(International Print/Online Journal)

SJIF IMPACT FACTOR: 5.565
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 4, Issue 5, Page No: 1540-1545
September-October 2021

IJMSCR

The Risk of Type 2 DM among the Rural Residents of Pondicherry by Using IDRS

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Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract

Introduction

Diabetes mellitus is a major clinical and public health problem. And one of the leading cause of long term morbidity .More than 50% of the diabetic subjects in India remain unaware of their diabetes status, which adds to the disease burden. The risk factors are non-modifiable and modifiable. A simplified Indian Diabetes Risk Score (IDRS) for screening of undiagnosed diabetic subjects was developed by Mohan Diabetes Foundation, Chennai. So an initiative has been taken with an aim to assess the risk of DM among the rural residents of Koodapakam, Kumarapalyam and Katterikupam which comes under the field practice area of the Department of Community Medicine using IRDS.

Materials and Methods:

The present study was conducted in the field practice areas are Kudapakam, Katterikupam, Kumarapalayam village among the people who are above 18 years and non-diabetic using universal sampling.

Results:

The study population lies between the age group of 18-28 of which 47% were male and 53% were female. They were among skilled workers (26.7%).Majority of the study population had no regular physical activity (52%) and had no family history of diabetes (52.6%) The study population were normal (33.3%) in their BMI were non vegetarians(89%).Nearly 44.6% of study participants had a high score,45.6% had a medium score and 9.6% had a low score in IDRS.

Conclusions:

This study showed that the rural population lacks physical activity and have a high IDRS.

Keywords: IDRS, TYPE 2DIABETES, RURAL, DIABETESRISK

INTRODUCTION

Diabetes mellitus is a major clinical and public health problem. The prevalence of diabetes mellitus in India is 8.7%.(1) The risk factors like age, gender, family history are non-modifiable while others like smoking, diet, physical activity, hypertension, diabetes etc. are modifiable(2). A simplified Indian Diabetes Risk Score (IDRS) for screening of undiagnosed diabetic subjects was developed by Mohan Diabetes Foundation, Chennai. IDRS consisting of variables such as age, abdominal obesity, physical activity, and family history predicted diabetes mellitus. IDRS has been validated by various studies conducted in different parts of India. These studies have found IDRS as useful for identifying undiagnosed diabetic subjects, can make screening programmes more cost effective, can be

reliably applied as effective tool for the mass screening of diabetes in the community(3) The performance of IDRS as screening tool for undiagnosed cases of Type 2 diabetes and to find the prevalence of undiagnosed Type 2 diabetes. IDRS also helps to distinguish type 2 from non-type 2 diabetes mellitus.(4)The global diabetes prevalence in 2019 is estimated to be 9.3% (463 million people), rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045. The prevalence is higher in urban (10.8%) than rural (7.2%) areas, and in high-income (10.4%) than low-income countries (4.0%). One in two (50.1%) people living with diabetes do not know that they have diabetes. The global prevalence of impaired glucose tolerance is estimated to be 7.5% (374 million) in 2019 and projected to reach 8.0% (454 million) by 2030 and 8.6% (548 million) by 2045.(5)National programme on prevention and control of diabetes cardiovascular diseases and stroke in India is prevention of diabetes through identification of high-risk subjects and early intervention in the form of health education; early diagnosis of disease and appropriate treatment; reduction of morbidity and mortality with reference to the high-risk group; prevention of acute and chronic metabolic, cardiovascular, renal and ocular complications , provision of equal opportunities for physical attainment and scholastic achievement for the diabetic patients; and rehabilitation of those partially or totally handicapped diabetes people.(6)Many studies have been conducted among urban /rural population on diabetes risk assessment using various other parameters. But only a few studies have been conducted based on IDRS score to assess the risk of DM. So an initiative has been taken to assess the risk of DM among the rural residents of Pondicherry.

Materials and Methods

Study area:

The present study was conducted in the field practice area of the Rural Health Training Centre [RHTC] of the Department of Community Medicine, Sri Lakshmi Narayana Institute of Medical Sciences. The field practice areas are Kudapakam, Katterikupam,, Kumarapalayam village with the total cumulative population of 11,610 and is geographically located in Pondicherry taluk of Pondicherry district .

Study design:

This study was a community based cross sectional study using a validated structured questionnaire, regarding risk of type 2 DM among the rural residents of Pondicherry by using IDRS chart.

Study population:

The study subjects were people aged above 18 years who were permanent residents of Koodapakkam, Kumarapalyam and Katterikuppam villages.

Inclusion criteria:

1. People of age above 18 years
2. Non diabetic
3. Those people were permanent residents of the study area.

Exclusion criteria:

1. People below 18 years are excluded in the study
2. Diabetic patients
3. People who were not present even after two visits during the survey were excluded.

Study period:

1. The study was conducted between February 2021 and March 2021.
2. The data was collected over a period of two months from February 2021 and March 2021.

