HOLY FAMILY NURSING AND MIDWIFERY TRAINING COLLEGE

BEREKUM

A CLIENT/FAMILY CENTERED NURSING CARE STUDY ON

SICKLE CELL DISEASE

FORIWAA MILLICENT

4120190078

A PATIENT/FAMILY CARE STUDY SUBMITTED TO THE NURSING AND MIDWIFERY COUNCIL OF GHANA IN PARTIAL FULFILMENT TOWARDS THE AWARD OF LICENSE TO PRACTICE AS A PROFESSIONAL REGISTERED NURSE.

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PREFACE

The scope of nursing keeps changing with each passing day. The word nursing derives its meaning form the latin word “nutricus” which means nourishing. According to the Henderson (1960), nursing is defined as the unique function of the nurse, is to assist the individual either sick or well in the performance of those activities contributing to health or its recovery or peaceful death that he or she would have performed unaided if he or she has the necessary strength, will or knowledge.

Many people believed that Nursing started with Florence Nightingale, however nursing itself dates back to the beginning of motherhood when nurses were traditionally female. The history of nursing has its origin in the care of infants and children, so all mothers were nurses.

The history of nursing first started to become more continuous and defined with Christianity when Christians cared for the sick, fed the hungry and buried the dead. Therefore, it was said that the history of nursing is tied to the church. When it became apparent that love and nurturing alone were not enough to cure disease, the need for a more educated frame work for nurses began to form. As a result of this, Florence nightingale in 1860, fulfilled her dream concerning nursing by establishing the Nightingale Training School for Nurses. It was the first formal, fully organized training program for nurses.

In this 21st century, many nursing schools have been established to help build on the previous skills and experiences that were acquired through long years of housekeeping, assisting in child bearing and care of formal sick relatives. In the olden days, nursing practice was based on intuitions, observations and experiences and was focused towards diseases and illness. Today, however, there is increasing recognition of people’s need for health care. This has placed nursing at a level where much emphasis is placed on research and the use of scientific data at the bedside.

The patient family care study entails rendering nursing care to a patient and his/her family. It involves the interaction between the patient/family and health team with a specified time frame until patient's care is terminated.

The study is based on the nursing process which has the assessment, analysis, planning, implementation and evaluation to be its components which follows a systematic method and it works consistently.

The study forms part of the academic requirement on obtaining the Registered General Nursing Certificate awarded by the Nursing and Midwifery Council of Ghana.

For confidentiality sake patient's name will be in initials. The study is designed to enable the student nurse to practically apply the nursing process in the care of the patient and apply the knowledge acquired in medicine, surgery, pharmacology, basic nursing, anatomy and all other field of health in the care of the patient.

It helps broadens the knowledge of the student nurse in terms of a particular disease condition and its management, and build the confidence of the student nurse in the discharge of his/her duties.

Finally, it builds a good cordial relationship between the nurse and patient /family as well as other members of the health team.

ACKNOWLEDGEMENT

The writing of this patient and family care study would not have been successful without the help of some individuals and groups. I therefore find it necessary to express my sincere gratitude to them for their contribution in diverse ways.

My first thanks go to the almighty God for protecting and guiding me throughout the writing of this script.

I am most grateful to Master W.O., the subject of this study and his family for their co-operation and necessary information given to me at the hospital and during my home visits.

My next gratitude goes to my supervisor, for his relentless efforts to make this study a great and easy one for me.

I wish also to express a heartfelt appreciation for the nurse-in-charge at the Males' ward and the entire staff of the Holy Family Hospital, Berekum, may God bless you all for your guidance and support.

Finally, I am grateful to my family, my classmates and authors and publishers whose books have been used and those who have contributed in diverse ways to make the writing of my care study, a successful one, I say God bless you all.

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 needs to arrive at a desired outcome. It also takes into account of patient's psychological and social needs in planning the care.

This care study is written on Master W.O., a 16-year-old man who comes from Biadan in the Berekum East District. Master W.O. arrived on the Male Medical ward of Holy Family Hospital, Berekum on 14th December, 2021 at 12:00pm and was diagnosed of vaso-occlusive crisis in known sickle cell disease. I interacted with him the very day he was admitted. He spent five days at the hospital and throughout his stay in the hospital, he had treatment and care geared towards complete recovery.

The following investigation/test were ordered and carried out;

1. Full Blood Count
2. Blood Culture and Sensitivity test
3. Blood film for malaria parasite

Medications given to Master W.O. during his period of hospitalization and discharge were;

1. Intravenous Morphine 10mg stat
2. Intravenous Paracetamol 1g tds for 24 hours
3. Intravenous Tramadol 200mg in 500ml of Normal Saline tds for 3 days
4. Intravenous Ringers lactate 2 litres for 48 hours
5. Intravenous Normal Saline 4 liters for 48 hours
6. Intravenous Cefuroxime 750mg tds for 24 hours
7. Tablet Ibuprofen 400mg tds for 3 days
8. Tablet Folic acid 5g daily for 30 days
9. Tablet Dihydrocodeine 30mg tds x 7

With proper care and attention, he got well and was discharged on 18^{th} December, 2021 without any complication. After he was discharged, I made three follow up visits until I handed him over to a community health nurse in their area on the 3^{rd} January, 2021.

This script is written, organized and compiled into six (6) chapters for easy reading and understanding.

Chapter one deals with the assessment of patient and family. It includes patient's particulars, family medical and socio-economic history, lifestyle and hobbies, past and present medical history. Others are admission of patient, patient concept of illness, literature review as well as data validation.

Chapter two is the second step. It concerns with the analysis of data collected about patient and comparing this data with standards. This chapter also involves the identification of patient and family strengths, their health problems and formulating diagnosis for them.

The third chapter is mainly about planning the care for patient and family where a nursing care plan is drawn and used in the management of the patient.

Chapter four deals with the implementation of patient and family care plan. The summary of actual nursing care, preparation of patient for discharge and follow-up visits are involved.

The fifth chapter is about the evaluation of care rendered to patient and family. It involves the statement of evaluation, amendment of nursing care plans for partially met or unmet objectives and the termination of care.

The last chapter, chapter six is the summary and conclusive part of the care rendered to the patient.

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CHAPTER ONE

ASSESSMENT OF PATIENT AND FAMILY

1.0 Introduction

According to the North American Nursing Diagnosis Association (NANDA-I) (2018), a nursing assessment provide the starting point for determining nursing diagnoses. It is vital that a recognized nursing assessment framework is used in practice to identify the patient's problems, risks, and outcomes for enhancing health. Assessment encompasses the gathering of subjective and objective data and review of past information provided by the patient/family, or found within the patient chart (Herdman & Kamitsuru, 2018). The first step of the nursing process is the assessment of the patient/family during the admission process. Assessment covers the patient's particulars, family medical/surgical history, family socio-economic history, patient's developmental history, patient lifestyle and hobbies, patient past medical/surgical history and the present medical/surgical history of the patient, literature review and validation of data.

1.1 Patient's Particulars

Patient refers to an individual awaiting or under medical care and treatment (Merriam-Webster, 2022). Particulars is defined as an individual fact or details regarding an information (Merriam-Webster, 2022). Master W.O. is the title of the patient, a sixteen year old boy born on 18th February, 2005 to Mr. K.T. and Madam T.M. He is a Ghanaian and hails from Biadan in the Bono region of Ghana. Biadan is situated in the Berekum East District and that is his current place of residence with house number OT-54. Master W.O. is a Christian who worships with the Assemblies of God church. He is dark in complexion, measures 1.5m tall and weighs 38kg. He has eight siblings made up of three girls and five boys and he is the eighth born of nine children. He is currently not having any sort of intimate relationship with anyone but has lot of friends. His father is his next of kin. He is a student of Biadan R/C primary and Junior High School. He is now in JHS one. He can speak two languages which are Twi and English. Master W.O. is registered under the National Health Insurance Scheme. He has no physical disabilities or impediments.

1.2 Family's Medical History

Health history is a series of questions used to provide an overview of the patient's current health status (Hinkle & Cheever, 2014). According to Master W.O. both of his grandparents are healthy. Master W.O. claims that his parents and eight siblings are all alive and well. There are no known hereditary disorders in the family, such as diabetes, hypertension, epilepsy, or mental illness. However, there is a history of the sickle cell trait on both the paternal and maternal side of their family. The members occasionally do suffer from minor ailments like common cold which they treat using over-the-counter medications. I advised them not to hesitate to seek for medical care whenever they are sick either at the nearby clinic or hospital. According to the father, they do not go for medical check up, they only visit the hospital for treatment when they are sick. Based on this information, I encouraged the members to frequently visit the hospital for medical check up. The source of medical treatment for the family are both orthodox and herbal medicine. There are no known allergies in the family.

1.3 Family Socio-Economic History

The relationship between Master W.O. and his family is very good. Socially the family is not known for smoking or alcoholism. Patients' family belongs to the middle-class income group of the society. According to the parents, most of their family members are government employees and some of them also have personal businesses. It was revealed that family members are always ready and willing to support each other in times of financial hardships. Master W.O. depend fully on his parents for financial support. His family members are well known for their massive participation in religious activities. In terms of religious believes he revealed that, all of his family members are Christians. According to the parents, most of their family members depend on National Health Insurance Scheme (NHIS) for medical care. There are no taboos governing the family.

1.4 Patient's Developmental History

Growth is the progressive development of a living thing, especially the process by which the body reaches its complete physical development (Weller, 2014). 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). The patients' developmental history was provided by the mother. Master W.O's. mother mentioned that she had a normal nine-month pregnancy with no pregnancy-related problems and had a spontaneous vaginal delivery at Holy Family Hospital, Berekum with the help of midwives. He was born without any congenital abnormalities, such as cleft lip or palate or hydrocephalus, and was immunized against childhood vaccine-preventable diseases, as established by a BCG scar on his right shoulder. Master W.O. was breastfed for several months before beginning to eat supplementary foods. He went through the regular stages of development. This includes the following: sitting up at the 7th month, crawling at the 10th month, walking, talking and running between the ages of one and three. Around the age of twelve, Master W.O. began to develop secondary sexual characteristics such as a broadening of the chest, deepening of voice, and the growth of pubic hairs. He is a student of Biadan R/C primary and Junior High School. He is now in JHS one. Patient claimed that he is currently having no problems understanding what is being taught in class. When asked about his goals and intentions for the future, the patient stated that he wants to become a lawyer in the near future.

Erik Erikson (1902–1994) focused on the role of cultural and socioeconomic influences in behavior. Erickson was interested in the development of the ego, self-aware, organized, and logical aspect of the personality. He outlined eight stages of ego formation that span a person's lifetime. Each stage is marked by a specific conflict, or crisis, pertaining to the individual's biological maturity and what society expects of a person at that age. Patient is now in his adolescence age group, where there is conflict between identity and role confusion (12 to 18 years), according to Erik Erickson's psychosocial development, which encompasses eight stages. This stage is critical in developing a sense of personal identity, which will continue to influence behavior and development for the rest of a person's life. Teenagers must develop a feeling of self and individuality. Failure leads to role confusion and a weakened sense of self, but success leads to the ability to stay loyal to oneself. I am certain that the patient has formed successful social ties, which places him in Erickson's identity dimension of psychosocial development.

1.5 Patient's Lifestyle and Hobbies

Life style is defined as the typical life of an individual or group (Merriam-Webster, 2022). Master W.O. goes to bed at 10:00 pm. and he always prays before sleeping. He normally gets up at 5:00 am. and says his morning prayers. He baths with warm water almost all time to prevent crisis and also brushes his teeth twice a day. He empties his bowels and bladder every morning and any other time he feels the urge to do so. He goes to school from Monday to Friday and he makes sure he is always in school before 6:15 am. The patient usually eats hausa porridge with bread for breakfast. The school provides them with lunch each and every day. He closes from school at 2:30pm and by 3:00pm he is home to help with house chores. He stated that he would have eaten his supper by 6:00 pm. Afterwards, he attends to the assignments given to him in school and also learn what he has been taught. He revealed that, Jollof rice with chicken is his favorite food. Master W.O. has no deep-rooted habits like drinking alcohol or smoking. On weekends he likes to watch movies. He washes his dirty clothing on Saturdays. On Sundays, he prepares for church in the morning. After church, he prepares for the upcoming week by ironing his school uniform. He described himself as an outgoing individual who likes to attends wedding with his parents. Patient has no known dietary or medicinal allergies. The patient stated that he eats three square meals per day, namely breakfast, lunch, and supper. Tricycle is his primary mode of transportation when he is running town errands for his parents. During our conversation, the patient indicated that his main source of stress is when he has a lot of material to study aside that nothing else bothers him. When he is stressed, he tends to read story books and listen to music as well. Patient stated that he prefers to be in good company. The patient gives me the impression of being someone who is fully focused on his future.

