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Comprehensive update on cancer scenario of Bangladesh

Syed Md Akram Hussain

Abstract

Bangladesh, at 142 million people, is the ninth most populous country in the world. There are 13 to 15 lakh cancer patients in Bangladesh, with about two lakh patients newly diagnosed with cancer each year. As an overview, lung cancer and mouth-oropharynx cancer rank as the top two prevalent cancers in males. Other types of cancers are esophagus cancer and stomach cancer. In women, cancer cervix uteri and breast cancer are most prevalent. Other cancer types, which affect women, are mouth and oropharynx cancer, lung cancer, and esophagus cancer. There are around 150 qualified clinical oncologists and 16 pediatric oncologists working in the different parts of the country. Regular cancer treatment is available in 19 hospitals and 465 hospital beds are attached as indoor or day care facilities for chemotherapy in the oncology/radiotherapy departments. There are about 15 linear accelerators, 12 Co-60 teletherapy and 12 brachytherapy units currently available. Approximately, 56 cancer chemotherapeutic agents are obtainable in Bangladesh. Research facilities are available at tertiary care centers and a few multi country collaborative research activities are ongoing. Bangladesh has a unique National Cancer Control Strategy and Plan of Action 2009-2015 formulated with the assistance of WHO with an objective to develop and implement continuum of cancer care through a comprehensive cancer control programe. Preventive measures taken to reduce the incidence of cancer include reduced tobacco smoking, change of dietary habit and reduced food adulteration, ensuring reproductive hygiene, increased physical activity, and reduced occupational hazard. Awareness buildup and media campaign are going on by organizing the general people, opinion leaders of the society, and boy and girl scout. Training of general physicians on cancer warning signs and setup of early cancer detection centers at each medical college and district levels are ongoing. Beside these, some other major cancer programs have taken place for early detection of breast, cervical and oral cancer by Bangladesh Government and NGOs such as ICDDR'B, BRAC, Ahsania Mission Cancer Hospital, BSMMU, Bangladesh Cancer Society, Ashic Foundation, Amader Gram, AK Khan Healthcare Trust, CANSUP, Oncology club etc. Piloting of cervical cancer vaccination has recently been completed. Improving the cancer scenario overnight is not an easy task but policy makers may become interested and push this agenda forward, if the huge health impact and economic loss caused by cancer become evident to them. Besides, Bangladesh has accepted reduction of cancer morbidity and mortality targets set by United Nations and World Health Organization as a part of global non-communicable disease prevention agreement.

Key words: Cancer, prevalence, facilities, prevention, cancer programme, agency, Bangladesh

Basic information on the oncology scenario, including the leading cancers, their prevalence, citing the causes of increased prevalence

Bangladesh, at 142 million people, is the 9th most populous country in the world. There are 13 to 15 lakh cancer patients in Bangladesh, with about 2 lakh patients newly diagnosed with cancer each year.[1,2]

As an overview, lung cancer and mouth and oropharynx cancer rank as the top 2 prevalent cancers in males. Other types of cancers commonly noted include esophagus cancer, stomach cancer, lymphomas, and multiple myeloma. In women, cervix uteri cancer and breast cancer are most prevalent. Other cancer types which affect women are mouth and oropharynx cancer, lung cancer, and esophagus cancer.[1] The prevalence rates of the leading cancers in both males and females are presented in Tables 1 and 2.[3]

Table 1: Leading cancers and the prevalence in last 5 years in males

Cancer type	Prevalence in last 5 years (%)
Lung cancer	13.1
Lip and oral cavity cancer	11.9
Other pharynx	8.2
Colo-rectal cancer	6.5
Stomach cancer	4.7
Esophageal cancer	4.1
Non-Hodgkin lymphoma	4.7
Hodgkin lymphoma	2.2
Bladder cancer	3.4
Prostate cancer	2.3
Liver cancer	1.5
Leukemia	0.6

Causes of increased cancer prevalence

Tobacco

Tobacco smoke contains approximately 4000 chemicals, of which at least 438 can cause cancer. Tobacco is the single most important modifiable risk factor (30%) for cancer.

