Original Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20195595

Risk factors assessment in non-insulin-dependent diabetes mellitus women: a cross sectional study from Telangana

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Received: 16 November 2019 Revised: 01 December 2019 Accepted: 02 December 2019

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ABSTRACT

Background: The prevalence of women with type-2 diabetes mellitus in Karnataka is 22.04%. Many people are diagnosed type-2 diabetes in their teens or early 20s. And with advancing age, the risk of getting type-2 diabetes goes up too, especially if you don't change any of the diabetes risk factors like your weight and physical activity level. Women who get type-2 diabetes are at greater risk than men of cardiovascular disease and blindness. The objective of the study was to study the risk profile amongst diabetic females.

Methods: The hospital-based descriptive observational study was carried out in 75 non-insulin-dependent diabetes mellitus (NIDDM) women at Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar from June 2010 to December 2010. Detailed history and anthropometric assessment was done and data analysed with SPSS software.

Results: Majority of the diabetic women were from 40-50 years age group i.e. 33 (44%). Mean age was seen as 52±12.4 years. 57 women having sedentary lifestyle (76%). Mean BMI was found to be 24.58±5.27 kg/m². Waist circumference was 83.42±9.35 cm. Hip circumference was 95.05±9.1 cm and waist/hip ratio was 0.877±0.041.

Conclusions: Increasing age, sedentary lifestyle, obesity especially central and obstetric events were found to be important risk factors in our study.

Keywords: NIDDM, Women, Risk factors

INTRODUCTION

Type-2 diabetes is a heterogeneous group of disorders characterized by variable degrees of insulin resistance, impaired insulin secretion and increased glucose production. Diabetes mellitus is one of the most common chronic diseases across the world and number of diabetic patients is on rise. In 2011, there were 366 million people with diabetes globally. On 2010, it was estimated that almost 143 million women in the world have type-2 diabetes.² Total of 10.1 million women have type-2 diabetes in America. In India, the total number of diabetes patients are 63.01 million as on 2012.3 Prevalence of diabetes mellitus in India is 9.01% as on 2012.³

Among Indian type-2 diabetic patients, female prevalence accounts for 37.87%. So, the prevalence of women with type-2 diabetes in India is 3.41% as on 2012. The prevalence of women with type-2 diabetes mellitus in Karnataka is 22.04%. Many people are diagnosed type-2 diabetes in their teens or early 20s. And with advancing age, the risk of getting type-2 diabetes goes up too, especially if you don't change any of the diabetes risk factors like your weight and physical activity level.

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Women who get type-2 diabetes are at greater risk than men of cardiovascular disease and blindness.

According to the National Family Health Survey-3, 15% of women in India are either obese or overweight. Obese diabetic patients have 13.5% more chances of developing diabetic complications compared to non-obese diabetic patients. This means obesity is associated with higher prevalence of complications.⁶

The objective of the study was to study the risk profile amongst diabetic females.

METHODS

The hospital-based descriptive observational study was carried out to study the risk factors for non-insulin dependent diabetes mellitus and their relative importance in 75 women. The study was carried out at Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar from June 2010 to December 2010.

Selection of cases

A case of non-insulin-dependent diabetes mellitus (NIDDM) was defined as a person having fasting plasma glucose levels \geq 7.6 mmol/l (>126 mg/dl) and/or a 2-hour post-load plasma glucose level \geq 11.1 mmol/l (>200 mg/dl) according to WHO criteria.

Inclusion criteria

Inclusion criteria were only NIDDM female cases attending diabetic clinic willing to take part in study after consent; diagnosed by blood sugar examination; newly detected cases i.e. diagnosed within 2 years; age more than 30 years.

Exclusion criteria

The study excludes females with age less than 30 irrespective of their blood sugar status.

Sources of cases

The cases were the patients attending Chalmeda Anand Rao Institute of Medical Sciences Hospital, Karimnagar during the period of June 2010 to May 2011.

Detailed history of all eligible women were recorded after written consent including age, occupation, history of diabetes, drug history, family history of diabetes, obstetric history. Risk factor assessment was done for each case by interview method followed by anthropometric measurements with standardized instruments like weighing machine and measuring tape. Depending upon nature of work, physical activity level of each women was assessed and data was collected.

Statistical analysis

Data was collected by using a structure proforma. Data thus was entered in MS excel sheet and analysed by using SPSS 24.0 version IBM USA. Qualitative data was expressed in terms of percentages and proportions. Quantitative data was expressed in terms of Mean and Standard deviation.

RESULTS

Out of 75 female diabetics involved in our study, majority were from 40-50 years age group i.e. 33 (44%). This is followed by 23 from 50-60 years age group i.e. 30.6%. We also observed 10 patients from 30-40 years age group i.e. 13.3%. Mean age was seen as 52 ± 12.4 years.

