Section: Community Medicine

Original Research Article

A STUDY OF PREVALENCE OF DIABETES MELLITUS AND ASSOCIATED RISK FACTORS IN STATE TRANSPORT EMPLOYEES FROM A TALUKA AMBAJOGAI IN MAHARASHTRA

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ABSTRACT

Background: Diabetes Mellitus, a chronic disease once thought to be uncommon in the developing world, has emerged as an important public health problem. Diabetes is one of the most common non communicable diseases prevalent globally. The rise is associated with economic development, ageing populations, increasing urbanization, dietary changes, reduced physical activity, and changes in other lifestyle patterns. State transport Employees job is stressful because of long hours of stressful travel, irregular eating habits, sleepless nights, shift duties, stresses and overtime working and working on Sunday's and holidays. Occupational stress can alter blood glucose level in an undesirable manner and can affect the management of dysglycemia and its complication. **Aim & Objective**: 1. To find out the prevalence of diabetes mellitus in state transport employees. 2. To study the associated risk factors for diabetes mellitus in state transport employees.
Materials and Methods: A Cross-Sectional Descriptive study was undertaken in State transport employees at State Transport Bus depot Ambajogai dist. Beed from June 2016 to December 2016 in 327 employees.
Results: **Results & Conclusion-** The overall prevalence of Type 2 Diabetes Mellitus among employees working at State Transport depot employees was 7.34%. Factors like Family history, level of physical activity, Body Mass Index ≥ were found to be significantly associated with Type 2 Diabetes Mellitus.
Keywords: Diabetes Mellitus, State, Transport, Employees.

INTRODUCTION

Diabetes Mellitus, a chronic disease once thought to be uncommon in the developing world, has emerged as an important public health problem & posing a serious threat to be met within 21st century.[1] WHO report 1991 states that diabetes in adults is now a third world problem.[2] Type-2 diabetes, the most prevalent form is often asymptomatic in its early stages and can remain undiagnosed for many years.[3]

Diabetic patients have about twice the prevalence of hypertension and twice the incidence of stroke as compared to non-diabetic subjects.[4] The rapid rises of non-communicable diseases represent one of the major health challenges to global development in this century.[5] The term 'Diabetes Mellitus'

describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycemias with disturbances of carbohydrate, fat and protein metabolism resulting from defect in insulin secretion, insulin action or both.[6]

Diabetes mellitus is not considered a professional illness, in many cases, these professionals assume long workdays, multiple jobs, shift work, entailing difficulties to adopt healthy life habits, without mentioning that the nature itself of health work confronts its workers with stress and anxiety on a daily base. These have been evidenced as harmful to people's health, making them susceptible to chronic health problems.[7] Over the past three decades, the number of people with Diabetes Mellitus has more than doubled globally, making it one of the most important public health challenges.[8]

Type-II Diabetes has already been described as the epidemic of new millennium.[9] The large health care burden due to diabetes in India has been mostly attributed to its rising prevalence in urban area.[10] Global prevalence of diabetes mellitus is 8.3%.There are more people with diabetes living in urban (246 million) than in rural (136 million) areas. The majority of the 382 million people with diabetes are aged between 40 and 59, and 80% of them live in low and middle-income countries. All types of diabetes are on the increase, type 2 diabetes in particular: the number of people with diabetes will increase by 55% by 2035. Moreover, with 80% of the total number affected living in low- and middle-income countries, where the epidemic is gathering pace at alarming rates.[11]

State transport Employees job is stressful because of long hours of stressful travel, irregular eating habits, sleepless nights, shift duties, stresses and overtime working and working on Sunday's and holidays. Occupational stress can alter blood glucose level in an undesirable manner and can affect the management of dysglycemia and its complication. Very less studies were done in relation to diabetic status of these employees, considering the ray of hope in increasing the knowledge regarding diabetic status and factors associated to it in State transport Employees, current study was conducted.

MATERIALS AND METHODS

1. Study design: A Cross-Sectional Descriptive Study.

2. Study setting: State Transport Depot Ambajogai, Dist. Beed.

3. Study period: From June 2016 to December. 2016.

4. Ethical considerations Ethical committee approval was obtained from the Institutional ethical committee prior to the start of the study.