1.6 Patient's Past Medical History

Past medical history is a record of past medical problems and treatments that a person has had (Merriam-Webster, 2022). Master W.O. never had whooping cough, poliomyelitis, measles, tetanus, TB, or diphtheria as a child, and has no known allergies to medications, animals, or insects. He is a known sickle cell patient. He mostly suffers from general body weakness, joint pains and pyrexia whenever he is exclusively exposed to a cold weather. He always goes to a neighboring hospital or clinic if he is feeling unwell. Master W.O. stated that he had never been in any serious accident. He has been admitted on several occasions at the hospital on account of severe malaria and mostly vaso occlusive crisis.

1.7 Patient's Present Medical/Surgical History

The history of the present illness or problem includes such information as the date and manner (sudden or gradual) in which the problem occurred, the setting in which the problem occurred, and the course of the illness including self treatment, specific symptoms are also described in detail (Hinkle & Cheever, 2014).

Patient was apparently well until the late hours of 13th December, 2021 when he started experiencing joint pains, headache, pyrexia and general body weakness. He indicated that extension of his joint caused him more pain and the only way he could feel a bit relieved was when his limbs are relaxed. He informed his mother and was rushed to the emergency unit of Holy Family Hospital, Berekum. They arrived at the emergency unit at 11:00pm, he was detained at the emergency unit where he was diagnosed of vaso occlusive crisis in a known Sickle Cell patient. As part of the pain management, he was given Intravenous Morphine 10mg stat. he was reviewed by a medical officer. Physical assessment and laboratory investigations were ordered. The doctor then ordered for patient to be transferred to the male's ward the next day when his condition is stable.

1.8 Admission of the Patient

Admission of a patient is defined as when an illness or injury requires an immediate health care (Hornby, 2019). Admission can be scheduled (planned) or unscheduled (emergency). The type of admission for Master W.O. was a planned admission.

On 14th December, 2021 at 12:00pm., Master W.O. arrived on the Male Medical ward per ambulation. He was accompanied by a staff nurse, a rotational nurse, and his parents. They were warmly welcomed to the ward and offered seats. On arrival, patient was completely alert and conscious. Patient had been detained at the emergency unit sine yesterday with the diagnosis of vaso occlusive crisis in a known Sickle Cell. The accompanying staff nurse gave me the patient's information. To validate his admission to the Male Ward, his folder number was input into the hospital's computer system. By mentioning the patient's name and waiting for him to answer, the patient's identity was confirmed. He was made comfortable in an admission bed. Name, sex, age, and home address were all recorded in the admission and discharge book, as well as the daily ward state. Vital signs were checked and recorded accurately as follows:

1. Temperature 37.9^{o}C

2. Pulse 90 bpm
3. Respiration 23 cpm
4. Blood Pressure 110/60mm/Hg

His weight was 38kg.

Physical examination on the patient was performed from head to toe. At the time of admission, assessment revealed that patient had severe joint pains, headache, high body temperature and general body weakness.

Due to the high body temperature, patient was asked to remove extra clothing, he was given cold drinks and prescribed Intravenous Paracetamol 1g was set up.

Patient looked anxious. He was reassured to put his thoughts and anxieties to rest. The patient was introduced to the other patients as well as the staff members present, and he was assured of quality healthcare. The hospital's policies on visiting hours and bill payment were discussed. The patient's parents were given a thorough orientation to the ward.

The following treatment plan were ordered:

1. Intravenous Morphine 10mg stat
2. Intravenous Paracetamol 1g tds for 24 hours
3. Intravenous Tramadol 200mg in 500ml of Normal Saline tds for 3 days
4. Intravenous Ringers lactate 2 litres for 48 hours
5. Intravenous Normal Saline 4 liters for 48 hours
6. Intravenous Cefuroxime 750mg tds for 24 hours
7. Tablet Ibuprofen 400mg tds for 3 days

Patient had the following laboratory investigations ordered:

1. Full Blood Count
2. Blood Culture and Sensitivity test
3. Blood film for malaria parasite

I introduced myself to the patient as a final-year nursing student at Holy Family Nursing and Midwifery Training College, Berekum who wanted to take him and his family for my care study. Master W.O. and his family were told that the care study is a requirement for the award of a Diploma in Registered General Nursing by the Nursing and Midwifery Council of Ghana. I explained to them that at least three official home visits will be made, after clearly explaining that every information obtained will be treated with the outmost confidentiality, I asked for permission to use him and his family for the study and they agreed. Discharge planning was initiated with the relatives thus they will continue the care at home once he is well. Patient was given a brief education on why he was manifesting the sign and symptoms associated with his condition and what he should expect from the medical team as part of his treatment regimen and was also assured of competent nursing care. I selected Master W.O. because I wanted to know more about sickle cell disease.

1.9 Patient's Concept of Illness

Master W.O. did not attribute the disease to any spiritual cause but rather he knew that, the disease is an abnormality found in his blood. He was highly optimistic that his signs and symptoms will be relieved because he periodically experiences similar signs and symptoms and gets relieved.

1.10 Literature Review

This section deals with documented information about the condition of Master W.O. Literature review of a condition gives a detailed insight into the condition. It talks about the established and laid down facts about the disease condition, which aids in the medical and nursing diagnosis and the appropriate management for that particular disease.

Anatomic and Physiologic Overview of the Hematologic System

According to Hinkle and Cheever (2014), the hematologic system consists of the blood and the sites where blood is produced, including the bone marrow and the reticuloendothelial system

(RES). Blood is a specialized organ that differs from other organs in that it exists in a fluid state. Blood is composed of plasma and various types of cells. Plasma is the fluid portion of blood; it contains various proteins, such as albumin, globulin, fibrinogen, and other factors necessary for clotting, as well as electrolytes, waste products, and nutrients. About 55% of blood volume is plasma (Hinkle & Cheever, 2014).

Blood

Blood is a connective tissue composed of a liquid extracellular matrix called blood plasma that dissolves and suspends various cells and cell fragments (Tortora & Derrickson, 2009). The cellular component of blood consists of three primary cell types: erythrocytes (red blood cells [RBCs], red cells), leukocytes (white blood cells [WBCs]), and thrombocytes (platelets). These cellular components of blood normally make up 40% to 45% of the blood volume. Because most blood cells have a short lifespan, the need for the body to replenish its supply of cells is continuous; this process is termed hematopoiesis. The primary site for hematopoiesis is the bone marrow. During embryonic development and in other conditions, the liver and spleen may also be involved (Hinkle & Cheever, 2014).

Functions of blood

According to Tortora and Derrickson (2009), Blood, which is a liquid connective tissue, has three general functions:

1. **Transportation**: blood transports oxygen from the lungs to the cells of the body and carbon dioxide from the body cells to the lungs for exhalation. It carries nutrients from the gastrointestinal tract to body cells and hormones from endocrine glands to other body cells. Blood also transports heat and waste products to various organs for elimination from the body.
2. **Regulation**: Circulating blood helps maintain homeostasis of all body fluids. Blood helps regulate pH through the use of buffers. It also helps adjust body temperature

through the heatabsorbing and coolant properties of the water in blood plasma and its variable rate of flow through the skin, where excess heat can be lost from the blood to the environment.

3. **Protection**: Blood can clot, which protects against its excessive loss from the cardiovascular system after an injury. White blood cells protect against disease by carrying on phagocytosis. Several types of blood proteins, including antibodies, interferons, and complement, help protect against disease in a variety of ways

Definition of Sickle Cell Disease

Sickle cell anemia is a severe hemolytic anemia that results from inheritance of the sickle hemoglobin gene. This gene causes the hemoglobin molecule to be defective. The sickle hemoglobin (HbS) acquires a crystal-like formation when exposed to low oxygen tension (Hinkle & Cheever, 2014).

Sickle cell anemia is the most severe form of sickle cell disease. Less severe forms include sickle cell hemoglobin C (SC) disease, sickle cell hemoglobin D (SD) disease, and sickle cell beta-thalassemia. The clinical manifestations and management are the same as for sickle cell anemia. The term sickle cell trait refers to the carrier state for SC diseases; it is the most benign type of SC disease, in that less than 50% of the hemoglobin within an erythrocyte is HbS (Hinkle & Cheever, 2014).

The inheritance pattern is autosomal recessive (both parents must at least have the sickle cell trait). If both parents have the sickle cell trait, there is a 25% chance that each child will have SCD, a 25% chance that each child will have neither the trait nor the disease, and a 50% chance that each child will have the trait. Therefore, a child may be asymptomatic (except under rare circumstances) with the trait or have varying degrees of symptoms with the disease (Swearingen, 2016).

In the homozygous state (sickle cell anaemia), both genes are abnormal (HbSS), whereas in the heterozygous state (sickle cell trait, HbAS), only one chromosome carries the gene. As the synthesis of HbF is normal, the disease usually does not manifest itself until the HbF decreases to adult levels at about 6 months of age (Kumar & Clark, 2017).

Incidence/Epidemiology

In the United States, sickle cell anemia is most often found in those of African or Eastern Mediterranean heritage. Worldwide, many persons residing in Asia, the Caribbean, the Middle East, and Central America are affected. Nearly 10% of African Americans have the sickle cell trait; 1 of every 500 African American infants born has inherited the two sets of abnormal genes needed to have the disease (Williams & Hopper, 2015). The sickle gene is most common in Africans (up to 25% gene frequency in some populations) but is also found in India, the Middle East and Southern Europe (Kumar & Clark, 2017).

Types of Haemoglobin

1. Normal haemoglobin A
2. Foetal haemoglobin F
3. Abnormal haemoglobin S and C

With inheritance of haemoglobin AA is normal, with haemoglobin AS or AC the individual is said to have sickle cell traits and is a carrier but with haemoglobin SS or SC is sickle cell disease (Hinkle & Cheever, 2014).

Forms of Sickle Cell Disease

There are various types, including HBSS, HBSC and HBS β-thalassemia. The possession of one normal hemoglobin (hemoglobin A) together with one abnormal hemoglobin (e.g. AS or AC) constitute a haemoglobinopathy trait and not sickle cell disease (Ministry of Health, 2017).

1. **Haemoglobin SS (Hb SS)**: in this, individual inherit two sickle cell gene "S" from their parent. This type is known as sickle cell disease and usually the most severe form of

the disease. The individual exhibits the signs and symptoms of the disease (Hinkle & Cheever, 2014).

2. **Haemoglobin SC (HBSC**: In this type of disease, the individual inherits a sickle cell gene “S” and an abnormal gene “C”. It is usually a mild form of the disease and individual exhibit it signs and symptoms (Williams & Hopper, 2015).
3. **Haemoglobin Beta Thalassaemia (HBS βthalassemia)**: it is the form of sickle cell disease in which individual inherits one sickle cell gene and one gene of beta Thalassaemia, another type of anaemia (Williams & Hopper, 2015).

Aetiology

Sickle cell disease (SCD) is an autosomal recessive hereditary disorder. This means that if both parents pass on the abnormal hemoglobin, the child will have the disease. If only one parent passes on the abnormal hemoglobin, the child will have the sickle cell trait and will be able to pass the trait (or the disease if the other parent is also affected) on to his or her child (Williams & Hopper, 2015).

Pathophysiology

The defect occurs when there is a single amino acid substitution in the data chain of haemoglobin. The normal haemoglobin A contains two alpha and two beta chains. People with the trait thus AS and AC here inherited only one abnormal gene so their red blood cell can synthesize both normal beta chain and beta sickling chain thus they have “A” and “S” genes causes substitution of amino acid called valine for glutamic amino acid in the beta haemoglobin chain. The heterozygous AS or AC in the inheritance of these gens result in sickle cell trait. Haemoglobin S is less soluble than haemoglobin A especially when it gives up its oxygen to become deoxygenated haemoglobin, when the pH of the blood is below 7.4g/dL, when haemoglobin is deoxygenated, the molecules of the haemoglobin, polymerizes, thus simple molecules combining to form large molecules hence form crystals like substance called tactloids. The tactloids are firm and rigid and changes red blood cell membrane. The greater the concentration of sickle cell haemoglobin in the individual cells, the more tactloidsis formed. These tactloids are usually in crescent shape thus sickle shape. Because the cells are fragile, the life span of the RBCs in patients with sickle cell anemia is significantly decreased. Normal red cells live about 120 days. Sickled cells survive only about 10 to 20 days, an 80% to 90% decrease in cell survival (Williams & Hopper, 2015).

