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PREVALENCE OF DIABETES AND PRE-DIABETES IN URBAN POPULATION IN INDIA: A REVIEW

REEMA SINGH* AND MAYANK SRIVASTAVA**

Declaration

The Declaration of the authors for publication of Research Paper in The Indian Journal of Research Anvikshiki ISSN 0973-9777 Bi-monthly International Journal of all Research: We, *Reema Singh and Mayank Srivastava* the authors of the research paper entitled PREVALENCE OF DIABETES AND PRE-DIABETES IN URBAN POPULATION IN INDIA: A REVIEW declare that , We take the responsibility of the content and material of our paper as We ourself have written it and also have read the manuscript of our paper carefully. Also, We hereby give our consent to publish our paper in Anvikshiki journal , This research paper is our original work and no part of it or it's similar version is published or has been sent for publication anywhere else. We authorise the Editorial Board of the Journal to modify and edit the manuscript. We also give our consent to the Editor of Anvikshiki Journal to own the copyright of our research paper.

Abstract

India is going through a rapid socio-economic progress and urbanization which has vastly changed the lifestyle patterns of Indians. Studies in different parts of India have revealed that the cases of diabetes are emerging at an alarming rate. The prevalence of pre-diabetes is also high and due to lack of proper diabetes care facilities a speedy conversion of impaired glucose tolerance to diabetes is clearly evident in various studies. Situation is more serious in the urban parts of the country in comparison to the rural parts because of the differences in life style and eating habits. Here an urgent need is felt for availability of proper health care to cope up with the situation and people need to be aware about the disease and bring modifications in the sedentary life style and imbalanced eating habits.

Objective: This paper tries to examine the prevalence of pre-diabetes and diabetes in urban population of India.

Methodology: This paper is based on the review of various research papers and articles on prevalence of diabetes in urban India. Information has also been taken from NFHS-3.

Keywords: Diabetes, Pre-diabetes, Life style changes.

Introduction

Worldwide at least 171 million people have diabetes. Unfortunately India has the largest number of diabetes patients in the world. It is predicted by WHO that India would continue nearly 57 million people to the global burden of diabetes by the year 2025. On the basis of the ICMR estimates the prevalence of diabetes in adults to be 3.8% in rural areas and 11.8% in urban areas (Mitra and Bhattacharya,2006). The prevalence of type 2 diabetes mellitus (T2DM) is projected to increase radically

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during the forthcoming decades in both developed and developing countries. However, the prevalence of various stages of glucose intolerance, ie, T2DM, impaired fasting glucose (IFG) and impaired glucose tolerance (IGT), differ noticeably between countries and populations. It has been suggested that differential prevalence in the stages of glucose intolerance is related to the diet and genetic susceptibility of individuals, the age structure of the population, and the stage of economic development and level of urbanization of a country. According to the Nationwide study conducted by Indian Council of Medical Research–India DIABetes (ICMR–INDIAB) the prevalence of diabetes & pre diabetes in northern India is 13.6% & 14.6% respectively. Prevention, timely diagnosis, and treatment are important in patients with diabetes mellitus. Many of the complications associated with diabetes, such as nephropathy, retinopathy, neuropathy, cardiovascular disease, stroke, and death, can be delayed or prevented with appropriate treatment of elevated blood pressure, lipids, and blood glucose.

Objective: Prevalence of Diabetes and Pre-diabetes in Urban Population in India.

Material and Methods

This paper is based on the review of various research papers and articles on the Prevalence of Diabetes and Pre-diabetes in Urban Population in India. Information has also been collected from National Family Health survey 2005-06.

Type of Diabetes: there are three type of diabetes :

- (1) *Type 1 Diabetes:* Type 1 diabetes mellitus is loss of the insulin-producing beta cells of the islets of langerhans in the pancreas, leading to insulin deficiency. Beta cells normally produce insulin, a hormone that helps the body move the glucose contained in food into cells throughout the body, which use it for energy. But when the beta cells are destroyed, no insulin can be produced, and the glucose stays in the blood instead, where it can cause serious damage to all the organ systems of the body. People with type 1 diabetes must take insulin in order to stay alive.
- (2) *Type 2 Diabetes:* Type 2 diabetes mellitus is insulin resistance, which may be combined with relatively reduced insulin secretion. Approximately 85–95% of all cases of diabetes are type 2 diabetes.
- (3) *Gestational Diabetes:* Gestational diabetes mellitus (GDM) resembles type 2 diabetes in several respects, involving a combination of relatively inadequate insulin secretion and responsiveness.

