Section: Community Medicine

Original Research Article

STUDY TO ASSESS THE RISK OF DIABETES USING INDIAN DIABETIC RISK SCORE (IDRS) AND ITS ASSOCIATED FACTORS AMONG ADULTS IN RURAL AREAS OF SRIKAKULAM: A COMMUNITY BASED CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Now a days the prevalence of diabetes is beyond the expected values in the developing countries. In India, there are estimated 77 million people aged >18 years are suffering from type 2 diabetes and nearly 25 million are prediabetics. Awareness, knowledge, Screening, prediction of risk and treatment of diabetes is mandatory to reduce the premature deaths due to diabetes and other non-communicable diseases. **Objective** of this study is to assess the diabetic risk among healthy adults aged >20 years and its associated factors those are residing in rural area of Srikakulam.

Materials and Methods: community based cross sectional study was done among adult rural population of Srikakulam district, Andhra Pradesh. House to house survey was done and the participants was selected randomly; risk assessment of diabetes was done by Indian diabetes risk score among adults >20 years of age and not a known diabetic patient.

Results: Out of 243, assessment of risk is 58 (23.9%) were high risk, 165 (67.9%) medium risk and 20 (8.2%) were low risk of diabetes. Those who are non-smokers has 46(18.9%) high risk of diabetes than smokers 12(4.9%) with p value (0.01), it is statistically significant.

Conclusion: This study was found that, 23.9% was high risk of getting diabetes and many participants were not knowing their health status. Assessment of health status at community one of the important steps to early identification of the chronic diseases, and prevent their complications in advanced age.

Keywords: Screening of diabetics, IDRS, Non-communicable diseases, Cross sectional study.

INTRODUCTION

Diabetes is a most common and neglected non-communicable diseases especially in rural areas of developing countries. In India, there are estimated 77 million people aged >18 years are suffering from diabetes (type 2) and nearly 25 million are prediabetics. More than 50% of people are unaware of their diabetic status which leads to health complications if not detected and treated early. Adults with diabetes have a 2-3-fold increased risk of heart attacks and strokes and diabetes is among the leading causes of kidney failure.[1] The prevalence of diabetes is rising and it is playing major role for premature death and which contributes a large burden to the patients and their families. Indian diabetic patients may be at greater risk for these complications due to the onset of disease at their early age.[2] More than half of the people are predicted to be undiagnosed, there is need to explain awareness and knowledge of diabetes and its complications among healthcare providers to promote screening and early diagnosis to improve health outcomes and reduce the

premature deaths, ultimate goal is save the lives.[3] Madras Diabetes Research Foundation developed a most effective tool for diabetic screening is the Indian Diabetes Risk Score (IDRS), a simple and economical method to assess the risk of developing diabetes based on variables such as age, waist circumference, physical activity, and family history of diabetes.[4] The only root of reducing the socio economic burden of diabetes is early diagnosis by using precise, appropriate questionnaire. Risk factors like age, obesity, family history of diabetes, lack of physical activity, stressful environment and dietary habits were plying major role of getting higher risk of Type 2 Diabetes.[5,6,7] Also rapid urbanization, globalization, and taking unhealthy food are vital factors in the development of major Non-Communicable Diseases (NCDs). These risk factors can be modified and controlled if detected early. The identification of high-risk individuals in their normoglycemic state will be the most crucial step to the prevention of disease.[8,9,10]

MATERIALS AND METHODS

A community based cross sectional study is conducted at rural area of Srikakulam district, Andhra Pradesh, from December 2023-February 2024. Study participants were recruited from family doctor program (FDP) survey areas by PI and field staff like ASHA, ANM, male health assistants. We included in the study those who apparently healthy aged >20 years with willing to participants and excluded those are not willing and known diabetes. Data is collected after taking consent from participants, through semi structured questionnaire by interview (house to house) and using by simple random sampling. Risk assessment for diabetes is done by Indian diabetes risk score (IDRS) and which contains parameters such as age, abdominal obesity, physical activity, and family history. IDRS total score is 100, which is categorized <30 low risk, 30-50 medium risk and > 60 high risk. IDRS tool is an easy, less time consuming, non-invasive, and cost-effective approach to assess an individual's risk of undiagnosed type 2 DM. We are collected information's like sociodemographic factors, morbidity profile and related factors etc. Sample size is calculated using by 4pq/d2 formula, assumptions are taken from Holla *et al*. study. Prevalence is 35%, alpha error 5%, confidence interval (95%), absolute precision is 6 % taken and then final sample size was included 243. Data were entered into Microsoft Excel sheets and analysed using SPSS 25.

RESULTS

A total 243 participants were included in this study, among them 42.8% males and 57.2% females. Majority are from nuclear family (81.5%) and majority were predominantly non-vegetarians (95%). And 12.3% were known smokers and 11.5 %were known alcoholics.

Table 1: Sociodemographic details of the study participants in rural area of Srikakulam

Sociodemographic variables		Frequency (N=243)	Percentage (%)
Gender	Male	104	42.8
	Female	139	57.2
Type of family	Nuclear	198	81.5
	Joint	29	11.9
	Others	16	6.6
Type of diet	Vegetarian	12	4.93
	Non-Vegetarian	231	95.07
H/O Smoking	Yes	30	12.3
	No	213	87.7
H/O Alcohol	Yes	28	11.5
	No	215	88.5

Regarding morbidity profile of the study participants, among the total 35.9% were having arthritis, gastritis (24.2%), respiratory illness (14.9%) and skin diseases (9.0%), fever (7.4%) respectively (Table 2). Majority of participants from aged ≥ 50 Years (56.8%) followed by 35 to 49 Years (32%) and <35 Years (11.1%). Those who are having Waist circumference < 80 cm [female]; < 90 cm [male] were 54.3%, and those who are doing moderate physical activity is 58.8% than Mild exercise (28.4%) and No exercise and sedentary activities (12.8%). Majority of the participants are doesn't have family history of diabetes (Table 3).

