

## **Current Status and Prospective Of Cancer Disease in Bangladesh: A Cross-Sectional Survey**

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**ABSTRACT:** A survey was performed from July 2012 through September 2012 on randomly selected cancer patients at three well-known hospitals in Dhaka city, Bangladesh, by the help of a structured questionnaire. A total of 60 patients, 27 male and 33 female were involved in this study with the ratio of 1:1.2. Cancer prevalence was much noticeable in middle to old age where lung and stomach cancers stood in the top level (37.04%), followed by thyroid cancer (25.93%), sarcoma (14.81%), male genital tract cancer (7.41%), eye cancer (7.41%), duodenum cancer (3.7%) and rectum cancer (3.7%) in male. In female patients, ovary cancer ranked the top (39.39%), followed by breast cancer (27.27%), rectum cancer (18.18%) and duodenum cancer (9.09%). This survey reflected that the primary and foremost means of cancer treatment in Bangladesh are surgery, chemotherapy and radiotherapy which can be used alone or in combination. From this study we found that, 60% of cancer cases were being treated with chemotherapy alone and 20% cases with the combination of chemotherapy and radiotherapy. Only a limited number of pharmaceutical companies manufacture anticancer drugs in Bangladesh and many of the required anticancer drugs are imported.

**KEYWORDS:** Cancer patients, Treatment patterns, Prices of anticancer drugs, Cost of cancer treatment, Bangladesh.

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### **I. INTRODUCTION**

Cancer is one of the leading causes of death worldwide [1]. The World Health Organization (WHO) reported the cancer disease accounting for 8.2 million deaths in 2012 [2, 3] and also predicted that 12 million of all deaths by 2030 worldwide will be due to cancer [2]. In major cases predominantly breast, colorectal, prostate, lung, stomach and liver cancers cause the most cancer deaths each year [4]. However, the most frequent types of cancer differ between men and women, lung cancer in men and cervical and breast cancer in women constitute about 38% of all cancer in Bangladesh [5] and in most cases cervical cancer patients come for diagnosis and treatment at very late stage [6]. In the European Union, the estimated numbers of new cases of cancer were approximately 1.4 million in males and 1.2 million in females, and around 707,000 men and 555,000 women died from cancer in the same year [4]. According to WHO, at least 30–40% of all cancer deaths are preventable and the rates are extending as more people live to an old age and as much lifestyle change originate in the developing world [7]. About 30% of cancer deaths are due to the five leading behavioral and dietary risks which are high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use and alcohol use [8]. Smoking alone is estimated to have caused 21% of global cancer deaths and about 70% of global lung cancer deaths [9]. Cancer rates are predictable to further increase if nothing changes. Some large surveys related to cancer are being conducted worldwide based on various sorts of comparative data on patients from different parts of the globe [10] but there is no population based cancer registry in Bangladesh for reliable data on cancer incidence, prevalence and mortality [11]. This study is aimed to define the characteristics and distribution of types of cancer in Bangladesh through a prospective, cross-sectional, multicenter survey of cancer patients. We are also attempted to present the cancer treatment patterns in different hospitals and to reflect current condition of available anticancer drugs in Bangladesh.

### **II. MATERIAL AND METHODS**

The study was conducted on 60 cancer patients at three well-known hospitals in Dhaka city, Bangladesh: National Institute of Cancer Research and Hospital (NICRH), Ahsania Mission Cancer & General Hospital (AMCGH) and Japan Bangladesh friendship Hospital (JBFH) between July and September in the year of 2012 on both the indoor and outdoor patients having radiological evidence or clinical evidence of malignancy from the hospitals. The study was a statistics based cross-sectional survey. This survey was done by a

structured questionnaire which was developed through multi-stages of cross check and analysis and was used to collect data from the patients. Questions were asked to the patient and finally answers of the patient were inserted into the data collection form.

