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Diabestiy-Hypertension VS Nutritional status and its Non-Clinical Management among Patients of sub-urban Population

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Abstract

Diabetes-II, Obesity and Hypertension are three metabolic disorders jointly may be termed as "Diabesity-Hypertension". The rising prevalence of DM-II 194 million (2003) and expected 333 million (2025) to be of overweight and obesity, that also increasing the prevalence of coexisted hypertension. Hypertension is about 6 times more frequent in obese subjects than in lean men and women. These increases translate into as estimate 12% increase risk for CHD and 24% increase risk of stroke. As prevalent comorbid association amongst Indian has risen over few decades. This may be also attributed to the changing life style trend that increasing number of the patients of diabesity-hypertension. The importance of nutritional recommendation with life style management for better control attracts attention to the researcher to carry out this paper. The objective of the paper was to analyse the status of Diabesity-Hypertension and its non-clinical management in different Nutritional status. The validation cohertsn=60. The main finding of the paper it was observed that among nutritional status of first order to fifth order the prevalence of diabesity hypertension were 12%,26%,24%,18% and 22% respectively. The awareness towards indigenous antioxidants intake for control diabesity-hypertension;22%. The awareness for useful dietary restriction. The health consciousness for healthy control and patients taking low sugar salt and fibre rick diet 48% and 28%, Exercising=61%,yoga;21% worship;58% avoid alcohol liquor;84 and tobacco and panmasala; 86% patients. As for control 37% patients only DM-II; 28% DM-II and hypertension and; 22%diabesity-Hypertension. A 13% patients not awarded to control all the three coexisted problems at all. Paper also suggests a dietary recommendation for diabesity-hypertension.

Keywords: Diabetes-II, Hypertension, Obesity, Diabesity-hypertension.

Introduction

Diabetes II, obesity and hypertension are three metabolic disorders. These three problems jointly may be termed as Diabesity hypertension. Obesity is important risk factors not only for diabetes but also for hypertension. Diabetes is a chronic disease which is reaching an epidemic proportion in many parts of the world. The rising prevalence of type II DM 194 million (2003) and expected 333 million (2025) to be of overweight and obesity. That also increasing the prevalence of coexisted hypertension. The majority of patients with high blood pressure are overweight with diabetes II. Hypertension is about 6 times more frequents in obese subjects than in lean mean and women. A 10 kg higher body weight is associated with a 3.0mmHg higher systolic and a 2.3mmHg higher diastolic blood pressure. These increases translate into an estimate 12% increased risk for CHD and 24% increased risk for stroke. NHANES III reported more specific estimate for the prevalence of high blood pressure per age group and BMI group. Among men, the prevalence of high blood pressure increased progressively with increasing BMI, from 15% at a BMI of 25kg/m^2 to 42% at a BMI ≥30kg/m^2. Women showed a pattern similar to that of men, prevalence of hypertension being 15% at a BMI of ≤25kg/m^2 to 38% at a BMI of ≥38kg/m^2. Obesity and DM II frequently occur together, and statistics show that 60-90 of all patients with DM II are or have been obese. Obesity is generally considered to be a strong risk for the later development of DM II. Studying this problem over time the question arises whether obesity is not only a risk factor but also a cause of DM II. The third National Health and Nutritional Evaluation Survey (NHANES II) demonstrated the following results addressing hypertension in people with diabetes[1,2]. 71% diabetics were found to have hypertension. 55% of diabetics on treatment had a BP>140-90. 43% of diabetics with hypertension were untreated. 29% of diabetics with hypertension were unaware of the diagnosis. 12% of diabetics on treatment had a BP<130/85.

The basic metabolic disorder risk factors for diabetes are: All obese patients, especially those with central obesity, waist measurement 90 cms or more for man and 80cms or more for women. Patients with atherosclerosis and its complications, especially those with premature macro-vascular disease. All patients with high blood pressure and lipid abnormalities. There exists a significant difference between diabesity-hypertension and normotensive patients. Diagnostic patients for diabesity hypertension.

BMI: Normal 20-23 , Overweight - >23 , Obese >25 ; Waist Circumference :Man ≥90 cms, Women ≥ 80cms ; Blood Sugar

– Fasting-2Hrs-PG ; Diabetes ≥ 14 0mg ≥ 200mg; Impaired glucose<140<140-199; Tolerance IGT; HbA1c- 6.5mg/dl; Blood Pressure Systolic BP 140mm Hg ; Diastolic BP 90 mm Hg JNC - 7 (Joint National Committee on Prevention, Detection, Evaluation and Treatment of High blood pressure 7th Report) Systolic BP 130mm Hg; Diastolic BP 80mm Hg. JNC-8 (2013) - Systolic BP 140 mm Hg; Diastolic BP 90mm Hg; (30-59 yrs); Systolic BP 140 mm Hg; Diastolic BP 90mm Hg (60-60+ years)

