Title Page

Patient "Care Study" Presented to the School of Nursing Jos in Partial Fulfilment for the Award of Professional Certificate in General Nursing

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Date: November 1989

Approval Page

This patient care study has been read and approved as meeting the requirenements of the School of Nursing, Jos, Nigeria, as partial fulfilment of the requirements for the award of Professional Certificate in General Nursing.

I hereby certify that apart from references made to other people's work which have been rightfully credited, this care study is a product of my personal research and that the care study has neither in whole nor in part been presented for another award either at the School of Nursing, Jos, or elsewhere.

Supervising Tutor — Date: 24/10/89

C.S. NURSING SCHOOL Principal Sign Date PLATEAU STATE

Principal — Date: 6/11/89

Dedication

To my Creator, the Almighty God,

my husband, children and parents.

Acknowledgement

My unreserved gratitudes are due foremost to Mr G.G. Musa, my able supervisor and a tutor in the School of Nursing, Jos, who has taken pains to proof-read every line of this work and for his tireless assistance, invaluable advice, useful suggestions and constructive criticisms.

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Also to make mention here are the followings: my mother Madam Uregwu Ikoni, my brothers Rev. J.O. Ikoni and Mr J.A. Ikoni and the rest of my sisters for their tireless sense of direction and duty, their patience and endless contribution, exemplary life of humility and transparent honesty revealed by their true and sincere guidance have been invaluable assets and served as an inspiration in my career as a professional nurse.

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not mentioned here but who in one way or the other have contributed to the success of my study. (Idea borrowed from First Degree Law thesis, 1989, presented to University of Jos by Ikoni, D.U.).

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Part I

Diabetes Mellitus

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CHAPTER 1

Introduction

Patient's "Care-Study" is an area in the nursing discipline one finds to be an interesting, rewarding, challenging but a useful practical aspect of the general nursing training. There is little wonder why the schools of Nursing curricular designers have carefully made care-study a requirement for all students in nursing.

The topics of this study centre around two patients: Miss G.N. and Mr J.S., the first being medical whilst the second is surgical as a course requirement. The author of this work wishes to emphasise that these two cases are people whose nursing care she has personally taken time to study, observe, be involved in the nursing care plan, suggesting and drawing possible nursing intervention. Therefore, whatever is said about these two cases is not hypothetical. The reader will observe that initials have been adopted rather than using the patients' actual names, the reason being moral, ethical and right to privacy.

The two studies are based on past medical history of the patients and where there was need to ask for social and family history the author did not hesitate to do so. The write-up is based on both prospective

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and retrospective history. Then there is documentation of the two patients right from admission to discharge including home-care follow up.

The past and the present history as revealed in the subsequent discussion include vital demographic data, for example, name, age, sex, place of origin, married or single, diagnosis on admission, investigations and their results. "Care-Study" actually means observing patients for a period of time, studying the nature of their diseases, planning the nursing by way of intervening to help the patients improve health status, gain normal health or at the other extreme assist in peaceful death, if need be.

To be able to have the full awareness of patients' physical and mental requirements demands that the nurses have full grasp of knowledge of the disease in question. Therefore, extensive literature review has been researched in order to learn more about the two disease conditions - Diabetes Mellitus and Inguinal Hernia. The outcome of the literature review has compelled the author to start the whole exercise with history note taking from the etiology of the disease. Brief description of anatomy and physiology of the disease organs has been briefly reviewed in this study.

Alongside with this the patho-physiology of the disease organs have been outlined. The major concern of this study is to expand the competence and role of the professional nurse. Accordingly therefore, nursing care plan and nursing intervention have taken a fair share of this project. There are two separate, unrelated disease studies in this write-up, each following the methodology of organising related contents into chapters.

Objective

The care study is just not an academic requirement for the award of professional certificate in the School of Nursing but other rationales include:

1. To enable the health professionals to be constantly aware of the associated morbidity and mortality.
2. For a successful Nursing Care there is the need to acquire the depth knowledge of the anatomy and physiology of the pancreas.
3. This type of study is important for research purposes because it enables one have useful information about patient management.
4. The study also enables nurses to differentiate between clinical nursing and research problems.

5. To provide opportunity for comprehensive nursing care of the patient; that is patient centred care and not disease centred.
6. The care study gives one the opportunity to put into practice what has been learned during the course of training.
7. The care based on sound knowledge of scientific nursing gives one the sense of job satisfaction as a nurse.

Literature Review

Diabetes Mellitus

Vander (1980: 450) defines the term diabetes mellitus to mean syphon or running through, used by the Greeks over 2000 years ago, describing the striking urinary volume excreted by certain people. Mellitus is said to be a Latin word meaning sweet, or honey, distinguishing the diabetic urine from large quantities of ordinary insipid urine produced by persons suffering from anti-dirutic hormone deficiency. This sweetness of the urine is said to be first recorded in the seventeenth century. In those days people were said to call diabetes mellitus as the "pissing evil". Because of the marked weight loss despite huge food intake the

body's substance was believed to be disolving and pouring out through the urinary tract, a view not far from the truth.

Studies by Arthur, Vander and Luciano (1980 op cit) have revealed that in 1889 experimental diabetes was produced in dogs by surgical removal of pancreas and that in 1921 Banting and Best discovered insulin, the treatment to diabetes mellitus.

Inheritance

Other literature review reveal that tendency towards diabetes mellitus can be inherited. One safely says "tendency" because diabetes often is not an all-or-none disease but may develop slowly and overt signs may all but disappear with appropriate measure for example, weight reduction.

Diabetes mellitus is said to be due to relatively insulin deficiency or diminished effectiveness of insulin which results in underutilization of glucose, causing a high level of glucose in the blood (hyperglycaemia), and excessive urination (polyuria). Parry (1984: 950) indicates that this chronic illness is generally commoner in the obese, middle aged female and in males who may be under underweight. Children

Gross Structures of Pancreas

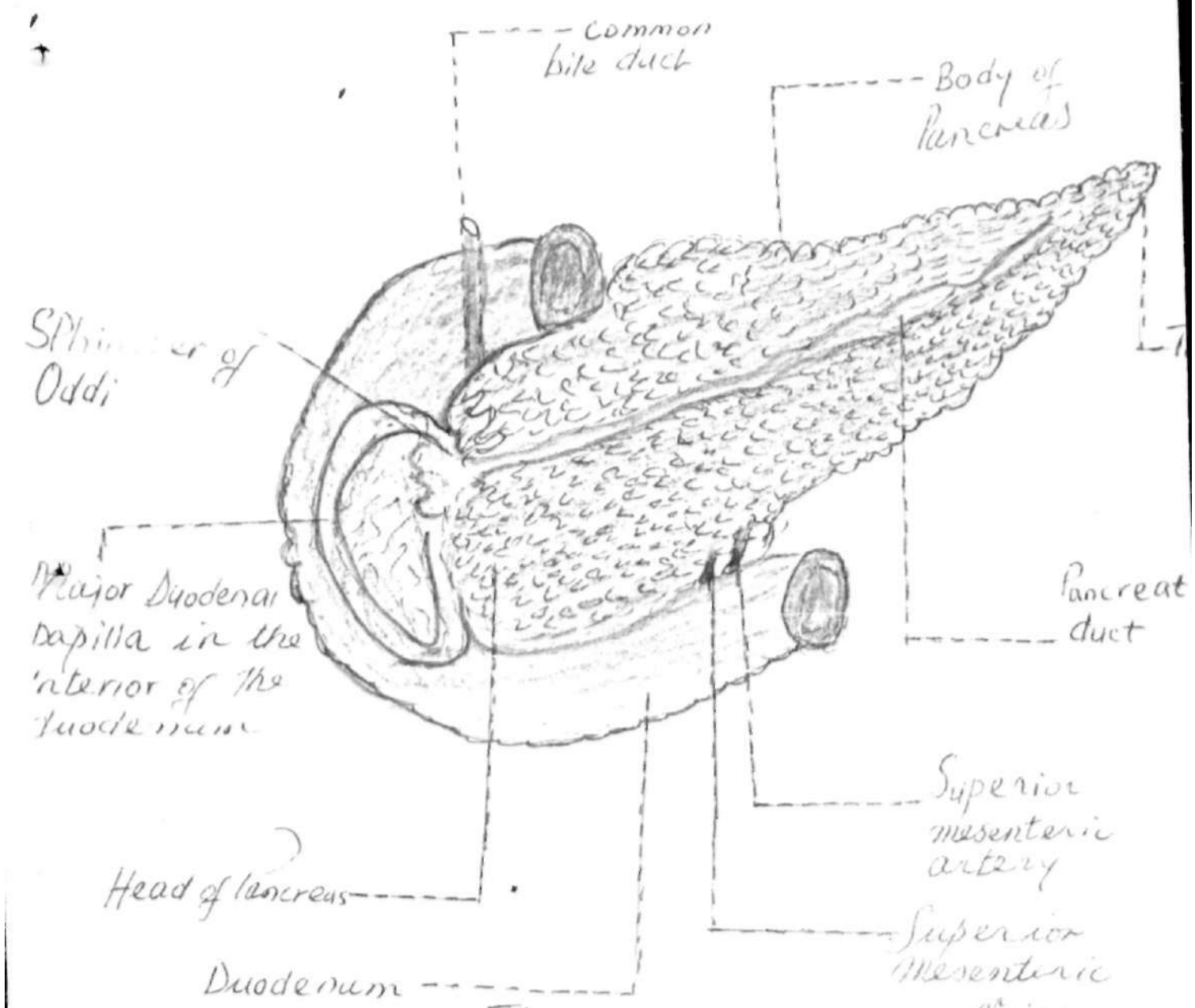

Figure 1.0

Idea borrowed from the Text Book of Anato
by Anthony and Thibodeau, 1983.

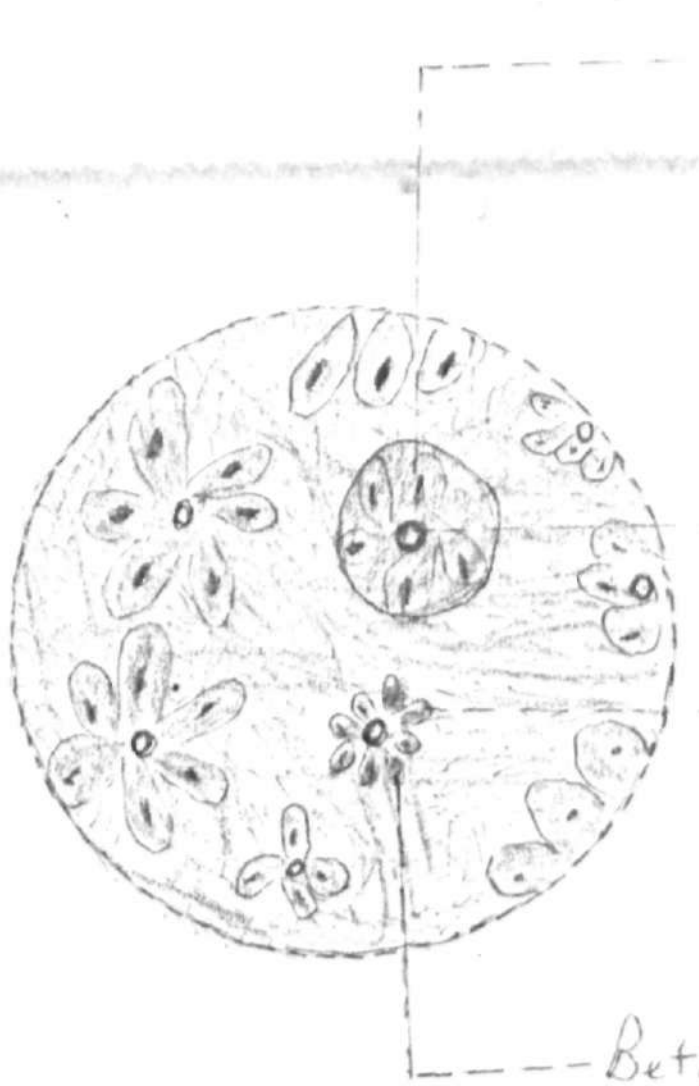

Figure 1.1.

MICROSCOPIC STRUCTURES of Pancreas.

Cells of Pancreatic Islets of Langerhan
(Endocrine).

and young adults can also be affected. Diabetes mellitus is therefore a disease condition affecting carbohydrate metabolism where sugar or glucose is neither stored nor utilized. Rather, the glucose accumulates in the blood stream and subsequently excreted in the urine. It is said that insulin on its own is the body's hormonal substances responsible for the breakdown of carbohydrates. This hormone is said to be produced by some cells in the pancreasc discussed in the subsequent part of this care-study.

Chape, Size, Colour and Position

A nurse who understands or has the knowledge of human anatomy and physiology is more likely to carry out her duties efficiently to benefit her patient. Ross and Wilson (1972: 495) state that pancreas is a pale, yellowish grey gland which weighs about 60 grammes. It is said to be about 12-18 cm long and situates in the eipgstrum of the abdominal cavity. Its head and neck lie in the C-shaped curve of the duodenum. Its body extends horizontally behind the stomach and the tail touching the spleen. The shape of pancreas resembles that of a leaf (Fig. 1.4).

Structure

The pancreas is structurally made up of a number of lobules which are made up of small alveoli lined with secretory cells. Each of the lobules is drained by a tiny duct which unites other ducts and joins the main pancreatic duct, passes the whole length of the gland into the duodenum at its mid-point just before entering the duodenum. The pancreatic duct joins the bile duct to form the ampulla of the bile duct. The duodenal opening is controlled by the sphinster of Oddi.

