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Original Research Article

Prevalence of high risk individuals for type 2 diabetes mellitus with Indian diabetes risk (IDRS) Score in bank employees of urban Maharashtra

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Abstract

Introduction: World Health Organization (WHO) defines the term diabetes mellitus as- 'a metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both.' Non-communicable diseases associated with changes in lifestyle and diet has become a major public health problem in both the developed and developing countries.

Objectives: To study prevalence of high risk individuals for Type 2 Diabetes Mellitus with Indian Diabetes Risk Score in Bank Employees of Urban Maharashtra.

Methods: The type of present study is a Cross Sectional community based descriptive study. Calculated sample size came to 400. The number of bank employees in each strata were calculated. There were 807 bank employees in government banks, 411 bank employees in co-operative banks and 397 bank employees in private banks. So it was decided by stratified random sampling that 200 subjects would be from Government banks, 100 subjects would be from Co-operative banks and 100 subjects would be from Private bank.

Results: The prevalence of high risk individuals for type 2 diabetes mellitus using IDRS score developed by V Mohan was 26.5% in the present study. The prevalence of already diagnosed diabetes mellitus cases was more i.e. 11.5%.

Conclusion: IDRS score was significant with age group,body mass index and family history of diabetes mellitus, waist circumference, tobacco addiction and alcohol addiction. But it did not significantly vary with gender and type of family.

Keywords: Prevalence, type 2 diabetes mellitus, Indian diabetes risk score, bank employees

Introduction

World Health Organization (WHO) defines the term diabetes mellitus as- 'a metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both.' Non-communicable diseases associated with changes in lifestyle and diet has become a major public health problem in both the developed and developing countries [1]. The global increase in the prevalence of diabetes is due to population growth, aging, urbanization and an increase of obesity and physical inactivity. The primary determinants of the epidemic

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are the rapid epidemiological transition associated with changes in dietary patterns and decreased physical activity. Unlike in the West, where older populations are most affected, the burden of diabetes in Asian countries is disproportionately high in young to middle-aged adults. This could have long-lasting adverse effects on a nation's health and economy, especially for developing countries [2].

According to recent estimates, approximately 285 million people worldwide (6.6%) in the 20–79 year age group will have diabetes in 2010 and by 2030, 438 million people (7.8%) of the adult population, is expected to have diabetes.[2] Diabetes is at the forefront of non-communicable diseases. According to WHO, the latest estimate (for the number of people with diabetes worldwide, in 2000) is 171 million. This will increase to about 366 million by 2030. It is estimated that South-East Asia countries will become the most challenged region in the world and it will bear the maximum global burden of the disease in the initial decades of the 21st century [3]. In line with the global prevalence trends, diabetes burden is increasing as rapidly in India as the country is industrializing. According to the IDF, 61.3 million people in India had diabetes in 2011. That figure is projected to rise to 101.2 million by 2030 [4].

The disease is showing an upward trend with urban prevalence increasing to 12-19% in 2000 AD. Prevalence studies are important for planning of public health services with specific reference to National Diabetes Control Program [3]. The prevalence of diabetes mellitus is known to be associated with various life style factors such as smoking, alcohol intake, lack of physical exercise and saturated fat (ghee) intake. A large prospective cohort study conducted in USA has found clear dose response relationship between amount of smoking and diabetes mellitus. A prospective study in UK also found that current smokers had significantly higher incidence rate of diabetes mellitus (2.9 per 1000 person years) compared to that of non-smokers (1.9 per 1000 person years). A study in Manipur India has found a significant association between alcohol intake and diabetes mellitus. This study has also found higher proportion of sedentary activity (69.4%) in diabetics compared to non-diabetics (32.1%) [5].

