

Disease specific program

[Health & Medicine](#), [Disease](#)



In this paper, we would be discussing the application of self-management concepts involved in improving the health and quality of life for people with chronic Diabetes Mellitus. Diabetes Mellitus is a complex disorder of carbohydrate, protein, and fat metabolism in which a relative or absolute insulin deficiency is the essential feature, Drury (1986). Diabetes is recognized as a model of broader based communicable disease control programs, WHO (1991 - 1998).

The metabolic derangement is frequently associated with permanent and irreversible functional and structural changes in the cells of the body, those of the vascular system being particularly susceptible. The changes lead in turn to the development of well-defined clinical entities, the so-called 'complications' of Diabetes which most characteristically affect the eye, the kidney and the nervous system. Introduction It is not too distant past one of the critical tests of the skill of a nurse was the ability to meet the needs of a patient with an acute infectious disease such as Typhoid fever or pneumonia.

When the patient recovered, the nurse could rightly take credit for having made an important contribution. As infectious diseases have been brought under control, the incidence of chronic illness has risen so that they now account for a significant portion of morbidity and mortality. Chronically ill patients often have a wider range of problems and need a greater variety of services than are needed to meet the needs of the acutely ill.

Restoration of the patient to optimum status and prevention of progress of the illness often demands the continued efforts of the patient, family, nurse, physician, and other health and welfare personnel as well as the

members of the community. With patients in whom progress toward recovery is slow and in whom control or prevention of the progression of disease is the goal rather than complete recovery, the nurse may not be able to see immediate results of her or his efforts. Instead of a relatively brief and intense relationship in which the patient is dependent on the nurse, the nurse often has a more or less pro-longed relationship.

This relationship with the patient changes from time to time, from dependence to independence to interdependence. To meet the needs of the patient, the nurse should be able to identify clues indicating the type of relationship best suited to the needs of the patient at a given time and to adapt her or his behavior accordingly. A Clinical Nurse Specialist (CNS) is described as an administrator, leader, manager, collaborator, practitioner, advanced clinician, consultant, educator and researcher (Wilson-Barnett, 1994; Dunne, 1997; McCarthy, 1996).

Literature Review Today the test of the skill of the nurse is the ability to meet the needs of the chronically ill patient. If a single disease was to be selected as the modern day test of nursing knowledge and skill, diabetes mellitus would undoubtedly receive many votes. There are many reasons that this is true. Diabetes mellitus has a relatively high incidence. It affects all age groups. Its complications are many and serious. There are, however, effective means for its detection, diagnosis, and treatment.

With modern methods of therapy, persons with diabetes mellitus can live almost as long as those who do not have diabetes. Even more important, they can have full and useful lives with few restrictions on their activities. Persons with diabetes mellitus have been Rhodes scholars, mountain

climbers, hockey players, television stars and statesmen. They marry, bear and rear children, and can lead successful, vigorous, productive, lives-a far cry from the predictable fate of the diabetic before the era of insulin therapy. The nurse is always concerned about the epidemiology of disease.

Understanding the distribution and dynamics (epidemiology) of a disease serves as a basis for meeting objectives of disease detection and foreducationof patient, family, and community. Because diabetes and other chronic diseases are not reportable, they are not subjected to the type of surveillance used for communicable diseases. As surveys and techniques of detection and diagnosis improve, reporting will increase and it may be possible to identify and to improve preventive measures.

According to the 1975 National HealthInterviewSurvey, a rate of 20.4 per 1,000 population or an estimated 4.8 million persons in the United States reported diagnosed diabetes. Between 1965 and 1975, the prevalence of diabetes increased by 50 per cent in the United States (Guthrie & Guthrie, 2002; Flarey & Blancett, 1996). There is some question if there is a true increase in the frequency. The data may represent an increase in recognition due to increased use of automated blood chemistry laboratory techniques.