5. Inclusion criteria: - Employee of age 20 years and above. Those who were willing to participate in a study.

6. Exclusion criteria: Pregnant women and lactating women up to 12 weeks. Persons with Type-1 Diabetes Mellitus. Those who were not willing to participate in a study.

7. Sampling Technique and Sample Size: Non probability convenience sampling method was used for the study; 451 state transport employees working at bus depot Ambajogai were considered. Samples were taken with respect to inclusion – exclusion criteria, so finally **327** samples were interviewed in this study.

8. Conduct of the Study:

- **Consent of study participants:** Study participants were informed about the objective and purpose of the study. Those who were willing to participate in the study, their written informed consents were taken and enrolled in the study.
- **Data collection:** The objective and purpose of the study was explained to the respective study participant. On an average 20-25 study subjects were examined per day. The predesigned proforma used to collect general information and socioeconomic details of study participant. History taking involved personal details of the individual, presenting complaints, Significant Past illness, family history for Diabetes Mellitus, Personal habits like alcohol consumption, tobacco chewing, smoking and physical activity level of individual. History taking was followed by clinical examination of individual. Detailed clinical examination included anthropometric measurements and blood pressure recording by using standard procedure and standardized instrument.
- **Data compilation:** Collected data was entered into Microsoft-Excel 2010 worksheets and coded appropriately.

Data analysis: Data was analyzed using Microsoft Excel 2010, Open EPI-Info Version 3.01 updated on 2013/04/06. To describe the data appropriately frequencies, percentages & chi-square test were used.

RESULTS

In Table no. 1 it was observed that most predominant age group of study participants was 35-49 years (42.20%), majority were male (94.19%), Hindu (92.97%), Married (96.33%), Graduate (29.97%), Driver by occupation (42.43%), Nuclear family (43.73%) & belongs to class II (46.79%) as per Modified B.G Prasad classification.[12]

Table no. 2 shows prevalence of Type 2 Diabetes Mellitus among study participants and it was 7.34%. [Table 2]

Table no. 3 shows that factors like family history of diabetes, less physical activity & increased BMI were associated statistically significant ($P<0.05$) with an increased risk of Type 2 Diabetes Mellitus. Whereas other factors like Age, Waist-hip ratio,

Hypertension, Socio-economic status were not associated statistically significant (P>0.05) with an increased risk of Type 2 Diabetes Mellitus. [Table 3]

Table 1: Socio-demographic profile of study participants

SN	VARIABLES		FREQUENCY (%)
1	AGE	<35	92(28.14)
		35-49	138(42.20)
		≥50	97(29.66)
2	GENDER	MALE	308(94.19)
		FEMALE	19(5.81)
3	RELIGION	HINDU	304(92.97)
		BUDDHIST	4(1.22)
		MUSLIM	19(5.81)
4	MARITAL STATUS	MARRIED	315(96.33)
		WID0W/WIDOWER	2(0.62)
		DIVORCED/SEPARATED	1(0.30)
		UNMARRIED	9(2.75)
5	EDUCATION	ILLITERATE	3(0.92)
		PRIMARY	33(10.09)
		SECONDARY	86(26.30)
		HIGHER SECONDARY	78(23.85)
		GRADUATE	98(29.97)
		POST-GRADUATE	29(8.87)
6	OCCUPATIONAL WORK	CONDUCTOR	121(37.00)
		DRIVER	139(42.43)
		MACHANIC	38(11.70)
		ADMINISTRATIVE STAFF	29(8.87)
7	TYPE OF FAMILY	NUCLEAR	143(43.73)
		JOINT	128(39.14)
		THREE GENERATION	56(17.13)
8	SOCIO-ECONOMIC STATUS	I	54(16.51)
		II	153(46.79)
		III	81(24.77)
		IV	32(9.79)
		V	7(2.14)

Table 2: Prevalence of Type-2 Diabetes Mellitus among study participants

VARIABLES	TYPE 2 DIABETES MELLITUS		TOTAL (%)
	PRESENT (%)	ABSENT (%)	
MALE	23(7.03)	285(87.16)	308(94.19)
FEMALE	1(0.31)	18(5.50)	19(5.81)
TOTAL (%)	24(7.34)	303(92.66)	327(100)

