



CORRELATION BETWEEN CERTAIN COMPLICATIONS AND HEALTH EDUCATION PROGRAM AMONG NON-INSULIN DEPENDENT DIABETES MILETUS PATIENTS

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ABSTRACT

Background: A total of 150 diabetic patients were selected retrospectively from Khartoum State Diabetic Care Centers, this group divided to two equal groups, had been analyzed using the certain complications of non-insulin dependent diabetes mellitus patients after implementation of health education program. Group (cases) the program was implemented and the other group was considered as a control (75 patients for each group). Objective: The aim of the study to evaluate the correlation between the Health education program and complications among non-insulin dependent diabetes Miletus patients. Results: Reveals that the controls & intervention group had the same basic knowledge about DM complications at pre-test. Knowledge relevant to complications of DM was improved as a result of educational program in the intervention group in the immediately post-test. The level of knowledge were shown some decline in follow up test after 15 months the level of knowledge were significantly higher than the pre-test program another had, significant differences between intervention & control group was found. Shows foot care practiced among the studied patients before and after the program and after 15months of the program. Practicing good foot care was not done by a high percentage of our studied patients before program intervention. The most common practiced was washing the feet daily (46.7%). The least practiced foot care was asking the doctors for food exam (6.7%), then management of minor foot complications (8.00%). Immediately after the program, there significant improvement was observed in the practices of foot care, as started to avoid activities that injure the feet, washed their feet daily, and chooses footwear (78.7%, 88%, and 65.3% respectively). Statistically significant was found between both groups (intervention and control) regarding foot care practiced compound to pre-program. Conclusion: In this study population, the Health education program of non-insulin dependent diabetes Miletus patients its relation diabetic complication determined.

Keywords: Diabetic patients, Non-insulin-dependent, Educational health program, Diabetic complication.

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Contribution/ Originality

This study contributes in the existing literature in Khartoum State Diabetic Care Centers among Sudanese diabetic patients. This study uses new estimation methodology of implementation health education program to understand the certain complications of non-insulin dependent diabetes mellitus patients.

1. INTRODUCTION

Complication of type I and type II DM can be categorized as acute complications including hypoglycemia (Insulin reaction), diabetic ketoacidosis, hyperglycemia, hyperosmolar nonketotic coma. Chronic or long term complications of diabetes can be categorized as either micro vascular or macro vascular in nature. Micro vascular complications refer to nephropathy, neuropathy and retinopathy and these problems are developed due to a constant state of hyperglycemia, [1].

Hypoglycemia occurs when the blood glucose levels fall below 2.75/mmol, it can be caused by too much insulin, too little food or an excess of physical activity. It commonly occurs before meals on in the early morning. When the blood glucose falls rapidly, the sympathetic nervous system is stimulated to produce adrenaline causing sweating, tremor, tachycardia, palpitation and nervousness. But when blood glucose falls slowly, there is a depression of the central nervous system resulting in headache, confusion, emotional changes, memory lapses, numbness of the lips and tongue, slurred speech, in coordination, staggering gait, double vision, drowsiness, convulsions and eventually coma because the brain depends on glucose for its energy supply. As hypoglycemia progresses, brain function deteriorates and permanent central nervous system damage may result from prolonged hypoglycemia. The combination of symptoms varies considerably in different patients and in the same patient at different times, [2].

Diabetic ketoacidosis usually occurs in patients with type I DM but it may occur also in persons with type II DM. It is usually prompted by an illness, infections, trauma, pregnancy or other stress or, although noncompliance of an insulin regimen also can initiate the dreaded cycle. In some patients with type 1 DM, the simple omission of one dose of insulin can results in hyperglycemia and leads to a series of biochemical disorders and the altered physiology is the result of insulin deficiency. It will affect many aspects of the metabolism of carbohydrate, protein and fat; so the amount of glucose entering the cells is reduced and fat is metabolized instead of carbohydrate and free fatty acids are mobilized from adipose tissue. Liver oxidases act upon these fatty acids to produce ketone bodies which escape into the blood and metabolic acidosis results. With lowering of serum bicarbonate, and PH and its clinical picture occur as a result of changes in body fluid, electrolytes, and acid-base status, [3].