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Table 2: Leading cancers and the prevalence in last 5 years in female

Cancer type	Prevalence in last 5 years (%)
Breast cancer	32.8
Cervical cancer	26.1
Lip and oral cavity cancer	6.5
Ovarian cancer	3.3
Colo-rectal cancer	2.7
Lung cancer	2.0
Esophageal cancer	1.9
Stomach cancer	1.8
Non-Hodgkin lymphoma	1.3
Hodgkin lymphoma	0.8
Liver cancer	0.6

Unfortunately, in Bangladesh, cigarette production has grown tremendously since 1980, and bidi production has grown even faster. A WHO study showed that 20 million people in Bangladesh use tobacco in some form, including five million women and 57,000 people die every year due to tobacco-related diseases. Smoking prevalence in Bangladesh is 41% among men aged 15 years and over. In women, it was 1.8% among those aged 15 years and over.[4]

Sexual and reproductive factors

Sexual and reproductive factors are associated with cancer of the uterine cervix and breast. Sexual behavior factors, like young age at first sexual activity, multiple sexual partners, and poor sexual hygiene, are associated with cancer of the uterine cervix. Human Papilloma Virus (HPV) has now been identified as the etiological agent responsible for cervical cancer. HPV prevalence increases with high-risk sexual behavior and poor sexual hygiene. Late age at marriage, nulliparity, and late menopause have been linked to breast cancer.[3]

Diet

Foods which are responsible for cancers of oral cavity, pharynx, larynx, esophagus, liver, and breast include red meat (cow, goat), sugar, artificial sweetener, tea, fried food, dried fish, preserved foods, food adulteration and soft drinks. Changing dietary patterns will lead to increased contribution of diet in cancer causation in Bangladesh.[4]

Obesity

Physical inactivity

Cancer-causing viral and bacterial infection

Human Papilloma virus, Hepatitis B and Hepatitis C virus, Epstein-Barr virus, Schistosoma haematobium, *Helicobacter Pylori*.

Basic facilities available in various parts of the country

Setting 1: Only basic care facilities

Only basic care and palliative oral treatment can be given in ASHIC Foundation. There are no oncology trained personnel available at the center and no specialized diagnostic facilities like histopathology, flow cytometry are available.

Setting 2: Regular cancer treatment facilities

According to International Atomic Energy Agency (IAEA), 2 teletherapy machines and 1 brachytherapy machine are needed for 1 million population. According to this estimation Dhaka city alone needs 20 and the entire

Various common oncology drugs available and not available

Available drug	Non-available drug
Anastrozole	Abiraterone Acetate
Bevacizumab	Ado-Trastuzumab Emtansine
Bleomycin	Aldesleukin
Cabazitaxel	Alemtuzumab
Carboplatin	Aminolevulinic Acid
Chlorambucil	Aprepitant
Capecitabine	Arsenic Trioxide
Cisplatin	Asparaginase Erwinia chrysanthemi
Cyclophosphamide	Axitinib
Dacarbazine	Azacitidine
Dactinomycin	Bendamustine Hydrochloride
Daunorubicin Hydrochloride	Bexarotene
Docetaxel	Bortezomib
Doxorubicin Hydrochloride	Bosutinib
Doxorubicin Hydrochloride Liposome	Brentuximab Vedotin
Epirubicin Hydrochloride	Cabozantinib-S-Malate
Erlotinib Hydrochloride	Carfilzomib
Etoposide	Cetuximab
Etoposide Phosphate	Clofarabine
Everolimus	Crizotinib
Filgrastim	Cytarabine
Fludarabine Phosphate	Cytarabine, Liposomal
Fluorouracil	Dasatinib
Gefitinib	Decitabine
Gemcitabine	Degarelix
HPV Bivalent Vaccine, Recombinant	Denileukin Diftitox
Ifosfamide	Denosumab
Imatinib	Dexrazoxane Hydrochloride
Irinotecan Hydrochloride	Eltrombopag Olamine
Lapatinib	Enzalutamide
Lapatinib Ditosylate	Eribulin Mesylate
Lenograstim	Exemestane
Letrozole	Fulvestrant
Leucovorin Calcium	Gemtuzumab Ozogamicin
Leuprolide Acetate	Glucarpidase
Mesna	HPV Quadrivalent Vaccine, Recombinant
Methotrexate	Ibritumomab Tiuxetan
Mitomycin C	Imiquimod
Oxaliplatin	Ipilimumab
Paclitaxel	Ixabepilone
Pegfilgrastim	Lenalidomide
Prednisone	Liposomal Cytarabine
Procarbazine Hydrochloride	Lomustine
Rituximab	Mechlorethamine Hydrochloride
Sorafenib Tosylate	Nelarabine
Sunitinib Malate	Nilotinib

