatine

On the 17th November, 2021 patient reported for review as scheduled. It was to find out if patient was adhering to the advice and all the education given to improve his health and standard of living. Three home visits were embarked on. The first home visit was done while patient was still on admission on 6th November, 2021, second home visit was on the 14th November, 2021 and third home visit was on the 17th November, 2021. The care of Mrs. A.A. and her family were terminated on the 17th November, 2021, during the third home visit when patient had fully recovered.

6.2 Conclusion/Recommendation

The study has equipped me with knowledge on how to care for a patient as an individual. Through this study, have been able to put into practice actual and holistic nursing care as has been learnt theoretically. The study provided a therapeutic environment for nursing patient as an individual and has promoted a good nurse-patient (family) relationship as well as broadened my knowledge on diabetes mellitus, its prevention and management. It has also helped me to practice my skills acquired in the classroom theoretically. It has deepened my relationship with patients, families and the people in a given community as a whole. The study also provided the platform for the patient/family to receive individualized care. Based

on the testimonies given by patients who receive individualized nursing at hospitals, it prompts most of the community members to seek medical help at the various hospitals. This helps to redeem the image of the hospital and the staff nurses as a whole. Also, this patient/family care study also helps to change the community's wrong perceptions about staff nurses and also improve the people's attendance to the hospital.

Therefore, it is my recommendation that all students are given the opportunity to embark on the patient/family care study to implement the nursing process in order to render individualized comprehensive care to patients/families. In brief, I really enjoyed every bit of writing this script despite the challenges encountered.

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APPENDIX I

Table 6. 1: Vital Signs of Mrs. A.A. throughout the period of hospitalization

DATE	TIME	TEMPERATURE (ºC)	PULSE (bpm)	RESPIRATION (cpm)	BLOOD PRESSURE (mmHg)
05/11/2021	4:25pm	36.0	65	21	170/70
	6:00pm	36.0	69	18	140/60
	10:00pm	35.7	70	18	130/70
06/11/2021	6:00am	36.3	57	19	130/80
	10:00am	36.3	62	24	120/80
	2:00pm	36.4	65	18	110/70
	6:00pm	36.4	73	18	120/60
	10:00pm	36.0	80	20	130/70
07/11/2021	6:00am	35.3	73	18	140/60
	10:00am	36.0	68	20	120/70
	2:00pm	35.9	94	27	120/60
	6:00pm	36.1	78	25	110/70
	10:00pm	36.5	81	20	110/80
08/11/2021	6:00am	35.2	73	18	100/60
	10:00am	36.6	82	20	120/80
	2:00pm	34.5	92	22	100/70
	6:00pm	36.6	80	20	100/80
	10:00pm	36.5	81	20	110/70

Table 6.1: vital signs of Mrs. A.A. throughout the period of hospitalization cont.…

09/11/2021	6:00am	35.3	91	24	120/80
	10:00am	34.7	84	21	100/60
	6:00pm	35.3	88	22	110/70
	10:00pm	36.5	81	20	110/70
10/11/2021	6:00am	35.5	86	22	120/70
	10:00am	36.1	80	26	110/70

APPENDIX II

Table 6. 2: Intake and Output Chart of Mrs. A.A.

DATE & TIME	INTAKE			OUTPUT					
				NG Tube/Abd Tube		URINE		STOOL	
	Kind of fluid	Route	Amt(ml)	Amt(ml)	Colour	Amt(ml)	Colour	Amt(ml)	Colour
06/11/2021 7:30am	Porridge	Oral	460						
8:00am	Normal saline	IV	500						
9:00am						600	Clear		
9:10am	Water	Oral	300						
1:30						480	Clear		
4:00pm	Normal saline	IV	500						
	Water	Oral	500						
6:00pm						620	Clear		
7:20pm	Water	Oral	250						
9pm						430	Clear		

07/11/2021 4am						650	Clear		
6am	Ringers lactate	IV	500						
6:30am						350	Clear		
7am	Porridge	Oral	430						
24 HOUR BALANCE									
	From				To				
Date	10/11/2021			Date	11/11/2021				
Time	7am			Time	7am				
Total Intake	3,440			Total Output	3,130				
Difference	310ml								

APPENDIX III

Table 6. 3: Blood Sugar Monitoring Chart

DATE	TIME	FBS (mmol/L)	RBS (mmol/L)	INSULIN GIVEN	REMARKS
05/11/2021	3pm		8.4	4 units	Subcutaneous
	6pm		6.5		
	10pm		4.0		Patient encouraged to eat
	11pm		11.2		
06/11/2021	12am		12.4	6 units	Subcutaneous
	6am	3.1			Patient encouraged to eat
	7am		7.9		
	10am	9.7		4 units	Subcutaneous
	2pm		3.4		Patient was told to eat
	6pm		17.1	10 units	Subcutaneous
	10pm		9.8		
07/11/2021	6am	7.1			
	10am		25.4	20 units	10 units in 500ml N/S and 10 units Subcut
	11:25am		14.1	4 units	Subcutaneous
	3:25		3.4		Patient encouraged to eat
	7:25		9.6		
	10pm		13.5	6 units	Subcutaneous
08/11/2021	6am	5.9			Oral antidiabetics given
	10am		6.2		
	6pm		8.5		
	10pm		9.4		Oral antidiabetics given

09/11/2021	6am	4.6			Oral antidiabetics given
	6pm		9.2		
	10pm		7.2		Oral antidiabetics given
10/11/2021	6am	5.3			Oral antidiabetics given

SIGNITORIES

1. THE STUDENT NURSE

NAME: ADJEI DACOSTA

SIGNATURE.....

DATE.....5/10/2022.....

2. NURSE IN-CHARGE OF EMERGENCY WARD, DORMAA PRESBYTERIAN HOSPITAL

NAME: JONAS ANSU

RANK: NURSING OFFICER

SIGNATURE.....

DATE.....05/10/2022.....

3. THE SUPERVISOR, HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE, BEREKUM

NAME: ERIC OBENG

SIGNATURE.....

DATE.....05/10/2022.....

4. THE PRINCIPAL, HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE, BEREKUM

NAME: MONICCA NKRUMAH

SIGNATURE.....

DATE.....06/10/2022.....

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