Recent Trends of Diabesity and its Non-Clinical Management among Urban Pts

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Abstract

Interdependent Relationship between diabetes mellitus and obesity is termed as "Diabesity" that is a complex syndrome whereby obesity progresses to diabetes with overlapping symptoms of insulin resistance, hyperinsulinemia, hyperglycemia, dyslipidemias, ion imbalances and inflammation. Diabetes presently affects 155 million people and obesity 310 million and an additional 800 million people are overweight. World-wide, these two serious conditions have become a health problem onepidemic proportions. The rising prevalence of DM appears to be greatly related to be increasing prevalence of overweight and obesity. Obesity is an important risk factor for diabetes also. Recently (2009) the general consensus in American Diabetes Association and American College of Endocrinology that an HbA[1]C level of more than 7% serves as a call to action to initiate or change therapy with the goal of achieving an HbA[1]C level below 7%. It was still realized that the importance of non-clinical management of diabesity, weight control is an important part of management. Diet and exercise intervention should be initiated early and should continue throughout the duration of the treatment. The objective of the paper to assess the role of non-clinical intervention for management of diabesitycontrol among urban patients. The paper was prepared at Barabanki, U.P. India. The subjects were purposively selected of diabesity. Those were taking treatment at different private nursing home at Barabanki U.P. India. A hundred patients were selected for intervention and ten for control group. The main findings of the paper changes after intervention bring in non-clinical diet 62%; exercise 58%; stress management 22%, cognitive management 20% smoking cessation 10% that changes in weight 43% cases upto 2 kg.and diabetes control approx. 69% patients having their HbA[1]C less than 7%. The calculated value of chi-square was found much more higher (26.0) as compared to table value (3.841) at one degree of freedom and five percent significant level. Therefore null hypothesis rejected and alternate hypothesis accepted i.e. knowledge, attitude and practices for diabesity non-clinical recent recommendation intervention could better control diabesity.

Keywords: Diabetes, obesity, diabesity, hyperglycemia, hyperinsulinemia, dyslipidemia.

Introduction

The term 'Diabesity' has been coined interdependent relationship between obesity and diabetes mellitus. Diabesity is a complex syndrome whereby obesity progresses to diabetes with overlapping symptoms of insulin resistance, hyperinsulinemia, hyperglycemia, dyslipidemias, ion imbalances and inflammation[1]. The passage from obesity to diabetes mellitus is made by a progressive defect in insulin secretion coupled with a progressive rise in insulin resistance[2]. Both insulin resistance and defective insulin secretion appear very prematurely in obese patients and both worsen similarly towards diabetes. Thus, the classic 'hyperbolic relationship' between insulin resistance and insulin secretion and the 'glucoseallostasis concept' remain prevailing concepts in this particular field of knowledge[3]. Diabetes that presently affects 655 million people and obesity 310 million people (an additional 800 million people are overweight). World wide these two serious conditions that have become a health problem of epidemic proportions. Differences among individuals in their susceptibility to both these conditions probably reflect, in large part, their genetic constitutions. In the coming decade, it was likely to see further increase in both the conditions due to sedentary life style, junk foods, supersizing of meal portions and 'emotional eating'. Evidence suggests that life style changes could prevent and/or delay the onset of type II diabetes in high-risk group by approximately 58% over 3 to 4 years by integrating modified life style with incorporation of physical activity and appropriate nutrition. The rising prevalence of type-2 diabetes appears to be greatly related to be increasing prevalence of overweight and obesity globally. Obesity is an important risk-factor not only for diabetes but also for hypertension, coronary heart disease, dyslipidaemia and insulin resistance. The link between obesity and type-II diabetes was well established. A recent study from USA, shows that comparative effects of obesity in relation to risk of type II diabetes. The fast and junk food culture has overwhelmed in our country that emerging as a major driver of diabesity epidemics. Today calorie rich and fat rich fast foods are easily available in the numerous food joints. It was assumed that the prevalence of diabesityrapidly increasing among all the sections of the society due to rapid changes in physical activity and dietary habits. There exists a positive association between trans fatty acid intake and the risk of type II diabetes as suggested by a report from a study[8]. An increase in post-prandial c-peptide and

insulin responses was noted in type II diabetic patients after a 6 week diet high in trans fatty acids (20% of energy) as compared with diet high in cis-monounsaturated fatty acids[9].

