Critical care bed capacity of Bangladesh: A Pre and Post COVID-19 pandemic survey

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Abstract:

Background: Intensive care unit (ICU) is the backbone of critical care service delivery in a hospital. Bangladesh has been lagging behind in critical care service delivery since first ICU was established in 1978. In 2017-19 an international study reported that Bangladesh had 0.7 Critical care (ICU and HDU) bed per one lac population. This was quite low compared to South Asian countries. Growth of critical care beds across our country has been reported to be heterogeneous. The aim of this survey is to determine current strength and growth of critical care beds before the beginning of recent COVID pandemic and also at the height of pandemic when additional COVID ICUs and HDUs were introduced.

Method: Data on number of ICUs and HDUs and their bed strength were obtained from different web sites of Govt. of Bangladesh as well through personal communication. Number of critical care beds were calculated at national and district level as number per one lac population. Ratio of critical care beds expressed in percentage with number of hospital beds in the hospital were calculated at national level. Data were also obtained on COVID ICU and HDU beds which were introduced temporarily from websites of ministry of Health, Govt. of Bangladesh.

Results: As of now we documented (pre COVID pandemic) 2139 ICU beds (965 in Govt. hospitals) and 717 HDU beds (315 in Govt. hospitals) among 208 hospitals (Govt. hospitals 79+ Private hospitals 129) during our survey. Number of critical care beds per one lac population across the country is found to be 1.70. In hospitals with critical care beds the average ratio of critical care beds (ICU+HDU) beds compared to hospital beds is 4.34% across the country. Thirty eight of total 64 districts have no critical care facility (non COVID/pre COVID) in their local hospitals. During peak of pandemic Govt. of Bangladesh introduced and approved 1186 COVID ICU beds, 695 COVID HDU beds both at Govt. and private level on temporary basis in different hospitals including in some critical care deprived hospitals.

Conclusion: Our survey concludes that growth and distribution of critical care beds (ICUS + HDUs) across Bangladesh is still heterogeneous and very much inadequate compared to the critical care need of the population. There was a temporary surge of new ICUs and HDUs to serve COVID patients at the height of COVID pandemic across the country. Health care planners of the country need to plan for developing adequate critical care man power as well as establish newer critical care facilities among existing hospitals who lack them.

Keywords : Critical care bed, COVID-19 pandemic, Bangladesh.

Introduction:

Critical Care Medicine (otherwise called Intensive care medicine) has been an officially recognized specialty in Bangladesh since 2007. In 1971 no Intensive Care Unit (ICU) existed in Bangladesh at the time of its independence. Critical care services were unknown in Bangladesh until 1978 when first officially recognized ICU was established at National Institute of cardiovascular disease, Dhaka.

Task force of World Federation of Societies of Intensive and Critical care Medicine (WFSICCM) has defined ICU and HDU (High Dependency Unit) as follows1:

An ICU is a defined geographic area of hospital and organized system for provision of care to critically ill patients that provide intensive and specialized medical and nursing care, an enhanced capacity for monitoring and multiple modalities of physiologic organ support to sustain life during a period of acute organ system insufficiency.

HDU otherwise called intermediate care unit in some countries is defined by WFSICCM task force is a dedicated space within the hospital with a higher nurse to patient ratio than a regular ward, equipped to monitor vital signs and oxygen saturation intensively and electrocardiogram continuously and to provide noninvasive ventilation, short term invasive mechanical ventilation or simple mechanical ventilation for stable chronically ventilated patients. Official definition of ICU and HDU in Bangladesh is similar to the above definition. For the purpose of our study we have accepted the above definitions by WFSICCM.

First reported study on critical care bed capacity in Bangladesh was published in 20102. The study was done in...
2007 and it involved 40 ICUs (including 4 Govt. run ICUs) in city of Dhaka, capital of Bangladesh. The study surveyed 424 ICU beds among 8824 hospital beds. There was no information on number of HDUs in that study.

In 2013-14 another study was done in Bangladesh involving 51 ICUs as apart of broader international study named as AISP study. The Bangladesh part of the study was done with data from districts of Dhaka, Sylhet, Chattogram, Mymensingh and Savar and it involved 748 adult, pediatric and neonatal ICU beds.

In 2017-19 an international study involving Asian countries named ABC study reported that Bangladesh had 84 hospitals with ICUs and HDUs. Total critical care beds was estimated to be 1174 which included 296 HDU beds. The study however failed to depict accurate information because of limited data collection resources. According to ABC study Bangladesh had 0.7 beds per 100000 population compared to India, Pakistan, Nepal, Sri Lanka which had 2.3, 1.5, 2.8, 2.3 critical care beds respectively. Taiwan had 28.5 critical beds per 100000 population and it was highest among Asian countries in that study.

According to an unofficial estimate by a daily newspaper of Bangladesh in 2019 there were about 220 ICU beds in Govt. run hospitals and 1000 ICU beds in privately run hospitals in Bangladesh.