Inheritance Pattern of Sickle Cell Disease

Sickle cell conditions are inherited from parents in much the same way as blood type, hair colour and texture, eye colour and other physical traits. The type of haemoglobin a person makes in the red blood cells depend on what haemoglobin genes are inherited from her parents. The figures below show the inheritance pattern of sickle cell disease.

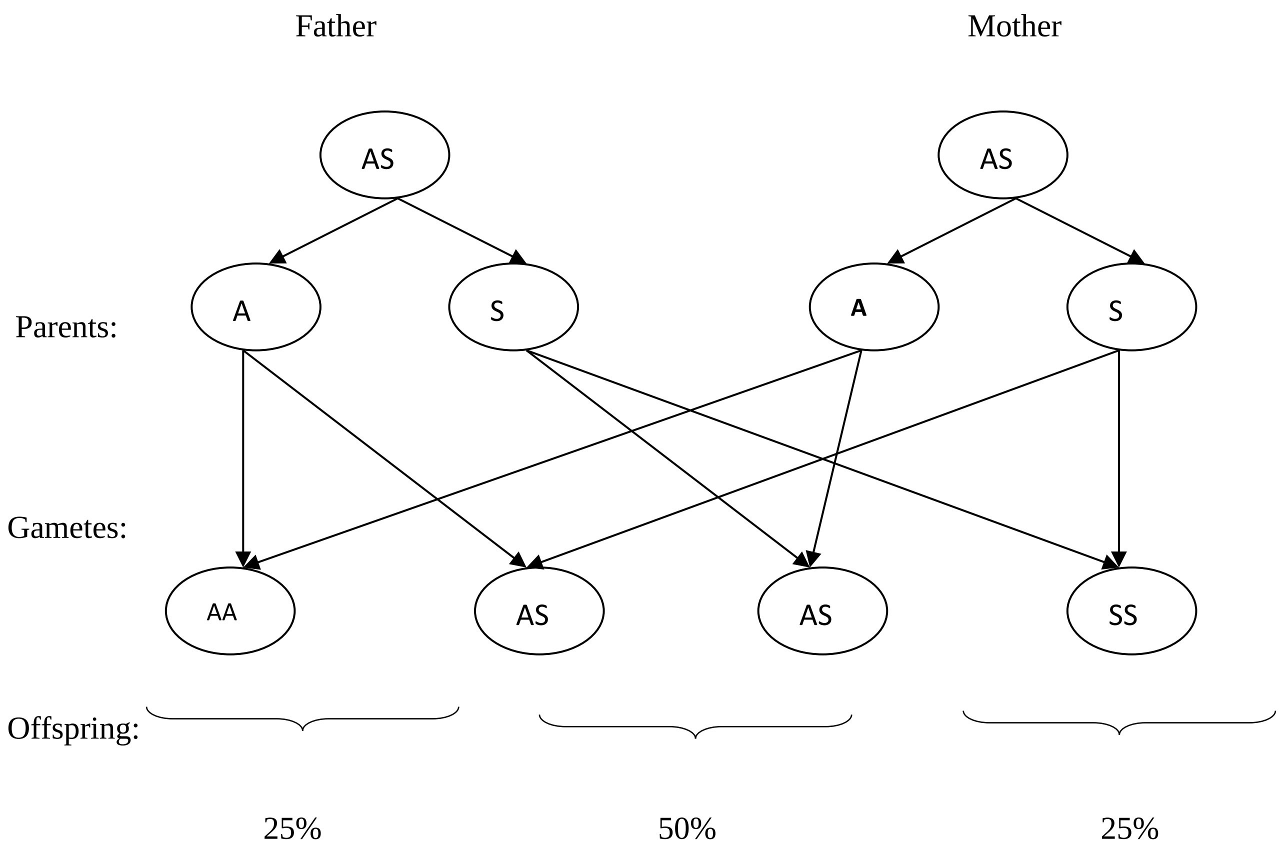

Figure 1: Inheritance pattern in AS father and AS mother

The above illustration of Figure 2 indicate that there is 25% chance of possessing a normal haemoglobin (AA), 25% for the infant to develop sickle cell anaemia (SS) and 50% chance of being a carrier or possessing sickle cell trait (AS) when both parents are carriers of the sickle cell trait.

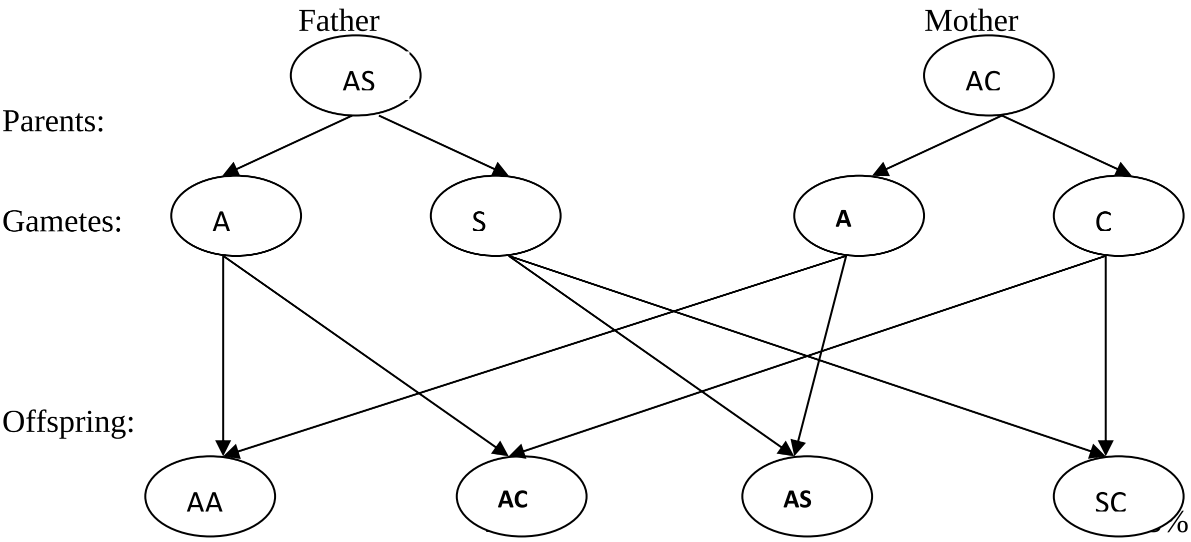

Figure 3: Inheritance pattern in AS father and AC mother

When one parent has a sickle cell trait (AS) and the other (AC), there is 25% chances of possessing normal haemoglobin (AA), 25% chance of possessing a trait of either (AC) and 25% chance of becoming a carrier with (AS) trait while there is another chance of 25% carrying an abnormal (SC) as illustrated in figure 2.

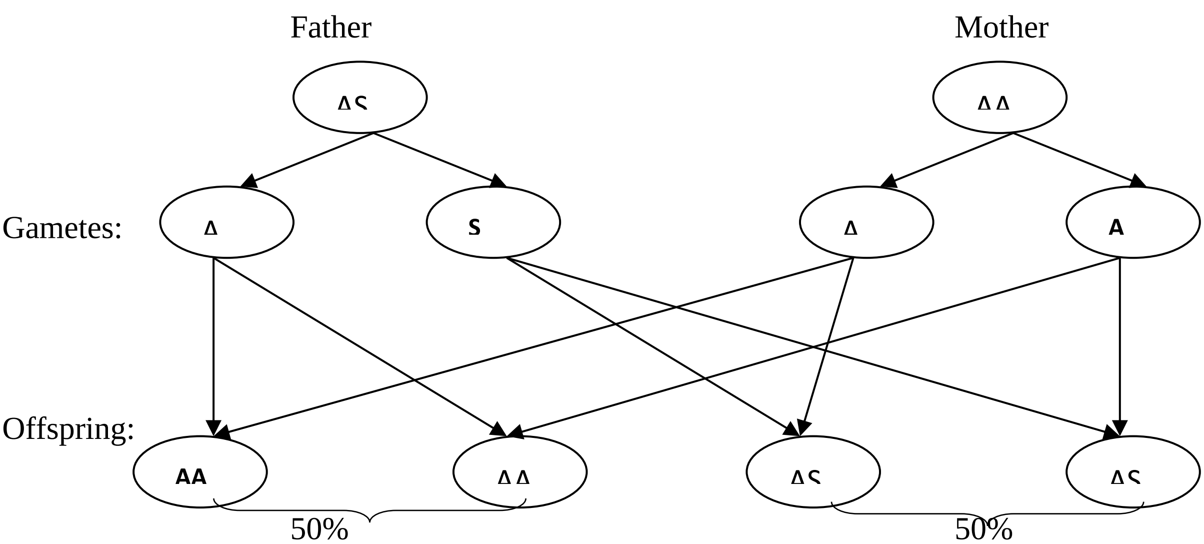

Figure 4: Inheritance pattern in AS father and AA mother

The illustration in figure 4 above indicates that when two parents with one being a carrier (AS) and the other possessing a normal haemoglobin (AA), there is 50% chance of their offspring possessing normal haemoglobin (AA) and 50% chance of possessing sickle cell trait or being carriers (AS).

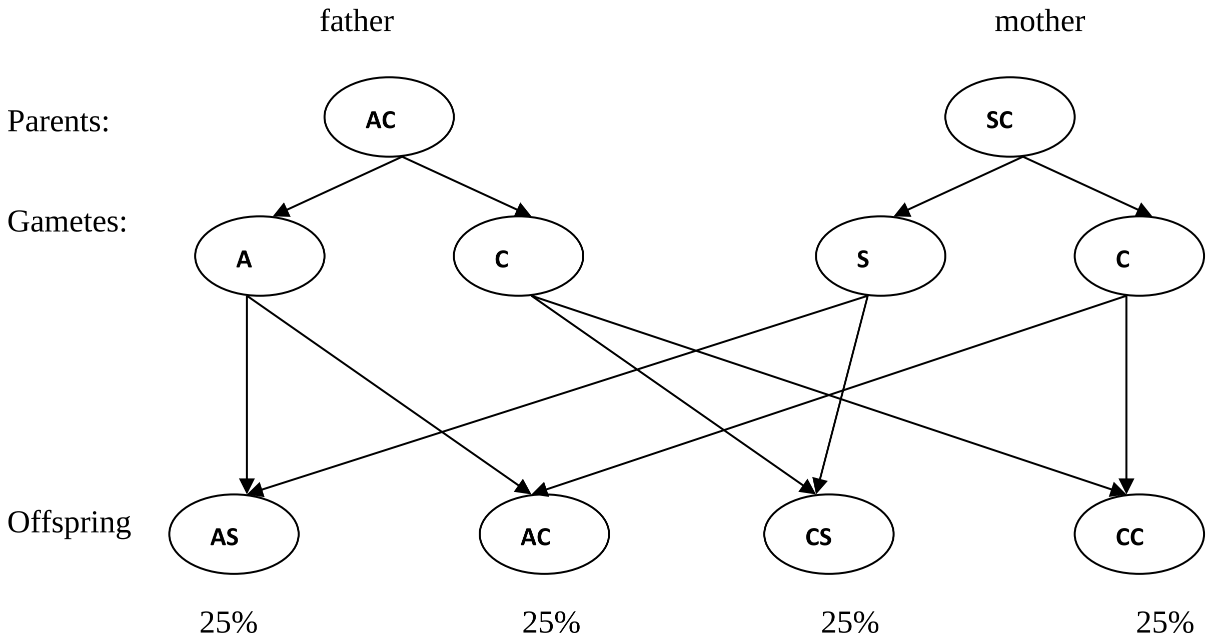

Figure 5: Inheritance pattern in AS father and AA mother

Figure 5 illustrates one parent being a sickle cell carrier (AC) and the other sickle cell (SC). In this case, there is 25% chance of their offspring being carrier AS, AC or CC with the remaining 25% having sickle, (SC).

Assessment and Diagnostic Findings of Sickle Cell Disease

1. **Hb electrophoresis**: The diagnosis is confirmed by hemoglobin electrophoresis (Hinkle & Cheever, 2014).
2. **Full Blood count**: The level of Hb is in the range 60–80 g/L with a high reticulocyte count (10– 20%) (Kumar & Clark, 2017). May show increased white blood cells (WBCs) with infection (Swearingen, 2016).