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Cont...

Available drug	Non-available drug
Talc	Ofatumumab
Tamoxifen Citrate	Omacetaxine Mepesuccinate
Temozolomide	Paclitaxel Albumin-stabilized Nanoparticle Formulation
Thalidomide	Palifermin
Trastuzumab	Palonosetron Hydrochloride
Vinblastine Sulfate	Panitumumab
Vincristine Sulfate	Pazopanib Hydrochloride
Vinorelbine Tartrate	Pegaspargase
Zoledronic Acid	Pemetrexed Disodium
	Pertuzumab
	Plerixafor
	Pomalidomide
	Ponatinib Hydrochloride
	Pralatrexate
	Raloxifene Hydrochloride
	Rasburicase
	Recombinant Interferon Alfa-2b
	Regorafenib
	Romidepsin
	Romiplostim
	Ruxolitinib Phosphate
	Sclerosol Intrapleural Aerosol (Talc)
	Sipuleucel-T
	Temsirolimus
	Topotecan Hydrochloride
	Toremifene
	Tositumomab and I 131 Iodine Tositumomab
	Vandetanib
	Vemurafenib
	Vincristine Sulfate Liposome
	Vismodegib
	Vorinostat
	Ziv-Aflibercept

Various cancer programs, cancer initiatives and NGOs in Bangladesh [4]

National goals and objectives	
Goals	**Objective**
To reduce the incidence of cancer through primary prevention	Reduce the number of people who develop cancers due to tobacco use and second-hand smoke
	Reduce the number of people developing physical inactivity and obesity-related cancers
	Reduce the number of people developing nutrition-related cancers
	Reduce the number of people developing skin cancer due to UV radiation exposure
	Reduce the number of people developing infectious disease-related cancers
	Reduce the number of people developing alcohol-related cancers
	Reduce the number of people developing occupation-related cancers

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National goals and objectives	
Goals	**Objective**
Ensure effective screening and early detection to reduce cancer incidence and mortality	At a national level, provide a strategic approach to cancer screening, and assessment and surveillance of those with familial risk, to ensure quality, acceptability, and effectiveness
	Establish a process to assess the value of early detection of cancer other than that obtained through organized screening
Ensure effective diagnosis and treatment of cancer to reduce morbidity and mortality	Provide optimal treatment for those with cancer
	Develop defined standards for diagnosis, treatment, and care for those with cancer
	Ensure patient-centered and integrated care for those with cancer and their family
Improve the quality of life for those with cancer, their family and through support, rehabilitation, and palliative care	Establish integrated programs of supportive care and rehabilitation with defined leadership
	Ensure all people with cancer and their families are able to access the appropriate resources for support and rehabilitation that they need
	Ensure all survivors of adult, childhood and adolescent cancer receive timely and ongoing support and rehabilitation, including early identification of, and intervention in, late effects
	Ensure that those with cancer and their family have access to high-quality information treatment and care, including complementary and alternative medicine
	Ensure optimal independence and function for those with cancer through systematic assessment and appropriate multidisciplinary intervention for their social and vocational needs
	Continue to improve access to essential palliative care services that provide appropriate symptom relief and emotional, spiritual, cultural, and social support for those with cancer and their family
	Ensure that integrated and comprehensive service is provided to all those with cancer who require palliative care and their family

country needs around 300 Teletherapy (radiotherapy) machines respectively.