Recent Diagnostic Criteria For Indians Obesity and Diabetes II: WHO have recommended obesity cut off for Asian to be: BMI: Normal- 20-23 kg/m^2; Overweight-723 kg/m^2; Obesity-725 kg/m^2; Waist Circumference: Normal- Men - 85 cm ; Women - 80 cm; Healthy Cut-offs – BMI:<23 kg/m^2; WHR-men < 0.89 m; Women < 0.81 m; Waist Circumference: Men-85 cm; Women-80 cm;

Table–1
Diabetes II Diagnostic Criteria

Sources	Preprondial Glucose Mg %	Bed time/ Post Prandial Glucose Mg %	Glycosylated Haemoglobin (Hba^{1}C)
American Diabetes Association (ADA)	90-130	110-150	<7%
American College of Endocrinology (ACE)	110	140	6.5%

Therefore, 'Diabesity' may be defined as the patients having their BMI more than 23 kg/m^2 or WHR more than 0.89 cm for men and more than 80 cm for women and glycosylated hemoglobin more than 7%.

Controlled Clinical Trials, such as the UK prospective Diabetes Study (UKPAS) and Kumomota study in type II Diabetes, have helped to establish the glycemic goals of therapy that result in improved long-term outcomes. These clinical trials, in concert with epidemiological data, support decreasing glycemia as an effective means of reducing long termmacrovascular and long term micro vascular and neuropathic complications. The most appropriate target levels for blood glucose, on a day to day basis, and HbA^{1}C, as an index of chronic glycemia, have not been systematically studied. The most recent glycemic goal recommended by the American Diabetes Association, selected on basis of practically and the projected reduction in complications over time, is in general, an HbA^{1}C level of <7%[4]. The general consensus is that an HbA^{1}C level of more than 7% should serve as a call to action to initiate or change therapy with the goal of achieving an HbA^{1}C level of below 7%. Obesity is a major global epidemic and overweight and obese individuals are associated with a significantly increased risk of type II diabetes and cardiovascular disease. Obesity and type II diabetes are closely related. This comorbid association of obesity and diabetes is also associated with increased mortality. In a 12 year follow up study of more than 700,00 patients, a weight of more than 50% above average was associated with a 2-fold increase in

mortality. The presence of diabetes, in addition to obesity, raised the mortality by 5 to 8 folds[5].

Diabesity is at increased risk of cardiovascular morbidity and mortality. This warrants early identification of such diabetes and their early treatment. Abdominal adipocytes possess the following unique characteristics: Increased intrinsicmetablic activity, High metabolic turnover, More number of catecholaminergic nerve endings, More receptors for glucocorticoids and androgens, High blood flow.

In the diabesity patients, micro vascular disease is primarily related to the presence of hyperglycemia. Uncontrolled hyperglycemia usually leads to: An unfavorable lipoprotein pattern, An increase in glycosylation end products in all tissues. An increased risk of thrombolic events.

Following issue need to be considered during the managements of diabesity: Treatment and control of obesity by caloric restriction and exercise, Tight glycemic should be achieved, but not at the expense of adipose tissue accumulation, Weight control must be achieved without ignoring the need for tight glycemic control, Special attention needs to be paid to control cardiovascular risk factors in the diabesity as they are likely to be exacerbated in this population group.

Recommended non-clinical management of diabesity: Weight control is an important part of management in an obese diabetic. Diet and exercise interventions should be initiated early and should continue throughout the duration of the treatment. Caloric restriction and weight greatly improves metabolic control as it results in improved insulin action in liver and muscle and frequently results in improved B-Cell response. The Diabetes Prevention Programme (DPP) Research Group showed that caloric restriction and exercise are more effective in reducing the incidence of diabetes in persons at high risk[6]. Weight control improves cardiovascular disease risk factors. Weight control should be achieved through a medically supervised, restricted caloric diet and an exercise regimen with long-term maintenance goals. Even moderate and sustained weight loss significantly improves the patient's metabolic profile and prolongs their life expectancy.

