IJMRP

Evaluation of Knowledge and Awareness of Diabetes Mellitus Amongst Rural and Urban Subjects at a Tertiary Care Teaching Hospital

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ABSTRACT

Background: Diabetes is a global health problem that is expected to present one of the 21st century's biggest medical challenges. Indians have a genetic phenotype characterized by low body mass index, but with high upper body adiposity, high body fat percentage and high level of insulin resistance. With a high genetic predisposition and the high susceptibility to the environmental insults, the Indian population faces a high risk for diabetes and its associated complications. The role of lifestyle and behavioral factors in the development and management of this chronic illness is now widely recognized. In view of the above, the present study was undertaken to assess the knowledge, awareness and attitude of diabetes mellitus amongst rural and urban subjects at a tertiary care teaching hospital.

Materials and Methods: The present cross-sectional study was commenced among 200 diabetic patients. A self-administered questionnaire was prepared in local language. Data so obtained was expressed as percentages and frequencies, mean and standard deviation as required accordingly. Independent t tests were used to analyze the difference between knowledge and awareness scores of rural and urban diabetic patients. $p < 0.05$ was considered as statistically significant value.

Results: The present study reported that 54% among urban and 32% among rural were aware that diabetes is a preventable disease. 68% urban and 39% rural diabetic patients avoided unhealthy food (processed foods, poor quality fats and little fibre content). 13% urban and 2% rural diabetic patients checked labels on food items indicating food values

while buying packaged foods. 71% urban and 38% rural patients regularly checked their blood glucose level. 57% urban and 61% rural diabetic patients go for morning walk. 79% urban and 52% rural patients take their medicines as prescribed by their physician without missing dose.

Conclusion: The study revealed that level of awareness among both the groups was not satisfactory to prevent and reduce the burden of complications of diabetes mellitus. However, there was a significant difference among knowledge and self-care practices among urban and rural diabetic patients. Television and Newspapers should play role to create awareness among people regarding prevention of diabetes. Doctors should do counseling of diabetic patients regarding their self-care practices.

Keywords: Diabetes; Eating Habits; Sedentary Life Style.

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INTRODUCTION

Diabetes is a global health problem that is expected to present one of the 21st century's biggest medical challenges. The role of lifestyle and behavioural factors in the development and management of this chronic illness is now widely recognized.[1] The World Health Organization has declared that unhealthy diets, sedentary lifestyles, tobacco and excessive alcohol consumption are the major risk factors for type 2 diabetes mellitus (T2DM).[2]

The conditions are more favourable for expression of diabetes in the Indian population, which already has a racial and genetic susceptibility of the disease. Prediabetic conditions like impaired glucose tolerance and impaired fasting glucose are also on the

rise, indicating the possibility of further rise in the prevalence of diabetes. Metabolic syndrome, which is a constellation of cardiovascular risk factors, of which hyperglycaemia and insulin resistance are components, is also widely prevalent. The conversion to diabetes is enhanced by the low thresholds for the risk factors, such as age, body mass index and upper body adiposity.[3] The assessment of the economic and social impact of diabetes in India is important as an article published in 2007 suggested that an estimated USD 2.2 billion would be needed to sufficiently treat all cases of type 2 diabetes in India. In comparison, health spending per capita in 2012 was USD 61.

Secondly, by 2025, most people with diabetes in developing countries will be in the 45 to 64 year age group, thus threatening the economic productivity of the country and the income-earning ability of individuals. Thirdly, the management of diabetes and its complications can be expensive, which poses serious obstacles to the strengthening of the Indian health care system and the government's plan to achieve universal health coverage by 2022. [4] The situation is changing rapidly due to socio-economic transition occurring in the rural India also. Chow CK et al[5] and Deo SS[6] reported high prevalence of diabetes and impaired glucose tolerance in Indian rural population. In view of the above, the present study was undertaken to assess the knowledge, awareness and attitude of diabetes mellitus amongst rural and urban subjects at a tertiary care teaching hospital.

