

Comparison of Prevalence of Metabolic Risk Factors among Residents Indians and Non-Resident Indians - A Tertiary Care Center Experience

Nupur Pandya¹, Hirak Vyas², Sanket Sheth³

¹ Narendra Modi Medical College, LG Hospital Campus, Ahmedabad

²Shalby Hospital, Naroda, Ahmedabad

³Tribhuvandas Foundation Hospital, Anand

Abstract: *The difference in prevalence of non-communicable diseases in various countries is due to genetic tendency of particular ethnic type, dietary habits, life style, cultural, social, behavioural practices acquired by the population. Non-resident Indians (NRIs) is population traditionally understood as persons of Indian origin or having Indian passport migrated to other countries. We aim to do comparative study of prevalence of metabolic risk factors and metabolic syndrome between healthy Resident Indian (RI) s and NRIs residing at USA. We also aimed to compare variation in other metabolic variables namely uric acid, SGPT, SGOT and TSH. Material and Methods: In this cross-sectional observational prospective study conducted in a tertiary care set up in a semi-urban area of Gujarat; Social, personal, anthropometrical and laboratory data of 50 NRI and 50 RI were collected from the Performa. Independent T test, chi square test and Fischer's extract were used for analysis. Results: Out of total 100 participants, the percentage of female and male participants were 48% and 52% respectively. Anthropometrical data was comparable in both arms. Twenty Three of NRI group and 32 in RI group had central obesity. Though the prevalence of individual metabolic risk factors (Systolic BP, Fasting Blood Sugar dyslipidemia) were found to be more among RIs compared to NRIs, statically significant difference was found, only in HDL levels which was significantly low in resident Indians. The prevalence of metabolic syndrome was not significantly different in both groups. Conclusions: There is a considerable variation in prevalence of cardio vascular diseases owing to metabolic syndrome and individual metabolic risk factors among populations of different regions and ethnicity. This can be explained by variations in diet, lifestyle and exercise patterns. Further research is required in this direction to help develop strategies for prevention and management of metabolic syndrome.*

Keywords: Metabolic syndrome, Non-resident Indians, Body Mass Index (BMI), Metabolic Risk Factors

1. Introduction

The metabolic syndrome has been identified as a risk factor for premature cardio-vascular deaths, strokes, and also associated with various diseases such as Non-alcoholic steatohepatitis, hypothyroidism and hyperuricemia among many others. (1) The development of metabolic syndrome is affected by various factors such as genetic variability, dietary patterns, lifestyle and level of physical activity as well as environment. Differences in above mentioned factors have been observed in different geographical locations, contributing to varying prevalence of metabolic syndrome in different parts of the World. (2) The study of such variation would be useful in developing strategies for prevention and management of metabolic syndrome among groups of individuals of different origins and locations. In this cross-sectional observational analytical study, we aimed to compare the differences in prevalence of metabolic syndrome and its risk factors (obesity, hypertension, high blood sugars and dyslipidemia) among the resident Indians and Non-resident Indians from USA.

2. Methodology

We gathered the data of individuals volunteering for preventive health check up in the "Hello Health" program being conducted at Shri Krishna Hospital which is a tertiary care centre in Sub-urban part of Karamsad Taluka of Anand

District in India. A total of 100 Adults with no history of any prevailing illness were recruited to the study which included 50 Non-Resident Indians and 50 resident Indians. Both groups were matched for age and gender. Pregnant women, individuals with falsely high waist circumference or individuals on medications for chronic illness (including and not limited to hypothyroidism or rheumatoid arthritis) were excluded from the study. The laboratory included parameters like FBS, HbA1c, Lipid profile, TSH, SGPT, SGOT, uric acid. The anthropometric details were collected by the staff nurse in the hello health section. For measuring height, subjects were requested to stand upright on a stadiometer, without shoes, with their back against the wall, heels together and eyes directed forward and height was measured to the nearest mm. Weight was measured by a digital weighing machine kept on a firm horizontal surface to the nearest 100 g. Waist circumference was measured with a non-stretchable tape at the midpoint between lower border of rib cage and upper border of iliac crest. Metabolic syndrome was defined as Central Obesity in combination of any two of the following i. e. Raised TG level, Reduced HDL cholesterol, Raised blood pressure, Raised fasting plasma glucose (FPG). The statistical analysis was performed using independent sample T and Fischer's extract test using STRATA 14.