American Diabetic Association Diagnostic Criteria: Glycosylated Haemoglobin in between and above 7mg/dl

Table–1
Glycosylated haemoglobin Vs Blood glucose level

HbA1c (%)	Average Blood glucose (mg/dl)
4	60
5	90
6	120
7	150
8	180
9	210
10	240
11	270
12	300

The most recent glycemic goal recommended by the American Diabetes Association, selected on the basis of practicality and the projected reduction in complication over time, is in general an HbA1C level of <7%. The general consensus is that an HbA1C level of ≥7%[3] should serve as a call to action to initiate or change therapy with the goal of achieving an HbA1C level of <7%. Thus Diabesity-Hypertension is a triple trouble that may be defined as: "BMI >25kg/m2, or waist circumference more than 90cms for male and 80cms for female with blood pressure >140/90mmHg and glycosulated hemoglobin 6.5mg/dl and more than 6.5mg/dl. Hypertension in diabesity should be given special attention, especially in the Indian scenario, as prevalence of the comorbid association amongst diabetics in India has risen over few decades. This may be attributed to the rising globalization, the rising economy and the changing life style trends of the people[4,5]. The increasing number of patients of diabesity hypertension, nutritional recommendation and importance of non-drug therapy with nutritional awareness for better control attracted attention to the researcher to carry out this paper on aforementioned issues.

Diabesity: The most commonly used system for assessing fat in the Quetelet Index or the body moves index (BMI). The index defines overweight as a BMI of 25-30kg/m2 and obese as a BMI>30kg/m^2. WHO has adopted a BMI >30kg/m2 to pose a greater risk of health. The waist circumference is being increasingly adopted for health promotion and epidemiological purposes, as it reflects both overall fatness and also controls fat accumulation. A waist measurement of 94cm(men) or 80cm (women) corresponds with a BMI of 30kg/m2.A retrospective study was conducted to analyze the long term, self recorded data on patients weight and compare them regarding obesity and diabetes .Current mean weight were found to be significantly higher in all groups than at 20 years of age. The study showed that weight gain between 20-40 years of age may be an important factor in diabetes.

Table-2
Current Weight Gain As Compared To Weight at 20 Years

Groups	Weight Gain (Approx)
Normal patients BMI <25kg/m^2	0
Currently overweight BMI 25-30 kg/m^2	14-16kg
Currently obese BMI 30kg/m^2	20-26kg

Following issues need to be considered during the management of an obese diabetic: Treatment and control of obesity, by caloric restriction and exercises; Tight glycemic control 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 factor in obese diabetics as they likely to be exacerbated in this population group[6,7].

Table-3
Goals for Glycemic Control

	Pre-prandial Glucose (mg/dl)	Bed Time/Post prandial Glucose (mg/dl)	HGA1C level (%)
American Diabetes Association	90-130	110-150	<7
American College of Endocrinology	≤110	≤140	≤6.5

Tips for Lifestyle Modification for Controlling Diabesity - Prohibition or avoidance of energy rich, fat rich, low fibre foods, high physical activity, long chain omega-3 polyunsaturated fatty acid (PUFA) is known to protect from diabetes, chromium has been found to facilitate binding of insulin to insulin receptors and hence increasing the insulin sensitivity, using just 30 minutes out of the 1440 minutes in a day exercise can be a good way to get in shape and prevent obesity and diabetes. The parameters found to change significantly in diabetic hypertensive as compared to normotensive diabetics included[8].

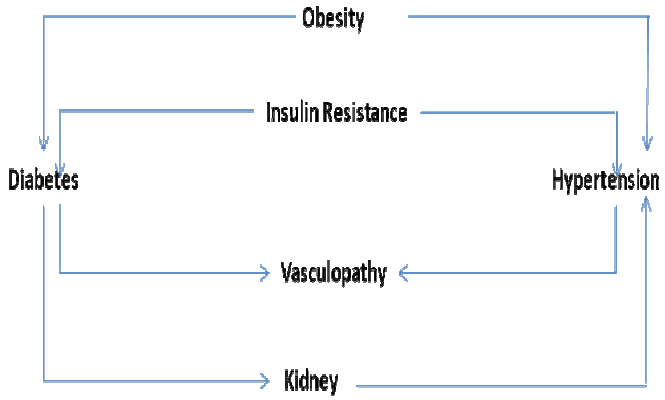
Table-4
Parameters

Increased	Decreased
Systolic BP	Na^+- L^+- ATPase activity
Diastolic BP	S. Sodium
Intra-erythrocycle sodium	S. Potassium
Serum glucose	S. Magnesium
Serum Urea	S. Calcium
Serum Creatinine	
Serum Osmolality	