Table 3: Factors associated with Type-2 Diabetes Mellitus in study participants

SN	RISK FACTORS		STUDY PARTICIPANTS			X^2, DF, p-value
			DIABETIC	NON-DIABETIC	TOTAL	
1	AGE (YEARS)	<35	4	88	92	X^2-1.828, DF- 2, p-value- 0.4009
		35-49	11	127	138	
		≥50	9	88	97	
		TOTAL	24	303	327	
2	FAMILY HISTORY OF DIABETES	PRESENT	6	114	120	X^2-14.18, DF- 1, p-value- 0.0008
		ABSENT	11	168	179	
		UNKNOWN STATUS	7	21	28	
		TOTAL	24	303	327	
3	PHYSICAL ACTIVITY	SEDENTARY	8	157	165	X^2-12.43, DF- 2, p-value- 0.002
		MODERATE	7	110	117	
		HEAVY	9	36	45	
		TOTAL	24	303	327	
4	BODY MASS INDEX	UNDER WEIGHT	1	6	7	X^2-9.715, DF- 3, p-value- 0.0211
		NORMAL	7	150	157	
		OVERWEIGHT	9	117	126	
		OBESE	7	30	37	
		TOTAL	24	303	327	
5	WAIST HIP RATIO	NORMAL	10	66	153	X^2-0.273, DF- 1, p-value- 0.0601
		HIGH	14	237	154	
		TOTAL	24	303	327	
6	HYPERTENSION	PRESENT	9	66	75	X^2-3.108, DF- 1,
		ABSENT	15	237	252	

		TOTAL	24	303	327	p-value- 0.0779
7	SOCIO-ECONOMIC STATUS	I	3	51	54	X^2-1.012, DF- 4, p-value- 0.9079
		II	11	142	153	
		III	7	74	81	
		IV	2	30	32	
		V	1	6	7	
		TOTAL	24	303	327	

DISCUSSION

In this Cross-Sectional Descriptive study, 327 state transport employees working at bus depot Ambajogai were interviewed. Socio-demographic profile of study participants (Table no. 1) shows most predominant age group was 35-49 years (42.20%), majority were male (94.19%), Hindu (92.97%) by religion, married (96.33%), Graduate (29.97%), Driver by occupation (42.43%), Nuclear family (43.73%) & belongs to class II (46.79%) as per Modified B.G Prasad classification. Table no. 2 shows prevalence of Type 2 Diabetes Mellitus among study participants and it was 7.34%. Table no. 3 shows that factors like family history of diabetes, less physical activity & increased BMI were associated statistically significant (P<0.05) with an increased risk of Type 2 Diabetes Mellitus.

Mean age of the study population was 48 ± 9.7 years in study done by Amam C. Mbakwem et al.[14] Whereas Odeyinka OT et al found age of study participants ≥41 years.[16]

Similarly prevalence reaches around the finding of this study in Levitt NS et al (7.1%)18, S.M KIM et al19 (7.6%), Arora V et al20 (8.1%), Ahmad J et al21 (6.05%), Zargar et al22 (6.14%). In study done by Rao CR et al, from total study participants 11.1% had Diabetes,[15] prevalence of Diabetes was 3.4% in Odeyinka OT et al,[16] study & 14% in Modjadji, P et al,[17] study.

Association of family history, physical activity & BMI with diabetes was significantly associated in the study participants in this study which was unanimously supported by the studies done by Arora V et al,[20] Menon VU et al,[23] Ramchandran A et al,[24] Mohan V et al.[25] In many studies like Kim S et al,[19] Mohan V et al,[25] Bhatti JS et al,[26] also found the significant relation between less physical activity and Type 2 Diabetes Mellitus. Amam C. Mbakwem et al mentioned in their study that 50.9% study participants were physically inactive. Prevalence of overweight and obesity was 41.7 and 21.1%, respectively.[14] Excessive body weight was recorded in 62.6% of the study population; 45.3% had overweight and 17.4% were diagnosed with obesity (Andrzej Marcinkiewicz et al,[13]) 40.0% were overweight and obese in study done by Rao CR et al,[15] 47.2% obese in Modjadji, P et al.[16] The prevalence of overweight (44%) and obesity (30%) were observed by Modjadji, P et al.[17]

CONCLUSION

The overall prevalence of Type 2 Diabetes Mellitus among employees working at State Transport depot employees was 7.34%. Factors like Family history of diabetes mellitus, level of less physical activity, Body Mass Index ≥ 25 were found to be significantly associated with Type 2 Diabetes Mellitus.

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