### **III. RESULTS**

About 98 cancer patients were selected for the survey but only 60 of them were agreed to answer the questionnaire, response rate was 58.8%. Out of 60 cancer patient we have got 27 male and 33 female in this study (male: female ratio- 1:1.2, Table 1). Majority of the patients were from the Dhaka division. In this study the cancer incidence was much higher at the old age 50-59 years (23.33%), followed by middle age 30-39 (21.66%) whereas cancer was least prevalent in pediatric and teenage patients that was only 5.0% (Table 2, Fig 1) in both cases. With respect to family income, we found that the majority (about 21.67%, Table 3) of patient's family income (range 30,000-34,000 taka only) was not sufficient for the treatment of cancer in Bangladesh. Regarding the educational status, the incidence and prevalence of cancer were much in illiterate patients (total 30.00%, male 25.93% & female 33.33%, Table 4). Among the 60 cancer patient, there were 13(21.67%) ovary cancer, 12(20.00%) lung and stomach cancer, 9(15.00%) female breast cancer, 7(11.67%) thyroid cancer, 7(11.67%) rectum cancer, 4(6.67%) sarcoma, 4(6.67%) duodenum cancer, 2(3.33%) eye and 2(3.33%) male genital tract cancer patient. With respect to the prevalence, ovary cancer (39.39%) topped in women and lung & stomach cancer (37.04%) in men (Table 5).

The main approaches of cancer treatment were surgery, chemotherapy and /or radiotherapy, used alone or in combination. We found that 60% (36, 21 female and 15 male) of patient were being treated with chemotherapy alone. In 20% of cancer cases chemotherapy was followed by radiotherapy and 11.6% cases were being treated with radiotherapy whether triple therapy (chemotherapy, radiotherapy & surgery) treated cancer patient were insignificant in the study (Table 6 and Fig 2). With respect to the high treatment cost and hospital facilities, most of the patients were not satisfied (58%) in taking treatment from different hospitals (Fig 3). The most important matter related to cancer treatment is the use of anticancer drug. In Bangladesh, there are a few pharmaceutical companies that manufacture various groups of anticancer drugs. Among them Beacon Pharmaceutical and Techno Drugs ltd. are in leading position. Beacon pharmaceutical produces diverse classes of anticancer drugs pricing from 100 taka to 10,000 taka and Techno Drugs Ltd. produces significant numbers of anticancer drug pricing from 95 taka to 12000 taka (Table 7). But the total needs of anticancer drugs are much more. The rest of the required medicines are imported from different foreign countries which lead to an increase in the price of the anticancer drug. In this study the entire chemotherapy treated patient had experienced a number of chemotherapy induced side effects which were managed with suitable medications.

### **IV. DISCUSSION**

This study was conducted during the period of July to September 2012 on the cancer patients in three hospitals of Dhaka city. For this purpose, a questionnaire was used to collect data from 60 cancer patients having radiological or clinical evidence of malignancy. The survey reflected some distinct picture on the cancer in Bangladesh. The age range of the sampled patients were 0 years to 70 years above and a total 23.33% (Table 2, Fig 1) of the patients having cancer with the range of 50-69 years. This data supports the facts that cancer is a disease of adult and old age [12, 13]. According to this study, there were exactly 33 female cancer patients among the 60 patients, which represent 55 % of the total patients that indicates women are in the vulnerable condition of the total cancer occurrence (Table 1). But a population based survey is greatly needed to enlighten the exact scenario of cancer in Bangladesh. Most people are affected with cancer because of illiteracy, ignorance, scarcity of cancer consciousness, religious superstitions, inadequate diagnosis availability in most cancer center and poor socio-economic status in Bangladesh [10]. Our survey also found that lack of education can cause cancer incidence, in our study 30% of the total patients were uneducated, and 23.33% patients passed secondary level and only 10% completed graduation (Table 4). Globally the three most common cancers are lung, breast and colorectal [14]. Our study also reflected that mostly occurred cancer type in Bangladesh are stomach and lung cancer (37.04 %) in male and ovarian (39.39%) and breast cancer (27.27%) in female patients (Table 5). According to this survey, surgery, chemotherapy and /or radiotherapy are the three main strategies of cancer treatment and 60% of the total patients were being treated with chemotherapy alone (Table 6, Fig 2). Most focusing segment of our survey was to find out the anticancer drugs which are manufactured within our country as well as to see how many drugs are being used in our hospitals. So through our afford we got 22 different anticancer drugs that are available in the market manufactured by the local pharmaceuticals companies which are "Beacon Pharmaceutical" And "Techno Drugs Ltd"(Table 7).