However, in Bangladesh there are 17 radiotherapy centers in public and private sector; only one is situated in a rural area. There are only 15 Linear Accelerators installed in the country with two installed in a rural area. 12 Cobalt- 60 machines and 12 brachytherapy machines are installed in Bangladesh [Table 3].

Bed capacity is around 500 beds all over the country which is insufficient for the current and future needs.[4] Among these, 64 beds are for day care and remaining are in indoor facility [Table 4].

Oncologist available: There are 150 qualified oncologists.

Regular cancer treatment can be made available to patients in:

Hospital
National Institute of Cancer Research and Hospital, Dhaka
Khwaja Yunus Ali Medical College Hospital (Rural Centre)
Dhaka Medical College Hospital
Oncology Department BSMMU
Chittagong Medical College Hospital
Mymensingh Medical College Hospital
MAG Osmani Medical College Hospital, Sylhet
Sher-e-Bangla Medical College Hospital, Barisal
Rajshahi Medical College Hospital
Rangpur Medical College Hospital
Khulna Medical College Hospital
Shaheed Ziaur Rahman Medical College and Hospital, Bogra
Delta Oncology Center, Dhaka
Ahsania Mission Cancer Hospital, Dhaka
Square Hospital, Dhaka
United Hospital, Dhaka
Bangladesh Cancer Hospital and Welfare Home
North East Medical College Hospital, Sylhet
Enam Medical College Hospital, Savar

*Most of the public medical college hospitals do not have dedicated beds for cancer patients.[4]

Setting 3

Tertiary care centers, with research facilities are available in

- Bangabandhu Sheikh Mujib Medical University
- National Institute of Cancer Research and Hospital (NICRH)
- Khwaja Yunus Ali Medical College and Hospital- KYAMC Cancer Center
- Dhaka Medical College Hospital
- Sir Salimullah Medical College Hospital
- Sher-E-Bangla Medical College Hospital, Barisal
- Chittagong Medical College Hospital
- Mymensingh Medical College Hospital
- MAG Osmani Medical College Hospital, Sylhet
- Rajshahi Medical College Hospital
- Rangpur Medical College Hospital

Transplant facility: The only bone marrow transplant facility is available in Dhaka Medical College.

Cancer programs

- Breast Cancer Identifying and Treating Project; Amader Gram an ICT4D initiative of Bangladesh.
- The Government of Bangladesh, with support from UNFPA, has taken initiatives to develop a cervical and breast cancer screening program in Bangladesh.
- International Childhood Cancer Forum: Exploration and setting priorities for an unmet need in Bangladesh.
- The Bangladesh Women Chamber of Commerce and Industry has committed to raise the awareness of cervical cancer in every woman and every child.
- CANSUP, an NGO in Chittagong, is working on breast self-examination and cervical cancer screening with technical assistance from WHO.
- Gonoshasthaya Kendra is heading towards establishing a cancer hospital for the poor. The Government has already acquired the land, and Gonoshasthaya Kendra has started to mobilize resources and are requesting the philanthropists and donors to come forward in establishing the cancer hospital for the poor adjacent to Savar campus.
- ASHIC Foundation for childhood cancer improves the quality of life for children living with cancer in Bangladesh by providing hope, physical and emotional support, and raising public awareness for early detection, improved treatment, and social acceptance.
- Identifying and Treating Women with Advanced Breast Cancer in Bangladesh by Amader Gram.

NGOs working on cancer

ICDDRB, Ahsania Mission cancer Hospital, Bangladesh Cancer Society, AK Khan Healthcare Trust, Oncology Foundation, Oncology club, ASHIC Foundation, Amader Gram, Center for Cancer Prevention and Research, Cancer Support Society (CANSUP), BRAC, Gonoshasthaya Kendra.