Diabetes mellitus occurs in all age groups and in both sexes. The prevalence rate increases with age, from 1.3/1,000 (1 in 77) for persons under 17 years of age to 78.5/1,000 (1 in 12) in persons over the age of 65. Diabetes is reported more frequently in females (2.4 per cent) than in males (1.6 per cent). Females have a prevalence rate of 24.1/1,000. This is a 50 per cent increase from 1965 data when it was 16.1/1,000. The prevalence rate for

males is 16.3/1,000. The most dramatic changes in prevalence of reported diabetes is the increase of diabetes in nonwhites under the age of 45. This group has a percentage change of 150 per cent.

Nonwhites are 20 per cent more likely than whites to have diabetes (Dunning, 2003). Incidence is the frequency of new cases of a disease developed during a specified time period. In 1963, 17 years after the first Oxford study, 65.7 per cent of the residents aged 34 to 55 years who lived in Oxford during the first study were re-studied. The percentage of diabetics was found to be the same in the second as in the first study (O'Sullivan, 1969). In the 1930s and 1940s there was marked improvement in the life expectancy of diabetics. Since that time, there has been little improvement.

This may be due to the fact that Diabetes patients are living long enough to develop the more dangerous concomitants (Kessler, 1971). Reasons for failure to prevent the concomitants of Diabetes are one of the problems being studied intensively today. The Management of Diabetes Mellitus The ideal treatment for diabetes would allow the patient lead a completely normal life to remain not only symptom-free but in positive good health, to achieve a normal metabolic state, and to escape the complications associated with long-term diabetes.

Nowadays diabetic patients rarely die in ketoacidosis in any number, but the major problem which has emerged is the chronic invalidism, due to disease of both large and small blood vessels, of many of those whose duration of life has been extended. It is well known that diabetics show an increased propensity to fall due to visual impairment and neuropathy, as well as foot

problems (Wallace et al, 2002; Keegan et al, 2002) and presumably accelerated cognitive decline (Gregg et al, 2000).

Data from clinical studies strongly suggest that although genetic factors affect the susceptibility to develop complications, the incidence of serious retinopathy is related to the degree of diabetic control achieved (Clark & Cefalu, 2000). It is therefore incumbent on all those who are involved in looking after diabetic patients to strive in every way to achieve as good control as is practicable in terms of blood glucose concentration. The management of diabetes demands a broad range of professional skills, which include communication, counseling, leadership, teaching and research to name but a few.

The Diabetes Nurse Specialist has the expertise and specialist knowledge to incorporate these skills into practice and so develop standards of care that benefits the patient (Daly, 1997). The Diabetes Nurse Specialist (DNS) plays a pivotal role within a multidisciplinary team. The recognition of the contribution of the Diabetes Nurse Specialist in helping patients achieve good diabetes control highlights his/her essential role in diabetes care, (DCCT, 1995; UKPDS, 1998). Metcalfe (1998) states that a Diabetes Nurse Specialist works in collaboration with a team to ensure continuity of care, lends towards more successful management.

Types of Treatment There are three methods of treatment, namely diet alone, diet and oral hypoglycemic drugs and diet and insulin. Each obliges the patient to adhere to a life long dietary regimen. Approximately 60% of new cases of diabetes can be controlled adequately by diet alone, about 20% will need an oral hypoglycemic drug and another 20%, mainly younger

patients, will require insulin (Long, et al, 1995). A patient may pass from one group to another - temporarily or permanently. Role of the Nurse in Prevention and Diagnosis

Nurses have numerous opportunities to assist the identification of persons who either have diabetes or are potential diabetics. The CNS is prepared beyond the level of a generalist (The Report of The Commission on Nursing, 1998). Review of the etiologic factors gives the nurse clues as to the target populations. In addition she or he, regardless of the field of practice, must always be alert to the signs and symptoms of diabetes. Any individual with symptoms suggesting diabetes mellitus should be encouraged to seek medical attention. The Suspicion of the school nurse should be aroused when a child develops polyuria and polydipsia.

The public health nurse who visits in the home should be alert to the possibility of diabetes in family members. Some patients are discovered to have diabetes after they are admitted to the hospital. Most hospitals have a rule that before a patient can undergo any type of surgical procedure, the urine must be checked for glucose. The nurse can also assist in community screening programs. In addition to opportunities for the nurse to participate in programs for the identification of persons who have diabetes mellitus, nurses have a role in the prevention of the disease.