## V. CONCLUSION

Cancer treatment is a long process and very much expensive. This survey reflects the overall picture of cancer and its treatment in Bangladesh which include patients' condition (age, sex, educational status and income range), types of cancer, strategies of treatment and the cost of the treatment. This study reveals that mass education, adoption of a healthy lifestyle (diet and exercise), tobacco abstinence, health consciousness and early diagnosis of disease are much important to fight against serious health ailments such as cancer. One of the most focusing segments of our survey was to keep an eye to the availability of anticancer drugs as well as to visualize how many drugs are being used in hospitals. Only a few companies manufacture anticancer drugs in Bangladesh which cannot fulfill the total drug requirement for the treatment of cancer within the country and the rest of the requirement is imported from different foreign countries which lead to an increase in the expense of cancer treatment. Government should offer enough facilities to conduct research and increase manufacturing scopes of the anticancer drugs locally. If the local companies get more funds, many of them will come ahead to manufacture anticancer drugs, which will aid to enrich our local pharmaceutical market. The government should emphasize on the development of specialized cancer center. These centers can also provide rehabilitation and palliative care for cancer patients to relieve their suffering. If we follow the efficient and decent way, we suppose it can shrink the current condition of cancer diseases.

## VI. ACKNOLEGMENT

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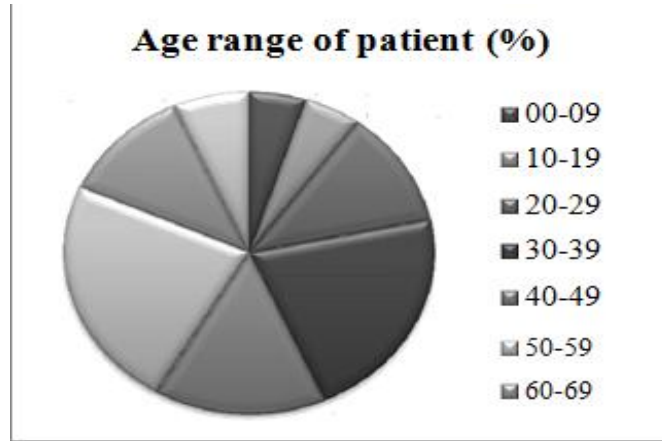