The structure of pancreas is composed of two quite different types of glandular tissue. These are exocrine and endocrine. Most of the pancreatic tissue is exocrine with a compound acinar arrangement, that is, grape-like formation. These release their secretion into microscopic duct within each unit. Acinar cells secrete pancreatic juice.

Endocrine, embedded between the exocrine units of the pancreas, like so many little islands lie clusters of endocrine cells called pancreatic islets (or island of langerhans). There are about a million of this tiny islets consisting of three types of cells namely: alpha cells which secrete glucogon; beta cells which secrete somatostatin. They are secreting cells, but their

secretion passes into the blood capillaries rather than into ducts.

Thus, the pancreas is a dual gland, an exocrine or duct gland, because of the acinar units and an endocrine or ductless gland because of the islets of langerhans. Insulin therefore is made and secreted by the duodenum. Blood supply - is by mesenteric and splenic arteries. Venous drainage - is by mesenteric and splenic veins. Nerve supply - is by the sympathetic and parasympathetic nerves.

Functions of Pancreatic Cells

The acinar units of the pancreas (exocrine) secretes the digestive enzymes found in pancreatic juice. Hence the pancreas plays an important part in the chemical digestion of food.

Beta cells of the pancreas secrete insulin, a hormone that exerts a major control over carbohydrates metabolism. While alpha cells secrete glucogon. It is interesting to note that glucogon, which is produced so close to insulin has a directly opposite effect on carbohydrate metabolism.

Somatostatin

The islets of langerhans secrete still a third hormone somatostatin. Secreted by a third type of cell, the delta cells. However, the role of this hormone as a controller of metabolic processes is not yet understood. It is said to have the capability of inhibiting the secretion of both glucogon and insulin by the alpha and beta cells of the islets of langerhans. Therefore, it has been suggested that somatostatin might help to control the secretion of one or both of these other hormones.

Somatostatin is the same as growth hormone (inhibitory hormone) that is secreted by the hypothelamus, a hormone that might help to control growth hormone secretion. It is also secreted by the mucosa of the upper gastrointestinal tract, but its function is also said to be unknown.

Functions of Glucagon

It raises blood sugar level,

It converts liver glycogen to glucose.

It promotes glyconegenesis.

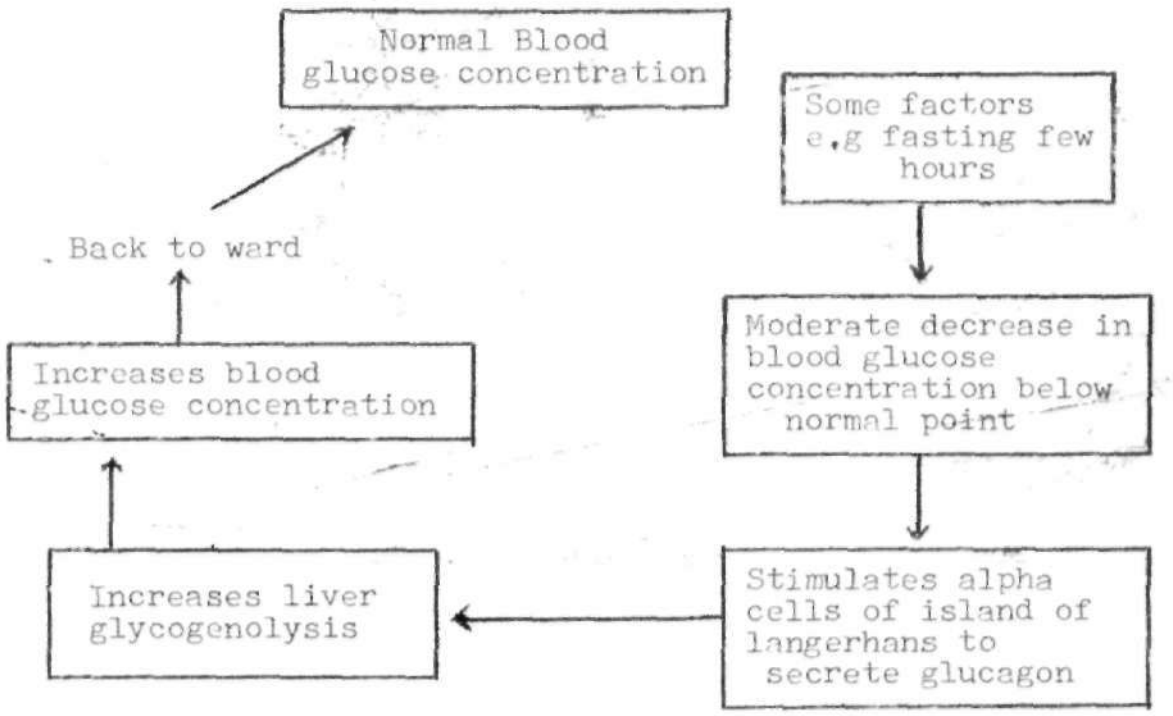

Fig. 1.2

Homeostatic mechanism that under usual condition is chiefly responsible for preventing blood glucose level from falling below the lower limit of normal.

Functions of Insulin

1. Control of glucose metabolism.
2. The complex mechanism that normally maintains homeostasis of blood glucose concentration consist of hormonal and neural devices. At least five endocrine glands -
   a. Island of langerhans,
   b. Adrenal cortex,
   c. Adrenal medulla,
   d. Thyroid gland - and at least eight hormones secreted by these glands function as key parts of the glucose homeostatic mechanism, Beta cells of langerhans in the pancreas secrete the famous sugar-regulating hormone of them all insulin.
3. It decreases blood glucose level.
4. Insulin is known to act in some way to accelerate glucose transport through cell membrane.
5. It also increases the activity of the enzyme glucokinase.

Glycokinase catalize glucose phosphorylation, the reaction that must occur before either glycogenesis or glucose catabolism can take place. Some of the prominent metabolic defects resulting from insulin deficiency such

as occurs in diabetes mellitus.

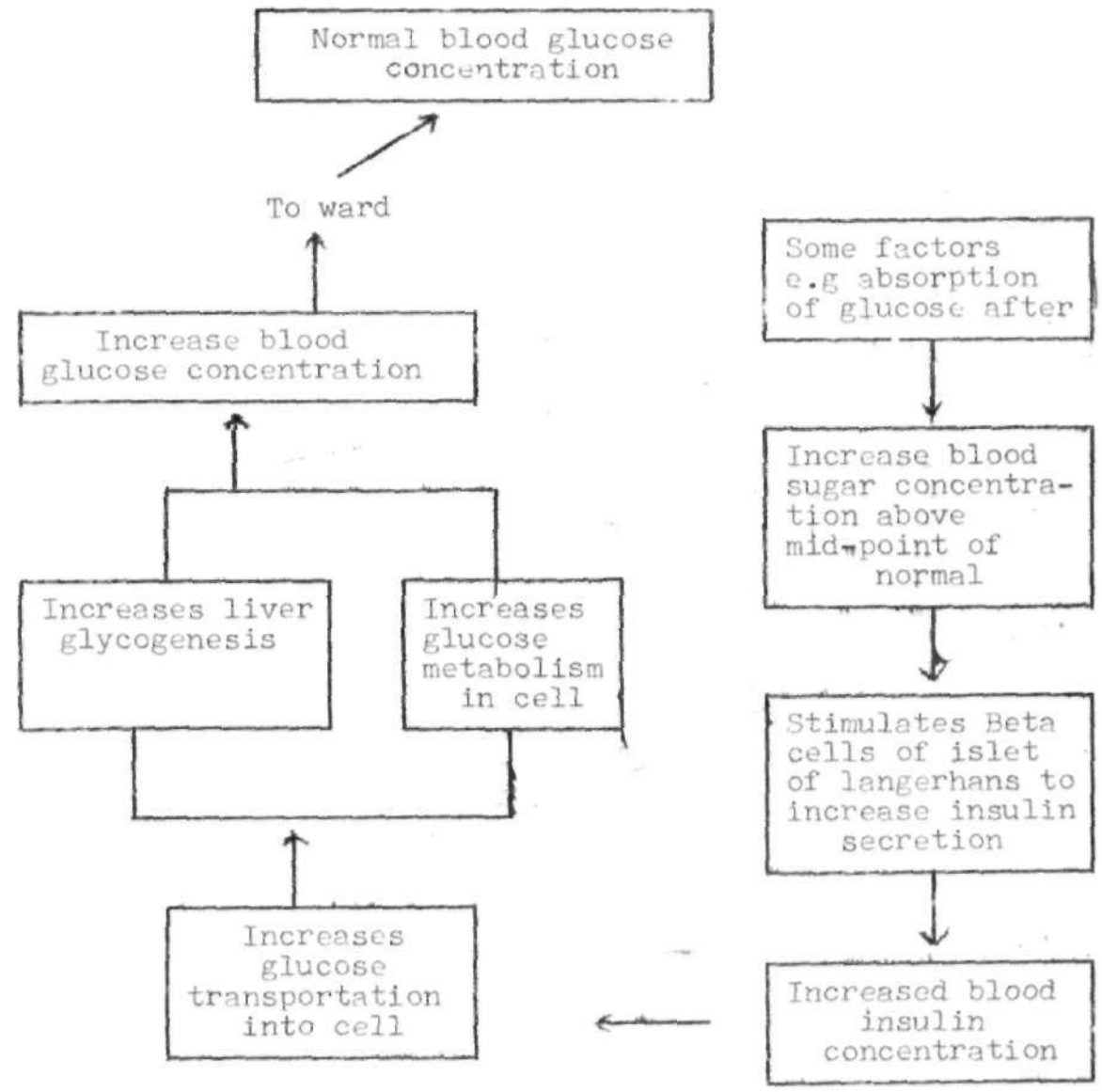

Fig. 1:3

Homeostetic mechanism which tends to prevent blood glucose concentration from increasing above the upper limit of normal. For fig 1.3

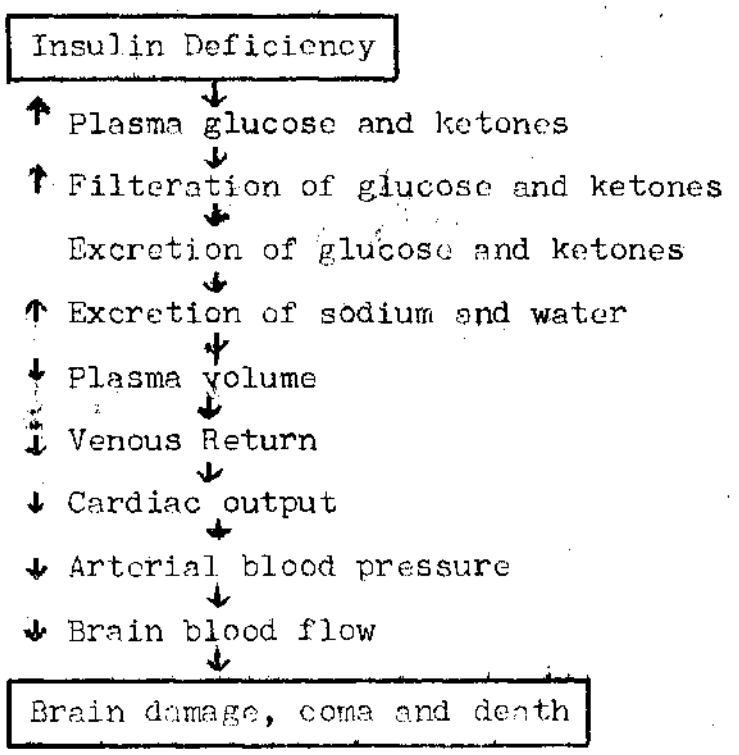

Fig. 1.3
Effects of severe untreated insulin deficiency on renal function.

Aetiology

The real cause of diabetes mellitus is said to be unknown. However, the following remain closely associated:

hereditary, age, sex, pregnancy, insulin deficiency, obesity, diet, stress and drugs.

Hereditary

Most writers have asserted that diabetes mellitus can be inherited. This notion went further to say that where both parents are diabetic all their children are likely to be diabetic and when one parent is diabetic there is a 50% chance that each child develops diabetes. However it is said that if a diabetic marries a known carrier, none of their children will be carriers.

Age

Chaffe and Lytle (1984 op cit) asserted that diabetes mellitus most frequently develops during and after middle age life and that it occurs more in women. It is said that although diabetes may occur at any time, 80 per cent of cases, occur after the age of 50 years and the highest incidence occurs in 60 to 70 years age-group. Age is relevant here because above the age of 50 years carbohydrate tolerance is said to decrease because of the diminished secretion of insulin.

Sex and Pregnancy

It is claimed that diabetes mellitus is common in women. Some writers think that it is common in women because of their indulgence in food habits giving rise to the tendency to be obese. It is claimed too that

women are used to sedentary jobs with little exercise, thereby encouraging obesity.

Parry (1984: 957) supports this claim by saying that diabetes mellitus is generally common in obese middle or after age women. There is a physiological reason too that during pregnancy the level of plasma is raised by placenta hormone and that pregnancy itself constitutes the functional burden on the beta cells. The pancreas is therefore unable to produce insulin to act on the carbohydrate. It will be interesting to know what the opinion of recent writers are today since women are now taking active jobs like men and involved more on exercise. Having learned that diabetes mellitus is most common in middle and after middle life, one is tempted to think that children, infants and adolescents are relatively free from the incidents of the disease. Contrary to this view, Chaffee and Lytle went further to say that there are two types of diabetes mellitus: juvenile diabetes and the maturity age onset type. This implies that the disease can also occur in younger people.