Diabetes mellitus, a lifelong disease is achieving pandemic proportions. Even in India its prevalence is on the rise making our country the diabetic capital or the world. Many studies have found that sedentary lifestyle and increased mental stress are risk factors for diabetes [1]. The job of bank employees is both sedentary in nature and accompanies high levels of mental stress [1]. Bank employees are constantly exposed to stress due to long hours of work, sitting in front of computers, dealing with money which needs strongly management and full concentration [6]. The job nature of banking employees is very tedious as it involves the direct customer interaction in all levels. This research shows that a large number of bankers are facing high level of stress because of their job and the reasons behind this stress include long working hours, heavy work load, improper reward system, lack of job autonomy, organizational culture, role conflict etc. and the main reason is lack of management support to employees. Not only health but personal life of bankers are also being affected because of high job stress, most employees are unable to spend time at home or with family. However, with the help of proper management techniques by management, the bankers stress level can be reduced to great extent. The type of research conducted is ‘’Causal‟ as this research explores the effect of one variable over other [7].

Prevention, timely diagnosis, and treatment are important in patients with diabetes mellitus. Many of the complications associated with diabetes such as nephropathy, retinopathy, neuropathy, cardiovascular disease, stroke and death can be delayed or prevented with appropriate treatment of elevated blood pressure, lipids, and blood glucose [8]. Studies on non-communicable diseases, focused on such occupational groups are rarely reported in our country and more of such studies are needed. Special programmer, integrating promotive, preventive and curative care for bank employees are required urgently. There are very few studies conducted among bank employees in Maharashtra but not a single study was conducted in this part involving bank employees to find out the risk of diabetes and prevalence.

So the present study was conducted among Bank employees to find out the prevalence of high risk individuals for Type 2 Diabetes Mellitus with Indian Diabetes Risk Score and assess

the risk factors for the same.

Indian Diabetes Risk Score (IDRS) [9]

Sr. No.	Particulars	Score
1	**Age (years)**	
	< 35 (reference)	0
	35-49	20
	>50	30
2	**Abdominal obesity**	
	Waist <80 cm (female), <90 (male) (reference)	0
	Waist> 80-89 cm (female), >90-99 cm (male) (reference)	10
	Waist >90 cm (female), >100 cm (male)	20
3	**Physical activity**	
	Vigorous exercise or strenuous (manual) labour at home/work	0
	Mild to moderate exercise or physical activity at home/work	20
	No exercise and sedentary activities at home/work	30
4	**Family history**	
	No family history	0
	Either parent	10
	Both parents	20
	Minimum score -0 Maximum score -100	

Interpretation

Score < 30 low risk, Score 30-50 medium risk and Score > 60 high risk for type 2 diabetes and cardiovascular diseases

Materials and Methods
Type of study

The type of present study is a Cross Sectional community based descriptive study.

Study Setting

The study was conducted in all banks from a Latur city of Maharashtra. Banks were listed according to sectors i.e. government, co-operative and private. 400 subjects were enrolled in the study according to sectors i.e. Government (200), Co-operative (100) and Private (100) by stratified random sampling and banks were selected by simple random sampling till we got the desired subjects according to stratified sampling.

Study Population

All the bank employees belonging to officer level, clerical grades and attendants who were in service were included in the study after explaining them purpose of the study.

Study Period

The study was conducted during One year from 1 October 2018 to 30 September 2019

Sample Size Estimation
Considering the prevalence of type 2 diabetes mellitus of 20% and allowable error of 20%, the required sample size was calculated with the help of this formula: Sample size (N) = 4 P Q / L2

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Where, P (Prevalence of diabetes in bank employees) = 20[(1)],
Q = 1- P = 100- 20 = 80,
L (Allowable error) = 20% of P = 4
N= 4 × 20 ×80/4×4
Calculated sample size came to 400.

Inclusion criteria

- All the bank employees belonging to officer level, clerical grades and attendants who are in service were included in the study.
- All the bank employees willing to participate in the study.

Exclusion criteria

- Pregnant employees, employees absent on the days of the interview, persons who were on anti- depressant drugs or taking steroids.
- The bank employees not willing to participate in the study.

