Stamford Journal of Pharmaceutical Sciences

Risk factors and trends of common cancers in Bangladesh: Outcome of hospital based case control survey conducted in Dhaka city, Bangladesh

***Mohammad Shahriar, Rezaur Bin Islam, Abu Salek Mahmood, Md. Shamim Al Mamun, Syeda Sumsun Nahar, Tasnim Sadiana and Sanjida Shahid**

Department of Pharmacy, University of Asia Pacific, Dhanmondi, Dhaka- 1209, Bangladesh.

Original Research Article

ABSTRACT

The present study aimed to provide information about the common cancer types and respective predisposing risk factors among the Bangladeshi cancer patients from different cancer hospitals located in Dhaka city. A survey is conducted to establish a relationship between common cancer types and predisposing risk factors. A nationwide representative sample of 610 Bangladeshi cancer patients were asked about their medical history, life-style, eating habit and genetic risk factors in relation to cancer prevention, as a part of omnibus survey. Interviews were conducted with 610 subjects (339 men and 271 women). Among the male, the leading cancers were lung (76 patients), followed by mouth and oropharynx (66 patients), stomach (41 patients) etc. Among the female, breast cancer (64 patients) ranked the topmost position, followed by cervix (48 patients), ovary (37 patients), mouth and oropharynx (34 patients). Among 11 risk factors among men candidates, the attributable fraction of cancer causing by tobacco smoking was considered highest (68.14%), followed by betel leaf (67.55%). For most risk factors, attributable fraction responses were higher in women than in men. 14 risk factors among women cancer patients, the attributable fraction of cancer causing by viral and bacterial diseases (39.10%) was highest, followed by obesity (37.10%) and then chronic disease (37.03%) excluding food habit. Our results suggest that awareness of the attributable fraction of cancer causes in the Bangladeshi cancer patient tends to be dominated by tobacco smoking, food habit, cancer causing infection, men and women hygiene, and reproductive history among females rather than genetic factors.

Keywords: Predisposing risk factor, common cancer, genetic factor.

INTRODUCTION

Cancer is a disease of elderly people. It is rare in children and rises in frequency throughout the adulthood and occurs most often in elderly (Young et al., 1995). The higher frequency of cancer in the elderly is consistent with the multistage nature of the carcinogenesis which usually requires decades for cancer to develop following exposure to etiological agents (Doll and Peto, 1993). Approximately 80% of the invasive cancers occur among the population of age 55 years or older in USA (Fredrick, 1993). In this study, patients aged between 8 and 80 years, 37.54% of the patients were of age more than 50 years. Lung cancer has become the most common form of cancer in men in the United States and in many other countries (Denoix and Gelle, 1955). In the 3rd National Cancer Survey in the United States, cancer of the lung made up 21.2% of all cancers in men (Cutler and Young, 1975). In this study lung cancer (19.84%) also ranked the topmost position in male which also co relates with

***Corresponding Author:**
Mohammad Shahriar, Assistant Professor
Department of Pharmacy, University of Asia Pacific
House # 73, Road # 5A, Dhanmondi R/A
Dhaka- 1209, Bangladesh.
Contact No: +88 01199844259
E-mail: *shahriar_12@yahoo.com*

those of other studies done in our country. Laryngeal cancer constitutes 2.5% of all cancer in male in United States (Regato et al., 1985). It is very common in Brazil, Sao Paulo, Bombay (Muir and Nectoux, 1982). Highest incidence has been reported in Brazil and India (Muir and Nectoux, 1982).