Study tool:

The study tool has the socio-demographic details, anthropometric measurements, physical activities, dietary details, and family history of diabetes. All these were combined to get the IDRS score.

Data collections:

Data collection was carried out by house to house survey using the validated structured questionnaire. The study was pilot tested by using the validated structured questionnaire in the village from the field practice area and modification of the study tool was done accordingly, in order to satisfy getting answers to various parameters that has to be assessed. In the above mentioned village the entire eligible participants as per the inclusion criteria were selected starting randomly from a street and house to house survey was done by using the study questionnaire. Participants who were available at their home at that

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time of visit were interviewed. Those who were not available were interviewed in the second visit.

After informing the study participants about this research, and getting prior consent using the participants information sheet and consent form, they were interviewed.

Data analysis:

The data obtained from the questionnaire for quantitative studies were entered in Microsoft excel and analysed using SPSS software version 21.

Socio economic status:

Modified B.G Prasad Classification for rural area 2020 was used to assess the socioeconomic status of participants.

Results:

The majority of study population lies between the age group of 18-28. Nearly 47% were male and 53% were female among the study population. Majority of the study population were among skilled workers (26.7%) and were among Married groups (83%) .Majority of the study population had no regular physical activity (52%) and no family history of diabetes (52%) Majority of the study population were among Hindu religion(91.7%) and were normal (33.3%) in their BMI status. Majority of the study population were non vegetarians (89%)

Discussion:

Many studies were conducted about the risk of diabetes among Indian population. But very few studies were only conducted using IRDS score. The aim of our Study is to assess the risk of diabetes in rural areas of Kumarpalyam, Katterikuppam and koodapakkam using IRDS score as screening tool. A cross section study done by Sanjay Kumar Gupta, et al (7)in Rural Tamil Nadu. Comprising 60.27 % females and 39.73% males was studied. . A large number of the subjects were below 35 years of age .On comparing with our study large of subjects were among 18-28 yrs of age. The risk of diabetes was high in both case studies which is attributed to high BMI. A cross section study done by Reshma S Patil, et al.,(8) in an urban slum of Pune, Maharashtra the prevalence of people in the non diabetes category were more due to high proportion of people involved in physical labour (skilled and unskilled) 44%. A study done by Saurabh Kumar,et al.(9), in Chandigarh and Panchkula region showed that a total of 444 subjects were found to be at high risk (≥60 or known diabetes status) and were further assessed with HbA1C. On comparing with our study the 134 respondents out of 300 ie. (44.6%) had high risk of diabetes (>60) IRDS score. But in this study it is not feasible to assess HbA1C among study population due to limitations in funds.A study done by Raghuram Nagarathna,(10) et al., in all populous states and Union territories of India showed that 40.9% subjects were detected to be high risk, known or newly diagnosed DM subjects in urban and rural regions. This study also picked up the high risk group (44.6%). A cross section study done by Meera George, et al.,(11) in a Colony, Kollam, Kerala showed that nearly 62% of study population were female, 42.7% had high school education and 44.7% were daily wage employees. On comparing with this study nearly 53% of the study population were females and 43% were among manual labourers. Majority of the study population belong to High risk category (44.6%) and medium risk category (45%) as per IDRS. Increasing age, female gender, low education, high BP, High BMI, High waist to hip ratio, lack of physical activity attributed to risk of diabetes. Thus in this study though the family history of diabetes were not there in 52.6% the high risk score in IDRS were more like 44.6%,this is attributed to decrease in physical activity of 52% and about 89% were non vegetarians with 33% in the overweight category. Thus it is evident that even when the non modifiable risk factor of hereditary if in the favouring side the life style habits (modifiable risk factor) like type of diet, physical activity and BMI are contributing factors for high risk in IDRS scoring. Thus proper and appropriate health education has to seep in through the rural areas also to rectify these pitfalls in life style modifications.

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Table1: Distribution of IRDS scale

S.NO	PARAMETERS	FREQUENCY(n)	PERCENTAGE(%)
	AGE		
1.	<35 years	115	38.3
2.	35-49 years	87	29.0
3.	≥50years	98	32.7
	WAIST CIRCUMFERENCE		
	(Female)		
1.	<80cm	32	20.0
2.	≥80-89cm	75	46.9
3.	≥90cm	53	33.1
	(Male)		
1.	<90cm	66	47.1
2.	≥90-99cm	56	40.0
3.	≥100cm	18	12.9

