



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2023; 9(7): 191-194
www.allresearchjournal.com
Received: 05-04-2023
Accepted: 09-05-2023

Gopika GP Nair
Medical Officer, Santhwanam
clinic, Perumbavoor,
Ernakulam, Kerala, India

Jayakrishnan Shaji
Medical Officer, KMJ
Dispensary, Perumbavoor,
Ernakulam, Kerala, India

A study on prevalence of diabetes mellitus in various demographic regions of Kerala

Gopika GP Nair and Jayakrishnan Shaji

Abstract

Background: With the prevalence of diabetes mellitus (PODM) differing in populations of different locations, diabetes is rising at an alarming rate among Indians, especially South Indians. This study compares the risk of diabetes in the northern coastal districts of the Indian state of Kerala by assessing PODM in three different geographic contexts: tribal, semi-urban, and urban.

Materials and methods: In order to research the prevalence of diabetes in about 3,000 people between the ages of 15 and 68, 1,000 people from each area were chosen at random. A 75-g oral glucose tolerance test (OGT) was used to diagnose diabetes mellitus in accordance with World Health Organisation standards and criteria from 1988. Microsoft Excel 2007 was used to carry out the statistical analysis.

Results: According to the study's research, 32.3% of the population was found to have diabetes, with the percentages rising to 14.5% in urban areas, 11.6% in semi-urban areas, and 6.4% in tribal areas.

Conclusion: According to the study, those who live in urban areas are more likely to get type-2 diabetes than those who live in semi-urban and tribal areas. When compared to semi-urban and metropolitan areas, more new instances of diabetes were documented in tribal communities, showing that diabetes did not just affect people in urban areas.

Keywords: Diabetes mellitus, oral glucose tolerance test, prevalence of Diabetes mellitus, World Health Organisation

1. Introduction

It is now necessary to allot funds and allow for national planning in order to determine the prevalence of diabetes mellitus and the total number of persons affected by the disease, both now and in the future. Obesity, inadequate physical activity, urbanisation, population expansion, ageing, and DM are the key causes of the disease's high prevalence ^[1]. Diabetes mellitus (DM) is a long-term metabolic condition in which the body is unable to make enough insulin or use it appropriately. A hormone called insulin is produced by the beta cells in the pancreas and is necessary for a cell to take up glucose from the bloodstream and use it to produce energy. Excessive urination (polyuria), excessive thirst or increased fluid intake (polydipsia), excessive food intake (polyphagia), blurred vision, and hypertension are the hallmark signs of diabetes.

The World Health Organisation (WHO) reported that the prevalence of DM seemed to be rising by roughly 6% annually and anticipated that by 2030, there will be 9.40 million diabetics worldwide. Studies of India's industrialised population have shown that diabetes is now the world's most serious health issue, with a 35% increase in mortality ^[2]. Like the Red Ribbon is for AIDS, the blue circle has recently become a symbol for diabetes.

In India, there were 32 million diabetic patients in 2000, and by 2030, there would be 80 million ^[1]. According to data from the International Diabetes Federation (IDF), India had 41 million diabetic people overall in 2006, and 70 million would have the disease by 2025 ^[3].

The Indian Council of Medical Research (ICMR) conducted the country's first multi-centre study between 1972 and 1975. According to this survey, the prevalence was 3.0% in cities and 1.3% in rural regions. Tenali, a semi-urban Andhra Pradesh town with a high prevalence of 4.7%, saw the first indications of the impending diabetes epidemic ^[4, 5].

Corresponding Author:
Gopika GP Nair
Medical Officer, Santhwanam
clinic, Perumbavoor,
Ernakulam, Kerala, India

The prevalence of diabetes is 2.5%, according to the first study conducted in South India at Vellore in Tamil Nadu [6]. According to a population-based survey, the prevalence rates in the towns of Chandigarh, Pondicherry, and Varanasi were 2.9%, 0.7%, and 2.7%, respectively [7-9]. Kudremukh, a semi-urban location in Karnataka, has a frequency of 5.0% DM, according to some researchers [10-11].

2. Materials and Methods

This study relied heavily on direct communication with each subject, who completed questionnaires that served as the main source of data. A total of 1,000 participants were chosen for the study from each area under investigation.

All men and women between the ages of 20 and 68 were included in the study population. From each locality in the chosen area, random samples of the study subjects were taken in proportion to their populations. With the aid of a field staff from primary health centres, the localities and households were identified. By using the approach outlined in the cluster sample technique used for assessing universal immunisation coverage, the lane and first house within the neighbourhood were randomly chosen. All the homes in the lane were constantly covered, moving to the left, starting with the first house. Until the sample size was reached for each locality, this method was repeated.