Life Style Management of Diabesity: Dietary Management is a starting point in management of diabesity. The low caloric, low fat, low carbohydrate and fibre rich diet, in a setting of high physical activity to reduced obesity. High Fat content in diet leads to increase in fat storage especially for those who have high propensity for development of obesity. It is thus necessary to avoid to low fat dietary item. Long chain Omega-3 polyunsaturated fatty acid (PUFA) is known to protect from diabetes and chromium has been found to facilitate binding of insulin to insulin receptors and hence increasing the insulin sensitivity. Life style modifications, including diet and exercise, are important in maintaining glycemic control in diabesity. Regular physical activity has been found to improve insulin sensitivity, independent of weight loss and thus plays an important role in the management strategy for achieving

glycemic control in the diabesity. The life style modifications are often needed to be supplemented with oral pharmacotherapy to main glycemic control.

Aims and Objectives: The objective of the paper to assess the role of non-clinical intervention for management of diabesitycontrol among urban patients.

Hypothesis: Null: Knowledge, attitude and practices for diabesity non-clinical recent recommendation intervention couldn't better control diabesity.

Alternate: Knowledge, attitude and practices for diabesity non-clinical recent recommendations interventions could better control diabesity.

Methodology

The paper was prepared at Barabanki city. The patients were taken as registered obese diabetes II for treatment in different private nursing homes. A 100 pts purposively selected for intervention and ten diabesity patients for control group.

Tools: An interview schedule method for record information in face to face situation. An intervention guide line was used to counselling the subject (intervention group).

Research Design: Exploratory cum explainatory research design.

Parameters: BMI and HbA^1C level

Analysis of Data: The collected data were tabulated and analysed in accordance with statistical and scientific method. A chi-square test was used to test the hypothesis.

Results and Discussion

Findings: The Age wise distribution of the subject; a maximum 32% in the age group of 35-40 yrs, followed by 26%; 30-35 yrs, 18%; 25-30 yrs, 16%; 40-45 yrs and 8% in the age group of 45 plus years.

As for the concern of caste and religion a 54% hindu includes 30 percent general 19% other backward classes and 6% schedule caste and 46%muslim that included 26% general, 18% other backward classes and rest 2% schedule caste. The academic status of subjects; a maximum 38%, graduates 32%, post graduates, 14% Intermediates, 12% high school and 2% each below high school and illiterate. Occupation and activity of the subjects 32% businessmen, 28% in government job, 15% in private job, 16% formers, and 9% engage in other service sector activities. Obesity status of the subjects, it was observed that all the subjects were of overweight or obese having their BMI more than 23 kg/m^2 with diabetics. Before intervention it was observed that 36% patients were having their HbA^1C approx. 9%, 22 percent; 8-9%, 28% more than 7-8%. Their HbA^1C 7% (approx.) and rest 14% patients

having their HbA^1C normal floating to 7% (lower and above). The awareness for diagnosis of diabesity; it was found only 14% shown a good knowledge for diagnosis as recommended by ADA. As for the concern of attitude; only 10% shown their attitude for following the guideline in respect of diagnostic and control. Similar trend also can be seen in terms of practices. Before intervention non-clinical management of diabesity, it was observed that: Dietary management-14%; Exercise-21% ; Stress Management - 26% ; Cognitive Management - 21% ; Smoking Restriction - 86% . The changes after intervention that was observed is better dietary intake by 62%, exercising practice; 58%, stress management, 22%, cognitive management 20% and smoking restriction by 10%. Changes in diabetes control approx. 69% patients those having their HbA^1C below 7%. The reduction in their weight among 43% patients after four months of intervention and treatment by 2 kilogram. The calculated value of chi-square was found much more higher (26.0) as compared to table value (3.841) at one degree of freedom and five percent significant level i.e. null hypothesis rejected and alternate hypothesis accepted (i.e. KAP for diabesity non-clinical recent recommendation intervention could better controldiabesity).

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Table-1
Intervention Guideline

Energy	For underweight 35 kCal/kg, Healthy – 30 kCal/kg, Overweight/Obese– 25 kCal/kg
Carbohydrate	55%
Protein	15-20%
Fat	30%, Saturated Fat 10% MUFA and PUFA 20 % (Prefer Pure Mustard/Rice Bran oil)
Cholestrol	<300 mg/day
Almonds/Walnuts	10-14 nos.
Garlic	5 gm per day
Fruits	200 gm preferably citrus fruits
Milk	400 ml per day
Yogurt	200 gms.
Exercise/Yoga/Worship	45 minutes to one hour
If Habitual Redwine	45 ml/day
Meat/Poultry	60-90 gm if non-vegetarian
Stress Management	30-40 minute

Diet should be preferably based on green vegetable with low salt and fruits