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Identify the Prevalence and its Association with the Demographic Factors of Prediabetes Among Young Adults in Selected Urban Area of Aizawl, Mizoram

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Abstract: ***Background: India harbours a significant diabetic population, with over 60 million adults affected, a substantial proportion of whom remain undiagnosed or untreated, elevating the risk of complications and premature mortality. Identifying prediabetes and advocating lifestyle modifications become imperative in such a scenario.this study aims to identify the Prevalence and its demographic factors among young adults of 20-40years of age in selected Urban area of Aizawl, Mizoram[1].***
Methods: Quantitative Research Approach and Non-Experimental Survey Research Design was adopted in the study. Probability Proportion to Size (PPS) Sampling Technique was adopted for selection of data collection . 40 sample were included in the study. After obtaining permission a standardized tool Type 2 Diabetes Risk Assessment Form designed by Professor Jaakko Tuomilehto under the Finnish Diabetes Association was adopted to identify the prevalence of prediabetes among young adult.
Result: The findings of the study revealed that out of 40 young adults of 20–40 years of age, 60% were having low risk,5% moderdate and 35% were slightly elevated risk for Type-2 Diabetes.
Conclusion: Therefore, the study showed that there is a significant association between the prevalence of Pre-diabetes and demographic variables like monthly family income and frequency of alcohol consumption.
Keywords: Prevalence, Pre-Diabetes, Young adults

I. INTRODUCTION

Diabetes mellitus (DM) is a major global health concern[1]. It is a leading cause of morbidity, mortality, and cardiovascular complications[2,3].

Diabetes and its associated complications have become a serious health concern in the present decade.International Diabetes Federation has estimated that worldwide the number of adult people aged between 20 to 79 years with diabetes will increase from 463 million in 2019 to 700 million by 2045.1 In India, studies have shown that over a period of 3 years to 5 years nearly 40% to 50% of the prediabetic will develop type 2 diabetes.[4,5]

Pre-diabetes is a condition preceding diabetes wherein blood glucose is higher than normal yet below the diabetes limit[6,7]. It is typically defined as an intermediate state of hyperglycemic concentration in the blood with a high potential to progress to type 2 diabetes (T2D)[8]. According to the American Diabetes Association (ADA), Pre-diabetes is diagnosed when the fasting plasma glucose (FPG) is between 100-125 mg/dl or glycated hemoglobin A1c (HbA1c) levels are between 5.7-6.4% .

A. Problem Statement

To identify the Prevalence and its demographic factors among young adults of 20-40 years of age in selected Urban area of Aizawl, Mizoram.

B. Objectives

1) To identify the prevalence of Pre-Diabetes among young adults of 20-40 years of age in selected Urban area of Aizawl Mizoram.
2) To find the association between the Prevalence of Pre-Diabetes among young adults of 20-40 years of age with selected demographic variables.

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C. Methods

Quantitative Research Approach and Non-Experimental Survey Research Design was adopted in the study. Probability Proportion to Size (PPS) Sampling Technique was adopted for selection of data collection . 40 young adults of 20-40 years of age from selected urban areas of Aizawl Mizoram were included in the study. After obtaining permission, a standardized tool Type 2 Diabetes Risk Assessment Form designed by Professor Jaakko Tuomilehto under the Finnish Diabetes Association was adopted to assess the prevalence of prediabetes among young adults.

D. Hypothesis

H_1: There is significant association between the prevalence of Pre-Diabetes among young adults of 20-40 years of age with selected demographic variables.

E. Assumption

There maybe low risk of Pre-Diabetes among young adults of 20-40 years of age in selected Urban areas of Aizawl, Mizoram.