Because of the frequency with which diabetes in the middle-aged person is associated with obesity, individuals are encouraged to avoid overweight by diet and exercise. The preventive aspects related to genetic counseling are less clear. Persons with diabetes or persons with families in which there is a known history of diabetes should be acquainted with the risks involved when

planning marriage. Psychological Aspects Fink (1967) has proposed a model of the processes of adaptation to stressful situations. He proposes that psychological phases follow a sequential pattern as follows:

Stage 1: Shock; in this phase the person's cognitive structure is characterized by disorganization. There is inability to plan or to reason.

Stage 2: Defensive retreat characterized by denial. Stage 3:

Acknowledgment, giving up the past, and starting to face reality. Stage 4:

Adaptation, acceptance. of the modification in health. Planning to care for self and to prevent complications. When a person learns that he or she has diabetes mellitus, even when its presence was suspected, he or she experiences disbelief and then grief. The degree of shock will depend on the individual and what the diagnosis and treatment mean to him or her.

Any preexisting problem can be expected to be intensified. The patient and family can be expected to react to knowledge of the diagnosis as they do to other crisis situations in life. The patient compares diabetes with health and prefers health. The nurse can usually be of more help to the patient if she or he can help in identifying and expressing feelings rather than telling the patient how lucky he or she is. During the period immediately following diagnosis, the patient and family require psychological support. This should start with the patient's admission to the office of the physician, to the clinic, or to the hospital.

The type and amount of support will vary with each individual. Both the patient and family have a right to expect professional personnel to try to understand their feelings and to accept their behavior as having meaning (Otong, 2003). The nurse should try to convey to the patient that, while

understanding or trying to understand his or her feelings, the patient will be able to learn to do what must be done and will be provided with the necessary assistance. Control of Diabetes Mellitus Successful management of diabetes mellitus depends on the intelligent co-operation of the patient and the family.

Unlike recovery from an acute infectious disease, recovery from Diabetes does not follow a period of acute illness. Diabetes Mellitus is permanent. Remissions can and do occur, but even these patients should not think of themselves as cured. The fundamental methods used in the treatment are diet, insulin or hypoglycemic agents, exercise, and education. The continued management and control of diabetes mellitus depend on the patient. Education as to the nature and behavior of the disease is required so that the patient understands the reasons for what he or she must do and develops the skills required for it.

Diet The keystone for management of the diabetic is dietary control. In most respects the goals of the diet for the diabetic patient are similar to those for the non-diabetic. They are to provide sufficient calories to establish and maintain body weight. The number will vary with the age, sex, body size, activity, and growth and development requirements along with an adequate intake of all nutrients, including minerals and vitamins. Modifications in amounts and types of foods as required in the control of complications of diabetes and other diseases.

Meal spacing so that absorption coincides with peak levels of insulin in the blood and protects from hypoglycemia during the night. For patients on intermediate-acting insulin, food is usually distributed in five meals-three

main meals with a small meal about 4 P. M. and another at bedtime. For the patient who is taking insulin, it is essential that a regular meal schedule be observed. Integration of exercise and diet with medications is essential. Most diabetic diets contain 50 to 60 per cent carbohydrates with 10 to 15 per cent in the form of Disaccharides and monosaccharide.

Fats should comprise no more than 35 per cent of the total calories. The remaining calories are protein (Arky, 1978). Patients are encouraged to select unsaturated fats as recommended by the American Heart Association. Concentrated sweets and refined sugars should be avoided. Insulin Treatment with exogenous insulin is indicated in the following situations: diabetic ketoacidosis, juvenile diabetes, diabetes developing before the age of 40, unstable diabetes, oral hypoglycemic failure, diet therapy failures, and during stress of pregnancy, infections, major surgery.