A proforma was created to record the biographical information of the sampled candidates, including their name, age, sex, the age at which the disease first manifested, height, weight, body mass index (BMI), waist-to-hip ratio (W/H),

genetic predisposition to the disease, blood sugar levels (both fasting and postprandial), employment status, and the distance and method of travel required for regular job purposes. If the person has diabetes already, both their starting weight and current weight are recorded. This proforma really aided us in obtaining crucial data on the disease's prevalence, sex-based incidence rates, age at which the sickness first appears, and other characteristics.

Complete information on the person was recorded through personal interviews, after building a strong rapport and receiving their permission, in accordance with the proforma indicated above. The proforma of illiterate, uneducated, and elderly people was filled out by hand in each of the three study regions. The population immediately agreed to the OGT test, a crucial indicator of whether or not someone has diabetes, and provided all the necessary information with great enthusiasm. Using a glucometer, subjects were tested for both FBS and PP blood sugar. The glucometer that was used in our investigation is made by a Dr. Morphan Glucometer. The individuals were administered 75 gm of anhydrous glucose after the diabetic screening test was completed in the morning with the fasting sample. Early in the morning, a fasting sample was used for the diabetes screening test. The individuals were then given 75 gm of anhydrous glucose in 200 ml of water, and exactly two hours later, a sample for the prostate cancer screening test was taken. Results were evaluated using WHO standards. Every person studied in all three locations underwent the same process.

3. Results

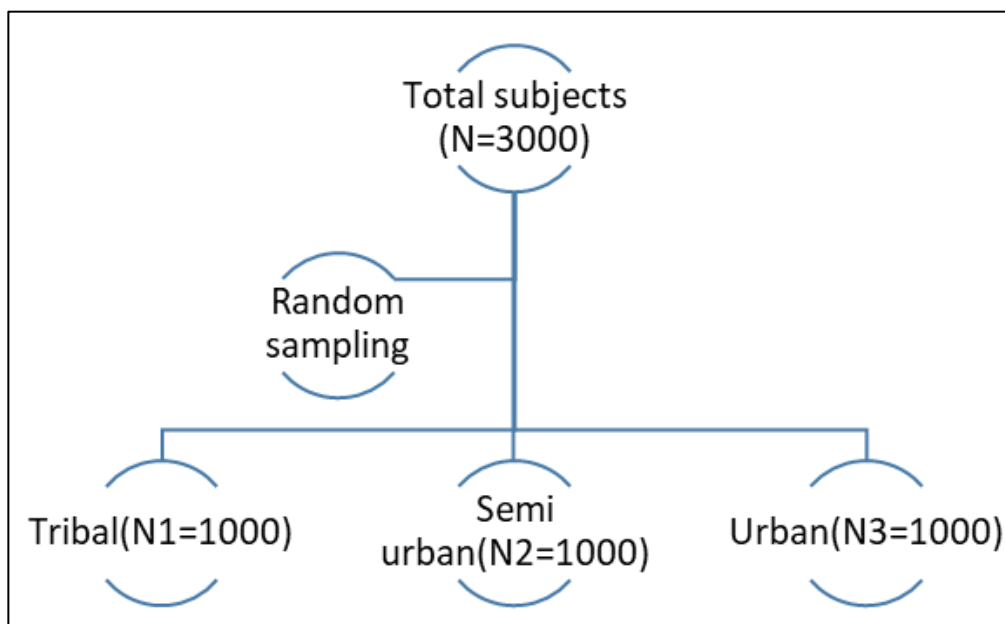


Fig 1: Show Total subjects (N=300), Radom sampling, tribal (N1=1000), semi and urban (N3=1000)

Table 1: Prevalence of Diabetes Mellitus in various region

Study Area	Rural	Semi-Urban	Urban
Total study population	1000	1000	1000
Old cases	22	35	105
New cases	56	95	54
Total Positive cases	78	130	159

The three research locations differ from one another in terms of socioeconomic standing and way of life. In each category,

the study comprised 1000 patients. In comparison to semi-urban areas (11.6%) and tribal areas (6.4%), the prevalence of DM is higher in urban areas (14.5%). According to the analysis of the current study, tribal areas are seeing DM growth at a greater pace than urban and semi-urban areas, which both experienced growth at rates of 4.1% and 5.2%, respectively. With percentages ranging from 4.5% between tribal and semi-urban, 8 % between tribal and urban, and 2.5% between semi-urban and urban, Table 1 and Figure 1 demonstrate the stark differences between the three areas.