Laryngeal cancer is also common in our country (Huq, 1988). In our study, laryngeal cancer which is considered with cancer of mouth and oropharynx ranked 2nd (19.47%) in male and 4th (12.55%) in female. Breast cancer is a distinctly urban disease (Dewaard, 1975). In the Western countries, it is the most common tumor in women. The data from "Surveillance Epidemiology and End Results" program of the National Cancer Institute showed that the cancer of the breast constituted 28% of all cancers in white women, 24.9% in black women in Unites States (Young et al., 1995). High intake of dietary fat has been implicated in the high breast cancer incidence seen in the western countries (Hirayama, 1978). In this study, breast cancer constituted 15.58% of all cancers in women and ranked the top most position. Cancer of the cervix and uteri, far long the 2nd most common cancer in women in United States, now makes up only 3.6% of all cancers taking the 6th place in ranking order among the females (Young et al., 1995). According to the National Cancer Control Program in India, carcinoma of cervix is the most common malignancy observed among the Indian women (Vallikad and Mariadss, 1987). In majority of the radiotherapy center of our country we are getting cancer cervix as the most common malignancy among the female (Huq, 1988; Akhter et al., 1998; Baki et al., 1999). Smith believes that poor obstetrical and post partum care and neglect of the symptoms of a lacerated and ulcerated cervix accounts for the (Mary and Daly, 1993) greater frequency of cervical cancer among the poorer classes (Jussawalla and Vole, 1987). But in our study, cancer of cervix has been observed as 2nd commonest malignancy in female and preceded by breast cancer. The results of this study have some similarities and dissimilarities with those of other studies done both home and abroad. It may not represent the exact picture of malignancy prevailing amongst the people of our country, but might not be quite unrepresentative too for divisional cities of our country.

There is an alarming ignorance about cancer and literacy about how to reduce the risk of disease which is now a day the biggest killer in Bangladesh. The good news is that a large number of cancers can be prevented. For example, it can be said that a lot of cancer deaths in this country could be prevented by eliminating the use of tobacco products.

The survey was conducted to find the trends and risk factors of cancer in Bangladesh, to find age incidence rate of cancer, to alert everyone to the fact that each one of us can reduce our risk of getting cancer and to expand public awareness, which will be very important part of this survey results in multiple venues to reach medical oncologists, oncology nurses, and patient's advocates will be important.

METHODS

A hospital based case control study of common cancer causes and etiology in Bangladesh was conducted from July 2, 2010 to July 2, 2011. The survey was conducted by face to face interview following some standard questionnaire format.

From interviews, information was obtained about demographic characteristics, occupation and residence histories, history of selected medical conditions and medication use, diet and tobacco consumption. Mean values of the attributable fractions were calculated for each risk factor of cancer and compared by demographic and risk factors, socio-economic factors. Highest care was taken to determine the mean values of different risk factors.

RESULT AND DISCUSSION

The present survey, targeted at the Bangladeshi cancer patients for male, showed that the attributable fraction of cancer among cancer patients tended to be higher for cancer- causing tobacco smoking and chewing, Hygiene, cancer causing bacterial

Table 1: Respondents profile.

	Total		Male		Female	
	Number of patients	Percentage in total patients	Number of patients	Percentage in male patients	Number of patients	Percentage in female patients
Total	610	100	339	55.57	271	44.43
Educational status						
Junior high school	303	49.67	174	57.42	129	42.55
Senior high school	204	33.44	110	53.92	94	46.08
College or higher	103	16.89	55	53.40	48	46.60
Occupation						
Agriculture, fisheries	127	20.82	127	100	0	0
Service, clerk, management and others	200	32.79	138	69	62	31
Household activities	221	36.23	2	1	219	99.09
Students	59	9.67	37	62.71	22	37.29
None	3	0.50	3	100	0	0
Habitual smoking	231	37.90	231	100	0	0
Betel leaf	229	37.54	192	83.84	37	16.16

and viral infection, age, air pollution than major lifestyle factors such as dietary factors. Among female cancer patients, cancer caused by contraceptive method, reproductive history, and age, chewing tobacco, viral and bacterial infection and women's hygiene tended to be higher than major lifestyle factors such as dietary factors.

In this survey we have studied total 610 patients, in which number of male and female patients are 339 and 271. We have classified all this patients according to Gender and age, divisions or zones, educational status and occupation (Table 1). We found that maximum number of people ranges from 50-59 years of age suffers from cancer (Figure 1) and only in Dhaka zone has 27% where as Comilla holds the second position for having 17% of the total count (Figure 2). There are 11 risk factors which have been identified as cancer causing factors for male (Table 3).

In our survey we found that most male cancer patients used to take Betel leaf and Tobacco smoking frequently. Among 17 types of cancer in this survey we found maximum male patients which is about 76 persons, are affected by lung cancer and all of them are found to take betel leaf and tobacco smoking. Globally the three most common cancers are lung, breast & colorectal. Literature revealed that lung cancer is the leading cancer in male in our country (Talukder et al., 2008). In our study we also found lung cancer as the leading cancer in male.