Juvenile diabetes is said to be starting in one's early life and is usually insulin dependent. In contrast, the "maturity age-onset type" starts at middle or after middle life. This is said to result from the degeneration

of beta cells in the islet of langerhans due to the aging process. The occurrence of diabetes mellitus in juvenile age who are less likely to be obese, makes it a misnomer (confusion).

Perry (1984 op cit) went further to say that even though the causes of diabetes mellitus is unknown they remain associated with the family history. He however stated that hereditary association in Africa is difficult to come by because, for cultural reasons Africans are reluctant to disclose family history associated with the disease. Some literature have confirmed that the syndrome of non-alcoholic calcific pancreatic diabetes account for 13 per cent of all diabetes mellitus under the age of 48 years in Uganda and 8.6 per cent of diabetes in Ibadan, Nigeria.

Insulin Deficiency

The main factor in diabetes mellitus is the deficiency of insulin which leads to lack of sufficient carbohydrate metabolism.

Diet

Some people indulge themselves in over-eating with under activities. The result of this is increase in weight.

Drugs and Stress

Most research works have concluded that long therapeutic usage of some drugs like corticosteroids, diuretics of thiazide derivatives and penthamide grups often lead to reversible diabetes.

In pregnancy unexplained stillbirths of an unusually heavy (large) babies for the size of the mother and stage of gestation should always alert the doctor to possible diabetes mellitus. It is however worth noting that pregnancy situation and stress cannot be seen as causes of diabetes mellitus but events unmaking diabetes only, that is, only precipitates the already existing disease.

Incidence

Most writers said that the incidence is high in female than in males and common in obese persons. By obesity one means an increase in body weight beyond the limitation of skeletal and physical requirement. The incidence is said to be high among the relatives of the diabetics.

Parry (1984 op cit) has documented that this prevalence of the disease is different in most part of Africa and that despite the difficulties in population survey in Africa, the few countries surveyed show

prevalence rate much high in urban areas than rural areas.

Pathophysiology

Most of the pathophysiology of diabetes mellitus can be attributed to one of the following three major effects of lack of insulin.

1. Decrease utilization of glucose by the body cells with a resultant increase in blood glucose concentration to as high as 300 to 1,200 mg per 100 ml of blood.
2. Markedly increased mobilization of fats from storage areas, causing abnormal fat metabolism as well as deposition of lipids in vascular walls to cause arteriosclerosis.
3. Depletion of protein in the tissues of the body.

In addition some special pathophysiological problems occur in diabetes mellitus that are not so readily apparent, these are: loss of glucose in the urine of diabetic persons, whenever the quantity of glucose entering the kidney tubules in the glomerular filterate rises above 225 mg per minute, significant proportion of the glucose begins to spill into the urine. However, the elevated plasma glucose of the diabetic may so increase the filtered load of glucose that

the maximum tubular reabsorptive capacity is exceeded and large amount of glucose may be excreted. In urine for the same reason large amount of ketones may also appear. These urinary losses of course, only aggravates the situation by further depleting the body nutrients, leading to weight loss.

Furthermore,is the effect of those solute on sodium and water excretion. If normal quantities of glumerular filterate are formed per minute, a situation which occurs when blood glucose level rises over 180 mg per cent, diabetes may result.

There is dehydrating effect of elevated blood glucose level in diabetes. Blood glucose level may be as high as 1,200 mg per cent, 12 times normal can occur under certain condition in extreme diabetes yet the only significant effect of the elevated glucose is dehydration of tissue cells, for glucose does not diffuse easily through the pores of the cell membrane, and the increase osmotic transfer of water out of the cells.

In addition to the direct dehydrating effect of excessive glucose, the loss of glucose in the urine causes diuresis because of the osmotic effect of glucose in the tubules to prevent tubular reabsorption of fluid. One of the important features of diabetes is a tendency

for extracellular and intracellular dehydration to develop and these are also often associated with collapse of the circulation.

Acidosis in Diabetes

When the body depends almost entirely on fat for energy, the level of acetoacetic acid and B-hydroxybuturic acid in the body fluid may rise from 1 m Eq/litre to as high as 10 m Eq/litre. This obviously is likely to result in acidosis.

Obviously, all the usual reactions that occur in metabolic acidosis take place in diabetic acidosis. These include rapid and deep breathing called "kussmaul respiration" which causes excessive expiration of carbon dioxide and marked decrease in bicarbonate content of the extracellular fluids. Likewise large quantities of chloride ions are excreted by the kidneys as an additional compensatory mechanism for correction of the acidosis. Though those extreme effects occur only in the most severe instance of uncontrolled diabetes, they can lead to acidotic coma and death within hours when they do occur.

There is a relationship of other diabetic symptoms with the pathophysiology of insulin lack. Polyuria (excessive elimination of urine), polydipsia (excessive

drinking of water), polyphagia (excessive eating), loss of weight and asthernia (lack of energy) are the earliest symptoms of diabetes mellitus. The polyuria is due to the osmotic diuretic effect of glucose in kidney tubules. In turn, the polydipsia is due to dehydration resulting from polyuria. The failure of glucose (and protein) utilization by the body causes loss of weight and a tendency towards polyphagia. The asthenia apparently also is caused mainly by loss of body protein.

Clinical Manifestations

The patient usually presents to hospital with the following:

- Frequency of urine due to kidney irritation as a result of presence of sugar, and also kidney trying to work in excess to remove excessive blood sugar.
- Excessive thirst and dehydration due to excessive loss of urine.
- If the urine of diabetes mellitus patient is tested sugar will be found in excess.
- At both extremes there could be hyperglycaemia due to excess presence of unutilized glucose in the blood sugar in the blood.

- Loss of weight due to inadequate metabolism of carbohydrates, fats, and proteins.
- If the patient is a female there may be vaginal pruritus, and in males balanitis due to the deposition of glucose around the vulva and the penile gland respectively.
- There may be ketones in urine or ketonuria due to utilization of fats and protein for production of heat and energy.
- The patient may be weak due to lack of energy to the body tissue.
- There may be the tendency for the patient to have infections like carbuncles, boils, rashes and itching due to glucose at the membranes of the blood vessels.
- Some diabetic mothers have unusually large babies due hyperglycaemic state.
- Some other patients will have double vision.

Investigations

The diagnosis of diabetes mellitus is done mostly in hospital settings in Africa. This is because mass screening exercise is not possible because of its expensive nature.

Screening exercise could be very useful because the diabetic patient could be diagnosed at the point where

the diseasa was mild. In contrast people in Africa are left to look for hospitals and health centres by themselves. The problem here is that those who manage to go to the hospital go there at the time when the clinical signs are fully manifested. These group of people are usually admitted to enable the hospital carry out investigations like fasting blood sugar and glucose tolerance tests. Should such result exceed 7 mm ol/litre (or 140 mg/100 ml of blood capillary) then diabetes mellitus is indicated. Besides this test there are many more diagnostic techniques e.g. urine testing for sugar, acetone, blood for H.b contents, sodium, potassium levels in the blood are also checked for because the aim of the doctor is to treat associated diseases as well.

Medical Management and Nursing Care

Treatment will depend on the type of diabetes mellitus. The principles of treatment of diabetes mellitus is to administer enough insulin so that the patient will have as nearly normal fat, protein and carbohydrate metabolism as possible. Optimum therapy can prevent most acute effects of diabetes and greatly delay the chronic effects as well. Objectives of

treatment are to:

- relieve the symptoms of diabetes.
- attain a normal blood sugar and avoid hypoglycaemia.
- prevent ketoacidosis.

Ideally, the major objectives should be the prevention of the disorders of glucose, protein and lipid metabolism and the prevention of microangiopathies and macroangiopathies.

Treatment depends on:

- an appropriate diet.
- regular physical exercise.
- education of the patient.
- prescription of antidiabetes drugs or insulin injections when required.

Diet

Maturity-onset diabetes. For such patients diet is the cornerstone of treatment. If the carbohydrate is reduced from 400 to 100 g daily, glycosuria and associated symptoms will usually disappear. The amount of calorie required is based on individuals weight, activity and age with the consideration given to the patient's food preferences, economic status and on foods allowed for the patient.

Insulin Dependent Diabetes

The need for strict dieting is by no means obvious and whatever the dietary advice is given many such diabetics eat an almost unrestricted diet but sugar should definitely be excluded from the diet.

Purpose of Diet

The diet for the adult is designed to do three things:

- to avoid or treat obesity.
- to restrict the intake of sucrose and keep the daily intake of energy at a uniform level.
- to provide adequate vitamins and bulk so that appetite is controlled.

Calculation of Diet

The diet is calculated by first defining the total energy needed daily based on 125-140 kj/kg of ideal weight, depending on whether the patient has sedentary or labourious work. 170-190 kj/kg for the under weight or active patient, and 85-110 kj/kg when weight must be reduced.

Sixty per cent of the total calories allowed should consist of complex carbohydrate, 20 per cent protein, and 20 per cent fats. The high carbohydrate can be obtained

from root vegetables e.g. yams, the roots which also contain a high proportion of dietary fibre and can reduce hyperglycaemia. The fat in the diet should be vegetable fats e.g. groundnut oil which contains unsaturated fatty acids: these dietry regimes will reduce serum cholesterol and triglycerides and thus inhibit arterogenesis.

With the Structural Adjustment Programme (SAP) and economic crisis, an ideal diet is not easily practicable for poorer patients because protein foods are expensive and out of reach of the masses (common man). One may therefore suggest that diabetic patients go to government hospitals where meals may be subsidised.

Effect of Diet

Diet alone can effectively control 50 per cent of diabetic patients depending on the stage of the disease. Patients have to be highly motivated and encouraged by their nurses and doctors to keep to a correct diet. Exercise should be encouraged when glucose blood level is normal, it helps in reducing weight in an obese diabetic patient. Exercise promotes metabolism and utilization of carbohydrate by the muscles and increases the action of insulin.

Patients who must use insulin therapy should take carbohydrate after exercise, because exercise reduces blood sugar level thus taking carbohydrate after exercise reduces the possibility of hypoglycaemia. Exercise maintains muscle tone and increases blood circulation and should be encouraged in the diabetics.

Oral Hypoglycaemic Agents

Indications

There are some other patients who cannot be controlled by diet alone and who have maturity-onset diabetes. Such patients may be obese (biguanides) or not obese (sulphonylurea) and should not be ketotic.

- When a more stable control is achieved, a biguanide (but not a sulphonylurea) may be given in addition to insulin injections.
- In the obese juvenile diabetic patient oral hypoglycaemic agents may occasionally be used.
- In the young illiterate patient living in a remote area where treatment with insulin injection is impracticable, suitable tablets may be recommended.

The Sulphonylureas

These drugs act by stimulating the release of already formed insulin from beta cells of the islet of

langerhans. Examples of the drugs are:

1. Talbutamide (Rastinon) dose 1.5 g thrice daily. Side effects like gastrointestinal and skin rashes may occur.
2. Chlorpropamide (Diabinese) dosage of 150-250 mg once daily.
3. Glipizide (Glibeness) dosage of 5-20 mg once or twice daily.
4. Glibenclamide (Daonil) dosage of 5-15 mg once to thrice daily, depending on weight and age.

These drugs should not be used in obese diabetes as they may cause more weight gain, but can be used in insulin-dependent diabetes who are not obese.

The Biguanides

These drugs increase the peripheral up-take of glucose, and reduce glucose absorption in the gut but do not affect beta cells. They should be used when sulphonylureas fail. The drugs are:

1. Phenforimin (Dibotin DBI) 25-75 mg twice or three times daily.
2. Meformin (Glucophage) 1.5 g bd or three times daily.

Insulin Therapy

Indications

- All children except perhaps the obese child in whom diet and tablets may be tried.
- Thin and underweight diabetes of whatever age.
- Pregnancy.
- Ketoacidosis.
- Before, during and after major surgery.
- During acute infection when control is lost.
- When the sulphonylurea-biguanide combination fails.

Types

1. Regular (crystalline) or plain or soluble insulins are rapid (short acting) insulins, they appear clear and time acting is 6-16 hours.
   - Semi-lente (amorphous) insulin is intermediate acting, it appears turbid and its time acting is 16-24 hours.
   - Insulin zinc suspension (lente), 3-7 hours time acting.

     Amorphous (semi-lente) that appears turbid and crystallin regular, acts for 16-24 hours.
   - Protamine zinc insulin (PZL) and ultra lente insulin appears turbid and acts slow (long acting insulin) i.e. 24-36 hours.

Patients who need insulin therapy should be admitted into the hospital in the first instance. This will enable the nurses teach by demonstrating to patients on how to test their urine for sugar, record the result, sterilization of syringes and needles, how to withdraw insulin and carry out self-injections of insulin and their dietary intake.

Strength of Insulin

Insulin is prepared in strengths of 20, 40, 80 and 100 units per milligram. It has a special syringe known as 'insulin syringe."

Dosage

Depends on the amount of sugar in urine. Insulin is not administered orally because it is destroyed by the digestive enzyme. Because of this it has to be administered by subcutanous injection or intravenous injection in emergency situations.