3. **Sickle solubility test**: A mixture of HbS in a reducing solution such as sodium dithionite gives a turbid appearance because of precipitation of HbS, whereas normal Hb gives a clear solution (Kumar & Clark, 2017).
4. **Family history**: The parents of the affected child will show features of sickle cell trait (Kumar & Clark, 2017).
5. **Blood culture**: Infection may have triggered a crisis. Sepsis is a leading cause of death in children younger than 5 years (Swearingen, 2016).

Sickle Cell Crisis

Occasionally, the sickling process cannot be reversed, and the problem continues unabated. This sudden and severe sickling is called a sickle cell crisis (Williams & Hopper, 2015).

According to Hinkle and Cheever (2014), there are three types of sickle cell crisis in the adult population.

1. **Vaso-occlusive crisis**: The most common is the very painful sickle crisis, which results from tissue hypoxia and necrosis due to inadequate blood flow to a specific region of tissue or organ (Hinkle & Cheever, 2014). An early presentation may be acute pain in the hands and feet (dactylitis) owing to vasoocclusion of the small vessels (Kumar & Clark, 2017).
2. **Aplastic crisis**: results from infection with the human parvovirus. The hemoglobin level falls rapidly and the marrow cannot compensate, as evidenced by an absence of reticulocytes (Hinkle & Cheever, 2014). This most commonly follows infection with erythrovirus B19, which invades proliferating erythroid progenitors. There is a rapid fall in haemoglobin with no reticulocytes in the peripheral blood because of the failure of erythropoiesis in the marrow (Kumar & Clark, 2017).
3. **Sequestration crisis**: results when other organs pool the sickled cells. Although the spleen is the most common organ responsible for sequestration in children, most

children with sickle cell anemia have had a splenic infarction by 10 years of age, and the spleen is then no longer functional (autosplenectomy). In adults, the common organs involved in sequestration are the liver and, more seriously, the lungs (Hinkle & Cheever, 2014).

Precipitating Factors for Sickle Cell Crisis

1. Cold can aggravate the sickling process, because vasoconstriction slows the blood flow (Hinkle & Cheever, 2014).

The following were mentioned by the Ministry of Health (2017):

2. Physical exertion
3. Mental stress

Kumar and Clark (2017) added the following:

4. Infection
5. Dehydration
6. Acidosis or hypoxia

Note: Sickle cell anemia presents problems for the patient who needs surgery. Anesthesia and blood loss during surgery and postoperative dehydration can trigger a crisis (Williams & Hopper, 2015).

Clinical Manifestations of Vaso Occlusive Crisis

The following signs and symptoms were mentioned by Williams and Hopper (2015):

1. Severe pain in the joints
2. Swelling in the joints
3. Fever
4. Breathing difficulty (dyspnea)
5. A male patient may have a continuous, painful erection (priapism)

The following were mentioned by the Ministry of Health (2017):

6. Dactylitis (hand and foot syndrome)
7. Splenomegaly (may be absent in older patients)
8. Hepatomegaly
9. Jaundice
10. Pallor
11. Easy fatiguability
12. Abdominal pain, especially in the splenic area

Treatment of Vaso Occlusive Crisis

According to the Ministry of Health (2017), the following are the treatment objectives of VOC:

1. To relieve pain
2. To identify and manage the precipitating cause of crises
3. To maintain a good steady state haemoglobin
4. To prevent long term complications and organ damage
5. To manage sickle cell crises and complications once developed

Non-pharmacological treatment

1. Good hydration at all times by drinking adequate water/fluids
2. Maintenance of good nutrition
3. Avoidance of common precipitating causes of crises such as malaria (bed nets etc.), dehydration, stress, excessive exercise, and exposure to extremes of weather (Ministry of Health, 2017).
4. Apply warm compresses as ordered to the painful areas, cover the patient with a blanket, and keep the room temperature above 72°F (22°C) to reduce the vasoconstricting effects of cold (Williams & Hopper, 2015).

5. Avoid cold compresses because they decrease circulation and increase the number of sickled cells caught in a painful area (Williams & Hopper, 2015).
6. Avoid restrictive clothing and raising the knee gatch (the adjustable joint in the hospital bed, which allows for the patient's knee to be flexed and the legs supported). These can restrict circulation (Williams & Hopper, 2015).

Pharmacological Treatment

Analgesia: Morphine is the drug of choice for severe pain. Milder pain can sometimes be relieved by codeine, paracetamol and NSAIDs e.g., Diclofenac and Ibuprofen (Kumar & Clark, 2017).

Transfusion: Blood transfusions should only be given when there are clear indications. Patients with steady state anaemia, those having minor surgery or those having painful episodes without complications should not be transfused (Kumar & Clark, 2017). Transfusion will be necessary if haemoglobin level is < 5 g/dL (Ministry of Health, 2017).

Oxygen therapy: decreases dyspnea caused by the anemia (Williams & Hopper, 2015).

Intravenous fluids: fluids are given to flush the kidneys of the byproducts of the many broken cells' debris. e.g., IV Infusion of Dextrose in Sodium Chloride, IV infusion of Normal Saline (Williams & Hopper, 2015).

Antibiotics: used to treat infection that may have triggered the crisis. e.g., Amoxicillin + Clavulanic Acid, IV (Williams & Hopper, 2015).

Corticosteroids: may reduce the need for analgesics and oxygen e.g. Prednisolone (Williams & Hopper, 2015).

Folic acid supplement: given to help prevent anaemia.

Nursing Management

Nursing Management of Patient in Sickle Cell Crisis

- Complete bed rest is ensued
- Patient was reassured that appropriate measures would be taken to deal with the pain he was going through
- Warm compresses were applied to patient's joints
- Patient was encouraged to take in more fluids
- Patient was given prescribed analgesics
- Oxygen would be provided via nasal catheter if needed
- Blood transfusion is done when the patient is anaemic
- Patient's pain is continuously assessed during the periods of crisis using the numerical pain rating scale from 0-10.

Psychological Care/Reassurance

- Patient and family were reassured that he was in the hands of competent health staffs that are ready to help him.
- This help to relax them, relieve the, of fear and anxiety, win cooperation and confidence and finally establish good rapport.
- Allow patient and relatives to express their fears and anxiety by asking questions.
- Provide answers to them in simple terms to their understanding and refer the rest to any officer or nurse in charge to answer.
- Introduce patient and relative to other patients with similar condition who are recuperating to talk to patient and family to help boast their confidence.

Observation

- Patients vital signs which are temperature, pulse, respiration and blood pressure are monitored every four hourly and recorded in the nurses notes and report any abnormalities. This will help access improvement or retrogression in patient's condition.

- Observe signs and symptoms of dehydration such as sunken eyes, low blood pressure, pour skin turgor and hypothermia, shock as well as high temperature to prevent complications
- Intravenous infusion in situ is monitored to ensure that it is dripping according to the prescribed rate, the infusion set is patent not kinked and also ensure the cannula is in the vein to prevent swelling, redness and tenderness.
- Observe for signs and symptoms of fluid overload such as coughing and dyspnoea.
- Patient's level of consciousness is assessed by calling his name, pinching him using pins at his feet. His level of responding to stimuli will determine whether he is fully conscious, semi-conscious or unconscious.
- The patient's mental orientation is assessed to know whether patient is oriented to time, person and place. The desired effect and side effects of drugs are observed and any problem identified is solved. Monitor intake and output chart.

Position

Assist patient to assume a comfortable position which is not contraindicated in his condition. This will enhance his comfort, release pressure of the chest and joint, maintain patent airway and promote circulation. It also helps to minimize pains.

Protection from Injury

- Patient is protected from injury by nursing patient in a low bed with side rails.
- Sharp instrument is also taken away from the patient's vicinity.
- The floor of the ward would be kept dry to prevent patient from slipping and falling
- Plugs that are not in good condition would be covered with plaster. Oxygen cylinder should be taken away when not in use to prevent it from falling on the patient.

Rest and Sleep

- These are ensured to enhance recovery process, conserve energy, reduce metabolic activity, relax patient and promote healing
- The bed should be free from creases and cramps.
- Change soiled linen to enhance comfort
- Minimize noise in the ward and organize and perform all nursing activities in order not to disturb sleep
- Ensure adequate ventilation

Personal Hygiene

- Bath patient or assist patient to bath
- Provide mouth care for patient to maintain oral hygiene.
- Care for the patients nails and feet
- Treat pressure areas to prevent pressure sores
- Change soiled linen
- Educate patient to wash his hands before and after eating using soap under running water

Nutrition

- Plan diet with him and dietician to know his like and dislike
- Serve food attractively and in bit
- Food should be rich in vitamins and other nutrients
- Encourage to take enough fluids

Elimination

Serve bed pan and urinals on request or assist patient to the toilet. Observe stool and urine for texture, quantity, odour, colour, consistency and document findings

Exercise

- Depending on the patient's ability to tolerate, the nurse performs mild to moderate exercises for patient.
- This will help to promote circulation, prevent embolism, joint stiffness and muscle weakness or wasting.
- The patient can be made to sit up, walk around with help.
- Encourage patient to undertake range of motion exercise such as flexion, abduction, adduction and rotation.

Pain Management

- Assist patient to assume a comfortable position
- Support painful areas with firm pillows
- Engage patient in diversional therapy
- Apply warm compresses on the pain site to help reduce pain

Education

- Educate patient and relative on the disease condition thus the cause, signs and symptoms, treatment etc.
- Educate patient to stay hydrated
- Educate patient on desired and undesirable effect of the drug

Complications of Sickle Cell Disease

Complications result from chronic hemolysis or thrombosis (Hinkle & Cheever, 2014).

1. Acute Chest Syndrome: Acute chest syndrome is manifested by fever, cough, tachycardia, and new infiltrates seen on the chest x-ray (Hinkle & Cheever, 2014).
2. Pulmonary hypertension is a common sequela of sickle cell disease, and often the cause of death (Hinkle & Cheever, 2014).

3. Infections: Infections are common in tissues susceptible to vaso-occlusion, such as bones, lungs and kidneys (Kumar & Clark, 2017).
4. Leg ulcers: These occur spontaneously (vaso-occlusive episodes) or following trauma, and are usually found over the medial or lateral malleoli. They often become infected and are quite resistant to treatment; sometimes blood transfusion may facilitate ulcer healing (Kumar & Clark, 2017).
5. Cholelithiasis: Pigment stones occur as a result of chronic haemolysis (Kumar & Clark, 2017).
6. Priapism: An unwanted painful erection occurs from vaso-occlusion and can be recurrent. This requires urgent treatment, as it may result in impotence. Treatment is with an αadrenergic blocking drug, analgesia and hydration (Kumar & Clark, 2017).
7. Pregnancy: Impaired placental blood flow causes spontaneous abortion, intrauterine growth retardation, pre-eclampsia and fetal death. Painful episodes, infections and severe anaemia occur in the mother (Kumar & Clark, 2017).
8. Cardiac problems: Cardiac problems occur, with cardiomegaly, arrhythmias and iron overload cardiomyopathy. Myocardial infarctions are caused by thrombotic episodes, which are not secondary to atheroma (Kumar & Clark, 2017).
9. Neurological complications: These occur in 25% of patients and include transient ischaemic attacks, fits, cerebral infarction, cerebral haemorrhage and coma. About 11% of patients under 20 years of age suffer strokes (Kumar & Clark, 2017).
10. Acute and chronic renal failure: Chronic tubulointerstitial nephritis occurs (Hinkle & Cheever, 2014).
11. Avascular Necrosis: Bones are a common site for vaso-occlusive episodes, leading to chronic infarcts. Avascular necrosis of hips and shoulders, compression of vertebrae, and shortening of bones in the hands and feet occur. These episodes are the common

cause for the painful crisis. Osteomyelitis is more frequent in sickle cell disease and is caused by Staphylococcus aureus, Staph. pneumoniae and salmonella (Kumar & Clark, 2017).

1.11 Validation of Data

Validation is the extent to which a method of data collection possesses the quality of being true as far as it can be judged (Weller, 2014). This basis on the fact that all information written about the client and the one's gathered from client and relatives, reference to past medical records and observations from clinical review as well as clinical manifestations presented by client shows that client is suffering from sickle cell disease and Vaso-occlusive crisis. All investigations carried out on client were compared with standard measurement. Hence, all data collected are free from erroneous mistakes and biases.