The early features of DKA are polyuria, polydipsia and anorexia; osmotic diuresis causes water loss (dehydration) and electrolyte depletion. So patient becomes more dehydrated, oliguria (diminished urination) develops, later on malaise and visual changes may be noted by the patient. Headache, muscle aches and abdominal pain are frequent complaints as well as anorexia, nausea and vomiting. If infection has precipitated the ketoacidosis, fever may be present; the patient's respiratory rate increases to compensate for acidosis. Respiration will be very deep but not

labored, (Kussmaul's breathing) and sweetish odor of the breath (acetone odor) and so patient is drowsy and soon becomes comatose, [4].

Hyperglycemic, Hyperosmolar, Nonketotic Diabetic Coma, this occurs in patients with type II DM and it is seen most commonly in elderly patients, non-insulin dependent diabetic patients who are treated with oral hypoglycemic agents. The patient's persistent hyperglycemia causes osmotic diuresis, resulting in loss of water and electrolytes so to maintain osmotic equilibrium, water shifts from intracellular fluid space to the extra cellular fluid space so hypernatremia and increasing hyperosmolality occur with glycosuria and marked dehydration, [5].

American Diabetic Association stated that diabetes is a leading cause of new cases of blindness in adults between "20-74" years of age. People with diabetes experience higher rates of cataracts and glaucoma. Diabetes mellitus is associated with damage to the small blood vessels in the retina, resulting in loss of vision.

Martin and Selby [6] mentioned that 25 % of all new cases of end-stage renal disease are related to diabetes. Renal disease causes 50 % of all deaths among adults with insulin dependent diabetes, thickening of the glomerular capillary is the main specific renal problem related to diabetes. This chronic hyperglycemia induces intercapillary glomerulosclerosis, (Kimmelstiel Wilson syndrome) and proteinuria is an early warning sign of nephropathy. Therefore, detection and management of elevated urine albumin levels can prevent further kidney damage and damaged is allowed to progress the eventual need for dialysis, which may be one of the only remaining options for survival.

The neuropathies are often one of the earliest signs of chronic complications of diabetes. The extent and severity of neuropathy often linked to the severity and duration of the hyperglycemia. Autonomic neuropathy can lead to considerable disruption in the lifestyle of the patient with diabetes. As manifested by postprandial bloating owing to gastro-paresis, nocturnal diarrhea, urinary bladder dysfunction and impotence. The combination of vascular changes and peripheral neuropathy put the patient's feet at particular risk from damage and this can lead to gangrene, requiring amputation, [7].

Heart and blood vessel problems are the main causes of sickness and death among people with diabetes. These problems can lead to high blood pressure, heart attacks, and strokes. Heart and blood vessel problems can also cause poor blood flow (circulation) in the legs and feet. If one feels dizzy, have sudden loss of sight, slur your speech, or feel numb or weak in one arm or leg, so he/she may be having a serious heart and blood vessel problems. Danger signs of circulation problems to the heart include chest pain or pressure, shortness of breath, swollen ankles or irregular heartbeats. Signs of circulation problems to your legs pain, thighs, or calves during physical activity, [8].

Nerve damage, circulation problems, and infection can cause serious foot problems for people with diabetes. Nerve damage can cause one to lose feeling in his/her feet. Sometimes nerve damage can deform or misshape ones feet, causing pressure points that can turn into blisters, sores, or ulcers. Poor circulation can make these injuries slow to heal. Some of the signs of foot problems are that the feet may tingle or burn. There may even be changes in the color and

temperature of the feet. The skin of the feet may be dry and cracked. Toenails may turn thick and yellow and fungus infections can grow between the toes [9].

2. MATERIALS AND METHODS

This is a descriptive study to evaluate the complication of non-insulin dependent diabetes mellitus patients after implementation of health education program. The study conducted in Khartoum State Diabetic Care Centers during the period from January 2014 to March 2015.