Method of Use

As the correct starting dose is doubtful for an out-patient or a beginner, one would safely start with 12 units of say lente insulin and measure the blood glucose or the 24 hours urine glucose value. The insulin dosage can then be increased by 4 units at each

visit if the urine sugar or blood sugar is too high. If more than 40 units is required, the insulin dosage can be increased by 8 units. The insulin syringe is used as it is calibrated. During this early days the patient is taught to give his own injections, test his urine while the nurse supervises. If large amounts of lente insulin are required to control the diabetes, soluble insulin in two divided doses - morning and evening before meals - should be substituted for a single dose of lente insulin.

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Patient Education

Patient should be educated on medication including the followings:

- urine testing for sugar at home and how to record the chart and results.
- how to read the syringe and draw the correct dose of the insulin.
- giving of subcutaneous injections and sites and insulin storage at home is taught by the nurse.
- care of the reagents, syringes and needles are also taught.
- type of diet to eat and reduction of weight is advised.
- how to recognise signs of hyper- and hypoglycaemia is

taught.

- personal hygiene and enviromental sanitation is encouraged.
- patient should avoid minor injuries, which are difficult to heal.
- always carry a diabetic identification card and some sugar cubes along with him or her in case he falls hypoglaecimic.
- the patient should be discouraged from keeping long nails as they can easily cause injuries.
- the patient should not fast (long without food).

Psychotherapy

The patient must be taught about his disease. It is important for him and his relatives to know that there is yet no known cure but can be controlled so that one can live as near a normal life as possible. He should be told that people are working towards the cure and with his co-operation he may be alright. The patient should know that even when the disease is under control and he has no symptoms, he should attend a clinic or see his doctor at regular intervals so that he can be kept well.

He should be told that any complication of the disease can also be detected early to prevent it becoming serious. Signs and symptoms of hypoglycaemia should be taught especially if the patient is on insulin therapy.

Complications and their Management

Diabetic Coma or Ketosis:

This occurs as a result of high blood sugar level and ketoacidosis.

Treatment - urgent

- Patient should be admitted into a warm comfortable bed.
- Soluble insulin, 40 units should be given intravenously to ensure rapid action and this can be repeated at frequent intervals until patient gains consciousness.
- An intravenous normal saline 0.9% drip is set up and 1000 ml are given rapidly within one hour to overcome the severe dehydration, which may cause circulatory failure. This treatment may be followed by normal saline isotonic (1.3%) sodium bicarbonate or sodium lactate drip to correct ketoacidosis.
- On recovery of consciousness, oral fluids and carbohydrate are given. Diet and the doses of insulin are stabilised.

- Sodium bicarbonate 2 g in small amount of water may be given orally 2-4 hourly to reduce acidosis and vomitting.
- Appropriate antibiotics may be given for any chest infection.
- The pulse, temperature, respiration and blood pressure should be checked hourly and recorded accordingly.
- Fluid balance chart should be strictly maintained.
- Urine should be tested for sugar and ketone bodies every hour and results recorded.
- The level of consciousness should be checked.
- Blood estimations should be carried out every four hours to estimate electrolyte balance and sugar level.
- The patient should be reassured by keeping him warm.

Signs and Symptoms of Diabetic Coma

1. At first there is drowsiness with great thirst and polyuria followed by unrousable coma (deep sleep).
2. Deep sighing respiration with the breath smelling of acetone.

3. Cold extremities, sunken eyeballs, shrivelled tongue, dry skin and a low blood pressure: these signs are due to dehydration (loss of fluid).
4. Urine contains heavy amounts of sugar and ketones.

The picture of diabetic coma is quite different from that of insulin coma.

Differences between Diabetic Coma and Insulin Coma (for teaching of diabetic patients and their relatives)

	Signs and Symptoms	Diabetic Coma	Insulin Coma hypoglycaemia
1	Onset	Gradual. History of severe thirst and polyuria: abdominal pain and vomitting	Sudden. Patient previously well and active, taking insulin.
2	Infection	Usually present (e.g. tonsillitis, entritis, pyelitis)	Not usually present
3	Respiration	Deep sighing. Breath smell of acetone.	Quiet regular breathing.
4	Skin	Dry. Inelastic, tongue dry and shrunken	Sweating and moist.
5	Blood Pressure	Very low, rapid thin pulse	Normal full pulse.
6	Urine	Sugar and acetone	No sugar or only a trace.

Insulin Coma or Hypoglycaemic Coma

This occurs as a result of low blood glucose level. Signs and symptoms of hypoglycaemia (insulin coma):

1. Hunger.
2. Lack of concentration.
3. Light-headedness.
4. Weakness.
5. Sweating.
6. Palpitation.
7. Tremour and finally
8. Coma.

Treatment - urgent

- The patient should be admitted into a warm comfortable bed. If the patient becomes comatose before he is brought into the ward, the treatment is usually 30-50 ml of 50 per cent glucose by intravenous injection as soon as possible, a further 50 ml may be needed if he does not recover consciousness.
- If patient can swallow, one has to give sugar orally.
- In the absence of intravenous glucose, 50 g of sugar in a few milligram of water is given through nasogastric tube (NGT).

- Urine is tested for sugar as soon as patient can produce the urine.

Prognosis

With proper administration of insulin, dietary therapy and weight reduction in an obese patient, the blood glucose level is usually stabilized. Patients are then discharged either on oral hypoglycaemic drugs or insulin injection. Because most incidences of diabetes mellitus are chronic some patients are put on life treatment known as maintenance doses.

Assessment of Diabetes Control

The degree of control and success of treatment of a diabetic person is assessed by:

- the clinical state of patient.
- tests for glucose in selected samples of blood and urine.

Insulin Treatment

The four most important samples of urine for testing are:

- The specimen passed immediately before (the bladder having been already emptied on waking), which reflects the fasting blood sugar.

- Pre-lunch)
- Pre-supper) samples which reflect the blood sugar levels before these meals.
- The pre-bed sample which reflects the blood glucose level just before the patient retires to bed.

Investigation for Complications of Diabetes Mellitus

Random Blood Sugar Test

Blood is randomly taken for blood sugar test. An average result of 380% will confirm abnormal blood sugar content and this will warrant further treatment. When the urine is tested for sugar content the result which reads "brick red indicates the presence of plenty sugar usually charted as (+++). Further treatment is indicated.

The Talbutomide Test

This test is usually done in order to determine the excess sodium talbutamide level which results in an increased secretion of insulin (hyperinsulinism). The patient fasts, then one gram of sodium talbutamide is given in 10 to 11 milligrams of water for some minutes. The sample of blood is then re-taken in 20 minutes to 30 minutes and so on. Instead of a high level of insulin, it will manifest low plasma and a sluggish glucose administration.

Other Complications and their Management

Some complications do manifest in changes which may be ocular, vascular, neurological or manifestations by way of repeated body infections. The symptoms will depend on the duration and the severity of the complication. The symptoms will depend on the duration and the severity of the complication. The symptoms will also depend on the body organ affected. The following complications may occur and their management may require specialty attention.

- Retinopaty which is change in the retina of the eye, may require an optician intervening.
- Cataract which is an opacity of the eye, may be unilateral or bilateral and may also require both medical and surgical examination. The treatment of this is usually surgical. Nursing management of cataract repair is extensive and not within the scope of this assignment.
- Glaucoma - an abnormal swelling of eye with infection resulting from intra ocular pressure. The management is usual medical and surgical. The nursing management here is reassurance, relieve of pain and giving of both physical and mental comfort.
- Neuropathy involves changes in nerve conditions and

this usually involves specialist doctor's attention. The management here is strictly according to prescription.

- Arteriosilerosis which are changes involving the arteries, and peripheral neuritis (inflamation of the peripheral nerves) usually require the attention of a general practioner. If however heart vessels are involved the attention of a cardiologist may be required. In this case the nursing management will depend on the specific diagnosis arrived at. Usually in all cases of ill-health the nurse strives to relieve pain and discomfort.
- Infection - which may be respiratory or systemic antibiotics be prescribed by the doctor. The nurse then ensures their strict intake. If respiratory, 4-hourly temperature chart will be required. Adequate fluid intake will be advised.
- Gangrene - death of mass of a tissue. This may result in amputation of a limb or organ involved. It is therefore the duty of the nurse to check for free circulation, keep circulation chart, watch for swelling, keep bandages loose. General management may include:

Managements

- Prompt treatment of infection caused by organism which may destroy the pancreatic cells e.g. viruses.
- Control of dietary intake and weight reduction in an obese patient.
- Teaching the patient on how to avoid exposure to infection and patient should be encouraged to have exercise as it promotes glucose metabolism and may diminish the amount of insulin.

Prognosis

Chaffee and Lytle (1984 op cit) have indicated that diabetes mellitus is a chronic condition which should receive medical supervision for the rest of one's life time. This implies that within the present realm of medical technology when once one is struck with the disease of diabetes mellitus, the situation can only be improved to enable the person cope with activities of daily living, the cure is yet to be discovered.

However, recent medical efforts have successfully controlled the disease mortality but the incidence of the disability remains very high.

Prevention and Control

Diabetes mellitus cannot be prevented but can be controlled, symptoms and predisposing factors can be treated and prevent the disease from getting worse by the following ways:

- Infections and trauma must be treated early and vigorously. If this is done ketoacidosis, which is the major cause of morbidity can be reduced to berest minimum.
- Control of dietary intake and weight reduction in an obese person.
- Educating the public on diet and exercise to prevent obesity.
- Prompt treatment of diseases that will lead to destruction of the pancreatic cells e.g. viruses.

CHAPTER TWO

INFORMATION ABOUT THE DIABETIC PATIENT	MISS N.G.
PATIENT'S INITIALS	Female
SEX	15 YEARS
TRIBE	Jato-Aka Village
OCCUPATION	STUDENT
RELIGION	Christianity
NEXT OF KIN	Mr A.G.
DATE OF BIRTH	10-3-74
DATE OF ADMISSION	25-4-89
DIAGNOSIS	DIABETES MELLITUS
DATE OF DISCHARGE	6-5-89

Student's Observation of the Patient

Patient aged 15 years was admitted into the ward on 25-4-89, through the Medical Out-Patient Department (M.O.P.D). She walked into the ward by herself accompanied by the brother.

Appearance

On admission, she appeared clean and neatly dressed, was not ill-looking, no oedema, not dehydrated or thin, but looked a bit weak. She was not anaemic, no sweet breath, not in much pain, not restless, appeared to have good appetite, looked calm and co-operative. Observation: Temperature, 36.5^{oc}; Pulse, 70; Resp. 22; B/p, $^{120}/_{80}$.

Patient's Present Complaints

On admission, she complained of excessive thirst, frequent urination, hunger, weakness of the body and mild abdominal pain. See by the doctor who placed her on subcutaneous injection of sliding scale soluble insulin 30 units tds ½ hr before food and also ordered blood sugar test (random).

Past Medical History

Patient said that she started feeling unwell since January 1989. The onset of the signs and symptoms was

gradual until recently when the pain increased in intensity. She went to Seta Medical Center at Jato-Aka, a private clinic in Benue State where she was seen and diagnosed diabetes mellitus after testing her urine and finding large doses of sugar in urine. The parents then asked for referral to Jos University Teaching Hospital for a better management and the request was granted. She had never been hospitalised in her life, this was going to be the first experience and needed reassurance.

Past Surgical History

The patient had never had any operation before.

Family History

The patient is said to be the last child of the 13 children in the family, both parents are still alive and are not polygamous. She is a "form-one student" of Government Secondary School, Akuji in Benue State. She had no history of diabetes mellitus and other medical cases in the family. The rest 12 children are all said to be well and healthy.

Social History

The patient is a christian. A member of N.K.S.T. Church. She mixes well with her age group in the school and has many friends. She interacts very well with

others and could adjust easily.

Nutritional History

She was said to be well breast-fed during her infancy. Presently she has good appetite and likes diet mostly rich in carbohydrates, little protein, fats, vitamins and mineral. Carbohydrates is known to be the stable food of the area she comes from.

Investigations, Results, Discussions, and their Importance

The patient went through the general ward test, urine and stool tests. Blood tests were carried out to decide the level of Red Blood Cells (RBC), Urea, Sodium Chloride, Potassium and Bicarbonate salts. Routine observations of Temperature, Pulse, Respiration and Blood pressure (T.P.R. and B/p) levels were estimated.

Date 25/4/89

Test	Normal Value	Patient's Result	Significance
Blood			
Na	134-145 mmol/l	124 mmol/l	subnormal
K	3.5-5 "	3.3 "	normal
Cl	96-106 "	90 "	subnormal
Glucose	3.9-5.6 "	25.0 "	abnormal
HCO_3	21-31 "	18 "	subnormal
Urea	2.5-66 "	6.2 "	normal
H/B	12-16 gm %	10.5 gm %	subnormal
R B C	4.0-5.0 million 40-50 L/L	25.0 mmol/-1	subnormal

Discussion

The results showed the red blood cells to be subnormal, urea content normal. Also potassium level is normal and chloride level subnormal. However, sodium content is abnormally low, the normal being 134-145 mmol/l. This does imply that the patient has lost a lot of sodium through the urine. Sugar is abnormally high 25.0 mmol/l while the normal is 3.9-5.6 mmol/l. Bicarbonate is subnormal, the normal being 21-31 mmol/l (the result reads 18 mmol/l). This is why the diabetic cases tend to be acidotic.

Sliding Scale Soluble Insulin Injection Based on Urine Testing for Sugar Results

The dosage was 40 units for 4^{+} of sugar in urine and was later changed to 48 units tds and not based on the urine result any longer.

Nursing Intervention

Admission

Patient was admitted into a clean warm comfortable bed. Bed rest was ensured and to avoid infection, patient was not exposed unnecessarily.

