

# Gender Difference in Diabetes Mellitus

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Sex had been identified as a relevant factor in the clinical representation and complications of diabetes mellitus. There are certain subtle differences between men and women with NIDDM.

Difference between diabetic men and women with regard to clinical presentation and clinical features have been well documented. However the compliance of a patient in a chronic disease like diabetes is very important and this has not received much attention in the literature.

## CLINICAL DIFFERENCES

The clinical differences between diabetic men and women are anthropometric measurements like BMI and waist to hip ratio. Most of the previous studies have shown that women have greater incidence of obesity compared to men. This is because of the estrogen effect on the fat metabolism. Women have body proportions and fat distribution very much different from that of men. In our study conducted at M>S. Ramaiah Medical College and Hospital, and Diacon Hospital, Bangalore involving 13,662 NIDDM patients comprising of 8,344 men and 5,318 women, we found obesity more common in women than men. Taking upper limit of BMI as 27 in men, we found that 13.2% of men were obese compared to 55% of the women who had BMI more than 25. waist to hip ratio of more than 0.85 in women was 35.1% and more than 0.95 in men was 25.4%.

Arrow in 1988 found mild obesity in NIDDM to be slightly higher in men compared to women, while severe obesity was more common in women. He found grade I obesity (BMI 25-30) in 34% of men compared to 24% in women. Grade II obesity (BMI 30-40) was found in 8% of the women compared to 6% in men. Grade III obesity (BMI>40) was seen in 0.1% of NIDDM's. The waist/hip ratio was also abnormally high in NIDDM women compared to NIDDM men.

## CLINICAL PRESENTATION

There are some differences in the clinical presentation of NIDDM in men and women. Majority of NIDDM patients are asymptomatic at the time of diagnosis. We studied 13,662 diabetes at the time of first visit to the hospital regarding symptoms. 61% of men and 38% of women had one

or more multiple symptoms for which they sought medical advice.

Anemia is more common in women compared to men. The reasons are quite obvious. This holds good even in diabetes. Most of the studies in our country have shown consistently higher incidences of anemia in diabetic women compared to men.

## Hypertension

Hypertension is more common in diabetics compared to non-diabetics. In a study involving 658 NIDDM patients we found hypertension in 26.3% of men and 32.6% of women. The combination of IHD and hypertension in NIDDM patients in the present study revealed 6.8% of women having both the problems.

## Cardio Vascular Disease

Hyperglycaemia is an independent risk factor for CAD in women but not in men[1]. Incidence of angina is 60% higher in diabetic men compared to non-diabetics and 90% higher in diabetic women. Relative risk of myocardial infarction is 50% higher in men with diabetes and 150% higher in women with diabetes than in non diabetic counterparts.

Sudden death is 50% more frequent in diabetic men and 300% more frequent in diabetic women than in age matched non-diabetic controls.

## Skin

Diabetic dermopathy (brown spots, shin spots) is commonly observed in men then women. In one of the studies involving 300 NIDDM patients 32% of women and 68% of men had diabetic dermopathy. Lipodystrophy is more common in women compared to men. Above the age of 20 yr. incidence among women is 7 times as greater than that of men. This sex difference in the incidence of lipodystrophy may be due to larger layer of subcutaneous fat in adult women than in men. Acanthosis nigricans is more common in diabetic women than in men. Type A insulin resistance is more common in younger women as seen in polycystic ovarian syndrome and in women with hirsutism. Type A resistance indicates insulin receptor defects. Type B insulin resistance is more common in older women which is due to the circulating insulin receptor antibodies.

## Hypoglycaemia

Sex has been identified as a relevant factor in blood glucose threshold for cognitive motor dysfunction in adult diabetics. Men are more sensitive to low blood glucose in terms of counter regulatory hormone secretion as well. In men, the plasma glucose fell faster and further and recovered slower compared to women. In our recent study involving 23 men and 18 women in a twice a day regimen of insulin, the incidence of hypoglycemia was more in women (28%) compared to men (13%).

Weight gain during insulin therapy:- In a twice a day insulin research project we found that the mean weight gain in men was 1.5 kgs during the project compared to 1.4 kg in women.

## Diabetic Foot

Foot problem are more common in men than women. Even the prognosis is much worse compared to women. Male sex is associated with higher amputation rate compared to women.[2]

The clinical differences between men and women are mostly depending on the anthropometric measurements and associated diseases like hypertension and the complications of diabetes. these gender differences have clinical relevance as well as therapeutic implications.

## GENDER DIFFERENCE COMPLIANCE

Compliance is neither automatic nor accidental. Men and women have different attitudes and behaviors related to health care. Women are more sensitive to illness, more able and likely to rest during illness and more willing to seek medical advise. Hebbard JH [3] found women to have greater interest and concern for health and were more likely to perceive symptoms than men. In general, women appear to be more knowledgeable and sensitive to and symptoms of illness and seek medical care more frequently than men. The compliance in a patient may be related to various factors like hospital visit, dietary adherence., blood test and investigations, regular medication oral or insulin, compliance for exercise and annual checkups.

As with other chronic diseases non compliance is common in diabetes and is usually blamed on inadequate or inefficient education.

One of the good indicator for compliance is euglycaemia and the long term compliance is

assessed by glycated hemoglobin. The compliance varies in patients in a research project where it is high compared to routine hospital visiting patients. The compliance is highly variable and is unpredictable and no single factor like age, sex, income or personality can predict the compliance in a diabetic.

In our study patients volunteering for research had higher compliance compared to routine hospital visiting patients. The compliance for hospital visits was 94% in men compared to 96% in women, during a 10 months research project. The mean glycated hemoglobin in men was 8.9% compared to 9.2% in women which is not significant. Hence we did not find much difference between men and women regarding the compliance in a research project.

In the routine hospital visiting diabetics, we found men to be more compliant for diet and exercise compared to women.

## Exercise

One of the studies involving 1054 patient attending University of Michigan diabetes clinic [4] showed that men were more compliant to exercise (96%) compared to women (88%). While women were more compliant to blood testing and carrying sweets to treat hypoglycaemia.

## CONCLUSION

After extensive review of literature and our own studies it is evident that there are clinical differences between diabetic men and women. The compliance varies between men and women to a great extent. These gender differences in clinical presentation and compliance in diabetics has greater implications in management strategies and planning for health care delivery in the community.

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