150 non- dependent diabetic patients, all originating from the Sudanese, were eligible for analysis. Patients were divided equally to two groups. One group was considered as the study group (cases) and the other group was enrolled as control group (non-cases).

2.1. The Following Variable Analyzed

Basic knowledge about diabetes mellitus complications and management of minor foot complications were collected by a structured questionnaire.

2.2. Ethical Considerations

The aims, methods of this study were fully explained to the patients and their consent to participate in this study were obtained. The questionnaire filled with the presence of the patient; the results of biochemical shown and discussed with the patients.

2.3. Statistical Analysis

Data will be analyzed using SPSS program.

3. RESULT

Reveals that the controls & intervention group had the same basic knowledge about DM complications at pre-test. Knowledge relevant to complications of DM was improved as a result of an educational program in the intervention group in the immediate post-test (Vascular complications, Renal complications, Eye complications , Cardiac complications, CNS complications, Immune complications, Skin complications , Foot complications ,62.66%, 66.66%, 78.66%, 80%, 66.66% 73.33%, 80.00%, 66.66 % respectively).

The level of knowledge shown some decline in follow up test after 15 months the level of knowledge were significantly higher than the pre-test program another had, significant differences between intervention & control group was found where X^2 (64.93, 52.46, 98.91, 77.50, 81.12, 71.87, 57.82, 62.87).

Shows foot care practiced among the studied patients before and after the program and after 15 months of the program. Practicing good foot care was not done by a high percentage of our studied patients before program intervention. The most common practiced was washing the feet daily (46.7%). The least practiced foot care was asking the doctors for food exam (6.7 %), then management of minor foot complications (8.00%). Immediately after the program, there significant improvement was observed in the practices of foot care, as started to avoid activities

that injure the feet, washed their feet daily, chooses footwear (78.7%, 88%, and 65.3% respectively). Statistically significant was found between both groups (intervention and control) regarding foot care practiced compound to pre-program test $P < 0.00$.

Table-1. Distribution of correct knowledge about DM complications between the intervention and control groups throughout the health education program (N=150)

Items	Intervention						Controls (N=75)		X ²	P-Value
	Before (N=75)		After (N=75)		Follow-up (N=68)		No	%		
	No	%	No	%	No	%				
Vascular complications	9	12	47	62.66	34	50	9	12	64.93	0.000*
Renal complications	13	17.33	50	66.66	30	44.1	14	18.66	52.46	0.000*
Eye complications	11	14.66	59	78.66	39	57.4	8	10.66	98.91	0.000*
Cardiac complications	14	18.66	60	80	28	41.2	15	20	77.5	0.000*
CNS complications	7	9.33	50	66.66	36	52.9	8	10.66	81.12	0.000*
Immune complications	11	14.66	55	73.33	28	41.2	13	17.33	71.87	0.000*
Skin complications	20	26.66	60	80	41	60.3	21	28	57.82	0.000*
Foot complications	11	14.6	50	66.66	36	52.9	12	16	62.87	0.000*
Total (correct answer)	14	18.66	57	76	35	51.47	16	21.33	66.59	0.000*

(*): Statistically significance difference

4. DISCUSSION

The main goals of diabetes treatment are to achieve metabolic control as near normal as - possible and to prevent or delay the onset of complications. This is achieved by lowering blood glucose by diet alone or by diet and oral hypoglycemic agents or diet and insulin besides the exercises. Therefore, the sole responsibility for management depends primarily on the patients; therefore they should be assisted by health care providers to understand the nature, treatment of the disease and the prevention of complications, [10]. So the aim of this study is to develop instructional materials to help the diabetic patients to improve their knowledge and practices about diabetes. In order to accomplish this aim, the researchers followed the health education principles which emphasize the importance of assessing the patients' learn needs for health education

5. CONCLUSION AND RECOMMENDATION

Their findings will provide us with greater insight into improving the Health education program of non-insulin dependent diabetes Miletus patients and certain complications of diabetic correlated. Further innovative studies with larger sample sizes are needed to examine how the

status of this potentially modifiable health education program and non-insulin dependent diabetes mellitus patients. Lastly, we recommend further studies in this field with wider scope.

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