CHAPTER TWO

ANALYSIS OF DATA

2.0 Introduction

Analysis is the arrangement and grouping of identical material meaningfully for the purpose of identification and comparison. Analysis in the nursing process deals with comparing data gathered on the patient with the standard to help determine any deviation from normal functions of the body and this enables the nurse formulate appropriate nursing interventions. This chapter compares data gathered with standards. It basically compares causes, treatment, diagnosis, investigations, clinical features and complications with references from the literature review and text books. It also looks at the patient/family strength, health problems and nursing diagnosis formulated and complications presented by the client (Tripathy, 2018).

2.1 Comparison of Data with Standard

This is comparing the data collected with that of the standards which includes diagnostic investigations, causes, clinical features, treatment and complications.

A. Diagnostic Tests/Investigations

Test is defined as an examination or trial (Weller, 2014). Investigation refers to procedures performed to establish a diagnosis, to monitor a person's health, disease or the effectiveness of treatment (Weller, 2014). These investigations were carried out on patient;

1. Full Blood Count
2. Blood Culture and Sensitivity test
3. Blood film for malaria parasite

Table 1: Comparison of Test Done on Patient to Literature

Test in literature review	**Test conducted on patient**
1. Hb electrophoresis	1. Hb electrophoresis was not done
2. Full blood count	2. Full blood count was done
3. Sickle solubility test	3. Sickle solubility test was not done
4. Family history	4. Family history was taken
5. Blood culture	6. Blood Culture and Sensitivity test was done
7. Blood film for malaria parasite was not in literature review	5. Blood film for malaria parasite was done

From the table above, full blood count, blood culture and family history which are part of the literature review were ordered which helped in the management of the crisis. Other test which was not part of the literature review such as malaria parasite was done to rule out malaria, hemoglobin electrophoresis (genotype SC) was not done on the day of admission because it was previously done and recorded.

Table 2: Results of Diagnostic Investigations Carried out on patient

Date	**Specimen**	**Investigations**	**Results**	**Normal Results**	**Interpretation**	**Remarks**
14/12/21	Blood	Hemoglobin estimation	10.9g/dl	Male: 12.5 – 18 g/dl Female: 12 – 16 g/dl	Patient had mild anemia	Tablet Folic Acid 5 mg daily for 30 days was given.
14/12/21	Blood	White blood cell count.	15.65g/dl	4.5 x10^9/L - 10.0 x10^9/L	Patient had infection	Intravenous Cefuroxime 750mg tds for 24 hours was given
14/12/21	Blood	Red Blood Cell Count	2.32×107/µl	4.2 -6.9×107/µl	Slightly below normal	Tablet Folic Acid 5 mg daily for 30 days was given.
14/12/21	Blood	Culture and sensitivity test.	No bacteria growth in blood	Negative	there should be no growth of bacteria in blood	No treatment was given
14/12/21	Blood	Malaria parasite	Negative	Negative	No malaria parasite was found	No treatment given

B. Cause of Patient Condition

With reference to the literature review, client has an inherited gene of hemoglobin S from one parent and hemoglobin C from the other, therefore, causing the sickle cell disease in Master W.O.

C. Clinical features of Master W.Os. Condition

Table 3: Clinical Manifestations Exhibited by Master W.O. as compared with Literature Review

Clinical Manifestation in the Literature Review	Clinical Features Exhibited by Master W.O.
1. Severe pain in the joints	1. Patient complained of severe pain in the joints
2. Swelling in the joints	2. Patient had swollen joints
3. Fever	3. Patient had fever (37.9ºC)
4. Breathing difficulty (dyspnea)	4. Patient did not experience dyspnea
5. Priapism	5. Patient did not experience priapism
6. Dactylitis (hand and foot syndrome)	6. There was absence of dactylitis
7. Splenomegaly	7. There was absence of splenomegaly
8. Hepatomegaly	8. There was absence of hepatomegaly
9. Jaundice	9. There was absence of jaundice
10. Pallor	10. Patient was slightly pale (Hb-10.9g/dl)
11. Easy fatiguability	11. Patient complained of easy fatigability
12. Abdominal pain	12. Patient did not complain of abdominal pain

Table 3 illustrates that patient manifested key signs and symptoms associated with Vaso occlusive crisis such as severe pain in the joints, swollen joints, pallor and easy fatigability. This clearly indicates that patient was really having vaso occlusive crisis.

D. Pharmacological Treatment

Treatment refers to the method of dealing with a disease (Weller, 2014). Medications given to Master W.O. during his period of hospitalization aimed at managing the crisis and preventing complications were;

1. Intravenous Morphine 10mg stat
2. Intravenous Paracetamol 1g tds for 24 hours
3. Intravenous Tramadol 200mg in 500ml of Normal Saline tds for 3 days
4. Intravenous Ringers lactate 2 litres for 48 hours
5. Intravenous Normal Saline 4 liters for 48 hours
6. Intravenous Cefuroxime 750mg tds for 24 hoursTablet Ibuprofen 400mg tds for 3 days

Drugs ordered on discharge

7. Tablet Folic acid 5g daily for 30 days
8. Tablet Dihydrocodeine 30mg tds x 7

Table 4: Treatment Given to Master W.O. Compared with Literature Review

Medical Treatment in literature review	**Treatment given to Master W.O.**
1. Analgesics such as Morphine, Codeine, Paracetamol, Diclofenac, Ibuprofen	1. Analgesics given were; IV Morphine, IV Paracetamol, IV Tramadol, Tablet Ibuprofen and Tablet Dihydrocodeine
2. Transfusion	2. Patient was not transfused (Hb was >5g/dl thus 10.9g/dl)
3. Oxygen therapy	3. Oxygen therapy was not given
4. Intravenous fluids	4. IV Normal saline and IV Ringers lactate were given
5. Antibiotic such as Amoxiclav	5. IV Cefuroxime was given
6. Corticosteroids	6. Corticosteroid was not given
7. Folic acid supplement	7. Tab folic acid was given

From the table 4, comparison of drugs in the literature review with drugs given to patient, the treatments given to patient were in line with the literature. Blood transfusion was not done and corticosteroid was not given because patient responded perfectly well to the drugs which he was given. The intravenous paracetamol was administered to achieve both analgesic effect and antipyretic effects.

Table 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	Side Effect/ Remedies
14/12/21	Morphine	**Dosage** IV: 2.5-10mg, Subcut or IM injection**:** 5-20mg **Route:** IV, IM or Subcutaneous	**Dosage:** 10mg stat **Route:** Intravenously	Opioid analgesic	It activates the inhibitory pathway of the CNS and the nociceptive afferent neurons of the PNS, which leads to reduction of pain transmission	Patient was relieved of pain	Constipation, vomiting, nausea, dizziness, sweating. None of these side effects were observed.
14/12/21	Paracetamol	**Dosage** 0.5–1 g every 4–6 hours; maximum 4g per day **Route** Oral, rectal and IV.	**Dosage** 1g tds x 24 hours **Route** IV	Anti-pyretic/ Analgesic	Has a central analgesic effect that is mediated through activation of descending serotonergic pathways.	Patient had a reduction in pain and temperature	Dark urine, skin reactions, liver damage following overdose. Patient experienced no side effects.

Table 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	Side Effect/ Remedies
14/12/21	Tramadol	**Dosage** 50–100mg every 4–6 hours **Route** IV, Oral, IM	**Dosage** 200mg in 500mls of normal saline tds for 3 days **Route** Intravenously	Narcotic/Opioid Analgesic	It binds to the opioid receptors and blocks the pathway of nor epinephrine and serotonin which reduce pain.	Pain was relived	Tremors, delirium, dyspnea, wheezing. None of these side effects were observed.
14/12/21	Ringers Lactate	**Dosage** Depends on patient's fluid and electrolyte level **Route** IV	**Dosage** 2 litres for 48 hours **Route** Intravenously	Isotonic solution of sodium chloride, sodium lactate, potassium chloride and calcium chloride in water	To correct fluid and electrolyte imbalance	Patient's body fluids and electrolytes were raised	Oedema, sneezing, hypocalcaemia, fever. None of these side effects were observed.

Table 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	Side Effect/ Remedies
14/12/21	Normal saline	**Dosage:** Depends on patient's fluid and electrolyte level **Route** IV	**Dosage:** 4.0L for 48 hours **Route:** 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.
14/12/21	Cefuroxime	**Dosage** 750 mg every 6–8 hours **Route** Oral, IV, IM	**Dosage** 750mg tds for 24 hours **Route** Intravenously	Second generation' Cephalosporin	Cephalosporins are antibacterials that attach to penicillin binding proteins to interrupt cell wall biosynthesis, leading to bacterial cell lysis and death.	Clients infection was controlled	Gastrointestinal disorders, Cutaneous vasculitis. None of these side effects were observed.

Table 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	Side Effect/ Remedies
14/12/21	Ibuprofen	**Dosage** 300-400mg 3-4 times daily **Route** Oral, Rectal, Topical, Intravenous	**Dosage** 400mg tds x 3 days **Route** Orally	Nonsteroidal Anti-inflammatory drug	It inhibits cyclooxygenas enzymes thus COX-1 and COX-2, these enzymes are involved in the synthesis of pain	Patient was relieved of pain	Ringing in the ears, dizziness, mild itching. Patient experienced no side effects.
18/12/21	Folic acid	**Dosage** 10mg daily **Route** Oral	**Dosage** 5mg dly x 30 **Route** Orally	Vitamin-water soluble	To manufacture red blood cells	Patient's condition improved	Gastrointestinal disturbances such as nausea, vomiting. None of these side effects were observed.

Table 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	Side Effect/ Remedies
18/12/21	Dihydrocodeine	**Dosage:** By mouth, is usually 30mg every four hours by subcutaneous or intramuscular injection, Up to 50gm every 4-6 hours **Route:** Oral, Subcutaneous, Intramuscular	**Dosage:** 30mg tds x 7 days **Route:** Orally	Opioid analgesic	It acts on the opioid receptors in the brain to reduce the perception of pain and improve psychological reaction to pain	Patient was relieved of pain	Dizziness, dry mouth. Sweating. Nausea. Vomiting, constipation. None of these side effects were observed.

E. Complications

With reference to the complications listed in the literature review such as Priaprism, chronic renal failure, acute chest syndrome etc., Master W.O. exhibited no complications throughout the period of hospitalization which resulted in his early recovery. Patient did not develop any complications because of the early seeking of medical help and prompt treatment given to him throughout his period of hospitalization.

2.2 Patient / Family Strengths

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

1. Patient could note the location of pain.
2. Patient could take in cold drinks and verbalize his degree of hotness
3. Patient demonstrated measures to prevent infection
4. Patient could express the intensity of the pain.
5. Patient could follow instructions and participate in his care.
6. Patient could eat 1/3 of 500ml of porridge.

2.3 Patient's Health Problems

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

1. Patient complained of joint pain (14/12/21).
2. Patient had fever (37.9^{o}C) (14/12/21).
3. Patient has impairment in host defences (14/12/21).
4. Patient complained of headache (14/12/21).
5. Patient complained of body weakness (15/12/21).

6. Patient complained of loss of appetite (15/12/21).

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.

1. Acute pain (knee joint) related to intravascular sickling with localized stasis and occlusion (14/12/21).
2. Hyperthermia (37.9^{o}C) related to vessel wall occlusion by the sickled cells (14/12/21).
3. Risk for infection related to chronic disease process (14/12/21).
4. Impaired comfort (Headache) related to reduced blood perfusion to the brain tissues (14/12/21).
5. Activity intolerance related to body weakness (15/12/21).
6. Imbalanced nutrition (less than body requirement) related to loss of appetite (15/12/21).

CHAPTER THREE

PLANNING FOR PATIENT/FAMILY CARE

3.0 Introduction

Planning is the process in which the nurse and patient together consider the goals to achieve in meeting the patient's identified or potential problems in daily life and produce an individual care plan (Weller, 2014).Once diagnoses are identified, prioritizing of selected nursing diagnoses must occur to determine care priorities. High-priority nursing diagnoses need to be identified (i.e., urgent need, diagnoses with high level of congruence with defining characteristics, related factors, or risk factors) so that care can be directed to resolve these problems or lessen the severity or risk of occurrence (in the case of risk diagnoses)(Herdman & Kamitsuru, 2018). This is the third phase in the nursing process which deals with setting of goals and objective/outcome criteria to meet the health needs of the patient. These objectives/outcome criteria are set in order of priority which can be long or short term. This is made possible based on the actual and potential problems identified

3.1 Objective/ Outcome Criteria

A nursing outcome refers to a measurable behavior or perception demonstrated by an individual, a family, a group, or a community that is responsive to nursing intervention (Herdman & Kamitsuru, 2018).