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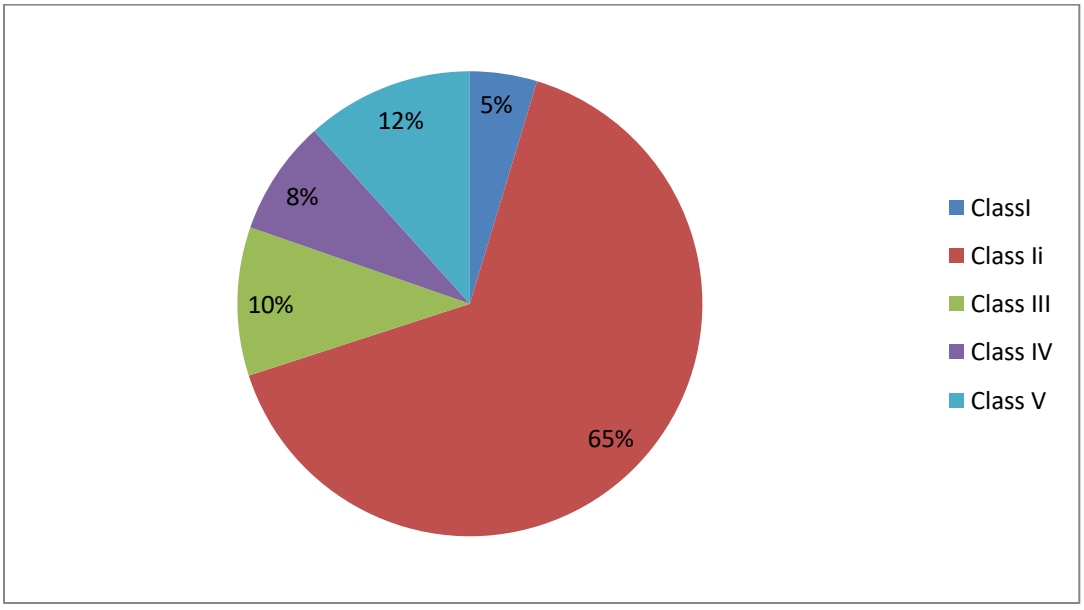
	PHYSICAL ACTIVITY		
1.	Strenuous activities	36	12
2.	Mild physical activity	108	36
3.	Sedentary activities	158	52
	FAMILY HISTORY OF DM		
1.	No DM in parents	158	52.7
2.	One parent is diabetic	104	34.7
3.	Both parents are diabetic	38	12.3

Table 2: IDRS SCORE:

IRDS SCALE	FREQUENCY(n)	PERCENTAGE(%)
High	144	48.3%
Medium	126	43%
Low	30	9.7%

Figure 1: Socio Economic Class Among Study Population(N=300)



Majority of the study population were among class II group(65%)

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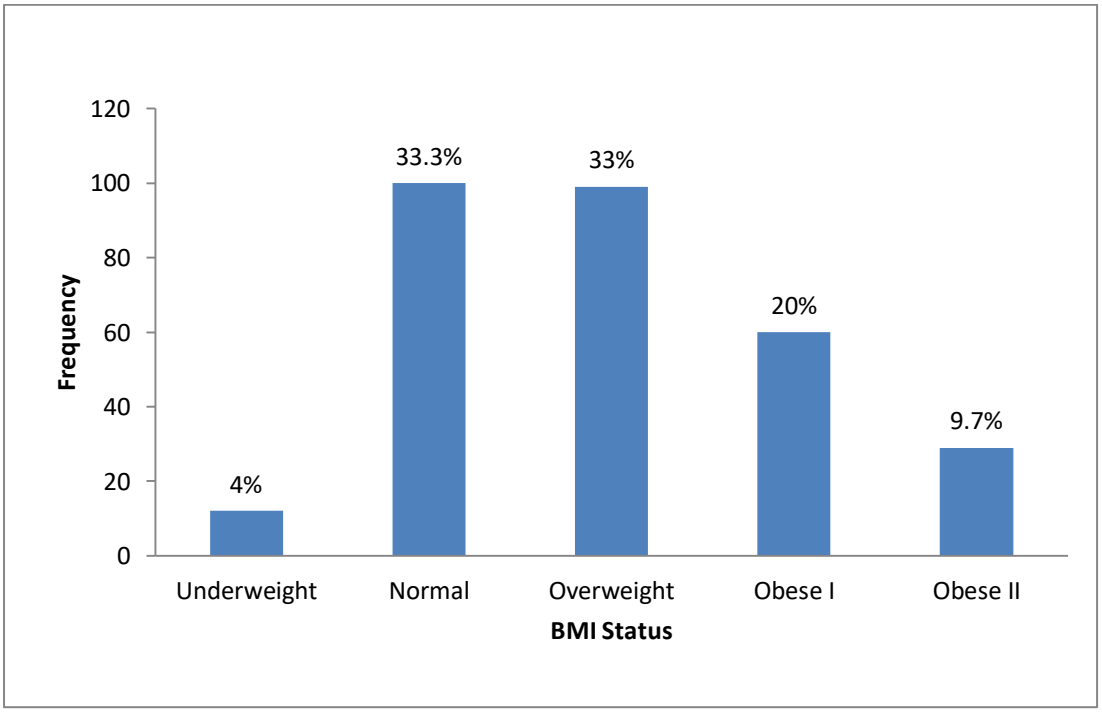
Figure 2: BMI Status Among Study Population(N=300)



Majority of the study population were normal (33.3%) in their BMI status.

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