Regarding assessment of diabetic risk, out of total 58 (23.9%) were high risk, 165 (67.9%) medium risk and 20 (8.2%) were low risk of diabetes (Table 4). Various important risk factors are attributes to diabetes, such as age, abdominal obesity, physical activity and family history. Finally, association between certain factors and risk of diabetes is females are high risk for diabetes than males with p value 0.18 (non-significant). Those who are non-smokers has 46(18.9%) high risk of diabetes than smokers 12(4.9%) with p value 0.01(statistically significant) and non-alcoholics 51(21%) high risk than alcoholics (Table 5).

Table 2: Morbidity details of study participants in rural area of Srikakulam

Morbidity profile	Frequency (N=243)	Percentage (%)
Fever with myalgia	18	7.4
Gastritis	59	24.2
Arthritis	87	35.9
Skin disease	22	9.0
Acute respiratory illness	36	14.9
Others	21	8.6
Total	243	100.00

Table 3: Details of risk factor for causes diabetes among participants in rural area of Srikakulam

Variables	Frequency (n=243)	Percentage (%)
Age		
<35 Years	27	11.11
35 to 49 Years	78	32.09
≥ 50 Years	138	56.8
Abdominal obesity		
Waist < 80 cm [female]; < 90 cm [male]	132	54.3
Waist 80 - 89 cm [female], 90 – 99 cm [male]	95	39.1
Waist ≥ 90 cm [female], ≥ 100 cm [male]	16	6.6
Physical Activity		
Vigorous exercise [regular] or strenuous [manual] work at home / work	0	0.0
Moderate exercise [regular] or moderate physical activity at home / work	143	58.8
Mild exercise [regular] or mild physical activity at home / work	69	28.4
No exercise and sedentary activities at home / work	31	12.8
Family History		
No diabetes in parents	220	90.5
One parent is diabetic	21	8.7
Both parents are diabetic	2	0.8

Table 4: Assessment of risk for diabetes among study participants by IDRS

Risk for diabetes	Frequency	Percentage
High	58	23.9%
Medium	165	67.9%
Low	20	8.2%
Total	243	100 %

Table 5: Association between certain risk factors and risk of diabetes among the study participants

Risk factors		Risk of Diabetes			χ^2 value	P value
		low	medium	high		
Sex	Male	19(7.8%)	61 (25.1%)	24 (9.8%)	3.36	0.18
	Female	38(15.6%)	67 (27.5%)	34 (14%)		
Diet	Vegetarian	3 (1.2%)	6 (2.4%)	3 (1.2%)	0.037	0.98
	Non-vegetarian	54(22.2%)	122 (50.2%)	55(22.6%)		
Smoking	No	51(21%)	114 (50%)	46(18.9%)	11.81	0.01
	Yes	6 (2.4%)	14 (5.7%)	12 (4.9%)		
Alcohol	No	49(20.1%)	113 (46.5%)	51 (21%)	6.62	0.15
	Yes	8 (3.2%)	15 (6.1%)	7 (2.8%)		

DISCUSSION

The current study shows out of total 243, 42.8% males and 57.2% females. 58 (23.9%) were at high risk, 165 (67.9%) medium risk and 20 (8.2%) were at low risk of diabetes. Sri PKSSU et al. study shows 53.5% were males, mean age was 40.13±15 year. The overall prevalence of diabetes was 21.0%, as per IRDS, 20.5% were in low-risk category. 44.5% and 31.5% were in moderate and high-risk category respectively. When compared with this study high risk category is more. A similar study Kumaran, et al. the higher IDRS risk score was seen in 48.2% of participants, 47.2% had moderate risk, while only 3.5% had low risk. In this study, the age >50 years is 56.8%, age between 35-49 year were 32% and <35 years is 11%. Sri PKSSU et al. found that 80 (40%) were below 35 years age 62 (31%) were between 35 to 49 and 58 (29%) were above 50 years of age, when compared with this study >50 years and above was elevated. This study found that, non-smokers have (18.9%) high risk of diabetes than smokers 12(4.9%) with p value 0.01(statistically significant) and non-alcoholics. Here, risk of diabetes is higher to non-smokers/non-alcoholic than smokers/alcoholic but it is biologically incorrect. May be various factors influenced the study findings like social stigma, environmental factors, false information, dietary habits and life style changes which are some limitations for this study results. A study from south India, showed that no physical exercise- 45 (71.7%), consumption of non-vegetarian food 43 (65%), low consumption of fruits- 47 (74.6%) among high-risk category, which is similar to this study findings. Psychological stress is one of the risk factors which

causes the progression of multiple diseases. Stress affects both the nervous and peripheral systems and it is closely related to diabetes because both have common risk factors such as inadequate eating behaviours and sedentary lifestyle. Ramesh Holla et al. study represent Majority (n=65, 67%) of the study participants did not have a family history of diabetes. The findings of this study were similar, those who are not having family history of diabetes were 90%, they assessed high risk of diabetes due to dietary habits, life style changes.

CONCLUSION

This study showed that, 23.9% are at high risk of developing diabetes and those who are non-smokers they are significantly associated with risk of diabetes. Many participants were not aware of their health status and lack of knowledge about chronic diseases at rural areas of Andhra Pradesh. Thus, this is good information and opportunity to improve quality of care at PHC levels, conduct opportunistic screening at community level, create awareness about non-communicable diseases like diabetes, hypertension, cancers and cardiovascular diseases.

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