The number of patients annually treated at Khwaja Yunus Ali Medical College and Hospital (KYAMC Cancer Center):

Year 2012		
Radiation therapy patients		Chemotherapy patients
Teletherapy	Brachytherapy	
2094	600	2507

Separate facilities of pediatric oncology in Banglasesh:

There are 16 pediatric oncologists in Bangladesh.[5]

Separate facilities for pediatric oncology are available in:

- Bangabandhu Sheikh Mujib Medical University
- National Institute of Cancer Research and Hospital (NICRH)
- Delta Oncology Center, Dhaka
- Square Hospital, Dhaka
- Dhaka Shishu Hospital
- Dhaka Medical College Hospital
- Sir Salimullah Medical College Hospital
- Sher-E-Bangla Medical College Hospital, Barisal
- Chittagong Medical College Hospital
- Mymensingh Medical College Hospital
- MAG Osmani Medical College Hospital, Sylhet
- Rajshahi Medical College Hospital
- Rangpur Medical College Hospital

Problems being faced in the treatment of cancer patients in Bangladesh

- Financial problem
- Late diagnosis
- Poor radiotherapy facilities

Table 3: Radiotherapy facilities available in Bangladesh[4]

Hospital	Linear Accelerator	Co60 Teletherapy	Deep X-ray	Brachytherapy	Simulator	Treatment planning system
National Institute of Cancer Research and Hospital, Dhaka	3	2	0	3 Ir192/Co60/ Cs137	1	2
Khwaja Yunus Ali Medical College Hospital	2	0	0	1 Ir192	2	2
Dhaka Medical College Hospital	1	2 (non-functional)	2	1 (non-functional)	1	1
Oncology Department BSMMU	1 (in process)	0	0	1+1 (in process)	1 (in process)	1 (in process)
Chittagong Medical College Hospital	0	1	1	0	0	0
Sher-e-Bangla Medical College Hospital, Barisal	0	1	0	0	0	0
Mymensingh Medical College Hospital	0	1	0	0	0	0
MAG Osmani Medical College Hospital, Sylhet	0	1	0	0	0	0
Rajshahi Medical College Hospital	0	1	0	0	0	0
Rangpur Medical College Hospital	0	1	0	0	0	0
Delta Oncology Center, Dhaka	1	2	0	1	2	1
Ahsania Mission Cancer Hospital, Dhaka	1 (in process)	0	0	1 (in process)	1 (in process)	1 (in process)
Square Hospital, Dhaka	1	0	0	0	1	1
United Hospital, Dhaka	1	0	0	1	1	1
Khulna Medical College	1 (in process)	0	0	0	1 (in process)	1 (in process)
Shaheed Ziaur Rahman Medical College and Hospital, Bogra	1	0	0	0	1	1
Enam Medical College Hospital, Savar	1 (in process)	0	0	1 (in process)	1 (in process)	1 (in process)
North East Medical College Hospital, Sylhet	1 (in process)	0	0	1 (in process)	1 (in process)	1 (in process)
Total	15	12	3	12	14	14

Oncosurgery=Oncosurgery is available in all cancer hospitals

Table 4: Hospital beds attached to oncology/radiotherapy departments[4]