Taking Betel leaf and Tobacco smoking are also observed in those people who are affected by Mouth and oropharynx cancer. The number of patients suffering from gastric cancer is 41 for male and 28 for female. It is to be noted that gastric cancer is rated the second most common tumor in the world with nearly a million new cases diagnosed each year, the incidence of which occur in developing countries (Forman and Burley, 2006; Liu et al., 2008).

Table 2: Types of cancer found in survey.

Cancer types found in male patients	Number of patients (male)	Cancer types found in female patients	Number of patients (female)
Lung Cancer	76	Breast Cancer	64
Mouth and Oropharynx Cancer	66	Cervical Cancer	48
Stomach Cancer	41	Ovarian Cancer	37
Oesophagus Cancer	38	Mouth and Oropharynx Cancer	34
Hodgkin's and Non - Hodgkin's Lymphoma	33	Stomach Cancer	28
Liver and Pancreas Cancer	26	Oesophagus Cancer	21
Colon and Rectum Cancer	24	Lung Cancer	11
Leukemia	15	Hodgkin's and Non -Hodgkin's Lymphoma	9
Bladder Cancer	12	Uterus Cancer	8
Gallbladder, Testes and Prostate Cancer	7	Liver and Pancreas Cancer	3
Malignant Melanoma	1	Colon and Rectum Cancer	2
		Leukemia	2
		Gallbladder Cancer	2
		Undifferentiated	2

From the statistical data regarding our study it is found that tea (30%), red meat (25%), and sugar and artificial sweeteners (21%) are the food habits which are found to be taken by male cancer patients frequently. We identified 14 risk factors and several types of cancer in female patients (Table 3). In this investigation 40.74% female cancer patients were found with more than 2 children, which play a major role to cause cancer of cervix. 48 patients were found with cervical cancer. According to the National Cancer Control Programme in India, carcinoma cervix is the most common malignancy observed among the Indian women (Vallikad and Mariadss, 1987). In this study 11.11% female cancer patients were found to have familial history of cancer which corresponds to other reports. In this survey we found that most women are affected by three types of cancer in this subcontinent which are breast cancer (23.62%), cervical cancer (17.71%) and ovarian cancer (13.65%). Among these types breast cancer is the most common malignancy-affecting women, with more than one million cases occurring worldwide annually (Stewart and Kleihues, 2003). Latest estimation suggest that more than 1,050,000 new breast cancer cases occur worldwide annually, with nearly 580,000 cases occurring in developed countries and remainder in developing countries (Ferlay et al., 2001).

It was observed that the chances of getting cancer increases with age for male it is 60.84% and female 70.06%. According to our study the largest prerequisite for developing cancer is aging (Table 3). 33.33% female patients were observed to have history of contraception causes different types of cancers (Table 3). 68.14% male were found to smoke and considered to be the main cause of different type of cancer like Lung cancer, mouth and oropharynx cancer (Table 3). 39.86% male cancer patients were found to be infected by bacteria and virus (Table 3).

Table 3: Awareness of attributable fraction of cancer causes among the Bangladeshi male and female cancer patients.

Risk Factors (Male)	Mean %	Risk Factors (Female)	Mean %
Age (40-59)	60.84	Age (40-59)	70.06
Tobacco smoking	68.14	Tobacco smoking	0
Betel leaf	67.55	Betel leaf	13.65
Occupational exposure	33.20	Air Pollution	17.00
Air Pollution	32.50	Food Habit	
		1. Red Meat (Cow, goat)	44.44
		2. Sugar, Artificial sweetener	74.07
		3. Tea	14.81
		4. Fried food	29.63
		5. Soft drinks	28.50
Food Habit		Obesity	37.10
1. Red Meat (Cow, goat)	57.14		
2. Sugar, Artificial sweetener	46.43		
3. Tea	67.74		
4. Fried food	26.19		
5. Soft drinks	25.88		
Obesity	25.40	Physical inactivity	34.37
Physical inactivity	23.80	Chronic disease	37.03
Chronic disease	50.00	Number of Children (>2)	40.74
Unbalanced diet	20.00	Induced Abortion	3.70
Cancer causing viral and bacterial infection	39.86	History of Contraception (Oral Contraceptive Pill, IUD, Ligation etc.)	33.33
		Cancer causing viral and bacterial diseases	39.10
		Genetic Factor	11.11
		Unbalanced diet	26.46