MATERIALS AND METHODS

The present cross-sectional study was commenced among 200 diabetic patients reporting to Department of Medicine, KPC Medical College and Hospital, Jadavpur, Kolkata, West Bengal (India). The diabetic patients aged 18 to 70 years, male and females agreed to take part in the study were selected by simple random method. Ethical clearance was obtained from the institution and informed consent was obtained from each participant. A self-administered questionnaire was prepared in local language. The questionnaire was first tested among 20 subjects, any difficulties in understanding the questionnaire was rectified accordingly. Details were collected regarding sociodemographic characteristics, lifestyle, dietary habits, awareness of diabetes and self-care methods among diabetics. The questionnaire was verbally explained to the patients and author used to sat by the participant for further assistance in filling the questionnaire to avoid bias.

Data so obtained were collected and subjected to analysis using SPSS-20 and was expressed as percentages and frequencies, mean and standard deviation as required accordingly. Independent t tests were used to analyze the difference between knowledge and awareness scores of rural and urban diabetic patients. $p < 0.05$ was considered as statistically significant value.

Table 1: Sociodemographic details of diabetic patients

Details		Urban (n=100)	Rural (n=100)
Mean Age		47.7±5.4	49.4±7.8
Gender	Male	58	61
	Female	42	39
Education	10th class or less	9	18
	12th class	14	39
	graduation	62	37
	Post-graduation	15	6
Occupation	Self employed	33	51
	Service	43	18
	Dependent	24	31
Family history of diabetes	Present	58	41
	Not present	28	43
	Don't Know	14	16

Table 2: Knowledge among urban and rural diabetic patients regarding diabetes mellitus

	Urban	Rural	p value
	Correct answer		
Can diabetes spread from one person to another (infectious)	84%	73%	>0.05
Does genetics (family history) has a role in diabetes	87%	36%	<0.05
Is diabetes is preventable	54%	32%	<0.05
Lack of exercise and sedentary way of life cause diabetes	71%	65%	<0.05
Is lifestyle modification is required to prevent complications among diabetic patients	52%	28%	<0.05
Is diabetes causes delay in wound healing	44%	19%	<0.05
Can hypoglycemia occur in diabetic patients	59%	21%	<0.05

Table 3: Attitude towards diabetes

Self-care practicing questions	Urban	Rural
Do you avoid unhealthy food (processed foods, poor quality fats and little fibre content)	68%	39%
Do you check labels on food items indicating food values	13%	2%
Do you regularly check your blood glucose level	71%	38%
Do you avoid sugary substances in your diet	97%	93%
Do you go for morning walk	57%	61%
Do you take your medicines as prescribed by your physician without missing dose	79%	52%
p value	<0.05	