Table 1: Distribution according to age group.

Age group (in years)	Number of females	%
31-35	4	5.3
36-40	6	8.0
41-45	9	12.0
46-50	24	32.0
51-55	10	13.3
56-60	13	17.3
>60	9	12.0
Total	75	100.0

Table 2: Distribution according to obstetric history.

	Number of females	%
Toxaemia	6	8.0
Abortion	8	10.7
Difficult labour	4	5.3
Big baby	3	4.0
Post maturity	2	2.7

We found abortion as an important obstetric event in our diabetic population i.e. 8 (10.7%), followed by 6 with toxemia of pregnancy i.e. 8%, 4 (5.3%) with difficult labour.

Table 3: Level of physical activity.

Grade of physical activity	Number of females	%
Sedentary	57	76.0
Moderate	16	21.3
Heavy	2	2.7
Total	75	100.0

In our study, we found 57 women having sedentary lifestyle (76%), moderate were 16 i.e. 21.3% and heavy were 2 (2.7%).

Mean body mass index (BMI) was found to be 24.58 ± 5.27 kg/m². Waist circumference was 83.42 ± 9.35 cm. Hip circumference was 95.05 ± 9.1 cm and waist/hip ratio was 0.877 ± 0.041 .

Table 4: Distribution according to anthropometry.

		Mean	SD
Anthro- pometric parameters	BMI (kg/m^2)	24.58	5.27
	Waist circumference (cm)	83.42	9.35
	Hip circumference (cm)	95.05	9.1
	Waist/hip ratio	0.877	0.041

DISCUSSION

Age group

In our study out of 75 female diabetics involved, majority were from 40-50 years age group i.e. 33 (44%). This is followed by 23 from 50-60 years age group i.e. 30.6%. We also observed 10 patients from 30-40 years age group i.e. 13.3%. Mean age was seen as 52±12.4 years Gucciardi et al reported mean age of women diabetics in his study was 55.7 years (SD 10.4). These are the proxy indicators of gestational diabetes mellitus which is restricted to pregnant women in whom the onset or recognition of glucose intolerance first occurs during pregnancy. WHO study group have quoted that in the majority of cases, glucose intolerance returns to normal postpartum, but lifetime risk for impaired glucose tolerance and NIDDM is substantially increased. Gender differences arise from sociocultural processes, such as different behaviors of women and men, exposition to specific influences of the environment, different forms of nutrition, life styles or stress, or attitudes towards treatments and prevention. 9,10

Level of physical activity

In our study, we found 57 women having sedentary lifestyle (76%), moderate were 16 i.e. 21.3% and heavy were 2 (2.7%).

Gurwitz et al noted that low physical activity level (adjusted OR 2.4, 9.5% CI 1.3 - 4.4) was significant predictor of NIDDM. Helmrich et al observed that for each 2000 kcal increment in energy expenditure, the risk of NIDDM was reduced by 24% (RR 0.76, 95% CI 0.63-0.92). Perry et al in a prospective study noted that women engaged in moderate levels of physical activity had a substantially reduced risk of diabetes, relative to the physically inactive men, after adjustment for age and BMI (OR 0.4, 95% CI 0.2-0.7). Kehoe et al in a case control study observed that persons with recently diagnosed NIDDM reported significantly lower levels of physical activity than control subjects. Hu et al observed that time spent in watching television, a major sedentary

behavior was significantly associated with higher risk of diabetes and increasing physical activity is associated with a significant reduction in risk for diabetes (p for trend <0.001). ¹⁵

Anthropometry

Mean BMI was found to be 24.58±5.27 kg/m². Waist circumference was 83.42±9.35 cm. Hip circumference was 95.05±9.1 cm and waist/hip ratios were 0.877±0.041.

Chan et al observed a positive association between BMI and risk of diabetes. ¹⁶ Men with a BMI of >35 kg/m² had a multivariate relative risk of 42.1 (95%CI 22.0-80.6) compared with men with a BMI <23.0 kg/m². Horton reported that there is a strong association between the presence of obesity and development of NIDDM. ¹⁷ Chasen-Taber et al observed that women with a BMI of 24 to <27 kg/m² had a RR of 9.5 (95%CI 1.8 -49.5) compared with the women in the lowest quintile (<20 kg/m²). ¹⁸ Baan et al observed that women having newly diagnosed diabetes had a significantly higher BMI (p<0.05) and waist hip ratio (p<0.10) compared with the subjects with normal glucose tolerance. ¹⁹

CONCLUSION

Increasing age, sedentary lifestyle, obesity especially central and obstetric events were found to be important risk factors in our study.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

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Cite this article as: Shruti P, Joshi KP, Takalkar AA. Risk factors assessment in non-insulin-dependent diabetes mellitus women: a cross sectional study from Telangana. Int J Community Med Public Health 2020;7:79-82.