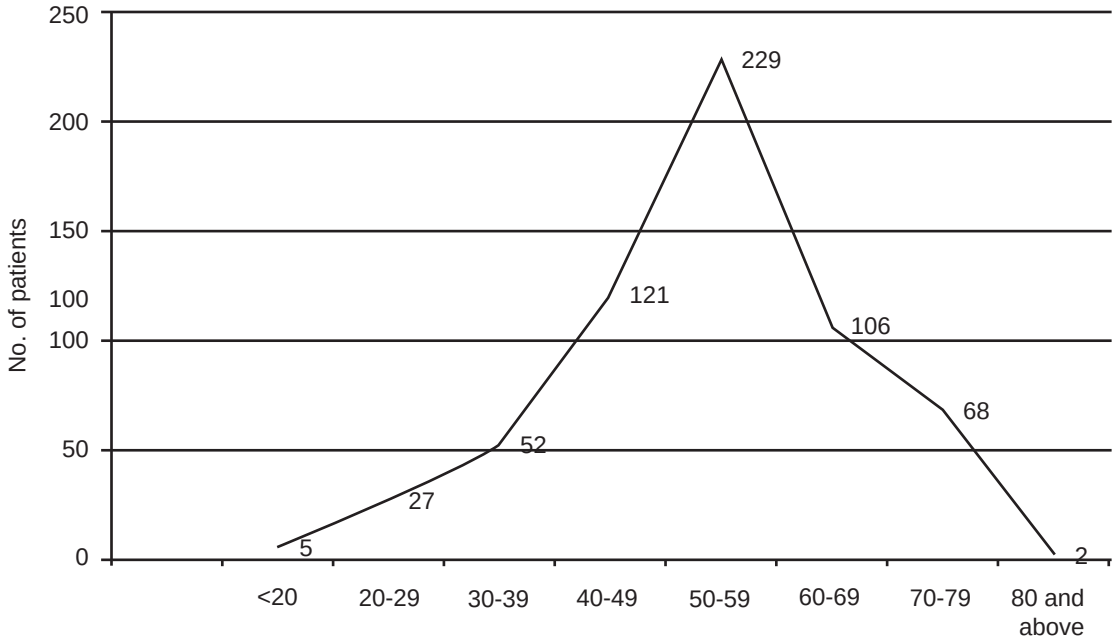

Figure 1: Overall incidence rate of cancer by age.

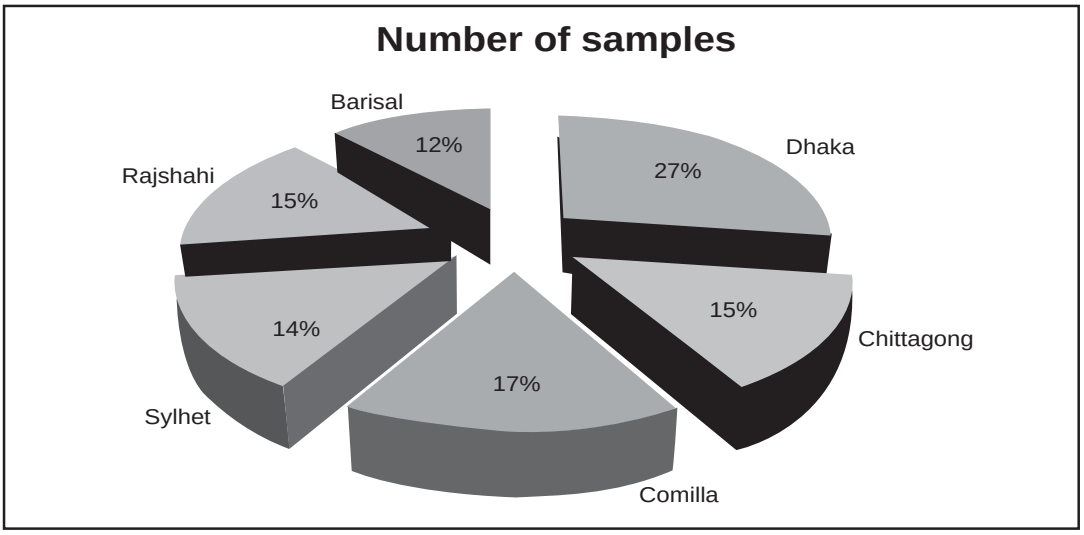

Figure 2: Distribution of patients according to divisions.

