Poster #0598– Type 2 Diabetes Mellitus- A risk indicator for colorectal cancer

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Background: Worldwide, colorectal cancer is the fourth most common cancer and affects both men and women equally. The substantial mortality associated with this cancer makes it the leading cause of gastrointestinal cancer deaths. Increasing evidence suggests that abnormal glucose metabolism may be associated with increased risk of colorectal cancer. Some studies done in developed countries found that Type 2 diabetes was associated with a 1.3-fold increased risk of colorectal cancer (HR 1.26 [95% CI 1.18–1.33].

Aim: The aim of this case control study was to determine the association of colorectal cancer with Diabetes mellitus among adult Bangladeshi population and to estimate different other risk factors of colorectal cancer among the cases and controls. The research hypothesis was “Type 2 Diabetes mellitus is a risk indicator for Colorectal cancer”.

Method: The study population were colorectal cancer patients as cases and the controls were patients with diseases other than colorectal cancer or diseases not known to be associated with diabetes mellitus attending the National Institute of Cancer and Research Hospital (NICRH), Dhaka. Three hundred (300) samples were selected for the study purpose. Among them 100 were cases and 200 age and sex matched controls. The cases and controls were from almost similar socioeconomic background.

Results: It was found that in cases 19% participants had diabetes before colorectal cancer and in controls 10.5% participants had history diabetes. The odds ratio was 1.99. Statistical test (chi square test) showed that that the difference was significant (chi square value was 4.1683 and P=0.041). We did inferential statistics for examining the association of colorectal cancer with family history of Diabetes and other chronic diseases including Hypertension, CHD, Cancer and COPD which revealed no significant difference between cases and controls. Statistical comparison of cases and controls as regards, duration of obesity for eight years and less and over eight years category, duration of hypertension of five years and less and more than 5 years category, smoking duration of ten years or less and more than 10 years category were done and no significant difference was observed between cases and controls indicating absence of any confounding in our study.

Table: 1. Test of significance on colorectal cancer and Diabetes related information among cases and controls

Variables	Level	Total		Case		Control		Odds ratio	95% CI		p-value
		n	%	n	%	n	%		Lower	Upper	
Diabetic status	Yes	40	13.3	19	19.0	21	10.5	Ref.			
	No	260	86.7	81	81.0	179	89.5	2.558	1.11	5.87	.027*
Family history of diabetes	Yes	68	22.7	28	28.0	40	20.0	.244	.02	3.84	.316
	No	226	75.3	71	71.0	155	77.5	.295	.02	4.22	.368
	Don't know	6	2.0	1	1.0	5	2.5	Ref.			
Diabetic family member	None	236	78.7	72	72.0	164	82.0	5.793	.89	37.43	.065
	Father	14	4.7	7	7.0	7	3.5	1.694	.19	15.08	.637
	Mother	31	10.3	12	12.0	19	9.5	3.024	.40	22.35	.278
	Brother	12	4.0	5	5.0	7	3.5	2.492	.27	22.28	.414
	Sister	7	2.3	4	4.0	3	1.5	Ref.			

Discussion: This study supported the Hypothesis that “Type 2 Diabetes mellitus is a risk indicator for Colorectal cancer”. This was a unique study for Bangladesh which showed results consistent with the finding of other investigators specially of the developed countries of the world. Other than Diabetes mellitus (type2) both cases and controls were studied to look for association of other factors including demographic, Socioeconomic factors , other chronic diseases (Hypertension, Coronary Heart Disease(CHD), COPD ,Obesity) and Lifestyle issues(Smoking ,Alcohol consumption, Physical activity, Dietary habit) which were not found statistically significant for association with colorectal cancer.

Conclusion: We did not find any appreciable possible confounding to nullify our research hypothesis. So, it is commented that Type2 Diabetes mellitus is a risk indicator for Colorectal cancer.

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Distribution of other risk factors among cases and controls

Table No. 2. shows that among the respondents 18.3% were found to be obese. Calculation of BMI (WHO international scale) showed that 13.0% of the respondents were overweight and 5% were obese. Less than one tenth (8.0%) of cases and 15.5% controls were overweight (odds ratio 1.172). Hypertension among cases and controls was observed to be 23.0% and 20.5% respectively (odds ratio1.046). Smoking among cases and controls was reported as 21.0% and 39.0% respectively (odds ratio 0.41). Less than half (40.7%) of the study subjects (both groups) reported consumption of smokeless tobacco and among them 36% were cases and 46% were controls (odds ratio (0.73). Only 1.3% of the respondents (cases and controls) reported consumption of alcohol and the risk ratio (odds ratio of alcohol consumption among the cases and controls was 0.079). It was observed that 10.0% of cases were coffee drinker compared to 7.5 of the cases (odds ratio 0.633). It was observed that adequate exercise between cases and controls were reported as 40.0% and 56.5% respectively (odds ratio 0.832). It was found that 27.0% of the respondents (both group) took adequate vegetables and fruits (as per WHO recommendation). However, consumption of adequate fruits and vegetable among cases and controls were 27.0% and 53.5% respectively (odds ratio 0.163).

Table 2. Other related factors among cases and controls

Variables	Level	Total		Case		Control		Odds ratio	95% CI		P-value
		n	%	n	%	n	%		Lower	Upper	
Obesity	Yes	55	18.3	12	12.0	43	21.5	Ref.			
	No	245	81.7	88	88.0	157	78.5	0.647	0.131	3.189	0.593
BMI level	Normal	246	82.0	87	87.0	159	79.5	0.701	0.096	0.41)	0.725
	Overweight	39	13.0	8	8.0	31	15.5	1.172	0.252	5.46	0.84
	Obese	15	5.0	5	5.0	10	5.0	Ref.			
Hypertensi on	Yes	64	21.3	23	23.0	41	20.5	Ref.			
	No	236	78.7	77	77.0	159	79.5	1.046	0.475	2.303	0.911
Smoking status	Yes	99	33.0	21	21.0	78	39.0	Ref.			
	No	201	67.0	79	79.0	122	61.0	0.402	0.205	0.786	0.008
Smokeless tobacco	Yes	122	40.7	36	36.0	86	43.0	Ref.			
	No	178	59.3	64	64.0	114	57.0	0.739	0.407	1.34	0.319
Alcohol intake	Yes	4	1.3	2	2.0	2	1.0	Ref.			
	No	296	98.7	98	98.0	198	99.0	1.014	0.079	13.026	0.991
Coffee consumption	Yes	25	8.3	10	10.0	15	7.5	Ref.			
	No	275	91.7	90	90.0	185	92.5	0.633	0.205	1.952	0.426
Exercise Level	Adequate	153	51.0	40	40.0	113	56.5	1.479	0.832	2.627	0.182
	Inadequate	147	49.0	60	60.0	87	43.5	Ref.			
fruits and vegetables intake	Adequate	134	44.7	27	27.0	107	53.5	Ref.			
	Inadequate	166	55.3	73	73.0	93	46.5	0.3	0.163	0.551	.000

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Rest of the References will be available upon request.