RESEARCH ARTICLE

Body mass index and complications of diabetes mellitus, Bangladesh

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ABSTRACT

Background: Diabetes mellitus is a global public health issue which has multiple complications. In developing countries obesity associated diseases – like diabetes increasing day by day among the urban people. This study was an attempt to assess body mass index and complications of diabetes mellitus among urban people. To observe the association between BMI and complications of diabetes Chi-square test was done. It was observed that complications of diabetes was significantly higher among obese diabetic patients ($p<0.05$) than that of non-obese diabetic patients. The effect of BMI on complications of diabetes was found statistically significant. Obesity was responsible for causing various complications among diabetic patients. Policy maker should be design and implement appropriate health education programme to prevent obesity and its associated complications among diabetic patients.

INTRODUCTION

Diabetes is very harmful disease. It is known that a patient with diabetes develops different types of complications. Normally diabetic patients are suggested to maintain a disciplined life. Diabetic patients are also suggested to control their body weight. If a diabetic patient fails to maintain normal body weight it may develop different physical complications. Thus it is necessary to understand properly what are the complications may be faced by the obese diabetic patients. There is very little information available regarding the risk factors of obesity associated with diabetes among selected urban people. Bangladesh is one of the developing countries in the world, which is facing rapid urbanization in recent time [1]. It was reported that prevalence of type 2 diabetes is on the rise more in urban areas compared to rural population in Bangladesh [2-3]. Urbanization was found to be associated with a sedentary lifestyle, higher calorie food intake and stressful condition, which might have contributed to the increasing prevalence of diabetes [4].

METHODS

It was observational study. The study was carried out over a period of one year. This study was conducted in different hospitals in Dhaka city. The study area was selected purposively. I had taken total 200 diabetic patients, divided into 100 obese diabetic and 100 non-obese diabetic patients. Non probability purposive sampling was used to collect sample.

Personal interview was taken to collect data. Diabetic book was considered for cross check. Diabetic foot was diagnosed by clinical examination. After coding and editing, data were analyzed by using Statistical Package for Social Science or SPSS (version 16.0). The study place was selected purposively. So the respondents in this study may not be the representatives of subjects and the results cannot be generalized.

RESULTS

Association between nephropathy and BMI

Tables reveals that 19.5% obese (case) and 8% non-obese (control) have nephropathy whereas 72.5% patients both cases and controls have no nephropathy. Association between nephropathy and BMI is statistically significant ($p<0.05$).

TABLE 1

Association between diabetic foot and BMI

Table 1 indicates that 18% obese (case) and 5.5% non-obese (control) have diabetic foot and rest of the patients have no diabetic foot. Association between diabetic foot and BMI is statistically significant ($p<0.05$).

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Nephropathy	BMI		Total	χ^2	p-value
	≥27	<27			
	(Case)	(Control)			
	%	%			
Yes	19.5	8	27.5	13.266	0
No	30.5	42	72.5		
Total	50	50	100		

TABLE 2

Association between diabetic foot and BMI

Table 2 indicates that 18% obese (case) and 5.5% non-obese (control) have diabetic foot and rest of the patients have no diabetic foot. Association between diabetic foot and BMI is statistically significant ($p<0.05$)

Diabetic foot	BMI		Total	χ^2	p-value
	≥27	<27			
	(Case)	(Control)			
	%	%			
Yes	18	5.5	23.5	17.383	0
No	32	44.5	76.5		
Total	50	50	100		

TABLE 3

Association between retinopathy and BMI

Table 3 reveals that 27% obese (case) and 7% non-obese (control) have retinopathy and rest of the patients have no retinopathy. Association between retinopathy and BMI is statistically significant ($p<0.05$)

Retinopathy	BMI		Total	χ^2	p-value
	≥27	<27			
	(Case)	(Control)			
	%	%			
Yes	27	7	30		
No	23	43	70	35.651	0
Total	50	50	100		

DISCUSSION

Overweight and obesity continue to increase substantially worldwide, affecting all ages, sexes and races. Worldwide about 58% of diabetes mellitus and 21% of ischemic heart disease are attributable to BMI above 21 kg/m2 [5]. In a study that examined ethnic differences in the strength of association between BMI and hypertension, higher prevalence of hypertension was associated with higher BMI levels in different ethnic group [6]. Significant associations between BMI and BP have also been documented in lean Chinese populations [7]. In a prospective cohort, increasing BMI was associated with a steady increase in the risks of total, ischemic, and hemorrhagic stroke. Although concomitant hypertension and diabetes accounted for much of the increase in total and ischemic stroke, a significant increase remained after adjustment for these potential biological mediators. Although the risk of ischemic stroke was highest among smokers and individuals with hypertension, these factors did not substantially modify the relationship between BMI and stroke. Body mass index was not associated with the severity of total and ischemic stroke, but the data suggest that it might be inversely associated with severity of fatal hemorrhagic stroke, particularly subarachnoid hemorrhage. The association between excess weight and stroke risk has been controversial. Among men, few prospective studies have investigated this relationship. Some of these had small sample sizes [8] and others did not classify stroke subtypes to my knowledge, the association between BMI and stroke severity has not been examined prospectively before. Association between stroke and BMI is statistically significant in this study. Individuals with diabetes mellitus are 17 times more likely to have an amputation as a result of peripheral vascular disease and are at an increased risk of developing nephropathy, retinopathy, and coronary heart disease, among other adverse health outcomes [10]. The present study showed similar findings. Increasing evidence suggests that obesity is a risk factor for diabetes and chronic kidney diseases. As a marker of obesity, high body mass index has been reported to be related with diabetic nephropathy and end-stage renal disease [11].

CONCLUSION

Chance of suffering from nephropathy, retinopathy and diabetic foot was higher among obese diabetic patients.

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