Methodology

The necessary approvals were obtained from the following authorities to carry out the study. Banks were listed as Government, Co- Operative and Private Banks according to strata. Further it was considered to select banks by simple random sampling in each strata till we fulfilled the desired subjects i.e. 200 bank employees in government banks, 100 bank employees in co-operative banks and 100 bank employees in private banks. Prior permission was sought from the regional offices of the banks for the conduction of interview and health check-up on the fixed days. Selected bank and/or its branches were visited on the appointed fixed days. The administrative authorities of selected banks were explained the nature and purpose of this study and permission was taken to carry out the study.After finalizing the list of banks, permission for study was taken from each bank's regional officer and Bank Manager.
Selection of samples was done by simple random sampling from prior selected list of banks according to strata i.e. 200 bank employees in government banks, 100 bank employees in co-operative banks and 100 bank employees in private banks till the desired sample size was fulfilled according to strata. All the bank employees belonging to officer level, clerical grades and attendants who were in service were included in the study after explaining them purpose of study. Informed consent was taken from the subjects who were ready to take part in the study from each bank after explaining them the nature and purpose of study.

Weighing machine

The weight was taken on a portable weighing machine with a calibrated scale of 0.5 kg marked from 0 to 130 kg and the machine was frequently checked against a standard weight.

Measuring tape

Height was measured with a calibrated measuring tape marked in centimetres. The measurement was taken in erect standing position, barefoot with foot together, heels against wall and looking straight. Waist circumference was measured with the subjects standing with feet 25-30 cm. apart and weight evenly distributed; the measurement was taken midway between the inferior margin of the last rib and the crest of the ileum in a horizontal plane by the measure sitting of the subjects and fitting the tape snugly, but not compressing soft tissues.[10] The study participants were interviewed by the investigator with the help of predesigned and pretested Proforma which included information about their biosocial

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characteristics, type of diet, family history, physical activity, smoking habits and tobacco intake, alcohol consumption habits etc., demographic & socio- economic data, medical and family history, clinical examination. The anthropometric measurements like height, weight, waist and hip circumference ratio were recorded and B.M.I. was calculated from the obtained data as below. Once the demographic and socioeconomic information filled in the proforma, detailed clinical examination was done. Weight of the study participant was taken by standardized digital weighing machine up to accuracy of 0.1 kg. Height was measured without footwear in cm by using metric scale on walls up to accuracy of 0.1 cm. BMI was calculated as weight in kilograms divided by the square of the height in meters (kg/m2). Subjects were classified according to WHO Classification based on BMI [10]. Waist circumference (WC) was measured at the midpoint between the lower margin of the least palpable rib and the top of the iliac crest in the mid axillary line, using a stretch- resistant tape. Hip circumference (HC) was measured around the widest portion of the buttocks, with the tape parallel to the floor. Waist circumference > 102 cm in males and > 88 cm in females were the cut off levels for subjects with abdominal obesity. Waist-Hip ratio (WHR) was also calculated and classified with criteria WHR >0.90 for males and > 0.85 for females [11]. The socioeconomic status was assessed as per modified B.G. Prasad socioeconomic status scale [12].

I.D.R.S. Score was obtained for all participants to assess the risk of diabetes except known diabetics. They were categorized as Low (< 30), Moderate (30 to 50) and High risk (≥ 60) for diabetes mellitus, Lastly lecture was arranged for bank employees on prevention of diabetes mellitus, it's complications and various aspects of diabetes mellitus which will help the bank employees in future.

Statistical Analysis

The collected data was entered in Microsoft Excel 2007 and then transferred to SPSS version 19, where it was numerically coded and entered. The qualitative was expressed as proportions whereas quantitative data was expressed as mean and standard deviation. Discrete data was analysed using Pearson's Chi-square test for difference in proportions (Fischer's exact test in case if the expected count in any cell was less than 5) to find the association of Diabetes Mellitus with various factors. P-values less than 0.05 were considered as significant and less than 0.001 were considered as highly significant.