Fig. 1. Graphical presentation of percentage of age range of patients

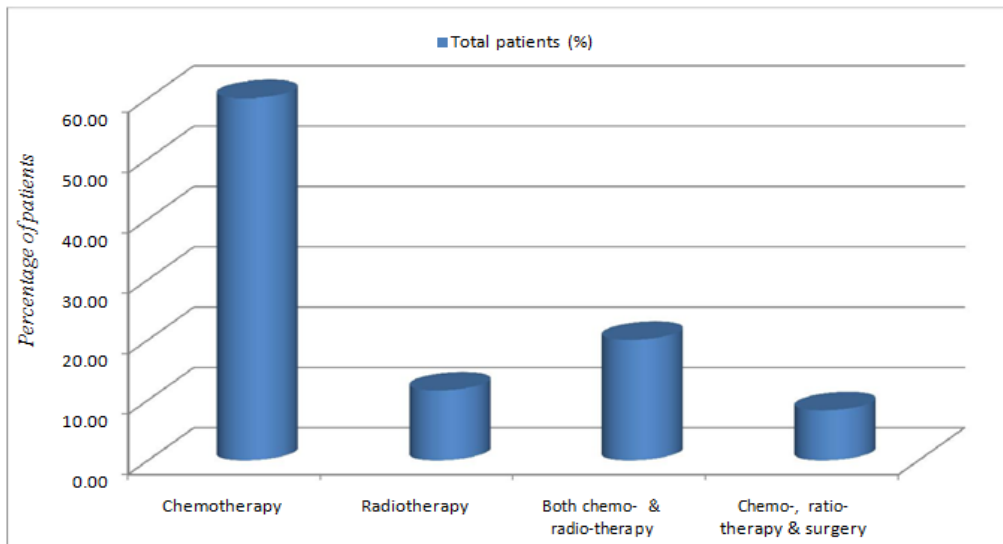


Fig. 2. Strategies of cancer treatment

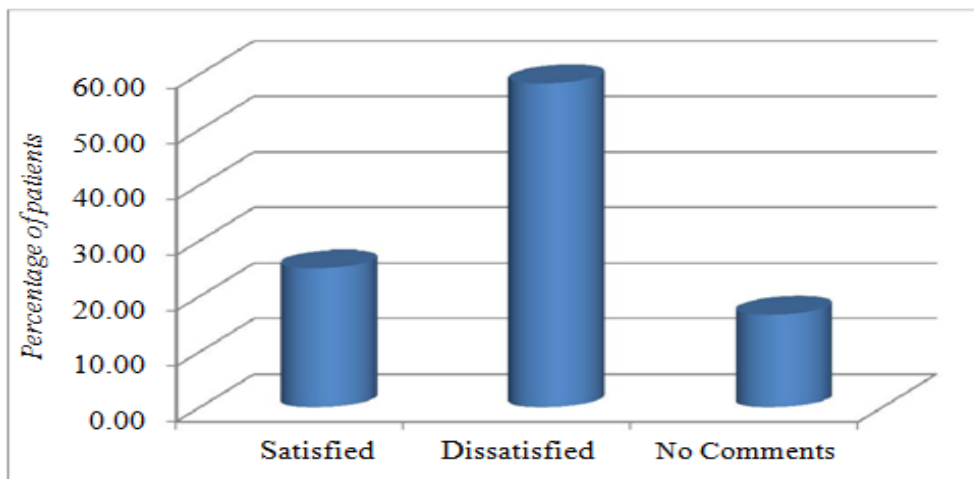


Fig. 3 Satisfaction of patients about their treatment & hospital facilities.

**Table 1.** Gender distribution

<b>Gender</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
Male	27	45
Female	33	55
<b>Total</b>	<b>60</b>	<b>100</b>

**Table 2.** Age range of patients

<b>Age range</b>	<b>No. of patients</b>	<b>Percentage (%)</b>
00-09	3	5
10-19	3	5
20-29	7	11.66
30-39	13	21.66
40-49	9	15
50-59	14	23.33
60-69	7	11.66
70-above	4	6.66
<b>Total</b>	<b>60</b>	<b>100</b>

**Table 3.** Income range per month of patients

<b>Income range (Taka)</b>	<b>No. of Patients</b>	<b>Percentage (%)</b>
10,000-14,000	2	3.33
15,000-19,000	4	6.67
20,000-24,000	5	8.33
25,000-29,000	8	13.33
30,000-34,000	13	21.67
35,000-39,000	10	16.67
40,000-44,000	4	6
45,000-49,000	8	13.33
50,000-54,000	4	6.67
55,000-above	2	3.33
<b>Total</b>	<b>60</b>	<b>100</b>