Volume 12 Issue 6, June 2023

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

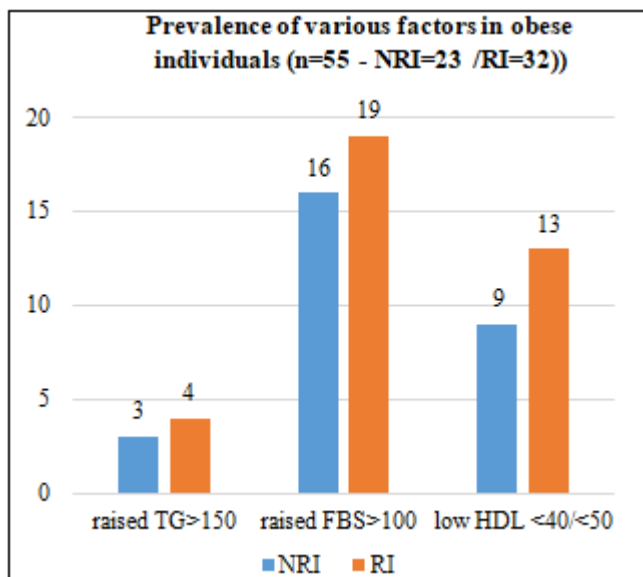
3. Results

Both groups had 26 males and 24 females who were part of the study with median age of 50 years. NRI group had more individuals who were smoker (9 vs 4). Anthropometric data was not significantly between 2 groups with mean BMI of 26.99.

Variable	NRI group (mean)	RI group (mean)
Height	161.5	160.6
Weight	69.38	69.56
BMI	26.63	27.25

Central Obesity (waist circumference of > 90 cm for men and > 80 cm for women) was found in 55 of the participants of which 23 were NRIs and 32 were RIs. Prevalence of hypertension (systolic BP more than or equal to 130 or diastolic BP more than or equal to 85 mmHg) was 42% in RI group and 26% in NRI group. Prevalence of hyperglycemia (FBS >100 g/gl or HbA1c > 5.7 % was seen among 65% individuals but it not significantly different between groups (p 0.677). Dyslipidemia was evaluated on 2 parameters i. e. Raised LDL, Raised Triglyceride (TG) and Reduced HDL. The groups were matched for all the criteria of dyslipidemia.

Upon analysis for metabolic syndrome, out of the 55 patients who had central obesity; 7 had Raised TG, 19 had Reduced HDL and 35 had hyperglycemia. Upon evaluating for individuals in both groups, though metabolic syndrome was observed to be more in RI group (12 vs 7); the difference was not statistically significant.



4. Conclusion

It has been reported that as Indians have an "unfavorable body type" i. e. for a lower BMI, they have more amount of visceral fat and abdominal adipocytes. (3) Our study indicated higher prevalence of key components of metabolic syndrome, i. e., central obesity, hypertension, dyslipidemia in resident Indians. Though the prevalence was not statically significant when compared with NRIs; more RIs are at a risk of developing non-communicable diseases. Further research in this direction will help in understanding impact of

environmental factors like duration of stay in other country, diet, lifestyle and exercise patterns on metabolic syndrome and its eventual impact on health of Indians.

References

- [1] Grundy SM. Metabolic syndrome pandemic. *Arterioscler Thromb Vasc Biol.*2008; 28 (4): 629–36.
- [2] Nightingale CM, Rudnicka AR, Owen CG, Wells JCK, Sattar N, Cook DG, et al. Influence of adiposity on insulin resistance and glycemia markers among U. K. children of South Asian, black African-Caribbean, and white European origin: Child heart and health study in England. *Diabetes Care.*2013; 36 (6): 1712–9.
- [3] Lorenzo C, Williams K, Hunt KJ, Haffner SM. The National Cholesterol Education Program-Adult Treatment Panel III, International Diabetes Federation, and World Health Organization definitions of the metabolic syndrome as predictors of incident cardiovascular disease and diabetes. *Diabetes Care.*2007; 30 (1): 8–13.