1. Patient would be relieved of joint pain within 48 hours of hospitalization as evidenced by;
    a. Patient verbalizing that he is relieved of joint pain
    b. Nurse observing a cheerful facial expression
2. Patient would have his temperature within normal range (36.2^{o}C-37.2^{o}C) within 6 hours as evidenced by;

a. Patient verbalizing that he no longer feels warm
b. Nurse observing the temperature reduced to normal range (36.2^{o}C-37.2^{o}C) using clinical thermometer

3. Patient would be prevented from infection within the period of hospitalization as evidenced by;
   a. Patient demonstrating measures to prevent infection such as hand hygiene
   b. Nurse observing the absence of clinical features of infection
4. Patient headache would subside within 24 hours as evidenced by;
   a. Patient verbalizing that he is relieved of headache.
   b. Nurse observing a cheerful facial expression.
5. Patient would be able to regain strength for his daily activities within 48 hours as evidenced by:
   a. Patient verbalizing that he no longer has any feeling of body weakness.
   b. Nurse observing that patient participate in activities that he can tolerate.
6. Patient would be able to attain and maintain adequate nutrition within 48 hours as evidenced by:
   a. Patient verbalizing that he has gained appetite for food.
   b. Nurse observing that patient takes in at least two thirds of 500ml of porridge served.

Table 6: Nursing Care Plan For Master W.O.

Date/ Time	Nursing Diagnosis	Objectives/Outcome Criteria	Nursing Orders	Nursing Intervention	Date/ Time	Evaluation	Sign
14/12/21 2:30pm	Acute pain (knee joint) related to intravascular sickling with localized stasis and occlusion	Patient will be relieved of joint pain within 48 hours as evidenced by; 1. Patient verbalizing that he is relieved of joint pain 2. Nurse observed that patient have cheerful facial expression and looked relaxed in bed.	1. Reassure client. 2. Assess level of pain 3. Apply warm compresses to the joint 4. Encourage ROM exercises 5. Ensure adequate IV hydration of patient 6. Serve prescribed analgesics.	1. Patient was reassured that appropriate measures will be taken to help him relieved of the joint pain 2. Patients pain was assess using the numerical pain rating scale (0-10) 3. Application of warm compresses were ensured. 4. Patient was encouraged to do range of motion exercises to prevent joint stiffness. 5.. Patient was hydrated with intravenous fluid of normal saline 4L 6. Prescribed medication of IV Morphine 10mg was administered.	16/12/21 2:30pm	Goal fully met as patient verbalized that he is relieved of joint pain and nurse observed that patient had a cheerful facial expression.	

Table 6: Nursing Care Plan For Master W.O. Cont'd…

Date/ Time	Nursing Diagnosis	Nursing Objectives/ Outcome Criteria	Nursing Order	Nursing Intervention	Date/ Time	Remarks	Sign
14/12/21 2:35pm	Hyperthermia (37.9°C) related to vessel wall occlusion by the sickled cells	Patient would have his temperature within normal range (36.2°C-37.2°C) within 6 hours as evidenced by; 1. Patient verbalizing that he no longer feels warm 2. Nurse observing the temperature reduced to normal range (36.2°C-37.2°C) using clinical thermometer	1. Assess patient's temperature every hour 2. Serve cold drinks (if patient can tolerate) 3. Ensure ventilation 4. Encourage patient to put on light clothes 5. Serve prescribed anti-pyretic. 6. Ready oxygen therapy for extreme cases.	1. Patients temperature was assessed every hour 2. Cold drinks such as Malt and Vitamilk were served. 3. Good ventilation was ensured by opening windows and doors 4. Patient was encouraged to put on hospital gown 5. Prescribed anti-pyretic IV Paracetamol 1g and IV Cefuroxime 750mg were served 6. Oxygen therapy was made available since hyperthermia increases metabolic demands	14/12/21 8:35pm	Goal was fully met as patient verbalized that he no longer felt warm and nurse observed that his temperature has reduced to normal range (36.2°C-37.2-°C)	

Table 6: Nursing Care Plan For Master W.O. Cont'd…

Date/ Time	Nursing Diagnosis	Objectives/Outcome Criteria	Nursing Orders	Nursing Intervention	Date/ Time	Evaluation	Sign
14/12/21 2:40pm	Risk for infection related to chronic disease process	Patient would be prevented from infection within the period of hospitalization as evidenced by; 1. Patient demonstrating measures to prevent infection such as hand hygiene 2. Nurse observing the absence of clinical features of infection	1. Assist patient with personal hygiene 2. Initiate prescribed antibiotics promptly 3. Monitor for clinical features of infections 4. Wash hands before and after having contact with patient 5. Encourage intake of protein-rich and calorie-rich foods 6. Teach patient to take prescribed medications at home.	1. Patient was assisted with personal hygiene 2. Intravenous Cefuroxime 750mg was administered 3. Clinical features such as fever was monitored 4. Hand hygiene was performed before and after having contact with patient 5. Patient was encouraged to eat protein-rich and calorie-rich foods 6. Patient was taught how to take prescribed medications at home	18/12/21 12:00pm	Goals fully met as patient demonstrated measures to prevent infection such as hand hygiene and nurse observed the absence of clinical features of infection	

Table 6: Nursing Care Plan For Master W.O. Cont'd…

Date/ Time	Nursing Diagnosis	Objectives/Outcome Criteria	Nursing Orders	Nursing Intervention	Date/ Time	Evaluation	Sign
14/12/21 3:00pm	Impaired comfort (Headache) related to reduced blood perfusion to the brain tissues	Patient headache will subside within 24 hours as evidenced by; 1. Patient verbalizing that he is relieved of headache. 2. Nurse observed that patient have cheerful facial expression and looked relaxed in bed.	1. Reassure client. 2. Assess level of pain 3. Apply warm compresses to the head 4. Ensure a complete bed rest. 5. Encourage Patient to take in fluids adequately unless 6. Serve prescribed analgesics.	1. Patient was reassured that appropriate measures will be taken to help him relieved of the headache. 2. Patients pain was assess using the numerical pain rating scale (0-10) 3. Application of warm compresses were ensured. 4. Patient was asked to stay put in bed unless he needed to undertake something very essential that required him to not be in bed 5. Patient was encouraged to take in copious such as water fluids adequately to correct dehydration. 6. Prescribed medication of Tab Paracetamol 1g was served.	15/12/21 3:00pm	Goal fully met as patient verbalized that he is relieved of headache and nurse observed that patient had a cheerful facial expression and relaxed in bed.	

Table 6: Nursing Care Plan For Master W.O. Cont'd…

Date/ Time	Nursing Diagnosis	Objective/ Outcome Criteria	Nursing Orders	Nursing Intervention	Date and Time	Evaluation	Sign
15/12/21 7:40am	Activity intolerance related to body weakness	Patient would be able to regain strength for his daily activities within 48hours as evidenced by; 1. Patient verbalizing that he no longer has any feeling of body weakness. 2. Nurse observing that patient participate in activities that he can tolerate	1. Reassure patient of regaining strength for daily activities with the available measures. 2. Assess the patient's level of physical activity and mobility. 3. Assess nutritional status 4. Place items of daily use close to patient 5. Provide emotional support while increasing activity. 6. Educate the patient in recognizing signs of physical over activity	1. Patient was reassured that appropriate measures will be taken to help him regain strength for his daily activities 2. Level of physical activity and mobility was assessed during periods of activity 3. Nutritional status was assessed by observing clients eating habit since adequate energy is needed for activities. 4. Items of daily use such as mirror, bottled water were kept close to patient. 5. Emotional support was provided and was increased for patient. 6. Patient was educated on signs of over activity such as muscle or joint pain	17/12/21 7:40am	Goal fully met as patient verbalized that he no longer has feeling of body weakness and nurse observed that patient participated in activities that he can tolerate	

Table 6: Nursing Care Plan For Master W.O. Cont'd…

Date/ Time	Nursing Diagnosis	Objectives/Outcome Criteria	Nursing Orders	Nursing Intervention	Date/ Time	Evaluation	Sign
15/12/21 8:00am	Imbalanced nutrition (less than body requirement) related to loss of appetite	Patient would be able to attain and maintain adequate nutrition within 48 hours as evidenced by: 1. Patient verbalizing that he has gained appetite for food. 2. Nurse observing that patient takes in at least two thirds of 500ml of porridge served	1. Reassure patient 2. Assess the nutritional status of patient 3. Maintain patient's oral hygiene twice a day 4. Plan meals with patient and dietician in order to provide patient with meals of his choice. 5. Educate patient on the need to take in nutritionally rich diets 6. Document procedure	1. Patient was reassured that measures will be taken to restore adequate essential nutrients. 2. The nutritional status of patient was assessed by observing clients eating habit 3. Patient brushed his teeth twice daily 4. Meals were planned with patient by taking into account his preferences 5. Patient was educated on the need to take in nutritionally rich diets 6. Procedure was documented in nurses notes.	17/12/21 8:00am	Goal fully met as patient verbalized that he has gained appetite for food and nurse observed that patient was able to eat at least two thirds of food served.	

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, 2014). 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 his family started on the day of admission, 14th December, 2021 to the time care was terminated on 3rd January, 2022. The management of patient and his 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.

First Day of Admission (14th December, 2021)

On 14th December, 2021 at 12:00pm., Master W.O. arrived on the Male Medical ward per ambulation. He was accompanied by a staff nurse, a rotational nurse, and his parents. They were warmly welcomed to the ward and offered seats. On arrival, patient was completely alert and conscious. Patient had been detained at the emergency unit sine yesterday with the diagnosis of vaso occlusive crisis in a known Sickle Cell. The accompanying staff nurse gave me the patient's information. To validate his admission to the Male Ward, his folder number was input into the hospital's computer system. By mentioning the patient's name and waiting for him to answer, the patient's identity was confirmed. He was made comfortable in an admission bed. Name, sex, age, and home address were all recorded in the admission and discharge book, as well as the daily ward state. Vital signs were checked and recorded accurately as follows:

1. Temperature 37.9^{o}C
2. Pulse 90 bpm
3. Respiration 23 cpm
4. Blood Pressure 110/60mm/Hg

His weight was 38kg.

Physical examination on the patient was performed from head to toe. At the time of admission, Assessment revealed that patient had severe joint pains, headache, high body temperature and general body weakness.

Due to the high body temperature, patient was asked to remove extra clothing, he was given cold drinks and prescribed Intravenous Paracetamol 1g was set up.

Patient looked anxious. He was reassured to put his thoughts and anxieties to rest. The patient was introduced to the other patients as well as the staff members present, and he was assured of quality healthcare. The hospital's policies on visiting hours and bill payment were discussed. The patient’s parents were given a thorough orientation to the ward.

The following treatment plan were ordered:

1. Intravenous Morphine 10mg stat
2. Intravenous Paracetamol 1g tds for 24 hours
3. Intravenous Tramadol 200mg in 500ml of Normal Saline tds for 3 days
4. Intravenous Ringers lactate 2 litres for 48 hours
5. Intravenous Normal Saline 4 liters for 48 hours
6. Intravenous Cefuroxime 750mg tds for 24 hours

7. Tablet Ibuprofen 400mg tds for 3 days
8. Tablet Folic acid 5g daily for 30 days
9. Tablet Dihydrocodeine 30mg tds x 7

Patient had the following laboratory investigations ordered:

1. Full Blood Count
2. Blood Culture and Sensitivity test
3. Blood film for malaria parasite

I introduced myself to the patient as a final-year nursing student at Holy Family Nursing and Midwifery Training College, Berekum who wanted to take him and his family for my care study. Master W.O. and his family were told that the care study is a requirement for the award of a Diploma in Registered General Nursing by the Nursing and Midwifery Council of Ghana. I explained to them that at least three official home visits will be made, after clearly explaining that every information obtained will be treated with the outmost confidentiality, I asked for permission to use him and his family for the study and they agreed. Discharge planning was initiated with the relatives thus they will continue the care at home once he is well. Patient was given a brief education on why he was manifesting the sign and symptoms associated with his condition and what he should expect from the medical team as part of his treatment regimen and was also assured of competent nursing care. I selected Master W.O. because I wanted to know more about sickle cell disease.