II. RESULTS

TABLE 1: Frequency and Percentage distribution of demographic variables
n=40

SL NO	DEMOGRAPHIC VARIABLES	FREQUENCY (f)	PERCENTAGE (%)
1	Gender		
	a) Male	12	30
	b) Female	28	70
2	Educational Qualification		
	a) Illiterate	-	-
	b) Primary School Certificate	-	-
	c) Middle School Certificate	2	5
	d) High School Certificate	13	32.5
	e) Intermediate or Diploma	14	35
	f) Graduate	11	27.5
	g) Professional or Honors	-	-
3	Occupation		
	a) Unemployed	28	70
	b) Elementary Occupation	10	25
	c) Plant and Machine Operators and Assemblers	-	-
	d) Craft and related trade workers	-	-
	e) Skilled Agricultural and Fishery Workers	-	-
	f) Clerks	1	2.5
	g) Technician and Associate Professionals	1	2.5
	h) Professionals	-	-
	i) Legislators, Senior Officials & Managers	-	-
4	Monthly Family Income		
	a) ≤ Rs.6174	6	15
	b) Rs. 6175 – 18,496	4	10

	c) Rs. 18,497 – 30,830	13	32.5
	d) Rs. 30,831 – 46,128	14	35
	e) Rs. 46,129 – 61,662	2	5
	f) Rs. 61,663 – 123,321	1	2.5
	g) ≥ Rs. 123,322	-	-
5	History of smoking and consuming tobacco		
	a) Not at all	14	35
	b) Formerly	7	17.5
	c) Daily smoker	10	25
	d) Occasionally	2	5
	e) Addicted/Abused	7	17.5
6	How often do you have a drink containing alcohol?		
	a) Never	35	87.5
	b) Monthly or less	3	7.5
	c) 2-4 times a month	2	5
	d) 2-3 times a week	-	-
	e) 4 or more times a week	-	-
7	Dietary Habits		
	a) Vegetarian	4	10
	b) Non-Vegetarian	36	90
7.1	If Non-Vegetarian, most preferred		
	a) Pork	18	45
	b) Beef	9	22.5
	c) Chicken	10	25
	d) Fish	3	7.5
7.2	For Non-Vegetarian, frequency of intake/week.		
	a) Once a week	12	30
	b) Twice a week	17	42.5
	c) Thrice a week	11	27.5
	d) All the time/Daily	-	-
8	Physical Activity		
	a) Active (3-4 times/week)	13	32.5
	b) Moderate Active (1-2 times/week)	6	15
	c) Low Active (1-2 times/month)	15	37.5
	d) Sedentary (Not at all ie. May have been due to pregnancy or ill health)	6	15
9	Previous knowledge of Diabetes Mellitus.		
	a) Yes	34	85
	b) No	6	15

Table 1 indicates that out of 40 young adults of 20-40 years of age, majority 70% were female, 35% had a qualification of intermediate or diploma certificate, 70% were unemployed ,35% had a highest income between Rs. 30,831 – 46,128, 35% had no history of smoking or tobacco use,87.5% had never consumed alcoholic beverages. 90% were non-vegetarian, 45% preferring pork typically consumed twice per week, 37.5% engaged in low levels of physical activity and 85% had prior knowledge of Diabetes Mellitus.

TABLE 2: Prevalence rate of Pre-Diabetes in selected Urban areas of Aizawl Mizoram

Among the 40 young adults of 20-40 years of age, those with impaired fasting glucose (IFG) defined as fasting plasma glucose of 110 mg/dl-125 mg/dl state of intermediate hyperglycaemia are considered to have prediabetes.

$$\text{Prevalence rate} = \frac{\text{Number of existing cases of disease}}{\text{Total study population}} \times 100$$

$$\text{Urban prevalance rate} = \frac{9}{40} \times 100$$

$$= 22.5\ \%$$

TABLE 3: Prevalence of Pre-Diabetes in selected Urban areas of Aizawl Mizoram

A standardized questionnaire tool Type 2 Diabetes Risk Assessment Form designed by Professor Jaakko Tuomilehto under the Finnish Diabetes Association was adopted to assess the prevalence of prediabetes among young adults of age 20-40 years of age. It consists of 8 scales and was categorized with a total point of 26. **n=40**

CATEGORY	FREQUENCY (f)	PERCENTAGE (%)
Low	24	60
Moderate	2	5
Slightly Elevated	14	35

Table 3 reveals that out 40 young adults of 20–40 years of age, majority 60% were low-risk, 5% moderate and 35% were slightly elevated for Pre-Diabetes.