Observation

Patient's vital signs were closely monitored to detect any alteration from normal. Examination was also done physically for anaemia and for skin rashes, boils and carbuncles.

Psychological Support

The relatives of the patient were reassured and were permitted to stay with her. The nature of the disease was explained to them in the way they would understand and were told that with proper management and their co-operation the patient could improve.

Fluid and Diet

Diet regime is very important in the management of diabetic patient as indicated in the literature review. The diet must therefore be regular to prevent hypoglycaemia. The relatives insisted that hospital meas be given to the patient because the diet will be properly monitored and in good proportion as required by her condition.

Nursing Care Plan

Nursing Diagnosis	Objectives	Nursing Action	Scientific Principles/ Rationale	Evaluation
1. Loss of fluid related to poly-uria	prevent patient from complaining of loss of fluid. prevent polydipia	1) Patient encouraged to take plenty of fluid orally. 2) She was prescribed for intravenous/ saline fluid. 3) Patient encouraged to increase sodium intake through diet.	1) Plenty intake of oral fluid increased fluid by absorption through the intestinal wall. 2) Intravenous infusion of normal saline replaced loss of fluid and minerals.	Patient was well rehydra-ted within 48 hours.
2 Prone to diabe-tic coma due to hyper-glycae-mia	Not allow-ing patient fall into diabetic coma during hospitali-zation.	1) Put on a regime of 6-hourly urine sugar test. 2) Prescribed insulin injection strictly administered according to the amount of sugar in urine (ranging from 10-40 units). 3) Prescribed intrave-nous infusion of normal saline was set up and strictly regulated. 4) Passive exercise was performed to improve cimulabi.	1) The regular urine test is to indica-te the amount of sugar in urine. 2) Administration of prescribed insulin helps in metabolism of carbohydrate. 3) Intravenous fluid of normal saline dilutes the ketone bodies accumulated in the body. 4) Passive exercise helps in metabolism and up-take of glucose by the tissue cells.	Patient did not fall into diabetic coma during the period of hospita-lization.

	Nursing Diagnosis	Objectives O	Nursing Action	Scientific Principles/ Rationale	Evaluation
3	Prone to hypoglycaemic coma after discharge due to excess of insulin administration	Prevent patient from developing hypoglycaemic coma after discharge by teaching the signs and symptoms.	1) Patient taught how to test urine for sugar and record the results. 2) Patient taught how to administer insulin and the sites for insulin injection. 3) Patient educated on diet and exercise. 4) Signs and symptoms of hypoglycemic coma were taught. 5) She was taught how to store insulin at home. 6) Patient advised to move with diabetic identification cards and some cubes of sugar which could be handy in hypoglycaemic state. 7) He was educated on personal hygiene.	1) Testing patient's urine will make him know how to test urine. 2) Health Education on insulin administration of hypoglycaemic coma. 3) Diet and exercise helps to maintain blood sugar level. 4) Knowing: signs and symptoms of hypoglycaemic coma by the patient and relatives will help in detecting early signs. 5) Emergency treatment: good storage of insulin maintains the composition of the drug. 6) Moving with identification card helps in case of crisis. 7) Personal hygiene helps to minimize entery of micro-organism resulting in infection.	Patient understood his condition and how to treat the condition at home before discharge.

	Nursing Diagnosis	Objectives	Nursing Action	Scientific Principles/ Rationale	Evaluation
4	Dizziness related to loss of heat and energy	Patient will not complain of dizziness within 72 hours.	1) Patient on complete bed rest for the first 24 hours. 2) Prescribed insulin was given after urine testing for sugar based on the amount of sugar in urine ranging from 10-40 units. 3) Passive exercise was encouraged. 4) Diet containing moderate carbohydrates was given.	1) Complete rest conserves heat and energy. 2) Giving prescribed insulin helps in the metabolism and uptake of glucose by way of tissue cells. 3) Passive exercise helps in the metabolism and uptake of glucose by the tissue cells. 4) Diet containing moderate carbohydrate replaces loss heat and energy during exercise and therapy minimises overloaded blood sugar circulation	Patient did not complain of dizziness and general body weakness after three days.
5	Anxious and worried due to his condition	Patient will accept his condition before his discharge	1) The nature of condition was explained to him. 2) Relatives were allowed to visit him. 3) Good nurse report was established. 4) Good nurse-patient relationship established.	1) Explaining her condition will alleviate her anxiety and fear. 2) Relatives visiting encourages patient to feel sense of love, sense of belonging and security.	Patient understood and accepted her condition before he/she is discharged.

	Nursing Diagnosis	Objectives	Nursing Action	Scientific Principle/Rationale	Evaluation
				3) Good Nurse-Patients relationship allays patient's fear and encourages her to ask questions when she choses to.	Evaluation
1	Prone to diabetic coma due to hyper-glycaemia	Patient not fall into diabetic coma during hospita-lization	1) Put on a regime of 6-hourly 2) prescribed insulin strictly administered according to the amount of sugar in urine.ranging from 10-40 units. 3) Prescribed intravenous infusion of normal saline was set up and strictly regulated. 4) Passive exercise was performed to improve circulation	1) The regular urine test is to indicate the amount of sugar in urine. 2) Administration of prescribed insulin helps in metabolism of carbohydrate. 3) Intravenous fluid of normal saline dilutes the ketone bodies accumulated in the body.	Patient did not fall into diabetic coma during the period of hospitaliza-tion.

Date	Nursing Diagnosis	Nursing Objectives	Nursing Intervention	Scientific Principles/ Rationale	Evaluatio
	(6) Rehabilitation	Client/ Patient will understand and adjust to the new life style imposed on her by the nature of her illness during and after hospitalization	1) Make patient understand that diabetes mellitus is said to be yet not curable but it is however controllable. 2) Teach patient how to sterilize the syringes and needles. 3) Teach patient how to withdraw insulin injection, select the sites and how to give self-injections. 4) Teach patient the signs and symptoms of hypoglycaemia. 5) Emphasize the need for keeping and following up appointments and report complications promptly.	1) Adequate knowledge about the causes and course of diabetes mellitus makes the patient receptive to learning and treatment. 2) Learning of how to test and record the result of her urine will enable patient to know how much sugar is present in the urine. 3) Sterilizing the syringes and needles will prevent infections if conterminated. 4) Withdrawing the correct dosage of insulin is very important to avoid over dose. And knowing the sites of injection and how to give the injections will prevent abscess that may result. 5) Makes patient able to detect deviation from normal. 5) Ensures continuity of	Patient accepted all teachings and advices in good faith. She was eager to practicalise them before she was discharged from the hospital. She expressed relief from her her health problems and satisfaction with the nursing care rendered. Goal met.

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Physical Care

Patient was given her daily bathroom bath and oral toilet. Bed linens were changed when dirty. Daily weighing was done to make sure she is not gaining too much weight.

Medication

On admission patient was placed on sliding scale soluble insulin injection subcutaneously and on vitamins to improve her general condition.

Complication Developed by Patient and the Management

Patient responded to the treatments very well. With the good management, balanced diet and her co-operation, the diabetes was controlled quickly. She had no any complications during her admission.

Patient discharged for hom.on 6th May, 1989.

Advice on Discharge

Patient was advised on personal hygiene, environmental sanitation and balanced diet. Patient was to take her insulin injections as was taught, accurately and regularly; and told not to miss her meals.

Signs and symptoms of insulin coma was stressed further. Patient was asked to visit or keep to regular

check-ups in the hospital to prevent likely complications. She was taught to avoid walking on high altitudes for example, along bridges or climb trees. To avoid being alone in lifts and avoid vehicles in case of sudden coma.

Complications

She should be made to understand that complications of the disease should be observed and reported early in order to avoid becoming too serious. Signs and symptoms of hypoglycaemia are to be taught to the patient, particularly if he is on a regime of insulin injections so that he can know when to and when not to administer insulin injection.

Work, Home, and Culture

The work of a farmer, although admirable in its physical exercise, it exposes the diabetics to much possible trauma. Wounds in diabetics heal very poorly so that a small wound may be the beginning of the loss of a whole limb from gangrene. The diabetic should therefore be advised not to work bare-footed. The habit of eating with the fingers is also not without its dangers for the finger may be pricked by a fish bone and become septic. Fingers must be carefully kept and nails should be cut.

Prevention and Control

- prompt treatment of any infection and complications.
- patient should not stay long without eating food.
- one should make sure the patient has regular supply of syringes, needles and insulin injection at all times.
- moderate exercise should be encouraged.
- patient should eat balanced diet but no sugary things.
- personal hygiene is very important and good environmental sanitation is paramount.

Recommendations

With this exhaustive discussion about the disease, a point would be missed without some form of recommendation for public consumption. Underlisted are the recommendations:

Government should build more hospitals, special clinics e.g. diabetic mellitus clinic for affected people to attend regularly. There should be public seminars on the subject to educate the masses. Also to provide the clinics with good manpower, drugs, equipment necessary for examinations. To reduce the charges in Government owned hospitals. The federal and state governments' ministry of health should teach the public the importance of prevention, curative, and

promotion of health to enable them achieve the aims of primary health care and good result of health for all by the year 2,000.

The Government should come to the aid of the diabetic by reducing the hospital charges in most of Governments owned hospitals and also to provide enough drugs at a subsidised rates. Many patients run away (abscond) or refuse to come to the hospital for treatment because of high charges, and their diseases get worse and they die prematurely.

Diabetes should be treated free of charge since their condition remain with them throughout their life span.

Government should encourage sporting by providing sporting activities and enlighten the public on the importance of exercise as a means of keeping healthy and reducing obesity which is one of the predisposing factors of diabetes mellitus.

The health workers also have important role to play as regarding this condition by giving health talks in the clinics, hospitals and home visits, also by way of posters, radios, television sets, public lectures and other suitable means that could also be extended to the rural areas. The public should be enlightened about

the condition, complications and causes of diabetes mellitus and how it could be controlled. The Government should establish many diabetic clinics and provide the necessary amenities for the treatments.

The Government should establish nutritional and dietary departments in rural areas and provide them with nutritionists and dieteticians to help in advising and teaching the communities on diet preparations from the local food stuff, also to provide in-patient in hospitals with the appropriate diet as most of the patients do not have the right proportion of food to be taken.

Both state and Federal governments should embark on mass education programmes about the disease to propagate awareness, stressing on associated causes, prevention and control.

The function of the social health workers should be enlarged to help propagate the education at the rural area.

For the home management there should be a medical practitioner and a community nurse who should visit regularly to monitor the progress. Government should make it compulsory to register all diabetic patients and should be made to wear diabetic tags stating the type of diabetes.

It is observed that most of the diabetic diagnosis are late reactive types, that is diagnosis after the disease must have advanced. It is therefore recommended that the government embarks on a nation-wide screening exercise in order to prevent complication.

CHAPTER 3

Summary and Conclusion

The author of this work has attempted to establish a better management of care study in diabetes mellitus. This she has done by first defining the disease diabetes mellitus. Extensive literature review to include a wide range of areas like aetiology, anatomy and physiology of the disease organs, prognosis and the medical and nursing intervention have been demonstrated. The author summarises the part of care study with series of education on health maintenance for the diabetic. This part of the education includes how to recognise the signs and symptoms of complication, how to do urine test for sugar, how to administer insulin to self and carry out other self therapies, and further more, the patient was taught the advantages of honouring the scheduled visits to the hospital for check up examination. The author finally concludes by preparing the patient to accept her condition. This she did by way of re-assuring the patient and by explaining to her that the doctor has directed that she be told that even though there is yet no known cure for the disease but that her co-operation was needed since the disease is controllable.

Definition of Terms to Part I

Acinar	Grape-like formation.
Asthenia	Lack of energy.
Acidosis	Coma due to too much acid in the blood.
A.D.H.	A peptide hormone synthesized in the hypothalamus and released from the posterior pituitary, also called vasopressin. It increases the permeability of the kidney collecting ducts to water.
Beta cells	Special cells in the islet of langerhans of the pancreas that secrete insulin.
Diabetes	Syphon or running through (Greek).
Exorcrine	With ducts.
Endocrine	Ductless (no duct).
Enzyme	A protein that accelerates specific chemical reactions but does not itself undergo any net change during the reaction: a biochemical catalyst.
Glucose	End product of carbohydrate.
Glycosuria	Glucose (sugar) in the urine.
Hormone	A chemical substance synthesized by an endocrine gland and secreted into the blood which carries to other cells in the body where its actions are exerted.
Hyperglycaemia	Excess sugar in the blood: normal range - 0.08-12%.
Hypoglycaemia	Low blood sugar level.
Insulin	The hormone secreted by beta cells.
Mellitus	Sweetness (honey) (Latin).
Maturity-onset	Matured age. As from 40 years upward.

Metabolism	Process in living organism by which nutritive material is built up into
Obesity	An excessive accumulation of fat by the adipose tissue in the body leading to overweight.
Polyuria	Excessive (urination) elimination of urine.
Polydipsia	A state of abnormal thirst (excessive drinking of water).
Polyphagia	Excessive swallowing (excessive eating).
t.d.s.	Three times every day, i.e in the morning, afternoon and in the evening.

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Part 2

Inguinal Herniorraphy

CHAPTER 4

Introduction

Patients known to have hernia are often advised to avoid vigorous exercises yet African economy is so underdeveloped technologically such that trying to avoid manual labour of subsistent farming would be suicidal. What then is the solution? Fish (1976: 274), Chaffee and Lyttle (1980: 166) define hernia as a disposition or displacement or protrusion of an organ, or when part of the content of a cavity protrudes through its coverings into the abnormal situation.