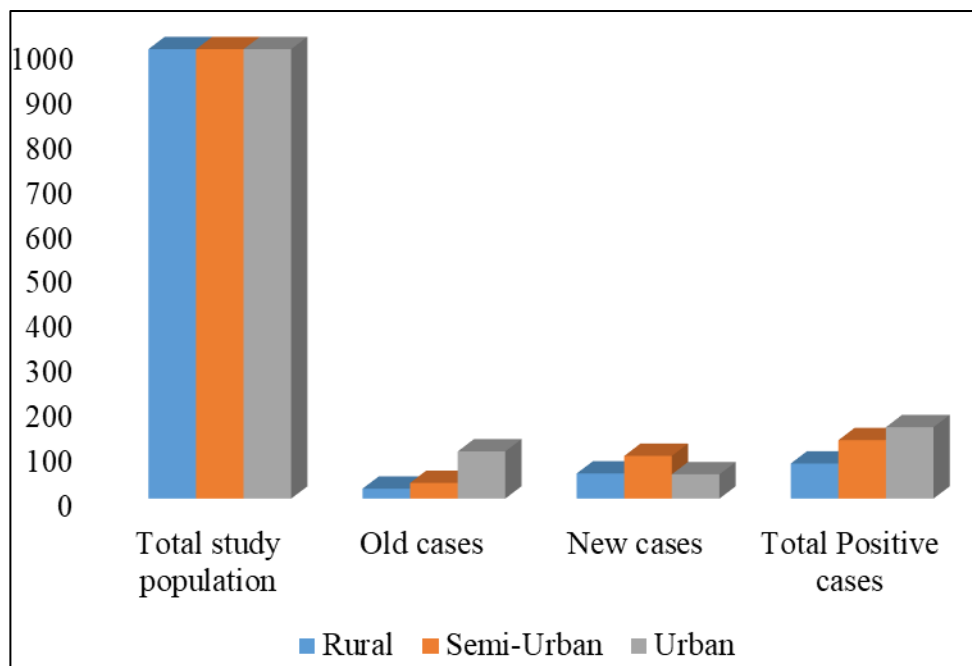


Fig 1: Prevalence of Diabetes Mellitus in various regions Tribal, Semi-Urban, and Urban.

4. Discussion

The prevalence of diabetes and its rise in three demographic groups tribal, semi-urban, and urban in the Indian state of Kerala were examined in the current survey. According to the study's findings, urban areas (14.5%) had the highest frequency of DM, followed by semi-urban (11.6%) and tribal areas (6.4%). In comparison to tribal areas, urban areas have a nearly two-fold higher prevalence of the DM. The differences in prevalence from region to region may be caused by the local environmental circumstances, dietary customs, way of life, awareness of the illness, socioeconomic position, etc. Numerous more factors, including weight, genetics, stress, and others, may contribute to the development of this illness.

Interestingly, various researchers have found that the prevalence of diabetes varies significantly across rural India [12-14]. In contrast to our 7.8% finding in the present study, several investigations have shown that the prevalence of DM was lower in rural Punjab, rural Kerala, rural Mysore, and rural Nagpur [15-17]. The Chennai Urban Rural Epidemiology Study (CURES) group's studies have revealed a 15.5% prevalence in Chennai [22]. Similar studies conducted in Andhra Pradesh found a prevalence of 15.1% in urban areas and 7.6% in tribal areas, which is in line with the findings of the current study [19].

If no immediate preventive action is taken, the estimated 40.9 million diabetes sufferers in India now will increase to 69.9 million by 2025 [20]. Patients with diabetes need to practise self-care behaviours such healthy diet, exercise, blood sugar monitoring, medication compliance, excellent problem-solving abilities, healthy coping mechanisms, and risk-reduction behaviours in addition to having adequate glycaemic control [21].

5. Conclusion

In the current study, we found that whereas DM cases are steadily rising in India's urban and semi-urban areas, the rise in cases in tribal areas is pronounced. Studies from many parts of the world have shown a link between illiteracy and DM, which was also seen in the present study's case of tribal

areas. There is an urgent need to organise a number of awareness campaigns on DM symptoms, causes, treatments, complications, and prevention throughout the nation, especially in tribal areas. It is crucial at this point to educate the tribal members about DM. The government should set the example in this regard, as should non-governmental organisations. By enlisting the aid of students, starting with school-age children, the press, media, and health professionals, India may be able to better restrict the spread of this fatal disease.