TABLE 4. Association between prevalence of Pre-Diabetes among young adults of 20-40 years of age with selected demographic variables. n=40

SL NO	DEMOGRAPHIC VARIABLES	Chi Square	df	p-value	Inference
1	Gender	5.16	2	0.76	NS
	a) Male				
	b) Female				
2	Educational Qualification				
	a) Illiterate	1.72	6	0.943	NS
	b) Primary School Certificate				
	c) Middle School Certificate				
	d) High School Certificate				
	e) Intermediate or Diploma				
	f) Graduate				
	g) Professional or Honors				
3	Occupation				
	a) Unemployed	4.959	6	0.549	NS
	b) Elementary Occupation				
	c) Plant and Machine Operators and Assemblers				
	d) Craft and related trade workers				
	e) Skilled Agricultural and Fishery Workers				
	f) Clerks				
	g) Technician and Associate Professionals				
	h) Professionals				

	i) Legislators, Senior Officials & Managers				
4	Monthly Family Income				
	a) ≤ Rs.6174	17.916	10	0.056	*S
	b) Rs. 6175 – 18,496				
	c) Rs. 18,497 – 30,830				
	d) Rs. 30,831 – 46,128				
	e) Rs. 46,129 – 61,662				
	f) Rs. 61,663 – 123,321				
	g) ≥ Rs. 123,322				
5	History of smoking and consuming tobacco				
	a) Not at all	13.00	8	0.112	NS
	b) Formerly				
	c) Daily smoker				
	d) Occasionally				
	e) Addicted/Abused				
6	How often do you have a drink containing alcohol?				
	a) Never	10.57	4	0.032	*S
	b) Monthly or less				
	c) 2-4 times a month				
	d) 2-3 times a week				
	e) 4 or more times a week				
7	Dietary Habits				
	a) Vegetarian	0.582	2	0.748	NS
	b) Non-Vegetarian				
7.1	If Non-Vegetarian, most preferred				
	a) Pork	2.42	6	0.877	NS
	b) Beef				
	c) Chicken				
	d) Fish				
7.2	For Non-Vegetarian, frequency of intake/week.				
	a) Once a week	4.39	4	0.355	NS
	b) Twice a week				
	c) Thrice a week				
	d) All the time/Daily				
8	Physical Activity				
	a) Active (3-4 times/week)	5.89	6	0.440	NS
	b) Moderate Active (1-2 times/week)				
	c) Low Active (1-2 times/month)				
	d) Sedentary (Not at all ie. May have been due to pregnancy or ill health)				
9	Previous knowledge of Diabetes Mellitus.				
	a) Yes	0.411	2	0.814	NS
	b) No				

*S- Significant, NS- Not Significant

Table 4 shows that there is a significant association between prevalence of Pre-Diabetes among young adults of 20-40 years of age with selected demographic variables like monthly family income and frequency of alcohol intake at 0.05 level of significance.

III. CONCLUSION

The study reveals that the prevalence rate of pre-diabetes is 22.5%. Thus the research hypothesis tested is accepted for association between the prevalence of pre-Diabetes and demographic variables like monthly family income and frequency of alcohol intake. And the null hypothesis is accepted for association between the prevalence of pre-Diabetes and demographic variables like Gender, educational qualification, Occupation, history of smoking and consuming tobacco, dietary habits, non-vegetarian preferred food , physical activity and previous knowledge of Pre-Diabetes.