Although hernia is known in almost all parts of the world it is said to be quite much more common in Africa. This is said to be due to the nature of the social conditions that operate. This section of the patient care-study relates to a patient who develops hernia and is considered to have surgical treatment, that is, removal or repair of the protrusion. In most cases the protrusion is repaired rather than removed. The author of this study has taken time to follow the patient care history right from the admission to the discharge and a follow up home. Before the follow up the author began his approach by

way of wide range of literature research on the types, causes of hernia and their treatments. She traced the etiology, anatomy and disease organs. The discussion outlines different types of hernia before narrowing down to inguinal herniorrhapy (repairs).

Literature Review

There are said to be two main types of hernia, the congenital and acquired hernia. Apart from these two major groups most hernia are named depending on t the area and the manner in which the protrusion occurs.

Congenital

This is said to be due to the failure of closure of umblicus during childhood.

Acquired

This type of hernia may be due to the presence of structures that penetrate the abdominal wall, for example through the inguinal canal or it may occur when a surgical incision weakens the layers of the abdominal walls. Other causes are said to be due to warm infestation like onchocercaisis, veneral diseases. The actual formation of hernia may be caused by anything that increases abdominal pressure such as chronic cough, chronic constipation resulting in straining

on defaecation, lifting heavy loads, vigorous manual farming with crude hoes, strenous exercises, chronic diarrhoea, dysentry and truck pushing. Hernia is therefore said to be most rampant in Africa because of the above reasons.

Because of the endemic nature of onchocerca warms in some geographical areas of Nigeria the occurrence of hernia is unevenly distributed. Also the persons of areas involved in heavy manual agricultural works tend to develop hernia diseases than is found in the non-agricultural areas. In Nigeria, the Tiv people in Benue State, the Gongola State people and some section of Plateau State found in the onchocerca belt are also known to develop hernia (Parry, 1984) (op cit).

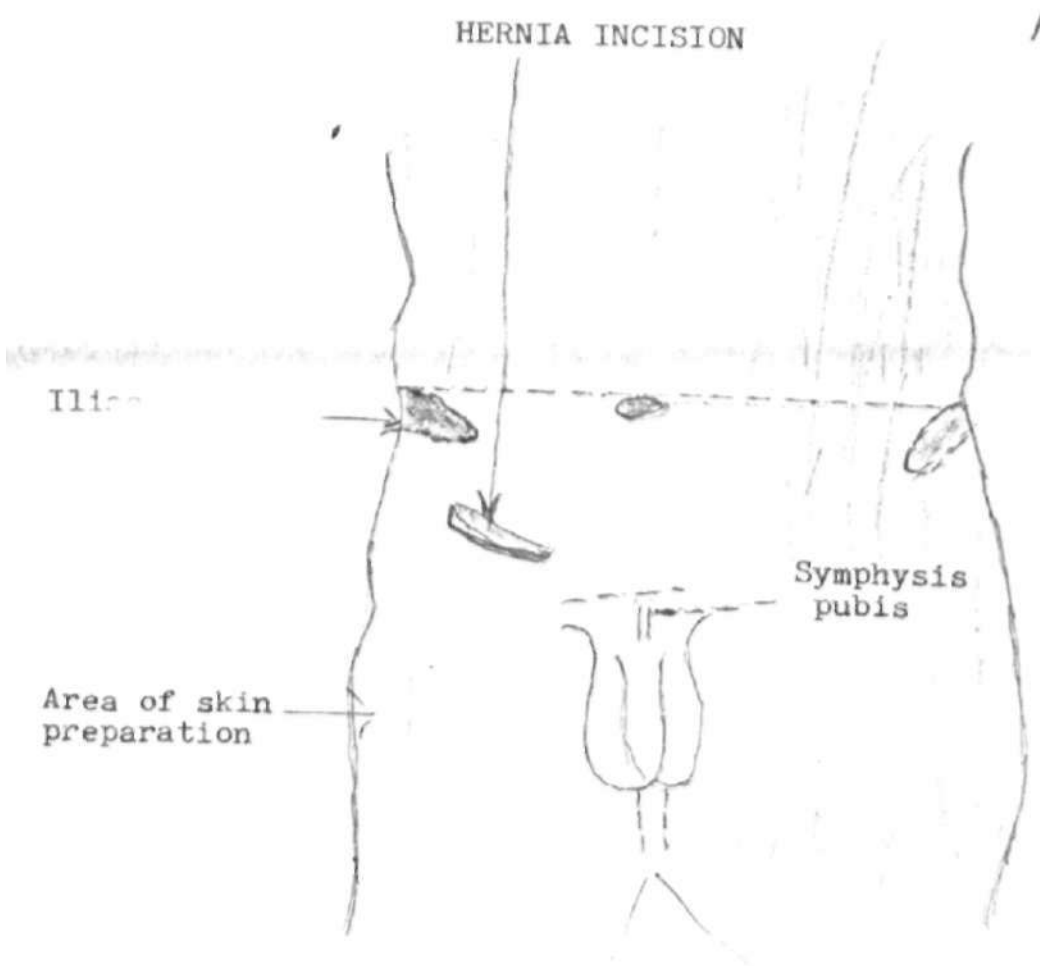
Aetiology

The basic underlying causes of any hernia is a sudden or prolonged increase in the intra-abdominal pressure. Decreased muscle tone in the abdominal wall which may follow an illness or occur naturally in other persons can be a contributory factor. Activities which promote the occurrence of hernia are those that increase the pressure of abdominal viscera against the ventral body wall.

ANATOMY AND PHYSIOLOGY

Right Indirect Inguinal Hernia

Fig. 2



Idea from Elizabeth Fish

Inguinal Canal

Position, Shape and Size

The inguinal canal is an oblique tunnel about 4cm) four centimeters long which passes through the lower abdominal wall parrallel with and a little above the inguinal ligament. The inguinal canal extends from the abdominal inguinal ring to the subcutaneous inguinal ring. It transmits the spermatic cord in the male and round ligament of the uterus in the female.

Owing to the upright position of the man the pressure of the weight of the abdominal viscera falls on the ventral part of the abdominal wall. As one stands any weak place in this portion of the wall will be put under added strain.

Gross Structures

Inguinal Ligament

Between the iliac spine and the pubic tubercle, the lower border of the muscle has no bonny attachment but folds back on itself like a hem on a dress, to form a thick band called the inguinal ligament, an important anatomical landmark.

The Superficial Inguinal Ring

The large aponeurosis of the external obligue muscle forms part of the anterior abdominal wall and inserts into

the linea alba. The subcutaneous or superficial inguinal ring, is an opening in the aponeurosis just above and lateral to the pubic tubercle. It is one of the weak places in the abdominal wall.

Deep Inguinal Ring

There is an opening in the aponeuroses of the transversus abdominis halfway between the anterior superior iliac spine and the pubic. This opening is called the abdominal or deep inguinal ring. It is one of the weak places in the abdominal wall.

Fish (1979: 275) asserts that the fact that the inguinal canal is larger in the male than in the female probably explains why inguinal hernia occurs more often in men than in women.

Femoral Ring

The femoral (saphenous) rings are openings in the fascia lata of the thigh below and lateral to the external inguinal rings and pubic tubercle.

The openings are covered by a thin membrane called the cribriform fascia that is perforated by the great saphenous vein. They have a diameter of about 1.3 cm ($\frac{1}{2}$ inch) and are usually somewhat larger in females, as a fact that accounts for the greater prevalence of femoral hernia in women than in men.

Functions of Inguinal Canal

1. It is for the passage of spermatic cord in male.
2. The testes pass or descend through the canal from the abdomen into the scrotum before birth.
3. The round ligament passes there to support or hold the uterus in position.

Blood Supply

Internal common iliac artery supplies the canal with blood. Venous drainage is via the common iliac veins. Nerve supply is via the ilioinguinal nerve. Lymph drainage is via the superficial and deep inguinal nodes.

Types of Abdominal Hernias

The following varieties of hernia may be found:

1. Inguinal Hernia

Protrusion of an organ through the inguinal canal which runs through the abdominal wall just above the inguinal (poupartis) ligament in the groin, is more common in the male sex because the testes descend from the abdomen, where they first develop, into the scrotum through this canal before birth and bring down a pouch of peritoneum. The pouch should be obliterated except around the testes themselves, but may persist and form a hernial sac.

2. Femoral Hernia

Protrusion of an organ through the femoral canal, that is between the inguinal ligament and the pelvic bone in the groin alongside the femoral artery and vein. It is more common in the females than in the males, because the female canal is wider as a result of the natural broader, rounder shape of pelvis which assists passage of child.

3. Umbilical Hernia

The congenital type of hernia is seen in babies and the acquired type seen in fat middle-aged women, especially after multiple pregnancy.

4. Incisional Hernia

This form of hernia occurs at the site of an operation wound when the muscle has failed to unite properly on account of sepsis or poor general condition.

5. Diaphragmatic Hernia

This rare form may be a congenital deformity or may follow a run-over accident with the diaphragm rupturing under pressure and allowing abdominal organs to escape into the thorax (Hew, 1970: 272).

6. Hiatus Hernia

A portion of the stomach protrudes through the opening by which the oesophagus passes through the diaphragm. There are two types of hiatus hernia both anatomically determined.

a. Sliding Hernia

Reflux oesophagitis (a backward flow inflammation of the oesophagus, that caused by regurgitation of acid stomach contents through the cardiac sphincter) with retrosternal (behind the sternum) burning, worst when the patient lies down and arises because the oesophago-gastric junction rises into the chest above the diaphragm.

b. Rolling Hernia

In this type of hernia, there is no reflux because a pouch of stomach rolls up alongside the stomach leading to a sensation of fullness and discomfort which sometimes resembles cardiac pain, but is not provoked by effort.

A hernia may be:

1. Reducible, that is, the contents of the sac can be pushed back into the abdominal cavity.

2. In contrast irreducible hernia may occur when the contents of the sac cannot be pushed back, this may be due to adhesions between the organ and the sac or to the intestine being distended by its contents. In this case the blood supply is normal.

Strangulated Hernia

This type of hernia is said to be common all over Africa although there are remarkable variations within countries.

Although indirect inguinal hernia is said to be by far the most common in some areas/states in Nigeria, e.g. in middle belt states like Benue, Gongola, Kwara etc where strenous jobs like manual farming, carrying of heavy objects, loads, lifting of heavy things etc are the major occupation of the people which they do daily for a living and these activities predispose them to hernia.

Pathophysiology

The gut is nipped by the neck of the sac which causes obstruction of the gut and gangrene due to the cutting off of blood supply. This is due to a ring of fibrous tissue at the neck of the sac, which stretches

under the strain of heavy lifting, allowing the bowel to protrude, but recoils directly when the strain is over and contracts on the intestine at the neck of the sac. This obstructs the thin-walled veins, so that blood cannot return: the pressure therefore rises in the veins, becoming as high as in the arteries and obstructing the flow from them; the veins finally rupture and bleed into the walls of the bowel, gangrene sets in and the dead tissue is readily infected by micro-organisms present in the intestine such as clustridium perfingens (welchii), and general peritonitis follows.

Strangulation therefore necessitates immediate operation or the result will be fatal owing to acute obstruction thereby leading to the signs of intestinal obstruction with signs of severe pain, vomitting, constipation, abdominal distension and a lump in the groin, scrotum and femur.

General Clinical Manifestations of Hernia

1. There is usually a lump felt in the groin.
2. There is usually pain and the patient screams.
3. It is movable and patient, if has courage, can push it away normally.

4. In cases of strangulation it will picture as follows:

An irreducible but severely painful lump is felt in the groin of the patient. This pain is colicky in nature and the patient is seen to be restless. This cannot be pushed normally. Later there may be signs of intestinal obstruction such as:

a. vomitting
b. distension
c. visible peristalisis and
d. increased bowel sounds may occur.
e. There is an impulse in the swelling on. There may be coughing (ideas extracted from 1988 lecture notes by Iyagulu I).

Appearance

In the case of external hernia, a swelling lump may be seen. Intestinal is diagnosed from symptoms acknowledged by the patient and supported by other investigations.

Investigations

Routine laboratory investigations such as urinanalysis, stool test, blood for haemoglobin estimation (H/b), grouping and cross-matching, and

blood chemical test are done to exclude any abnormalities or infection.

Treatment and Management

Hernia may be treated by:

a. Surgical operation, resulting in cure but few cases have been seen to re-occur after surgical repairs.

b. Medical treatment - the wearing of a truss, a palliative measure in cases where operation is impracticable or must be delayed. The treatment varies in different cases. Normal diet is required.

Medical Treatment

Umbilical hernia - In the umbilical hernia of children, operation may not be necessary as a rule as it is usually corrected spontaneously as growth proceeds: but a pad may be applied at the site and can be improvised from a penny or tiddly wink covered with lint and fixed in position by means of a piece of strapping. Alternatively, strapping alone may be used. These treatments though not necessary may relieve the mother's worries.

Anroid Bloom (1971: 258) asserts that strangulated hernia does not occur in infants but an infant's hernia

may become irreducible and cause the child to scream with pain, which increases the intra-abdominal pressure. This is not due to adhesions and can generally be rendered reducible by fixing the child up so that the hernia sac drains by gravity into the abdominal cavity. The loop of intestine empties and can generally be easily pushed back. The child's legs may be tied up to a cradle by soft flannel bandage. In the home this child can be fixed up in an arm-chair with a thick book under the buttocks and the legs secured, so that they rest against the back of the chair and the head towards the edge of the seat. Soft materials like pillows may be used round the ankles to hold the legs up. Following this the child soon stops crying usually as a general rule, and may drop off to sleep.