Graph 1: Attitude toward Diabetes
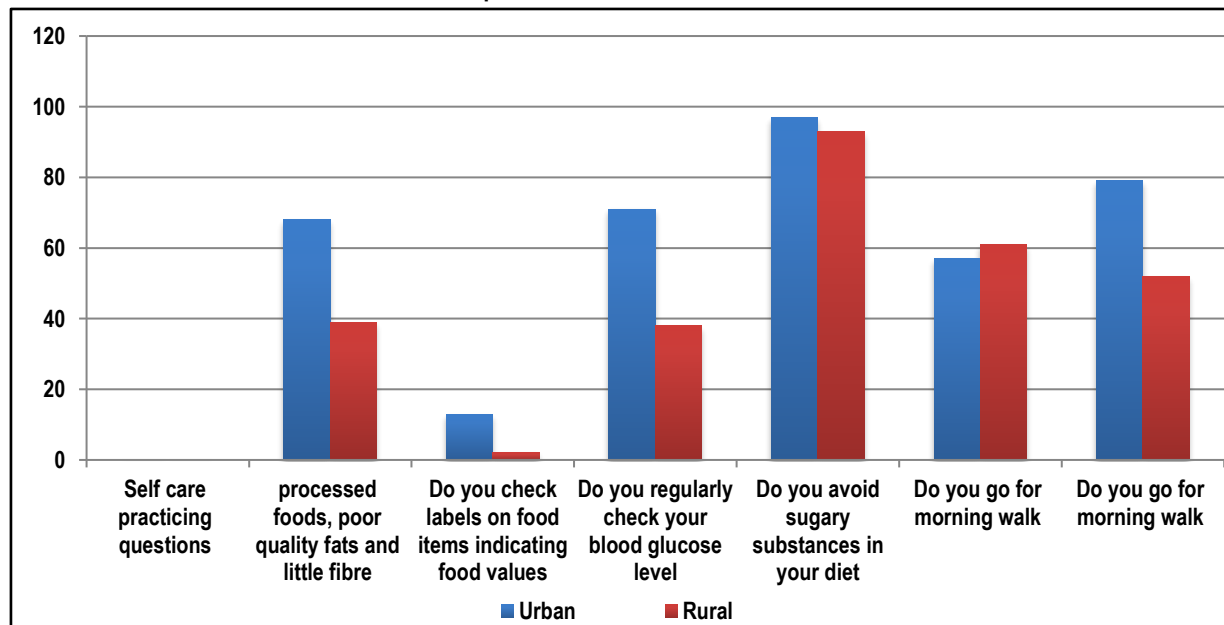
RESULTS

Table 1 shows sociodemographic details of diabetic patients. Age matched subjects were taken in urban and rural diabetic group with mean age of 47.7±5.4 in urban group and 49.4±7.8 in rural diabetic group. Among urban group, majority of the patients (43%) were servicemen and among rural group, majority 51% were self-employed. 58% among urban and 41% among rural had family history of diabetes. Table 2 shows knowledge among urban and rural diabetic patients regarding diabetes mellitus. Data reveals significant difference with p<0.05. 84% among urban and 73% among rural were aware that diabetes is a non-infectious. 87% among urban and 36% among rural were aware that genetics (family history) has a role in diabetes and 54% among urban and 32% among rural were aware that diabetes is a preventable disease. 71% among urban and 65% among rural were aware that lack of exercise and sedentary way of life cause diabetes. 52% among urban and 28% among rural were aware that lifestyle modification is required to prevent complications among diabetic patients. 44% among urban and 19% among rural were aware diabetes causes delay in wound healing. 59% among urban and 21% among rural were aware that hypoglycemia can occur in diabetic patients.

68% urban and 39% rural diabetic patients avoided unhealthy food (processed foods, poor quality fats and little fibre content). 13% urban and 2% rural diabetic patients checked labels on food items indicating food values while buying packaged foods. 71% urban and 38% rural patients regularly checked their blood glucose level. 97% urban and 93% rural diabetic patients avoided sugary substances in their diet. 57% urban and 61% rural diabetic patients go for morning walk. 79% urban and 52% rural patients take their medicines as prescribed by their physician without missing dose.

DISCUSSION

Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the phenotype of hyperglycaemia with disturbance of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both.[7]

Indians have a genetic phenotype characterized by low body mass index, but with high upper body adiposity, high body fat percentage and high level of insulin resistance. With a high genetic predisposition and the high susceptibility to the environmental insults, the Indian population faces a high risk for diabetes and its associated complications.[3]

The Indian Council of Medical Research India Diabetes Study (ICMR-INDIAB study) showed that India had 62.4 million people with diabetes in 2011. These numbers are projected to increase to 101.2 million by 2030.[8]

The present study compared knowledge, awareness and attitude towards self-care diabetes mellitus amongst rural and urban diabetic patients. The study revealed that level of awareness among both the groups was not satisfactory to prevent and reduce the burden of complications of diabetes mellitus. However, there was a significant difference among knowledge and self care practices among urban and rural diabetic patients.