Impaired glucose tolerance (IGT) is considered as a pre-diabetic stage that occupies a grey area between Diabetes mellitus (DM) and normal glucose tolerance (NGT). If diabetes is detected at the stage of impaired glucose tolerance, it may be possible to halt the progression to overt diabetes.

Causes of Diabetes

Insufficient production of insulin (either absolutely or relative to the body's needs), production of defective insulin (which is uncommon), or the inability of cells to use insulin properly and efficiently leads to hyperglycemia and diabetes. The absolute lack of insulin, usually secondary to a destructive process affecting the insulin-producing beta cells in the pancreas, is the main disorder in type 1 diabetes. In type 2 diabetes, there also is a steady decline of beta cells that adds to the process of elevated blood sugars. Essentially, if someone is resistant to insulin, the body can, to some degree, increase production of insulin and overcome the level of resistance. After time, if production decreases and insulin cannot be released as vigorously, hyperglycemia develops. Obesity, Sedentary life style, family history are also causes of diabetes.

Prevalence of Diabetes and Pre-Diabetes in Urban India

The Chennai Urban Population Study is an epidemiological study involving two residential areas in Chennai in South India representing the middle and lower socio-economic group. Of the total of 1,399 eligible subjects (age 20 years), 1,262 (90.2%) participated in the study. The overall prevalence of diabetes in the study population was 12.0%, which included 7.2% of known diabetic subjects and 4.8% undiagnosed diabetic subjects, while the prevalence of impaired glucose tolerance was 5.9% (Mohan V, Shanthirani CS, Deepa R, 2003). A study was conducted at Sri Ramachandra Medical College & Research Institute, Porur, Chennai. The subjects residing in the sub urban area of Chennai were chosen from the outpatient department of Medicine. Prevalence of IGT in this study population was 8.5% (Jaiganesh K., Semmal Syed Meerasa M .2010). The Chennai Urban Population Study, an ongoing epidemiological study in two residential colonies in Chennai [the largest city in southern India, formerly called Madras] was launched in 1996. The incidence rate of diabetes was 20.2 per 1000 person years and that of pre-diabetes was 13.1 per 1000 person years (Mohan V, M Deepa, Anjana RM, Lanthorn H, Deepa R, 2008).

In a study conducted in Urban area reveals that Results of the 16,607 individuals selected for the study, 14,277 (86%) participated, of whom 13,055 gave blood samples. The weighted prevalence of diabetes (both known and newly diagnosed) was 10.4% in Tamilnadu, 8.4% in Maharashtra, 5.3% in Jharkhand, and 13.6% in Chandigarh. incidence of diabetes is very high among urban south Indians. While obesity, abdominal obesity and hypertension were associated with incident diabetes, IDRS (Indian diabetes risk score) was the strongest predictor of incident of diabetes in this population (Mohan V, Deepa M, Anjana RM et al).

A study was conducted by V Mohan, CS Shanthirani, R Deepa The overall prevalence of diabetes in the study population was 12.0%, (age-standardized -9.3%), which included 7.2% of known diabetic subjects and 4.8% undiagnosed diabetic subjects, while the prevalence of impaired glucose tolerance was 5.9% (age-standardized prevalence 5.0%). The prevalence of impaired glucose tolerance was 10.8 percent, and that of diabetes was 4.4 percent (Santosh K. Bhargava, Harshpal Singh Sachdev, et al, 2004) NFHS DATA shows that according to self reports, more than two percent of women and men age 35-49 suffer from diabetes. Prevalence of diabetes increases with age and household wealth status (National Family Health survey 2005-06).

Summary

In India, the lack of proper healthcare infrastructure, rampant ignorance and absence of clear cut guidelines mean that approach to the management of diabetes is ad hoc. The lack of awareness among patients and General Practitioners (GPs) is a key factor in the poor care. There are practically no nurse educators or diabetic counselors, no podiatrists (foot experts) and very few dieticians which means that the treating doctor has no support and has to take the entire burden of caring for these patients. The patients' inability/unwillingness to pay for this additional support also hinders the treatment.

Diabetes mellitus basically produces changes in the blood vessels and hence can affect almost every part of the body. Once diabetes is diagnosed, adequate treatment requires a significant amount of resources for patients i.e. access to glucometers, medications, regular access to health care and referral to specialists for management of complications. Life style changes/interventions and drugs are the current strategies that exist to prevent or reduce the onset of diabetes.

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