6. Reference

1. Nirmala PV, Gudivada M, Lashmi C. Comparative Study of the Prevalence of Type-2 Diabetes Mellitus in Various Demographic Regions of Andhra Pradesh, India: A Population based Study. *Int. J MCH AIDS*. 2016;5(2):103-111. DOI: 10.21106/ijma.91. PMID: 28058197; PMCID: PMC5187642.
2. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: Estimates for the year 2000 and projections for 2030. *Diabetes Care*. 2004;27:1047-53.
3. Reddy KS, Prabhakaran D, Chaturvedi V, Jeemon P, Thankappan KR, Ramakrishnan L, *et al.* on behalf of the Sentinel Surveillance System for Indian Industrial Populations Study Group. Methods for establishing a surveillance system for cardiovascular diseases in Indian industrial populations. *Bulletin of the World Health Organization*. 2006;84:461-9.
4. Sicree R, Shaw J, Zimmet P. *Diabetes Atlas*. Belgium: International diabetes federation. Diabetes and impaired glucose tolerance; c2006. p. 15-103.
5. Tripathy BB, Panda NC, Tej SC, Sahoo GN, Kar BK. Survey for detection of glycosuria, hyperglycaemia and diabetes mellitus in urban and rural areas of Cuttack district. *Journal of the Association of Physicians India*. 1971;19:681.
6. Sandeep S, Ganesan A, Mohan V. *Diabetes Research Foundation Chennai, Development and Updation of the Diabetes Atlas of India*; c2010.

7. Vaishnava H, Dixit NS, Solomon SK. A Study in retrospect of hospitalized patients of diabetes mellitus in South India. *Journal of the Association of Physicians India*. 1964;12:255.
8. Berry JN, Malik K, Gupta HD. Prevalence of postprandial glycosuria in an urban community. *Journal of the Association of Physicians India*. 1966;14:519.
9. Data SP, Verma NPS, Gopalakrishnan R, Ghosh BN, Patel JC, Talwalker NG, Editors. Survey of diabetes mellitus in Pondicherry. In *Diabetes in the Tropics*. Diabetic Association of India, Bombay; c1966. p. 33.
10. Gour KN, Patel JC, Talwalker NG, editors. Epidemiological study of diabetes in the town of Varanasi. In *Diabetes in the town of Varanasi*, In *Diabetes in the Tropics*. Diabetic Association of India, Bombay; c1966. p. 76.
11. Ramachandran A, Jali MV, Mohan V, Snehalatha C, Viswanathan M. High prevalence of diabetes in an urban population in South India. *British Medical Journal*. 1988;297:587-590.
12. Park K. *Diabetes, Park's textbook of preventive and social medicine*. (16th Ed); c2000. p. 292-5.
13. Patadin S, Bots ML, Abel R, Valkenburg HA. Impaired glucose tolerance and diabetes mellitus in a rural population in South India. *Diabetes Research and Clinical Practice*. 1994;24:47-53.
14. Dontoolwar SP. A study of the prevalence of diabetes mellitus in working women of the banking sector, Thesis Submitted to Nagpur University for MD (PSM); c1998.
15. Gupta R, Sarna M, Thanvi J, Sharma V, Rastogi P, Kaul V, *et al*. High prevalence of multiple coronary risk factors in Punjabi Bhatia community. *Indian Heart Journal*. 2004;56:646-52.
16. Kokiwar PR, Gupta S, Durge PM. Prevalence of diabetes in a rural area of central India. *International Journal of Diabetes in Developing Countries*. 2007;27:8-10.
17. Menon VU, Kumar KV, Gilchrist A, Sugathan TN, Sundaram KR, Nair V, *et al*. Prevalence of known and undetected diabetes and associated risk factors in central Kerala: ADEPS. *Diabetes Research and Clinical Practice*. 2006;74(3):289-94.
18. Role of diet on type 2 diabetes mellitus. *International Journal of Multidisciplinary Research and Development*, Volume, Issue 6, 2021, Pages 20-24.
19. Raman Kutty V, Joseph A, Soman CR. High prevalence of type 2 diabetes in an urban settlement in Kerala, India. *Ethnic Health*. 1999;4:231-9.
20. Balasubramanyam M, Mohan V. Diabetes in 2007 - What are the promises and challenges? *Indian Journal of Medical Research* 2007 March 12.
21. Saurabh RamBihari Lal Shrivastava, Prateek Saurabh Shrivastava, Jegadeesh Ramasamy. Role of self-care in management of diabetes mellitus. *Journal of Diabetes and Metabolic Disorders*. 2013;12:14.
22. Mohan V, Deepa M, Deepa R. Secular trends in the prevalence of diabetes and impaired glucose tolerance in urban South India: The Chennai Urban Rural Epidemiology Study (Cures-17) *Diabetologia*. 2006;49:1175-1178.
23. Ojimekwe PC. Telfairia occidentalis: A blood booster, an antioxidant and an antihyperglycaemic agent. *Magnesium*.;2(2.90):2-94.