On admission at 2:30pm patient complained of joint pain hence, nursing diagnosis of Acute pain (joint) related intravascular sickling with localized stasis and occlusion was formulated. An objective was set to relieve patient of joint pain within 48 hours. The following nursing interventions were then implemented; Patient was reassured that appropriate measures will be taken to help him relieved of the joint pain, patients pain was assess using the numerical pain rating scale (0-10), application of warm compresses were ensured, patient was encouraged to do range of motion exercises to prevent joint stiffness, patient was hydrated with intravenous fluid of normal saline 4L, prescribed medication of IV Morphine 10mg was administered.

Patient had fever (37.9^{o}C) so at 2:35pm a nursing diagnosis of Hyperthermia (37.9^{o}C) related to vessel wall occlusion by the sickled cells was formulated hence, an objective was set to restore patients body temperature to normal within 6 hours. The following interventions were implemented; Patients temperature was assessed every hour, cold drinks such as Malt and Vitamilk were served, good ventilation was ensured by opening windows and doors, patient was encouraged to put on hospital gown, prescribed anti-pyretic IV Paracetamol 1g and IV Cefuroxime 750mg were served.

At 2:40pm, a nursing diagnosis of Risk for infection related to chronic disease process was formulated. An objective was set to prevent patient from infections within the period of hospitalization. The following nursing interventions were then implemented; Patient was assisted with personal hygiene. Intravenous Cefuroxime 750mg was administered. Clinical features such as fever was monitored. Hand hygiene was performed before and after having contact with patient. Patient was encouraged to eat protein-rich and calorie-rich foods. Patient was taught how to take prescribed medications at home.

served, oxygen therapy was made available since hyperthermia increases metabolic demands.

At 3:00pm patient complained of headache hence a nursing diagnosis of Impaired comfort (Headache) related to reduced blood perfusion to the brain tissues was formulated. An objective was set to relieve patient of headache within 24 hours. The following nursing interventions were then implemented; Patient was reassured that appropriate measures will be taken to help him relieved of the headache, patients pain was assess using the numerical pain rating scale (0-10), application of warm compresses were ensured, patient was asked to stay put in bed unless he needed to undertake something very essential that required him to not be in bed, patient was encouraged to take in copious such as water fluids adequately to correct dehydration and prescribed medication of tab paracetamol 1g was served.

At 5:30pm, patient took he supper which was ampesi and garden egg stew. He took his bath afterwards.

At 6:00pm vital signs were checked and recorded as indicated in the appendix.

At 8:35pm, evaluation of the set objective at 2:35pm to reduce patient temperature within normal range (36.2^{o}C-37.2^{o}C) within 6 hours was done and goal was fully met as evidenced by patient verbalizing that he no longer felt warm and nurse observed that his temperature has reduced to normal range (36.2^{o}C-37.2^{o}C) using clinical thermometer.

At 10:00pm, vital signs were checked and recorded, due medications were administered.

Patient slept around 10:30pm.

Second Day of Admission (15th December, 2021)

Patient woke up at 5:30am, he was assisted in carrying out his personal hygiene needs. On the second day of admission, at 7:00am I went to the ward to continue with my nursing care for Master W.O., his morning vital signs had already checked at 6am and recorded as follows;

Temperature	35.9^{0}C
Pulse	64bpm
Respiration	20cpm
Blood pressure	120/70 mmHg

At 7:40am, assessment revealed that patient was weak therefore a nursing diagnosis of Activity intolerance related to body weakness was made. An objective was set to help patient regain his strength for daily activities within 48 hours. The following interventions were implemented; Patient was reassured that appropriate measures will be taken to help him regain strength for his daily activities, level of physical activity and mobility was assessed during periods of activity, nutritional status was assessed by observing clients eating habit

since adequate energy is needed for activities, items of daily use such as mirror, bottled water were kept close to patient, emotional support was provided and was increased for patient, patient was educated on signs of over activity such as muscle or joint pain.

At 8:00am, patient complained of loss of appetite hence the nursing diagnosis of Imbalanced nutrition (less than body requirement) related to loss of appetite was formulated. An objective was set for patient to be able to attain and maintain adequate nutrition within 48 hours of hospitalization. The following interventions were implemented; Patient was reassured that measures will be taken to restore adequate essential nutrients, the nutritional status of patient was assessed by observing clients eating habit, patient brushed his teeth twice daily, meals were planned with patient by taking into account his preferences, patient was educated on the need to take in nutritionally rich diets, procedure was documented in nurse’s notes.

Patient was reviewed that morning at 9:00am and the plan was that the patient should continue his treatment.

Patient took porridge and bread as breakfast around 9:20am.

At 1:30pm, patient was served with his launch which was rice and beans.

At 2:00pm, his vital signs were checked and recorded as indicated in the appendix.

On 15th December, 2021 at 3:00pm, evaluation of set objective on 14th December, 2021 to help patient’s headache subside was done and goal was fully met as patient verbalized that he is relieved of headache and nurse observed that patient had a cheerful facial expression and relaxed in bed.

Patient was encouraged to take his super at 5:00pm.

At 6:00pm vital signs were checked and recorded as indicated in the appendix.

At 10:00pm, vital signs were checked and recorded. Patient slept around 10:30pm.

Third Day of Admission (16th December, 2021)

On the third day of admission, patient woke up at 5:20am, he was assisted in brushing his teeth, had his bath and emptied his bowel. Report from the night nurses read that he was able to sleep well upon the measures put in place. Vital signs checked and recorded at 6:00am read as follows:

Temperature	36.4^0C
Pulse	68bpm
Respiration	18cpm
Blood Pressure	110/70mmHg

He took oats with bread as breakfast at 8:10am.

At 9:22am patient was reviewed and plan was to continue all medications

At 1:40pm, patient took his launch which was rice ball and groundnut soup.

At 2:00pm, his vital signs were checked and recorded as indicated in the appendix.

At 2:30pm, evaluation of set objective on 14th December, 2021 to relieve patient of joint pain was done and goal was fully met as patient verbalized that he is relieved of joint pain and nurse observed that patient had a cheerful facial expression.

Arrangement was made for my first home visit on this day.

His vital signs were checked and recorded as indicated in the appendix. Patient was made comfortable in bed and he slept around 10:30pm.

Fourth Day of Admission (17th December, 2021)

On the fourth day of admission, patient woke up at 5:30am, he looked cheerful that morning, he performed his personal hygiene. The night nurses reported that patient was able to sleep well upon the measures put in place. Vital signs checked and recorded at 6:00am read as follows:

Temperature	36.7^0C

Pulse	78bpm
Respiration	21cpm
Blood Pressure	120/70mmHg

On 17th December, 2021 at 7:40am, evaluation of the set objective on 15th December, 2021 to help patient regain his strength was done and goal was fully met as patient verbalized that he no longer has feeling of body weakness and nurse observed that patient participated in activities that he can tolerate.

On 17th December, 2021 at 8:00am, evaluation of the set objective on 15th December, 2021to help patient attain and maintain adequate nutrition within 48 hours was done and goal was fully met as evidenced by patient verbalized that he has gained appetite for food and nurse observed that patient was able to eat at least two thirds of normal meal served.

Patient took his breakfast at 8:40am which was wheat porridge with bread. During the ward rounds, patient did not complain about any problem so the doctor ordered us to continue with treatment. All medications were served at due times.

At 1:40pm, patient took his launch which was kenkey with shito and fried fish.

At 2:00pm, his vital signs were checked and recorded as indicated in the appendix.

At 10:00pm, vital signs were checked and recorded. Patient was made comfortable in bed and he slept around 10:30pm.

Day of Discharge/Fifth Day of Admission (18th December, 2021)

I went to continue the nursing care rendered to 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 Master W.O., he responded with a cheerful facial expression. I was inquisitive enough to ask patient why he has put up a smiley face. Upon asking, patient said that he feels grateful to have special nursing care rendered to him over the past few days since he was admitted. His morning vitals had already been checked and recorded at 6:00am as;

Temperature	36.5^0C
Pulse	80bpm
Respiration	18cpm
Blood Pressure	110/60mmHg

Patient took hausa porridge and bread in the morning at 7:50am.

During routine ward rounds, patient was discharged since his condition was stable and he had no complains. Patient was prescribed Tablet Folic acid 5g daily for 30 days and Tablet Dihydrocodeine 30mg tds x 7to be taken home.

Evaluation of the set objective to prevent patient from infection within the period of hospitalization on 14th December, 2021 was done and goal was fully met as patient demonstrated measures to prevent infection such as hand hygiene and nurse observed the absence of clinical features of infection.

His relative was informed and the bills were assessed to be paid. Payment was made for medications which were not covered by National Health Insurance Scheme. Patient was educated on the need to eat food containing high fiber like whole grains, the entire essential food nutrients, for example protein, vitamins and irons, as well as maintaining good personal hygiene. He was educated on the disease condition, emphasis was placed on how to prevent crisis. He was told to always stay hydrated. Patient was made aware of the indications of the drugs given, side effects and adverse effects. He was encouraged to adhere to the medication therapy. Patient was informed to come for review on 24th December, 2021 at the main Out Patient Department. Education on the need for review was done to ensure patient reports on the said date. The need to continue with medications was emphasized. Patient and the family bid the ward inmates and staff goodbye.

4.2. Preparation of Patient/Family for Discharge and Rehabilitation.

Preparation for discharge commenced from the time of admission at the hospital, at 2:30pm on 14th December, 2021 till the last day of admission on 18th December, 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, treatment and management of sickle cell crisis were reemphasized. This was aimed at helping the patient and relatives in the provision of adequate care. Patient was educated to avoid over the counter medications. Patient was encouraged to take in food rich in the essential food nutrients. Patient and his family were also educated on the need to maintain personal and environmental hygiene to help improve immunity. Emphasis was placed on the need to continue with medication and to report to the hospital if any problem does occur. Patient was also told about the next two home visits which will be carried out to check on his state of health. Patient belongings were packed. Necessary documents were 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 (16th December, 2021)

My first home visit was made on the 16th December, 2021 while patient was on admission. A prearranged visit was made to Biadan where patient resides. The purpose of this visit was to know patient's residence and the environment in which he lives, verify the information given to me as well as to identify the risk factors such as familial tendency and stresses that can precipitate his condition and also to identify any nearest health facility at the area for possible referral. Patient and relative were informed about my intention to visit their home whiles he was still on admission. On the said date, Master W.O.s uncle gave me directions to their house. I left Holy Family Hospital around 12:30pm and alighted at patients residency at 12:40pm. The medium of transportation was a tricycle. I was informed by the uncle to tell the tricycle rider to alight at where ‘Policeman Stays’ or Nana Asoma’s area. Their house is direct opposite to ‘Policeman house’. On arrival, I met the patients auntie in the house. She welcomed me and since she had already met me at the hospital, there was a little need for a thorough introduction of myself. I was offered a seat. She asked of my mission and I explained every detail of my reasons stated above.

The house is a boy’s quarters with 5 rooms. The house is built with blocks, painted white, roofed with aluminum sheets, had windows but most of them were closed so I educated patient and his relatives on the need to open the windows to promote proper ventilation. Their source of water is pipe-borne water in the house and they have electricity. They have a plastic container used to store water which was well covered with a lid. They have a bath and toilet facilities built with blocks and cement. 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-collector which is within walking distance. The environment was well swept and clean.

The patient lives in the house with his with father and other family members. Observations made in patients’ room revealed well-furnished wall 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. They sleep under mosquito net and I stressed on the importance for them to maintain the practice since they are closer to bush, a suitable site for breeding mosquitoes.

His relative 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 his relative of competent nursing care and that he will be well very soon. I had an extensive interaction with patient relatives and through that I was able to confirm most of the information I have been given. No identifiable factor to patient's condition was made during the visit. She thanked me and assured me that she will ensure that all what I said will be done before I come for my next home visit. I left the residency of the patient at 2:00pm and got to the hospital at 2:10pm. Comments made on the condition of the house, education and recommendations were repeated to Master W.O. and he also promised to do everything in his 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 Holy Family Hospital and for that reason on my return I informed one community health nurse about handing over the patient to her.

4.3.2 Second Home Visit (22nd December, 2021)

This visit was made on 22nd December, 2021. I made this visit to find out how patient was doing and to see if he was following his treatment regimen and also to remind the patient of the review date which was 24th December, 2021.

On assessment patient windows were opened as they were educated to do. The environment was neat and they were commended for that. His medications were inspected and he was taken them as prescribed. 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.

I reminded patient of the review date which was 24th December, 2021. Patient and family were thanked for their cooperation and permission was sought to leave. I promised them of another visit which will be my last. Patient escorted me to the road side where I bordered a tricycle to my house.