Table 1: Bio-social characteritics of the study population

Sr. No.	Bio-social characteritics	Frequency (n=400)
01	**Age in years**	
	<30 yrs.	158 (39.5%)
	31-40 yrs.	85 (21.2%)
	41- 50 yrs.	78 (19.5%)
	51- 60 yrs.	79 (19.8%)
02	**Sex**	
	Male	349 (87.2%)
	Female	51 (12.8%)
03	**Religion**	
	Hindu	386 (96.5%)
	Muslim	12 (3.0%)
	Buddha	02 (0.5%)
04	**Type of family**	
	Joint	81 (20.3%)
	Nuclear	267 (66.7%)
	Extended	52 (13.0%)
05	**Socio-economic status**	
	Upper	264 (66.0%)

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	Upper middle	86 (21.5%)
	Middle	35 (8.75%)
	Lower middle	11 (2.75%)
	Lower	04 (1.0%)
06	**Body mass index (BMI)**	
	Underweight	25 (6.3%)
	Normal	237 (59.2%)
	Overweight	106 (26.5%)
	Obese	32 (8.0%)
07	**Bank employees category**	
	Co-operative bank	100 (25.0%)
	Government bank	200 (50.0%)
	Private bank	100 (25.0%)
08	**Diabetes status**	
	Known diabetic	46 (11.50%)
	Non diabetic	354 (89.50%)

It was seen from Table 1 that 158 (39.5%) of the subjects were < 30 years, 85 (21.2%) of the subjects were between 31-40 years, 78 (19.5%) of the subjects were between 41-50 years followed by 79 (19.8%) of the subjects were between 51-60 years. The mean age of 7the study subjects was 37.72 years with standard deviation of 11.80 years. Gender-wise distribution showed that there were 349 (87.2%) Male study subjects and 51 (12.8%) were Female. In the present study, most of the subjects 386 (96.5%) were Hindus followed by 12 (3.0%) Muslims and 2 (0.5%) were Buddha's. Majority of the subjects 267 (66.7%) belonged to nuclear family followed by 81 (20.3%) to joint family and 52 (13.0%) to extended family. The table 1 showed that according to Modified B.G. Prasad classification 264 (66%) of the bank employees were in Upper class of socioeconomic status, 86 (21.5%) belonged to Upper Middle class, 35 (8.75%) from Middle class, 11 (2.75%) belonged to Lower Middle class and 4 (1%) to Lower class of the socioeconomic status. Table 1 showed that out of 400 study subjects 237 (59.2%) of the subjects were having Normal B.M.I. followed by 106 (26.5%) were Overweight, 32 (8%) were Obese and 25 (6.3%) of the subjects were Underweight. Among the study 400 subjects, 46 (11.5%) were found to be suffering from Diabetes mellitus and 354 (89.5%) were non-diabetic subjects.

Table 2: Prevalence of risk of diabetes according to I.D.R.S. Score

I.D.R.S. Score	Frequency (Percentage)
Low risk	111 (31.4%)
Medium risk	149 (42.1%)
High risk	94 (26.5%)
Total	354 (100.0%)

It was seen from table 2 that out of 354 non-diabetic subjects 111(31.4%) subjects were having Low risk of diabetes mellitus according to I.D.R.S. score developed by V. Mohan, 149(42.1%) were having Moderate risk of diabetes mellitus according to I.D.R.S. score and 94(26.5%) were having High risk of diabetes mellitus according to I.D.R.S. score.

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Table 3: The Prevalence of risk of diabetes according to I.D.R.S. score and diabetic cases

I.D.R.S. Score	Frequency (Percentage)
Low risk	111 (27.75%)
Medium risk	149 (37.25%)
High risk	94 (23.5%)
Diabetic	46 (11.5%)
Total	400 (100.0%)

This table 3 shows the probable burden of diabetes cases in bank employees in future which is alarming (140)35% including diabetic cases 46(11.5%) and 94 (26.5%) having High risk of diabetes mellitus according to I.D.R.S. score.