However, the hernia may be extended with the bowel contained only in a translucent sac. In this case immediate surgical repair is essential because if it ruptures, death will result from pertonitis. The umbilical hernia of fat middle-aged woman is not easily cured by operation, because of the obesity and because it is often not seen till the gut is adherent to the sac. Operation is mainly undertaken if strangulation occurs and in cases where the sac is

small; trusses are advised in other cases.

Inguinal Hernia

In cases of inguinal hernia a truss may be used, but is merely palliative and is not recommended for adults unless an operation is undesirable or impracticable, the surgeon preferring to repair the hernia to prevent the risk of strangulation developing. The truss is worn for nine to twelve months, and if cure has not then taken place, operation is advised.

In children occasionally obliteration of the sac occurs spontaneously in the early months of life, so although operation is nearly always needed ultimately, it is usually postponed till the child is one and a half to two years old to allow for this possibility of spontaneous closure.

Femoral Hernia

In cases of femoral hernia the use of a truss is not desirable, because the neck of the femoral canal is narrow and an irreducible or strangulated hernia is liable to occur. Operative treatment is always the treatment of choice unless the patient's condition makes it impracticable.

Operative

Herniotomy gives good results in suitable cases. The sac is opened, its contents returned to the abdomen, the sac removed and the abdominal wall strengthened, with great care in inguinal hernia to avoid injury to or pressure on the spermatic cord. To strengthen the abdominal wall strips of fascia removed from the thigh may be stitched round the hernial orifice or artificial materials such as teflon may be used.

Pre-Operative Care

Preparation is as for any abdominal operation. It is particularly undesirable that the patient should put strain on the repair from coughing or constipation in the early post-operative days: hence if the patient has a respiratory infection at the time of admission, even though it may be slight, operation should be delayed till the infection has been effectively treated. Elderly patients are especially prone to develop constipation, so a mild aperient such as milpar or dulcolad tablet may be given preoperatively and continued following the operation. Ideally patients suffering from chronic bronchitis should be operated on in warm weather when the disease is more

quiescent (passive).

Complications and their Treatments

Strangulated Hernia (Inguinal)

This is one of the emergency situations.

Immediate nursing treatment.

Pre-Operative Care as Per Literature Review

- The patient is usually admitted into a comfortable bed and the history is obtained - this is known as assessment phase.
- The patient is usually kept on complete bed rest thereby discouraging further swelling.
- The foot of the bed is elevated and the aim is to reduce the hernia swelling.
- The area is shaved clean and cold compression is applied.
- Ryle's tube is normally passed for the stomach contents to be aspirated hourly.
- Fluid intake and output chart are kept and intravenous fluid infusions may be set up.
- Viral signs are checked and recorded quarter-hourly. The patient is reassured.
- The patient to sign the consent form for the operation; besides the mere consent, the patient

to make sure it is running at the prescribed rate of flow.

- When the patient regains consciousness the nurse should assist him to wash his face and hands. He should be helped to rinse his mouth as this will make him feel refreshed.
- He should be given the post-operative analgesic to relieve pain.
- Early ambulation should be encouraged on the first or the second day after the operation depending on the patient's condition.
- The nurse should watch for post-operative retention of urine and to report such.
- The nurse should remove the Ryle's tube when nothing is aspirated and this should be on doctor's instruction.
- The nurse should give a fluid diet when the patient's bowel sound has returned, then change to a light diet when his condition improves.
- The nurse should give a bed-bath daily, treat the pressure areas and assist him to rinse his mouth at 4 hourly intervals.
- The nurse should remove alternate sutures on the 7th day then the remainder on the 8th day if the

wound site looks good.

- The nurse should observe the operated site for bleeding.
- The doctor should discharge the patient when his wound is properly healed and give him the following advice:
  1. asking the patient to come for check-up after 6 weeks.
  2. requesting the patient to avoid lifting heavy loads and doing heavy work.
  3. encouraging the patient to take his drugs as ordered.
  4. encouraging the patient to observe good personal hygiene.

Constipation

Patient is advised to avoid hard foods; he is encouraged to have plenty of fluids and fruits intake. This will help soften the bowel contents thereby relieving or preventing constipation.

Retention of Urine

Measures such as running of tap water to the patient's hearing have positive psychological effect. Also application of warmth on the bladder and the use of warm urinals or warming bed pan for few minutes

before use have good physiological effect because they stimulate and encourage urination. If all these measures fail, then catheterization of bladder is indicated to relieve the patient of the retention. Patient is encouraged to move out of bed to ease the difficulty in micturation. This is because movement improves body fluid circulation.

Haematoma and Sepsis

Haematoma means swelling which is due to accumulation of blood. If this occurs in the system, drainage is then indicated. If infection occurs antibiotics such as penicillin and streptomycin and other relevant antibiotics with or without a sulphonamide may be given and these usually give satisfactory results.

Prognosis

If hernia is diagnosed and treatment commenced early with the patient complying with the instructions, such as having enough rest, avoiding lifting of heavy weights and balanced diet etc, there may be no recurrence of the hernia and the prognosis is usually good. But in an undiagnosed, untreated case, it may lead to strangulation which could be very fatal if prompt medical aid is not sort.

CHAPTER 5

Information about the Patient

Patient's Name	Mr J.B.S.
Address	17 M, Kufang Village Miango Road, Jos
Sex	Male
Age	19 years
Tribe	Urhobo
Religion	Christianity
Marital Status	Single
Date of Admission ..	5-7-89
Bed Number	15
Hospital Number	810976
Provisional Diagnosis ..	Right Inguinal Hernia
Final Diagnosis	Indirect Right Inguinal Hernia repair
Date of Discharge ..	11-7-89
Next of Kin	Mr J.I.
Address of Next of Kin ..	17 M, Kyfang Village, Miango Road, Jos.

The Student's Observation of the Patient

Mr J.B.S., aged 19, walked into the ward himself, accompanied by his uncle and the clinic attendant. He was admitted into the ward at 11.00a.m. through the Surgical Out-patient Department.

He and the relations were warmly welcomed into the ward. They were given seat and the usual demographic data were noted and recorded.

As a "book case", his operation was a planned type. His general treatment and nursing care was grouped into two. That is pre- and post-operative care in the ward. After the normal usual admission procedures, he was introduced to other staff, other patients and orientation of the ward was undertaken visiting the toilets, bathrooms and showing him places. He was then told what to do if he needed a help. He already knows his bed.

His personal things were neatly packed into his locker and clean hospital pygamas were given to him.

Patient's Present Complaint

On admission, Mr J.B.S. complained of a pain from a small swelling on his groin on the right side, pain more pronounced on coughing. The swelling was said to have come on and off.

Past Medical and Surgical History

Mr J.B.S. had never had any previous surgical history and he has never had any illness leading to any hospitalization. He stated that he observed the onset of the swelling since 1982 and was initially painless.

Because of this initial painless nature, he took it lightly and thought that he was doing fine in health until recently (June 1989) when severer pain started. The pain was said to be slight at the beginning but increased in intensity with time and this prompted him to come to hospital.

Family History

Mr J.B.S. is the third of the five children in the family. His parents are both alive, well and healthy together with the rest children back home in Bendel State of Nigeria.

Mr J.B.S. lives with his uncle who does trading here in Jos. There has never been any history of any disease in the family according to the patient's knowledge.

Social History

The patient is very sociable, he is not shy, speaks freely and makes friends easily. He mixes well,

interacts very well and adjusts quickly to his new environment - in the ward throughout his hospitalization.

Nutritional History

He was breast fed during his infancy. During his early youth, he enjoyed adult diet with good appetite and he thrived well compared to his age.

He had all the routine immunizations accordingly when he was an infant, patient got the information from his mother during his school days.

Treatment Undertaken Before Admission

Haematinic drugs were given as follows:

Tab. Folic Acid 5 mg daily x 7 days.

Tab. Ferrous sulphate 200 mg bd x 7 days.

Tab. Paracetamol 2tds x 3 days.

Patient was advised on a well balanced diet.

This treatment was in University Teaching Hospital, Jos (JUTH).

Physical Examinations

Mr J.B.S. came in clean, neatly dressed, looking well fed, strong, not pale, not jaundiced but worn an expression of pain on his face.

Physical Observations

There was complication of swelling and position SS of hernia. His temperature - 37^{oc}, pulse 90, respirations 22/minute and blood pressure 120/80 mmHg. also his weight was taken and recorded. These were taken to form baseline measurement. There was the need for surgery so blood investigations were ordered. Consent form was then signed by the patient for the operation and anaesthesia.

After the admission procedures he was properly informed of the nature of and when to visit, when the patient can start to eat.

Signs and Symptoms Seen on the Patient

- small swelling on the right groin.
- slight pain.

Investigations, Discussions and their Importance

Urine specimen was collected and tested for the following - protein, sugar, and acetone to exclude any abnormalities. The result was negative, meaning that no abnormality was detected. Blood specimen collected for blood chemistry investigations included the following - blood group and cross-matching - Group O^{+}.

Date	Specimen	Normal Value	Patient's Result	Significance
	Urine			
14/6/89	Blood		Negative	Normal
	Bilirubin		Negative	Normal
	Ketones		Negative	Normal
	Nitrite		Negative	Normal
	Ascorbic Acid		Negative	Normal
	Blood			
16/6/89	Haemoglobin	14-16g/100 ml	15.8g %	Normal
	P.C.V.	35-50%	50%	Normal
	W.B.C.		4,600/mm3	Normal
	Neut.		30	Normal
	Lymph		62	Normal
	Mono		2	Normal
	EOS.	7	6	Normal
	Blood			
5/7/89	Na	134-145 mm 1/1	140 mmol/1	Normal
	K	3.5-5-5 mm 1/1	4.0 mmol/1	Normal
	Cl	96-106 mm 1/1	100 mmol/1	Normal
	HCoz	21-31 mm 1/1	26 mmol/1	Normal
	Urea	2.5-6.6 mm 1/1	4.3	Normal

According to the result shown above the patient's results were at the range of normal value. The results showed that he was properly prepared for the operation and shows that he was fit to undergo the operation.

Actual Pre-Operative Management

Psychological preparation - The nature of the operation has previously been explained to the patient and

his uncle. Both of them were reassured. The patient was told not to eat or drink anything after 12 o'clock midnight of the operation day. This is to avoid vomitting effect of anaesthetic drugs which may block airways and strain patient if food was taken close to operation.

- Consent form obtained by the doctor; has already been signed by the patient even then the nurse checks to see that the form is truly signed as legal cover.

Physical preparations:

- shaving was done.
- enema saponis to be returned was given with good result. This was to keep the gut empty to avoid defecation that may contaminate operation procedures.
- In the morning of operation, a warm bathroom-bath was given, and the patient was asked to empty his bladder.
- A clean operation gown, cap and stockings were given to patient to put on. These are to keep him warm and nice.
- Identification is worn on the wrist, his name, bed number, hospital number, ward, date of operation were checked before the is taken to the theatre.
- Pre-medication was given as required and as usual.
- Patient was taken to the operating theatre at 8.00a.m. accompanied by a nurse and his case notes.
- Patient was reassured by his nurse. The operation was successful.

Pre-Operative Nursing Care Plan for Strangulated Hernia

	Nursing Diagnosis	Objectives	Nursing Intervention	Scientific Principles/ Rationale	Evaluation
1	Alteration in comfort related to severe abdominal pain	To completely rid pain or if at all there will be pain reduce it to bearable degree.	Elevate foot of bed to discourage further swelling on the site. Apply cold compress to the scrotum and abdomen for similar readon above. Administer prescribed strong analgesics e.g. pethedine inj. 50 mg I/m st. Diazepam inj. 5 mg I/m st.	- Elevation of foot of bed helps to reduce pressure on the hernia. - Cold compress reduce pain sensation by constricting the blood vessels around the area. - Analgesic reduce the pain sensation by depressing pain perception.	Patient complain less pain as against the previous severe pain.
2	Loss of fluid and electrolytes related to vomitting	Patient to have adequate fluid and electrolytes during hospitalization	- Assist doctor in setting for intravenous infusion of normal saline. - Pass naso-gastric tube to aspirate gastric content. - Maintain fluid balance chart.	- Intravenous infusion helps to prevent fluid and electrolytes loss. - Gastric aspiration reduces the chances of vomitting. - Fluid balance chart helps to find out how much fluid is being infused and how much is lost in the cause of treatment.	Patient's fluid and electrolytes was maintained throughout hospitalization.

	Nursing Diagnosis	Objective	Nursing Intervention	Scientific Principles/ Rationale	Evaluation
3	Severe abdominal pain related to strangulation	Patient will not develop gastro-intestinal complications during hospitalisation	- Prepare patient for emergency operation e.g. sign consent form, shave patient etc. - Wheel patient to the theatre for operation. - Give pre-medications e.g. Atropine inj. 2 ml st. Pethedine inj. 50 mg st. -Reassure patient.	- The pre-operative preparation of the patient prevents the likelihood of complications. - Wheeling patient prevents the discomfort that may result from walking when in pain. - Atropine inj. reduces the secretions in the mouth, nose and lower respiratory tract while Pathedine inj. relieves pain, sedates and calms the patient. - Reassurance allayed allayed the patient's anxiety.	Patient had an emergency operation which prevented gastro-intestinal complications such as gangrene.