Name of the hospital	Day care		Indoor		Total
	M	F	M	F	
National Institute of Cancer Research and Hospital	8	8	25	25	66
Khwaja Yunus Ali Medical College and Hospital (Rural Centre)	5	5	24	24	58
BSMMU Oncology Department	5	5	5	5	20
Pediatric Hemato-Oncology Unit, Pediatric Deptt., BSMMU	0	0	14	14	28
Uro -Oncology Unit, Urology Deptt., BSMMU	-	-	9	9	18
Gyne-Oncology Unit, Gyne and Obstetrics Deptt., BSMMU	-	-	-	11	11
Dhaka Medical College Hospital	0	0	11	13	24
Rajshahi Medical College Hospital	0	0	6	4	10
Mymensingh Medical College Hospital	0	0	10	4	14
Sylhet Medical College Hospital	0	0	8	4	12
Chittagong Medical College Hospital	0	0	8	4	12
Delta Oncology Center	5	3	40	40	88
Ahsania Mission Cancer Hospital	5	5	16	16	42
Bangladesh Cancer Society Hospital	0	0	10	10	20
Cancer Foundation Hospital	5	5	5	5	20
Enam Medical College Hospital, Savar			10	10	20
North East Medical College Hospital, Sylhet			10	10	20
Total					465

*Most of the public medical college hospitals do not have dedicated beds for cancer patients[4]

- Unavailability of a complete cancer-specialized hospital
- Poor funding from government for cancer
- Lack of NGOs to tackle the problem
- Lack of cancer registries
- Low levels of awareness.

Priorities to improve the oncology scenario in Bangladesh

To improve the oncology scenario, at first goal set-up is very important as described under National Goals and Objectives.[4]

To meet these goals, specific objectives have been established, which are given below:

- To create awareness about tobacco-related cancer and harmful effects through anti-tobacco action programs involving student volunteers, scouts, inter-sectoral personnel, medical personnel, and people at large.
- To attain Early Clinical Diagnosis (ECD) of oral, cervical, breast, and other cancers through circulation of warning signs/symptoms, screening and motivation, and expand laboratory diagnostic support through medical university/college hospitals and district level early cancer detection program and early detection center.
- To extend the therapy by introducing minimal therapy for early cancer at the periphery and comprehensive multi-disciplinary protocol-based therapy with early detection in oncology/radiotherapy departments of medical colleges and palliative care at the district level.
- To widen the coverage and reach of palliative care by providing human resource and supplying necessary drugs and equipments to district level, collaborating with NGOs for home care service.
- To improve the quality of life for cancer patients and their family through support, rehabilitation, and palliative care.
- To develop the effective delivery of services across the continuum of cancer control through effective planning, co-ordination, and integration of resources and activity, monitoring, and evaluation.
- To generate essential evidence for effective cancer control through research and surveillance.

Conclusion

Bangladesh is suffering from the double burden of both communicable and non-communicable diseases. So, improvement of cancer scenario overnight is not very easy for a country like Bangladesh. It is very important to know the cancer burden of Bangladesh. So, it is needed to find out disability-adjusted life year (DALY), Years of Life Lost (YLL) due to premature mortality in the population and the Years Lost due to Disability (YLD) and overall health impact assessment (HIA) for cancer. Policy makers may become interested in these issues when they understand that cancer causes a huge health impact and economic loss for Bangladesh.

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References

1. Uddin AK, Khan ZJ, Islam J, Mahmud AM. Cancer care scenario in Bangladesh. South Asian J Cancer 2013;2:102-4
2. Noronha V, Tsomo U, Jamshed A, Hai MA, Wattegama S, Baral RP, *et al*. A fresh look at oncology facts on south central Asia and SAARC countries. South Asian J Cancer 2012;1:1-4.
3. Cancer Registry Report National Institute of Cancer Research and Hospital 2005-2007. Available from: http://whobangladesh.healthrepository.org/bitstream/123456789/282/1/Publication_Cancer_Registry_Report.pdf [Last accessed on 2013 May 03].
4. National Cancer Control Strategy and Plan of Action 2009-2015. Directorate General of Health Services. Ministry of Health and Family Welfare, Bangladesh. Available from: http://www.ban.searo.who.int/LinkFiles/Publication_Cancer_Strategy.pdf. [Last accessed on 2013 May 02].
5. Islam A, Eden T. Brief report on pediatric oncology in Bangladesh. South Asian J Cancer 2013;2:105-6.

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15th Biennial Conference of Indian Society of Oncology (ISO)
Oncology Forum and 25 other organizations