Birth control pills might play role to develop the risk of breast cancer. In our study, the attributable fraction of air pollution in male (32.50%), chronic disease (50.00%) and occupational exposure (33.20%) were considered low compared with other risk factors (Table 3).

REFERENCES

Akhter PS, Uddin MM, Sarma SK (1998). Patterns of Malignant Neoplasms- A Three Years Study. BMJ. 27(2): 29-32.

Baki MO, Mostafa SKG, Hossain MS, Uddin MM, Hossain SA, Afroza S (1999). Cancer Epidemilogy of Ten Common Cancers at National Institute of Cancer Research and Hospital. Ban Can Reports. 24: 1-2:1-16.

Cutler SJ, Young Jr. JL (1975). Third National Cancer Survey: Incidence, Data. Natl Cancer Inst Monogr. 41: 1-454.

Denoix PF, Gelle X (1955). Evaluation of the comparative significance of bronchopulmonary cancer in France and in other countries. Bull Assoc Fr Etud Cancer. 42: 247-78. PMid:13240248

Dewaard F (1975). Breast Cancer Incidence and Nutritional Status with particular reference to body weight and height. Cancer Res. 35: 3551-3556. PMid:1192420

Doll R, Peto R (1993). The causes of Cancer: quantative estimates of a valuable risk of cancer in the United States today. Journ Natl Cancer Inst. 66: 1981.

Ferlay J, Bary F, Parkin DM, Pisani P (2001). Globocan 2000: Cancer Incidence and Mortality Worldwide (IARC Cancer Bases No. 5), Lyon, IARC Press.

Forman D, Burley VJ (2006). Gastric cancer: Global pattern of the disease and an overview of environmental risk factors. Best Pract Res Clin Gastroenterology. 20: 633- 49. http://dx.doi.org/10.1016/j.bpg.2006.04.008

Fredrick P, Juli L, Schneider AF (1993). Cancer Epidemiology: Cancer Medicine, 3rd Ed. Lea and Febiger, Philadelphia.

Hirayama T (1978). Epidemilogy of Breast Cancer with special reference to the role of diet. Prev Med. 7: 173-95. http://dx.doi.org/10.1016/0091-7435(78)90244-X

Huq SF (1988). Common Cancers of Bangladesh- the Trends Through Three Decades. BMJ. 63: 17:55.

Jussawalla DJ, Vole BB (1987). Epidemilogy of carcinoma of the cervix in India. In: Mould RF, Bose A. (Eds.). Carcinoma of the cervix in developing areas. Adam Higler, Bristol and Philadelphia.

Liu TS, Wang Y, Chen SY, Sun YH (2008). An updated meta analysis of adjuvant chemotherapy after curative resection for gastric cancer. Cancer Rev. 34: 1208-16.

Muir CS, Nectoux J (1982). International Patterns of Cancer. In: Schettenfeld D, Fraumemi JE Jr. (Eds.). Cancer Epidemiology and prevention. WB Saunders Company, Philadelphia.

Mary B, Daly MD (1993). Epidemilogy of Cancer. In: Weiss GR. (Eds.) Clinical Oncology- A Lange Medical Book, 1st Edition, San Antanio, Texas.

Regato JAD, Harlan J, Cox JD (1985). Cancer: Diagnosis, Treatment and Prognosis. 6th Ed. The CV Mosby Company, Washington. pp. 357-377.

Stewart BW, Kleihues P (2003). Human Cancers by organ site-Breast Cancer. World Cancer Report. IARC Press, Lyon. pp. 188.

Talukder MH, Jabeen S, Islam MJ, Hussain SMA (2008). Distribution of cancer patients at National Institute of Cancer Research and Hospital in 2006. Bangladesh Medical Journal. 37(1): 2-5.

Vallikad E, Mariadss P (1987). Factors influencing the development of carcinoma cervix. In: Moulds RF, Bose A. (Eds.). Carcinoma of the cervix in developing areas. Adam Higler Bristol, Philadelphia.

Young JL, Percy CL, Asire AJ (1995). Surveillance, Epidemiology and End Results: Incidence and Mortality Data 1973-77. National Cancer Inst. Cancer Supplement. 75: 140-421