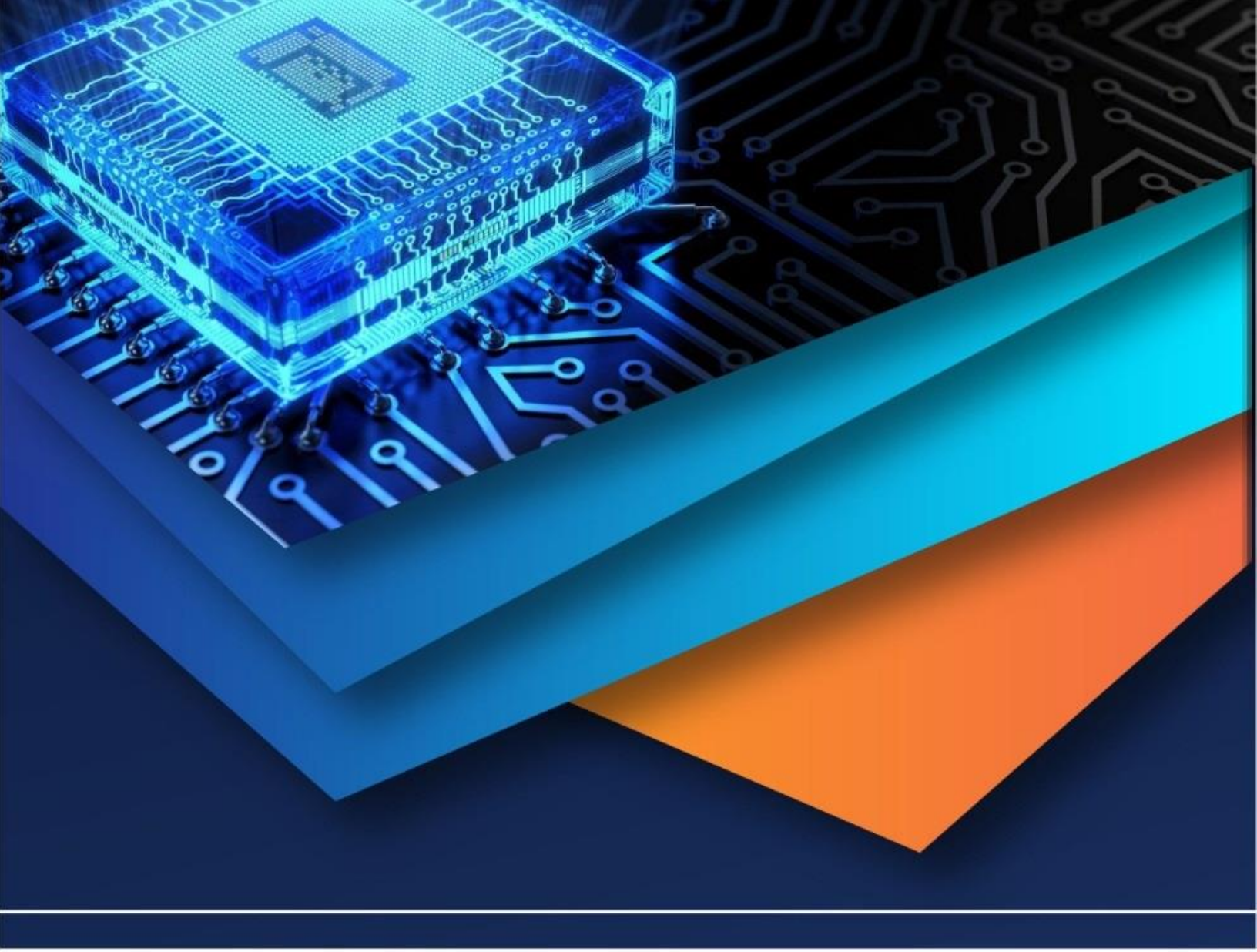
IV. RECOMMENDATIONS

1) A replication of present study can be done with larger sample size.
2) A comparative study can be carried out in rural and urban settings.

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