**Table 4.** Educational level of patients

Level of Education	Male	Percentage (%)	Female	Percentage (%)	Total Patients	Percentage (%)
Primary	3	11.11	6	18.18	9	15.00
Secondary	6	22.22	8	24.24	14	23.33
Higher secondary	7	25.93	6	18.18	13	21.66
Graduation	4	14.81	2	6.06	6	10.00
Illiterate	7	25.93	11	33.33	18	30.00
Overall	27	100	33	100	60	100

**Table 5.** Different types of cancer in both male and female patients

Type of cancer	Male	Percentage (%)	Female	Percentage (%)	Total patients	Percentage (%)
Duodenum	1	3.70	3	9.09	4	6.67
Ovary	0	0	13	39.39	13	21.67
Breast	0	0	9	27.27	9	15
Thyroid	7	25.93	0	0	7	11.67
Lung & stomach	10	37.04	2	6.06	12	20.00
Male genital tract	2	7.41	0	0	2	3.33
Rectum	1	3.70	6	18.18	7	11.67
Eye	2	7.41	0	0	2	3.33
Sarcoma	4	14.81	0	0	4	6.67
Overall	27	100.00	33	100.00	60	100.00

**Table 6.** Strategies of cancer treatment

Treatment Policy	Male	Female	Total	Percentage (%)
Chemotherapy	15	21	36	60.00
Radiation therapy	3	4	7	11.60
Combination of chemotherapy and radiotherapy	7	5	12	20.00
Chemotherapy, radiotherapy & surgery	2	3	5	8.30
Overall	27	33	60	99.90

**Table 7.** Anticancer drugs manufactured by Bangladeshi companies

Beacon Pharmaceuticals / Techno Drug Ltd				
Serial no.	Generic name	Brand name	Potency	Price
1	Cisplatin	Platinex / Cigalin	10 mg 50mg	250 taka 850/750 taka
2	Doxorubicin	Jorobin/ Doxorub	10 mg 50mg	100 taka 300 taka
3	Cyclophosphamide	Cyclotox / Cyclomide	200 mg 1 gm	180/200 taka 650/750 taka
4	Paclitaxel	Gelpac/ Paclitexin	30 mg 100 mg	1700 taka 4500 taka
5	Gemeitabine	Gemoxen /--	300 mg 200 mg 1 gm	900 taka 500 taka 1400 taka
6	Carboplatin	Carboplat /--	150 mg 450 mg	2100 taka 3800 taka
7	Etoposide	Topoxin /Eposide	100 mg	400 taka
8	Methotraxare	Traxonate/--	50 mg	130 taka
9	Vincristine sulphate	Criston/ Vincrist	1 mg 2mg	350 taka 550 taka
10	Oxaliplatin	Xaloplat /Oxalotin	50 mg 100 mg	3000 taka 5500 taka
11	Zolondranic acid	Xeloron /--	4 mg	3000 taka
12	Philgrastin	Filgrast/--	30 mg	2790 taka
13	5-Fu	Fluroxen/Flurine	500 mg	100/95 taka
14	Arlolinib	Argonix tablet/ Tarcinib	150 mg 100 mg	750/650 taka 600/500 taka
15	Imatinib	Imanix tablet/--	100 mg	125 taka
16	Capecitabine	Getabin tablet/ Captabin	500 mg	125/95 taka
17	Folinic acid	Folinix injection/--	50 mg	500 taka
18	Docetexin	Docigin injection / Docitax	20 mg 80 mg	3200/4000 taka 1100/12000 taka
19	Ifosfamide	--/ Ipamide	1gm 2gm	1800 taka 3200 taka
20	Tomozolamide	--/ Zolomide	250 mg	1300 taka
21	Araastrozole	--/ Aerodex	1mg	200 taka
22	Xencetabine	--/ Xenecetin	200 mg 1 gm	1400 taka 5000 taka

--/ = Not manufactured by Beacon Pharmaceuticals, /-- = Not manufactured by Techno Drug Ltd