Table 4: Association between bio-social characteritics and high risk individuals for Type 2 Diabetes Mellitus with Indian Diabetes Risk Score among study population

Bio-social characteritics	High risk for Diabetes & already diabetic	Low & medium risk for diabetes subjects	Total	X^2– value P-value
1.Age in years				
<30	13 (9.28%)	145 (55.76%)	158	X^2 = 6.063, p = 0.01 (HS)
31-40	39 (27.86%)	46 (17.69%)	85	
41-50	51 (36.42%)	27 (10.38%)	78	
51-60	37 (26.42%)	42 (16.15%)	79	
2.Sex				X^2 = 2.6, d.f.=1, p=0.1 (NS)
Male	117 (83.57%)	232 (89.23%)	349	
Female	23 (16.43%)	28 (10.67%)	51	
3.Type of family				
Joint	28 (20.0%)	53 (20.38%)	81	X^2 = 2.05, d.f.=1, p=0.151 (NS)
Extended	25 (17.86%)	27 (10.38%)	52	
Nuclear	87 (62.14%)	180 (69.23%)	267	
4.Socio-economic status				
Upper	105 (75.0%)	159 (61.15%)	264	X^2= 7.77, d.f.=1, p=0.005 (S)
Upper middle	19 (13.57%)	67 (25.76%)	86	
Middle	10 (7.14%)	25 (9.61%)	35	
Lower middle	06 (4.28%)	5 (1.92%)	11	
Lower	00 (00.0%)	4 (1.53%)	0 4	
5. Designation of employees				
Officer	101 (72.14%)	57 (21.92%)	158	X^2 = 96.37 d.f. = 1, p=0.0001 (HS)
Clerk	25 (17.86%)	133 (51.15%)	158	
Attendant	14 (10.00%)	70 (26.92%)	84	
6.Family H/o diabetes				X^2=42.72, d.f. = 1, p=0.0001 (HS)
Yes	62 (44.28%)	38 (14.61%)	100	
No	78 (55.72%)	222 (85.38%)	300	

It was observed from Table 4 that there were more cases of high risk diabetes mellitus in the age group of 41-60 years i.e. 88 (62.84%) cases where 52 (37.16%) cases from age less than 40 years. It suggested that as age increases the risk of diabetes mellitus also increases and difference in risk of diabetes mellitus with age advancement was statistically significant. Though there was male preponderance in high risk of diabetes mellitus but it was not statistically significant. There was significant association between diabetes and type of family. Significant association between designation and diabetes mellitus was reflected. The difference found between 62 (44.28%) among risk with diabetics and 23 (12.43%) among no diabetic risks as per their family history of diabetes mellitus, was found statistically

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significant. It showed the significant association between risks of Diabetes with family history of diabetes.

Table 5: Association between risk factors and high risk individuals for diabetes mellitus by IDRS score among study population

Bio-social characteritics	High risk for Diabetes& already diabetic subjects	Low & medium risk for diabetes subjects	Total	X^2– value P–value
1.Alcohol addition				X^2 = 22.34, d.f.=1, p=0.000022 (HS)
Yes	30 (21.42%)	15 (5.76%)	45	
No	110(78.58%)	245 (94.3%)	355	
2. Waist Circumference				X^2=16.18, d.f.= 1, P= 0.000057 (HS)
Normal	11(7.85%)	63 (24.23%)	74	
Abnormal	129 (92.15%)	197 (75.67%)	326	
3.Tobacco addition				X^2=4.58, d.f.=1, P=0.0323 (S)
Yes	35 (25.0%)	42 (16.15%)	77	
No	105 (75.0%)	218 (83.85%)	323	
4.Body Mass Index (BMI)				X^2 = 115.3, d.f.=1, p =0.00001 (HS)
Underweight	01 (0.71%)	24 (9.23%)	25	
Normal	42 (30.0%)	195 (75.0%)	237	
Overweight	75 (53.8%)	31 (11.92%)	106	
Obese	22 (15.71%)	10 (3.84%)	32	