Table-5
Indications For Initial Treatment And Goals For Hypertensive Diabetics

Goal (mmHg)	Systolic BP (mmHg)	Diastolic BP (mmHg)
Behavioural therapy above (for max 3 months) then add drug therapy	130-139	80-89
Behavioral and drug therapy	≥140	≥90

Pathogenesis of hypertension in Diabetes



Diabesity: Hypertension non clinical Management: Life style modification is the primary therapy of these three metabolic syndrome that consists of ;Weight reduction , Increased physical activity, An Anti-atherogenic diet , Smoking cessation. The combined effect of life style therapies to reduce cardiovascular risk factors and emergence of diabetes doubly validates the privacy of life style intervention for these syndrome.The ATP III embedded the metabolic syndrome into cholesterol guidelines to reinforce clinical life style therapies.Critically national cholesterol education Program ATP III; this hope is unrealistic, not because of the lack of a single criterion, but because regularity agencies are unlikely clinical end point trials. 7th Joint National commission for blood pressure treatment the ADA, the AHA. ACC and NIHO-initiative all advocates the importance of the life style therapy along with Pharmaeco Therapy. The life style therapy reduces the severity of all metabolic risk factors at every stage of progression as well as to slow their progression.JNC-8 also recommends the importance of life style for prevention and control of hypertension[9, 10].

Objectives: To analysis the status of diabesity hypertension and its non clinical management Vs. nutritional status among sub urban patients.

Methodology

The paper was prepared at Dewa Town of Barabanki District via a field survey for known diabesity hypertension patients.
Sampling: Purposive sampling method: Validation cohart (n=60), Male – (35); Female -(25).
Tools: Interview schedule method.
Research design: Explanatory cum exploratory.

Analysis of Data

The collected data were tabulated and analysed in accordance with statistical and scientific method.

Conclusion

Sex wise subject, a 55% male and 45% female. Age wise distribution of subject 30%, 38%, 20% 10% and 2% in the age group below 40 years, 40-45 years, 55-65 years and 65+ years respectively. Religions 32% Hindus and 68% Muslims.

Academic Qualification : Illiterate - 22% ; Below Primary - 12% ; Primary - 20% ; Middle - 8% ; High School - 8% ; Intermediate - 16% ; Graduate - 10% ; Post Graduate - 6% ; **Family occupation:**Govt. Jobs - 4% ; Pvt Jobs - 26% ; Businessmen - 38% ; Contractor - 12%; Others such as service sector - 20%

Average Nutritional intake: Cereal - 25gm ; Pulses - 53gm; Oils and Fat - 32gm; Milk - 10ml ; Fruits - 114gm ; Vegetable - 35gm ; Green vegetable - 105gm ; Meat & poultry - 35gm ; Sweets - 13gm; Beverages - 6ml ; Salt - 6.8gm ; Fast and junk food - 28gm ; **Liking of food ingredients:**Pulses - 32% ; Milk - 18% ; Fruits - 38% ; Green vegetables - 26%; Snacks - 45% ; Sweets - 52%; Meat and poultry - 32% ; Fast and junk food - 20% ; Vegetarian diet - 38%; Non vegetarian - 46%

Status of Diabesity- Hypertension on Different Nutritional Status with Awareness: First order i.e. much lower to requirement but diabesity hypertension 12% , 2nd order with lower to requirement but diabesity-hypertension 20% , Requirement order 26% diabesity-hypertension , 4th order i.e. upper order diabesity-hypertension 24%, 5th order i.e. much upper diabesity- hypertension 18%, Awareness towards indigenous intake 22% (almond and walnut), Awareness for dietary restriction for diabesity hypertension control-34%,

Health conscious for healthy control for BP, Blood sugar and Obesity – 48%

Patients taking low sugar, low salt and fiber rich dietary recipies-28%, Other lifestyle treatment:

Exercise - 61% , Yoga - 21%, Worship - 58%, Avoid Alcoholic liquor - 84%, Avoid Tobacco and Pan Masala 86%**Status of diabesity-hypertension control** : Only diabeties control - 37% ; Diabeties and hypertension control - 28%; Diabeties hypertension control and dietary restriction for obesity control 22%; Not controlled - 13%

Table-6
Recommended Diet

Food Groups	Amount
Carbohydrate	55-60%
Protein	0.8-1.0gm/kg body wt.
Oils & Fats	30% (15% Saturated and rest 85% mustard oil)
Vegetable – Green - Other	As desired but low salt 35-40 gm raw
Fruits	Two in number preferably citric fruits and Guava (200gm)
Salt	5gm
Nuts (almond or walnut)	20-25gm
K calrestriction	500kcal/day
Total kcal	1500-1600kcal/day

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