For the ketosis-prone individual and the unstable adult an exogenous insulin supply is always required. For the others it may be an intermittent requirement (Bonar, 1977) that is required during periods of stress. In the non-diabetic, insulin is released in response to food intake. The beta cells have the ability to release approximately 40 units daily, and there are another 200 units stored for emergency (Ellenburg et al, 2002). The diabetic does not have an endogenous supply, and an exogenous form is provided. Various types of insulin preparations have been developed.

They fall into three general categories: fast-acting (regular and semilente), intermediate (NPH and lente), and long-acting (PZI and ultra lente). The actions of each preparation vary as to time of onset, duration of action, and peak activity time. Hypoglycemic reactions are most likely to occur at time

of peak action. Regular insulin is the only form given intravenously, and it has a clear appearance. The other insulin preparations have a turbid appearance. Each type of insulin comes in three concentrations; U-40, U-80, and U-100. This refers to the concentration of insulin per milliliter.

U-40 has 40 units per ml, U-80 has 80 units per ml, and U-100 has 100 units per ml. Syringes are specially calibrated for each concentration. Eventually, the only concentration available will be the U-100 strength (Joshua, 1996). This will decrease confusion and cut down on errors. The objective of insulin therapy is to enable the individual to utilize sufficient food to meet nutritional needs and, within limits, the desire for food. For many patients this objective can be achieved by a single injection of protamine zinc insulin or one of the intermediate-acting insulin, either alone or in combination with crystalline insulin.

The ideal preparation of insulin would be one in which the insulin is released in response to hyperglycemia. At this time there is no such preparation. Persons who require less than 40 units of insulin per day often do very well on a single injection of Protamine Zinc Insulin. Insulin-Equipment and Administration The patient must know the type of insulin, concentration (U-80, U-100), and the prescribed dosage. It is essential that the appropriate syringe be used for the insulin concentration prescribed.

Diabetic patients on insulin may use either disposable or reusable syringes. The former are used one time only and then discarded. Patients find them highly desirable because they do not require sterilization. Although minimal, cost may be considered a disadvantage. If reusable syringes and needles are used they should be sterilized by boiling before each injection.

Boiling is simplified by placing the separated barrel and plunger of the syringe and the needle in a metal strainer. The strainer is placed in a saucepan of cold water and boiled for 5 minutes.

When the syringe is removed from the water, care should be taken not to contaminate any part of the needle or syringe that comes in contact with the insulin or is introduced into the patient. When the syringe and needle are kept in alcohol, the alcohol container should be emptied, washed, and boiled at the time the syringe is sterilized. Before the syringe is filled with insulin, alcohol should be removed from the barrel by moving the plunger in and out of the barrel a number of times. The skin over the site of injection should be clean, and just before the injection is made, it should be cleansed with alcohol.

The hour at which the patient takes the insulin will depend on the type of insulin, the severity of the diabetes, when blood sugar is highest, and the practices of the physician. The most common time is 20 to 30 minutes before breakfast for patients receiving one injection a day. Modified insulin containing a precipitate should be gently rotated until the sediment is thoroughly mixed with the clear solution. Vigorous shaking should be avoided to prevent bubble formation. Insulin, though usually called a protein, is a polypeptide and is digested in the alimentary canal. It must therefore be administered parenterally.

The usual method is by subcutaneous injection into loose subcutaneous tissues. Because daily, or more frequent, injections are required over the lifetime of the individual, care should be taken to rotate the sites, so that one area is not used more often than once each month. Conclusion The nurse

has major responsibilities in the care of the diabetic patient. She or he must provide instruction, guidance and understanding for the control and management of the condition. The nurse must be prepared to provide nursing care for the patient if acute or chronic complications should occur.

Last but not least, the nurse must recognize that the diabetic is not exempt from other diseases. She or he must be prepared to evaluate the impact of a concurrent illness on the diabetes and the impact of the diabetes on the concurrent illness. The sick diabetic has all the problems of any person who is ill and they are compounded by the diabetic state. The special needs of the diabetic must be recognized and met. The nurse who assists in the care of the diabetic patient has the satisfaction of knowing that the quality of life of the diabetic can be improved by intelligent nursing care.

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