The present study reported that 54% among urban and 32% among rural were aware that diabetes is a preventable disease. 71% among urban and 65% among rural were aware that lack of exercise and sedentary way of life cause diabetes. 52% among urban and 28% among rural were aware that lifestyle modification is required to prevent complications among diabetic patients. It has been revealed that 9 out 10 type -2 diabetes could be prevented if some risk factors were eliminated, these include – over weight, unhealthy diet, smoking and physical inactivity. The influence of diet and exercise on the ailment cannot be overemphasized. The disease is associated with serious cardio vascular, neurological and renal complications if not properly controlled. Obesity, unhealthy diet, physical inactivity, high blood pressures are some factors that increase the risk of developing type-2 Diabetes.[9]

In the present study 68% urban and and 39% rural diabetic patients avoided unhealthy food (processed foods, poor quality fats and little fibre content). 13% urban and 2% rural diabetic patients checked labels on food items indicating food values while buying packaged foods. 97% urban and 93% rural diabetic

patients avoided sugary substances in their diet. Mekary et al[10] reported that males who skipped breakfast and ate two main meals daily where 1.21 and 1.3 times more at a risk for type 2 diabetes, and they concluded that breakfast consumption has an influential impact on prevention and control of type 2 diabetes.

The present study found that 71% urban and 38% rural patients regularly checked their blood glucose level. 57% urban and 61% rural diabetic patients go for morning walk. 79% urban and 52% rural patients take their medicines as prescribed by their physician without missing dose. More and more evidence suggests that regular exercise is the single best lifestyle tool to prevent, delay, or treat diabetes. Emerging research is allowing clinicians and patients to choose the best forms of exercise and helping us all understand the mechanisms for why exercise is so beneficial. Motivating patients to be more physically active and outlining strategies to help prevent exercise-associated hypoglycemia in type 1 diabetes remain the two most challenging aspects of the physical activity prescription.[11] Beneficial effect of regular physical activity on levels of HgbA1C in patients with type II diabetes mellitus, is largely due to an increase in insulin sensitivity. Benefits are related to short term improvements in insulin sensitivity following individual exercise bouts. Regular exercise can prevent or delay the onset of type II diabetes in high risk populations. The insulin resistant state is associated with a cluster of cardiovascular risk factors all of which improve with regular physical activity. However, high intensity exercise may result in retinal hemorrhage and transient worsening of diabetic proteinuria. The most common complication is hypoglycemia. A combination of aerobic and light resistance exercise is appropriate. Patients should exercise a minimum of three times a week for 30–60 minutes at 50% to 75% of their Vo_2max.[12]

Gregory R. Waryasz[13] reported that T2DM is a condition in which physical activity has been documented to improve patient outcomes and recommended that an exercise prescription should be given to patient consisting of mode (type), frequency, intensity, duration, and progression. Determining the appropriate mode depends upon patient preference and safety issues regarding the state of T2DM or other conditions. Frequency, intensity, and duration are specific to the type of activity and should be tailored to the patient's abilities to safely perform the activity. Finally, the health professional addresses periodic progression in order to maintain the exercise stimulus needed to promote continued health improvements. [13] High costs and suboptimal access to drugs contribute significantly to the burden of the disease and should be addressed through market shaping strategies. While hospitalisation and complications are major components of the costs of diabetes, drug costs constitute an important part of the expenses, often representing more than 50% of total direct costs for households.[4] Availability of improved modes of transport, and less strenuously as in the vicinity have resulted in decreased physical activities. Better economic conditions have produced changes in diet habits.[3]

CONCLUSION
The study revealed that level of awareness among both the groups was not satisfactory to prevent and reduce the burden of complications of diabetes mellitus. However, there was a significant difference among knowledge and self-care practices among urban and rural diabetic patients. Television and

Newspapers should play role to create awareness among people regarding prevention of diabetes. Doctors should do counseling of diabetic patients regarding their self-care practices.

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