4.3.3 Review (24th December, 2021)

On Friday 24th December, patient was met at the Out-Patient Department of Holy Family Hospital at 8:00am. I helped patient to be registered into the hospitals system at the card office. The vital signs were checked and recorded as follows;

Temperature	36.5°C
Pulse	72bpm
Respiration	22cpm
Blood pressure	110/60mmHg

Patient was attended to by the medical officer at first consulting room. Patient did not make any complains. He was looking much better. He was advised not to delay in reporting to the hospital if he should encounter any health problem.

Patient was educated on the importance of good nutrition, adhering to his medications and measures to prevent crisis. Patient was assured of a third home visit which was going to be the last. I escorted to the entrance for him to board a tricycle home.

4.3.4 Third Home Visit (3rd January, 2022)

I made my third home visit on 3rd January, 2022. My main aim was to see how patient was doing at home, to see the general condition of the entire family, to reinforce on the education that had been given to them and to finally terminate care. I scheduled the visit together with the community health nurse I had previously arranged to hand over patient to her. We arrived at the family house around 11:00am, we were welcomed, offered seats and glass of water to drink. I then went ahead to introduce the community health nurse and stated her role in helping ensure the overall health of Master W.O. I told patient and family that once I terminate my care he will be taken care of by the community health nurse with the total support of the whole family. On observation, their environment was cleaned without weeds. The windows were closed so I stressed on the need to periodically open it to allow fresh air to enter the room. I handed over patient to a community health nurse at Holy Family Hospital to continue with the care. I thanked the client and family for the opportunity they gave me to render care to Master W.O. The patient and family also thanked me and we asked for permission to leave. We bid them goodbye and left.

CHAPTER FIVE

EVALUATION OF CARE RENDERED TO PATIENT/FAMILY

5.0 Introduction.

Evaluation is a critical appraisal or assessment of; a judgment of the value, worth character or effectiveness of that which is being assessed (Weller, 2014). Evaluation is done to ascertain whether the goal set out for each of the problem identified are achieved as targeted.

5.1 Statement of Evaluation

Master W.O. was admitted with a diagnosis of vaso occlusive crisis at the Emergency unit and later sent to the Male Medical ward. During history taking and assessment the following problems were identified; joint pain, fever (37.9^{o}C), impairment in host, headache, body weakness and loss of appetite.

1. Patient was relieved of joint pain

On admission (14th December, 2021) at 2:30pm patient complained of joint pain hence, nursing diagnosis of Acute pain (joint) related intravascular sickling with localized stasis and occlusion was formulated. An objective was set to relieve patient of joint pain within 48 hours. The following nursing interventions were then implemented; Patient was reassured that appropriate measures will be taken to help him relieved of the joint pain, patients pain was assess using the numerical pain rating scale (0-10), application of warm compresses were ensured, patient was encouraged to do range of motion exercises to prevent joint stiffness, patient was hydrated with intravenous fluid of normal saline 4L, prescribed medication of IV Morphine 10mg was administered.

On 16th December, 2021 at 2:30pm, evaluation of set objective on 14th December, 2021 to relieve patient of joint pain was done and goal was fully met as patient verbalized that he is relieved of joint pain and nurse observed that patient had a cheerful facial expression.

First home visit was made on this day.

2. Patient normal body temperature was restored

Patient had fever (37.9^{o}C) so at 2:35pm a nursing diagnosis of Hyperthermia (37.9^{o}C) related to vessel wall occlusion by the sickled cells was formulated hence, an objective was set to restore patients body temperature to normal within 6 hours. The following interventions were implemented; Patients temperature was assessed every hour, cold drinks such as Malt and Vitamilk were served, good ventilation was ensured by opening windows and doors, patient was encouraged to put on hospital gown, prescribed anti-pyretic IV Paracetamol 1g was served, oxygen therapy was made available since hyperthermia increases metabolic demands. On 14th December, 2021 at 8:35pm, evaluation of the set objective on 14th December, 2021 at 2:35pm to reduce patient temperature within normal range (36.2^{o}C-37.2^{o}C) within 6 hours was done and goal was fully met as evidenced by patient verbalized that he no longer felt warm and nurse observed that his temperature has reduced to normal range (36.2^{o}C-37.2^{o}C) using clinical thermometer.

3. Patient was prevented from infection

On admission at 2:40pm, a nursing diagnosis of Risk for infection related to chronic disease process was formulated. An objective was set to prevent patient from infections within the period of hospitalization. The following nursing interventions were then implemented; Patient was assisted with personal hygiene. Intravenous Cefuroxime 750mg was administered. Clinical features such as fever was monitored. Hand hygiene was performed before and after having contact with patient. Patient was encouraged to eat protein-rich and calorie-rich foods. Patient was taught how to take prescribed medications at home.

On 18th December, 2021 at 12:00pm, evaluation of the set objective to prevent patient from infection within the period of hospitalization on 14th December, 2021 was done and goal was fully met as patient demonstrated measures to prevent infection such as hand hygiene and nurse observed the absence of clinical features of infection.

4. Patient was relieved from headache

On admission at 3:00pm patient complained of headache hence a nursing diagnosis of Impaired comfort (Headache) related to reduced blood perfusion to the brain tissues was formulated. An objective was set to relieve patient of headache within 24 hours. The following nursing interventions were then implemented; Patient was reassured that appropriate measures will be taken to help him relieved of the headache, patients pain was assess using the numerical pain rating scale (0-10), application of warm compresses were ensured, patient was asked to stay put in bed unless he needed to undertake something very essential that required him to not be in bed, patient was encouraged to take in copious such as water fluids adequately to correct dehydration and prescribed medication of tab paracetamol 1g was served.

On 15th December, 2021 at 3:00pm, evaluation of set objective on 14th December, 2021 to help patient's headache subside was done and goal was fully met as patient verbalized that he is relieved of headache and nurse observed that patient had a cheerful facial expression and relaxed in bed.

5. Patient regained his strength for daily activities

On 15th December, 2021 at 7:40am, assessment revealed that patient was weak therefore a nursing diagnosis of Activity intolerance related to body weakness was made. An objective was set to help patient regain his strength for daily activities within 48 hours. The following interventions were implemented; Patient was reassured that appropriate measures will be taken to help him regain strength for his daily activities, level of physical activity and mobility was assessed during periods of activity, nutritional status was assessed by observing clients eating habit since adequate energy is needed for activities, items of daily use such as mirror, bottled water were kept close to patient, emotional support was provided and was increased for patient, patient was educated on signs of over activity such as muscle or joint pain.

On 17th December, 2021 at 7:40am, evaluation of the set objective on 15th December, 2021 to help patient regain his strength was done and goal was fully met as evidenced by patient verbalized that he no longer has feeling of body weakness and nurse observed that patient participated in activities that he can tolerate.

6. Patient attained and maintained his nutritional level

On 15th December, 2021 at 8:00am, patient complained of loss of appetite hence the nursing diagnosis of Imbalanced nutrition (less than body requirement) related to loss of appetite was formulated. An objective was set for patient to be able to attain and maintain adequate nutrition within 48 hours of hospitalization. The following interventions were implemented; Patient was reassured that measures will be taken to restore adequate essential nutrients, the nutritional status of patient was assessed by observing clients eating habit, patient brushed his teeth twice daily, meals were planned with patient by taking into account his preferences, patient was educated on the need to take in nutritionally rich diets, procedure was documented in nurse's notes.

Patient was reviewed that morning at 9:00am and the plan was that the patient should continue his treatment.

On 17th December, 2021 at 8:00am, evaluation of the set objective on 15th December, 2021to help patient attain and maintain adequate nutrition within 48 hours was done and goal was fully met as evidenced by patient verbalized that he has gained appetite for food and nurse observed that patient was able to eat at least two thirds of normal meal served.

5.2 Amendment of Nursing Care Plan for Partially Met and Unmet Outcome Criteria

With the support from other members of the health team and co-operation of the patient/family, all the goals set were fully achieved based on an individualized care plan. The care plan was therefore not amended.

5.2 Termination of Care

My last home visit to patient and his family was on 3rd January, 2022. The reason of the visit was to determine whether my client condition had improved after review and to finally terminate care. My main aim was to see how patient was doing at home, to see the general condition of the entire family, to reinforce on the education that had been given to them and to finally terminate care. I scheduled the visit together with the community health nurse I had previously arranged to hand over patient to her. We arrived at the family house around 11:00am, we were welcomed, offered seats and glass of water to drink. I then went ahead to introduce the community health nurse and stated her role in helping ensure the overall health of Master W.O. I told patient and family that once I terminate my care he will be taken care of by the community health nurse with the total support of the whole family. On observation, their environment was cleaned without weeds. The windows were closed so I stressed on the need to periodically open it to allow fresh air to enter the room. I handed over patient to a community health nurse at Holy Family Hospital to continue with the care. I thanked the client and family for the opportunity they gave me to render care to Master W.O. The patient and family also thanked me and we asked for permission to leave. We bid them goodbye and left.

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.

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

Master W.O. a 16 year old boy was admitted to the Male Medical ward through the Accident and Emergency Unit of Holy Family Hospital, Berekum on the 14th December, 2021 at 2:30pm with the diagnosis of vaso-occlusive crisis thus crisis in kwon sickle cell disease. On admission, he presented with headache, fever and joint pain. Patient was educated on sickle cell crisis and its management. Patient was also assisted in maintaining his personal hygiene, rest and sleep, nutrition, and exercises were also ensured. During Master W.O.'s stay at the ward six health problems were identified and they were all achieved through nursing interventions such as pain assessment, intravenous hydration, application of warm compresses, checking of vital signs, providing emotional support, oral hygiene, planning of activities in order not to disturb patient, education of patient and family on condition and many more.

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

1. Intravenous Morphine 10mg stat
2. Intravenous Paracetamol 1g tds for 24 hours

3. Intravenous Tramadol 200mg in 500ml of Normal Saline tds for 3 days
4. Intravenous Ringers lactate 2 litres for 48 hours
5. Intravenous Normal Saline 4 liters for 48 hours
6. Intravenous Cefuroxime 750mg tds for 24 hours
7. Tablet Ibuprofen 400mg tds for 3 days
8. Tablet Folic acid 5g daily for 30 days on discharge
9. Tablet Dihydrocodeine 30mg tds x 7 on dischared

Patient was discharged on the 18th December, 2021 after recovering successfully.

On the 24th December, 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 16th December, 2021 second home visit was on the 22nd December, 2021 and third home visit was on the 3rd January, 2021. The care of Master W.O. and his family care were terminated on the 3rd January, 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, I 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 sickle cell disease, it's prevention and management of crisis. 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 which in turn 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.

APPENDIX

Table 7: Vital signs of Master W.O.

Date	**Time**	**Temperature (ºC)**	**Pulse (Bpm)**	**Respiration (Cpm)**	**Blood pressure (mmHg)**
14/12/21	2:30pm	37.9	90	23	110/60
	6:00pm	37.4	75	24	130/80
	10:00pm	36.0	70	24	120/60
15/12/21	6:00am	35.9	64	20	120/70
	10:00 am	35.4	64	19	120/80
	2:00pm	36.0	72	21	110/80
	6:00pm	37.4	70	18	110/70
	10:00pm	36.7	68	21	120/70
16/12/21	6:00am	36.4	68	18	110/70
	10:00am	36.5	88	19	120/80
	2:00pm	37.4	81	20	110/60
	6:00pm	36.3	82	22	120/80
	10:00pm	36.9	79	20	120/80
17/12/21	6:00am	36.7	78	21	120/70
	10:00am	36.5	88	19	120/80
	2:00pm	37.2	78	18	110/60
	6:00pm	36.3	82	22	120/80
18/12/21	6:00am	36.5	80	18	110/60

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SIGNITORIES

1. NAME OF CANDIDATE

NAME: FORIWAA MILLICENT

SIGNATURE..

DATE 04/10/2022..

2. NAME OF WARD IN-CHARGE

NAME: EFFAH BENJAMINE..

SIGNATURE..

DATE 04/10/2022..

3. NAME OF SUPERVISOR

NAME Ms. Rita Agyei Boakye..

SIGNATURE..

DATE 04/10/2022..

4. NAME OF PRINCIPAL

NAME: MONICA NKRUMAH

SIGNATURE.. ACADEMIC CO-ORDINATOR-NURSING HOLY FAMILY NURSING & MIDWIFERY TRAINING COLLEGE, BEREKUM

DATE 05/10/2022..