Pre-Operative Care Plan for Mr J.B.S.

	Patient's Needs	Goals	Nursing Intervention	Scientific Principles/ Rationale	Evaluation
	5-7-89				
1	Need for psychological preparation before operation.	Patient to be made .. to be less anxious before surgery.	- Allow patient and his uncle time to settle into the new surroundings. - Explain all procedures. - Encourage questions. - His uncle should remain with the patient as much as possible. - Encourage friends to visit the patient and allow them chat together. - Explain post-operative care to the patient. - Honest pre-operative explanation can go a long way to prepare patient for post-operative outcome.	Allowing his uncle and friends to visit and chat with him would make him relax and adjust quickly to his new surroundings. - Providing homely environment gives room for good nurse-patient relationship and by explaining procedures and encouraging questions makes patient to know more about his disease. - Honest explanation helps patient to co-operate with his care and carry out instructions accordingly.	Patient gained confidence in the nurse, trusting the nurse makes him relax and no more anxiety but accepted and was ready for operation.

	Patient's Needs	Goals	Nursing Intervention	Scientific Principles Rationale	Evaluation
2	Need for physical preparation	Patient will not have infection of wound after surgery.	- Place identity band on Mr J.B. (name, sex, age, bed no, ward and date). - Check consent form for signature and date. - Assist doctor with collecting blood samples for H/b and W.B.C. levels. - Patient will have his temperature, pulse, respirations and blood pressure taken and recorded.	Identification band and consent form ensure surgical misrepresentation which may otherwise arise. - Blood for H/b and W.B.C. is to rule out anaemia and any infection. - Checking of vital signs will indicate any sign of infection which should be given prompt attention.	Patient did not have any pre-operative complications.

	Patient's Needs	Goals	Nursing Intervention	Scientific Principles/ Rationale	Evaluation
3	Need for physical preparation on day of operation.	To prevent post-operative complicat-tions such as vomitting, infection and urine retention.	- Patient to have his last meal or drink 6-8 hours before the operation, then nothing by mouth. - Ensure patient does not have any loose or artificial teeth. - Assist patient with bathroom bath, and give him clean gown and make sure the bed linen are clean. - Encourage patient to empty his bladder. - Administer pre-medication ordered by the doctor, such as inj. Atropine 0.6 mg i.v Inj. Diazepam 5 mg i.v.	- Nothing by mouth and no loose or artifi-cial teet will prevent patient vomitting and inhaling the vomitus or passing stool to remove, to prevent obstruction of airways. - Clean body and clean bed linens minimises dirts that promote the growth of micro-organisms. - Emptying of the urinary bladder will prevent retention and any accidental injury to the bladder bladder during the operation manoeuvre. - The pre-medications help to calm and sedate the patient. It also dry the mouth and throat of secretions, keeping the airway clear.	Patient did not develop any post-operative complica-tions.

Post-Operative Care Plan for Mr J.B.S.

	Nursing Diagnosis	Objective	Nursing Intervention	Scientific Principles/	Evaluation
1	Obstructed airway related to mucus secretions	Patient's airway will be kept clear	a) Patient should be placed in the dorsal or left lateral position with head turned to one side. b) Tongue should not obstruct his airway and his head should be lower than chest. c) Remove secretions by suction method. d) Observe patient's colour and level of consciousness. e) Monitor breathing ½ hourly and record.	A, B and C actions will help free drainage of any secretions from the mouth, and it keeps the tongue in position from falling back and block the way. - The colour of the skin and mucous membrane helps to indicate cyanosis. - This observation will indicate the patient's progress in respiratory rate.	Patient airway was maintaine

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Nursing Diagnosis	Objectives	Nursing Intervention	Scientific Principles/ Rationale	Evaluation
2 Alteration in the client's personal hygiene related to inability to have his normal bath, oral hygiene	Patient will be able to have his bath and oral toilet on the 1st day post-operation.	Patient was encouraged to have bathroom bath, water was provided and patient assisted in the bathroom. Oral hygiene was performed every 2 hours, using mouth wash solution and swab. Later in the evening patient brushed his teeth.	- A clean skin and mouth prevents infection and promotes peripheral circulation.	Patient was comfortable and refreshed at the end of the day after he had his bath. Goal achieved.
3 Impairment in the skin integrity related to incision along hernia sac.	Client's wound will be cleansed and healing by granulation will take place.	- Stitches were removed after 7 days. The wound was clean with methylated spirit and gentian violet applied, since the wound was well united (healed) - Patient was encouraged to take high protein diet and fruits (vitamins). - Patient was advised to avoid strenous activities for the next three months.	- Stitches kept the two edges of the skin close allowing healing to take place. - The intseptic nature of methylated spirit kills germs or prevent their growth, while gentian violet helped to dry the wound. Protein and vitamins A and C are essential for cellular proliferation, thus enhancing wound healing. - This will preventy any intra-abdominal pressure which may cause gaping of the wound.	After 7 days, the wound was closed and healing by granulation took place.

	Nursing Diagnosis	Objective	Nursing Intervention	Scientific Principles/ Rationale	Evaluation
4	Knowledge deficit related to rehabilitation	Patient will know more about his disease during hospitalization	During hospitalization, patient was advised on the following: occupation therapy, enough rest, to eat balanced diet and personal hygiene.	Adequate knowledge about the disease will enable the patient full participation in his care.	With the knowledge of his disease, the patient was able to participate in his care, during hospitalization.
	Alteration in elimination related to anaesthetic effect.	Patient will not have problem with his elimination.	- Provide privacy and a clean toilet. - Patient asked to use the toilet whenever he feels like micturating. - Encouraged on oral fluid.	- Privacy and a clean environment (toilet) encourages the patient to pass urine. - Oral fluid will increase the urine output. - The use of the toilet will help him empty his bladder properly without holding any urine back to cause retention.	Patient had no problem in elimination.

Post-Operative Management

The patient was brought back from the operating theatre and was already conscious. It was 10$\frac{51}{am}$. He was kept warm by the post operative bed.

- Placed on dorsal position with head turned to one side to facilitate breathing.
- He already came back from theatre with intravenous dextrose/saline infusion correctly regulated at the rate of 30 drops per minute and this regime was maintained for prescribed period of time.
- Operation site was observed for haemorrhage.
- Observations for temperature rise, pulse rate, respiration rate and blood pressure level were strictly monitored at a quarter-hourly intervals in order to detect signs of complications.
- When he was fully conscious, warm water was given to him to wash his face, hands, and rinse his mouth to keep him fresh.
- He was again reassured.
- His post-operative medications ordered included the followings:
  - intramuscular injection of pethedine 100 mg 8 hourly x 2 doses to relieve severe pain and were given as ordered.

- Tabs penadol 2tds x 5 days were given to deal with minor pain.
- He was allowed to eat as he fully recovered from anaesthesia.
- He was advised to start with light fluid nourishing diet.
- There was no post-operative urine retention noticed.
- Within few days the patient was encouraged to move out of bed on the second day of operation since this is good for him.
- He had his daily bath and oral toilet done by himself, assisted by the nurse initially. Later he performed unaided.
- Sutures were removed on the 7th day.

1st Day Post-Operation (8/7/89)

Patient complained of cough and fever. His temperature was taken and read 37.5^{oc}. This is low grade pyrexia indicating some form of secondary infection. Doctor's impression was bronchopneumonia and he placed the patient on the following drugs:

- I.M. inj. xbapen Imega units, 6 hrly x 24 hrs.
- Ampicillin caps. 500 mg qds x 3 days.
- Tab. paracetamol 2tds x 3 days.

The drugs were collected and treatment commenced

immediately. On the 10-7-89, patient complained less cough.

On the 11-7-89, patient was much better and there was no further complaint. His doctor saw him and performed physical examination on him. The examination revealed that he was now well so the doctor discharged him with the following instructions:

- to report in the S.O.P.D. clinic in two weeks, for check ups.
- to come for removal of remaining sutures on 13-7-89.

The patient was very happy to be well again. In addition he was given the following advice:

- to take his drugs as ordered.
- to rest well at home.
- to take a well balanced diet.
- to keep away from any activities prohibited for a while, e.g. no farming, heavy weight lifting etc as just had his inguinal hernia repaired to avoid recurrence.
- to come back for check ups in the clinic.

Patient was happy and promised to carry out all the instructions as much as he could. The patient's uncle promised to assist him at home. The nurse helped to arrange his baggage, escorted him and the relation to

the taxi park after the discharge card was issued.

Follow Up Care

On the 13-7-8[illegible], at 8 a.m the petitioner followed the advice given and came to the hospitol for the removal of the sutures.

He was warmly welcomed and a seat offered to him. The dressings were taken off, and stitches were removed, the wound was well united, clean and healed. There was no complaint from the patient. He was encouraged to keep up with his personol hygiene, eat well and keep his visits.

After two weeks the patient came to the S.O.P.D. clinic to see his doctor and his nurse. He was again examined physically and found to be clean, well-fed and fit; he had no complaint and was asked to report to the clinic whenever he is sick. He was then finally discharged from the clinic.

Prevention and Control

Occupationol Therapy

Patients whose occupations involve strenous activities such as manual farming, heavy weight lifting, truck-pushing, carrying of heavy loads on their backs and heads etc are advised to make a change, to a much

more light type of job. This will help to prevent the recurrence of the hernia as all these types of strenuous work increase intra-abdominal pressure which further lead to the abdominal muscles becoming weak.

The patient should be encouraged to eat a balanced diet from any type of local foodstuff he can afford. This implies that he will be taught the type of locally available foodstuff. This will help to repair the worn-out and torn tissues which took place during and after the operation. The balanced diet also promotes good physical health and healing of incised operation wound.

Patient should be encouraged to have enough hours of sleep and rest, which are added advantages to proper healing of wound and the body regaining its normal physical and mental state of health.

For the control, the patient is advised to report any time he notices the signs of unusual feelings of ill-health to his doctor without delay. He should keep to the advice given to him by taking his drugs as ordered.

- Obese patients are advised to lose excess weights by controlling their diet and have a light exercise done daily.
- Prompt treatment of any respiratory tract infection, such as cough will prevent an increase in intra-abdominal

pressure which will lead to hernia.

pressure which will lead to hernia.

Recommendation.

In view of the constant occurence of this problem among pregnant women, farmers etc, we would like to recommend to the Government that:

1. Pregnant women be provided with free medical services. The ideal objectives of family planning should be taken right into the villages as well and not professed only in urban areas, since frequency of pregnancies occur more in remote areas than is the case with urban areas.
2. To the farmers, the Government should encourage farmers in the rural areas to form co-operative societies so that it can aid them in getting machines, e.g. by in form of loans for mechanised farming, hence reducing the vigorous manual labour which predisposes them to hernia.
3. To the public, the Government should mobilise more health workers to educate the public on the cause and enable people to reorganise the signs and symptoms. The Government should also provide rehabilitation centres to help the victims.
4. To all the medical personnels, especially those in the rural areas, suspected cases of hernia should be

referred immediately to well equipped hospitals for prompt expert, adequate medical or surgical attention.

If the Government provides all the required facilities recommended to assist her citizens, then her plan for the programme "Health for All by the Year 2000" will be achieved in this respect. So people should join hands together to prevent the killer disease, as the saying goes - "Prevention is better than cure, and health is wealth."

5. There should be mass screening for venereal diseases because this is another associated factor. Worms infestations aggravate the situation and so there should be mass education by way of publicity on how to prevent goat parasites, filariasis, onchocerciasis and other skin infections.

Summary and Conclusion

This part of the care study has attempted to look generally into the types and causes of hernia. It then narrows down to the studying of a particular patient with hernia disease that had the need for surgical operation (inguinal herniorraphy).

The objectives of this part of the care study are outlined and to be able to have better insight to

patients with this kind of disease it is imperative that the nurse know the anatomy and physiology of the organs associated with the disease, hence, anatomy of the pelvic floor has been analysed. The author went further to discuss the pathophysiology of diseased organ (area).

The full nursing care plan following the surgery has also been carefully analysed. The discussion went further to analyse the complications and treatment of hernia. Teaching of patients as to the causes, what such patients should and should not do have been emphasised. It rounded off with series of recommendations. Although it is very difficult to avoid vigorous physical work in Africa as of now, a drastic reduction in occurrences of hernia could result if only one can exercise a little bit of care.

Definition of Terms to Part II

Anatomy	
Abdomen	body area between the diaphragm and pelvis.
Anaesthesia	loss of sensation.
Canal	like a tube.
Colick	
Dorsal	back
Gangrene	death of tissue.
Hernia	"rupture" protrusion of a loop of an organ through an abdominal opening.
Herniotomy	opening of the hernia sac to cut the herniated organ in position.
Herniorrhophy	removal of the hernial sac.
Haematoma	a swelling containing blood.
Irriducible	unable to cut in size.
Inguinal	of the groin.
Linea Alba	white line.
Peristalsis	the wave-like movement of the digestive tract - intestines.
Palliative	an agent which relieves, but does not cure disease.
Reducible	cut in size or push away.
Sepsis	condition of infection caused by pus-forming bacteria.
Strangulation	arrested circulation to a part which will result in gangrene.
[illegible]	[illegible]ying testes.
Truss	leather or wash leather pad applied over the inguinal canal and at reducing hernia.

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Scrotum	bag, carrying testes.
Truss	leather or wash leather pad applied over the inguinal canal and at reducing hernia
Tab	tablet.
IM	intra muscular.
SOPD	Surgical Out Patient Department.

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