As seen from Table 5 that the proportion of alcohol consumers among high risk for diabetes 30 (21.42%) was found more than proportion of alcohol consumers among low and medium risk for diabetics 15 (5.76%).This difference was highly significant as p value was less than 0.05.There was high significant difference found between high risk of diabetes and increased waist circumference. The proportion of tobacco consumers (smokeless and smoke) among high risk for diabetics 105 (75.0%) was found more than low risk diabetics 218 (83.85%) which was found to be significant. Among high risk for diabetics, the proportion of overweight and obese was 69.50% and among low & medium risk for diabetics it was 15.76%. It showed the significant association between overweight and obesity with high risk of diabetes.

Discussion

The present community based analytical Cross Sectional study was conducted in bank employees in a city. The study was among 400 bank employees i.e. government (200), co-operative (100) and private (100) according to strata. In the present study, most of the subjects 386 (96.5%) were Hindus followed by 12 (3.0%) who were Muslims and 2 (0.5%) of the study subjects were Buddha's. Out of 400 subjects included in the study 158 (39.5%) belonged to Officer grade, 158 (39.5%) belonged to Clerk grade and 84 (21.00%) belonged to Attendant grade. Out of 400 subjects included in the study, majority of the subjects 267 (66.7%) belonged to nuclear family followed by 81 (20.3%) belonged to joint family and 52 (13.0%) belonged to extended family. In the present study, we used simplified Indian diabetes risk score for identifying high risk subjects in urban banks of Latur. This is of great significance as use of such scoring system can prove to be a cost effective tool for screening of diabetes. Further use of such a risk score would be of great help in developing countries like India where there is a marked explosion of diabetes and over half of them remain undiagnosed. 94 (23.5%) of population had high risk score (>60) for diabetes in our study

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(Table 3) compared to 43% of the population were found in high risk category by study conducted at Chennai by Mohan *et al.* [9] In the present study the prevalence of high risk individuals for type 2 diabetes mellitus using IDRS score developed by V Mohan was found to be 26.5%and 46 (11.5%) cases were already diagnosed with diabetes mellitus, The total prevalence burden of Diabetes mellitus and high risk individuals for type 2 diabetes mellitus using IDRS score developed by V Mohan was found alarmingly high i.e. 140 (35.00%) cases out of 400 total study subjects. Similar results were seen in the study conducted by Chowdhury Ranadip *et al.* [13] in 2012 to estimate the prevalence of high risk individuals in rural set up of west Bengal as 74 (31.5%) had high risk with IDRS score over 60 versus 35% in our study.

In the study conducted by Abhishek Arun *et al.* [14] in 2015 at Lucknow urban and rural area to estimate prevalence of high risk subjects for diabetes using IDRS score revealed a prevalence of high risk individuals for type 2 diabetes as 122(14.9%) which was not so near to prevalence of high risk individuals for diabetes in our study. 129 (92.15%) high risk for diabetic subjects were having abnormal waist circumference as seen in table 5. This difference was statistically significant which showed significant association between risk of diabetes and increased waist circumference. Jinu Merlin Koshy *et al.* [15] showed the similar results confirming the association of high levels of waist circumference and risk of diabetes where 48% of male and 58% of female were in the high risk group with score ≥ 60 in their study.

In the study conducted by Rao *et al.* [16] on bank employees in and around Manipal town in 2014, the prevalence was around 20% for type 2 diabetes which was near to prevalence of diabetes in bank employees in our study. There were more cases of high risk diabetes mellitus in the age group of 41-60 years i.e. 88 (62.84%) cases where 52 (37.16%) cases from age less than 40 years. In a cross-sectional study conducted by Parashar P *et al.* [1] on all the employees (n=200) of 7 banks of urban area of Meerut district showed that Prevalence of diabetics was significantly more (26.8%) among those ≥ 45 years as compared to 4.8% among those <45 years age group as in our study was seen. In the study conducted by Jinu Merlin Koshy *et al.* [15] which showed as seen from table 5 that the proportion of alcohol consumers among high risk for diabetes 30 (21.42%) was found more than proportion of alcohol consumers among low and medium risk for diabetics 15 (5.76%).This difference was highly significant as p value was less than 0.05.There was high significant difference found between risk of diabetes and increased waist circumference. The proportion of tobacco consumers (smokeless and smoke) among diabetics 105 (75.0%) was found more than low risk diabetics 218 (83.85%) which was found to be significant. Among diabetics, the proportion of overweight and obese was 69.50% and among non-diabetics it was 15.76%. It showed the significant association between overweight and obesity with diabetes. Similar results were shown by Parashar P *et al.* [1] study on bank employees in Meerut district which focused on the fact that more alcoholism was seen diabetic subjects as compared to non-diabetic subjects. No association was seen between type of diet and diabetes.

Conclusion and Recommendations

Recently, risk scores based on simple anthropometric and demographic variables have been devised to detect high risk individuals named Indian Diabetes Risk Score (IDRS). This IDRS is a simple tool which can be used by the community health worker to screen the high risk population. The IDRS has a sensitivity of 72.5% and specificity of 60.1% and is derived based on the largest population based study on diabetes in India CURES (Chennai Urban Epidemiology Study). The advantage of IDRS are its simplicity, low cost and is easily applicable for mass screening programme. IDRS may be predictive of metabolic syndrome and cardiovascular disease as three of the factors [age, physical activity and waist circumference] are risk factors for both metabolic syndrome and cardiovascular disease. IDRS uses two modifiable risk factors (waist circumference and physical inactivity) and two non-modifiable risk factors (age and family history of diabetes), providing a clear message

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that if modifiable risk factors are altered, the risk score can be considerably reduced. Subjects with high IDRS regardless of their blood sugar status, are ideal candidates for life style modification as these are risk factors for not only diabetes but also for cardiovascular disease [16, 17]. The prevalence of high risk individuals for type 2 diabetes mellitus using IDRS score developed by V Mohan was 26.5% in the present study. The prevalence of already diagnosed diabetes mellitus cases was more i.e. 11.5%. The burden of high risk for diabetes and prevalence of type 2 diabetes mellitus was 35% in the present study which is threatening for sedentary workers like bank employees. The prevalence of risk of Diabetes mellitus varied significantly with age group, body mass index and family history of diabetes mellitus, waist circumference, tobacco addiction and alcohol addiction. But it did not significantly vary with type of family and gender. Periodic screening for the risk factors of Diabetes among bank employees should be arranged. The diagnosis of the people with raised blood sugar level should start early and appropriate actions can be taken. Many of the lifestyle-related factors are linked with the development of obesity and associated with Type 2 Diabetes Mellitus which can be prevented by lifestyle modifications. The increasing prevalence of abdominal obesity highlights the urgency of addressing abdominal obesity as a healthcare priority to prevent the development of Diabetes mellitus in the future. It is necessary to develop a need based planned "exercise programme" for the benefits of obese people on a regular basis where expert opinion is made available. Preventive strategy for Diabetes Mellitus should be focused on the first degree relatives of Diabetes patients as there was significant association found between high risk for Diabetes and family history of diabetes in the present study. The study showed strong association of high risk for Diabetes and tobacco addiction, therefore de-addiction from tobacco (smoked and smokeless) is strongly recommended. More number of alcoholics are seen in high risk diabetic subjects which showed the association of diabetes and alcohol addiction, therefore there is need to stop alcohol addiction. As the prevalence of diabetes was high in bank subjects as well as risk factors like age, B.M.I., waist circumference and waist-hip ratio were significantly higher , there is urgent need to control the risk factors like B.M.I., waist circumference and waist-hip ratio in bank subjects.

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