Islam MT et al reported in 2020 that there were 432 ICU beds under Govt. run hospitals and it included 110 beds outside city of Dhaka. The report also claimed that that private health care sector had additional 737 additional ICU beds for the whole population of the country.

Up till now there is no accurate and dependable data regarding critical care services documenting number of ICUs and HDUs in Bangladesh.

During recent COVID pandemic, Directorate of Health under Director General of Health, Ministry of Health and family welfare published data regarding COVID dedicated facilities including COVID ICUs.

Our survey of critical care bed capacity in pre and post pandemic period also involved estimation of additional critical care bed capacity incurred to accommodate critically ill COVID patients during pandemic period over and above preexisting critical care bed capacity in Bangladesh. As such we have aimed in surveying current critical care bed capacity in Bangladesh keeping in mind estimation of temporary COVID ICUs and HDUs established during the peak of COVID pandemic which started first in China in Dec 2019.

Methods of Survey

We conducted for the first time in Bangladesh an extensive survey on critical care bed capacity of Bangladesh including number of functioning ICUs and HDUs keeping in mind the bed capacity just before the COVID pandemic and extended bed capacity during the peak of pandemic. The survey period was during the month of May 2022 assuming that COVID pandemic in Bangladesh was over at the beginning of 2022. Only adult ICUs and HDUs were surveyed. Coronary care unit (CCU), Surgical, Pediatric ICU and Neonatal ICU were excluded from the survey.

First of all we went through different websites of Ministry of health and family welfare Govt. of Bangladesh: www.mohfw.gov.bd, www.hospitaldghs.gov.bd, www.dghs.gov.bd and obtained information on number of documented ICUs with number of critical care beds in different Govt. hospitals and private hospitals under different districts.

During COVID pandemic web sites from ministry of Health, Govt. of Bangladesh published number of COVID ICU beds in addition to number of dedicated COVID general beds in Govt. and privately run hospitals across the country. These data are described separately in our survey.

We found on Google search, websites of different private hospitals including some hospitals undocumented in Govt. database and obtained relevant information on critical care facilities. We also used personal contact at different districts and obtained relevant information on phone from different local physicians.

Relevant information on number of ICU beds were tabulated under headings of Asian and private, under different headings of districts which were tabulated under headings of different administrative divisions.

Total number of ICU beds and HDU beds, total number of hospitals with critical care facilities and their general bed facilities in the whole country were documented.

Number of hospital beds and critical care beds per one lac (hundred thousand) population were calculated.

Ratio of critical care beds to total hospital beds with critical care facilities expressed as percentage and ratio of critical care beds with total hospital beds in general across the country expressed as percentage were also calculated.

Data were obtained from web site of Govt. of Bangladesh (www.dghs.gov.bd) on introduction of new COVID dedicated ICUs and HDUs across the country during the peak of COVID pandemic (2020 - 2021).

Last of all number of critical care beds per one lac population in each of 64 districts of Bangladesh were calculated in a separate table.

RESULTS OF THE SURVEY:

CRITICAL CARE BED CAPACITY FROM DIVISION TO DISTRICT LEVEL JUST BEFORE COVID-19 PANDEMIC

Number of Govt. Hospitals, Govt. hospital bed strength and number of Govt. ICU beds & Govt. HDU beds are expressed in bold. Remaining are private hospitals, private ICU beds and private HDU beds.

Population of districts and divisions as per population projection by www.citypopulation.de/en/bangladesh/cities were noted.

SYLHET Division:

Hospitals with ICU/HDU-15 (4+11) in 4 districts ICU beds-137 (48+89), HDU beds-34 (14+20), Total population-12436000. General bed strength in 15 hospitals 4865 (2400+2465)
A) Habiganj district- Hospitals with ICU- 0, Population- 2640000
B) Moulvibazar district - Hospitals with ICU-2 (1+1), ICU beds- 8 (6+2).
Population- 2324000

**Govt Hospital:**
1) Govt Hospital: 250 bed Sadar Hospital.
   ICU- 6 beds. Hospital beds 250
Private Hospital:
1. Life Line Hospital & Cardiac Center, Srimongol
   ICU-2 beds. Hospital beds 40
C) Sunamgonj district-Hospitals with ICU-0, Population- 3091000
D) Sylhet district-Hospitals with ICU- 13 (3+10), ICU beds- 129 (42+87), HDU beds 34 (14+20), Population- 4408000.

See Table 1 for details.

**DHAKA Division:**
Hospitals with ICU/HDU - 111 (30+81), ICU beds - 1335 (573+762), HDU beds - 483 (206+277) in 13 districts. Total population- 42607000. General bed strength in 111 hospitals 38450 (17335+21115)

A) Dhaka district- Hospitals with ICU/HDU- 96 (22+74), ICU beds- 1201 (487+714), HDU beds – 447 (188+259), Population- 13798000

See Table 2 for details.
B) Faridpur district- Hospitals with ICU/HDU - 2 (2+0), ICU beds- 26 (16+10), HDU beds - 6 (6+0). Population- 2201000

**Govt. Hospital:**
1. Faridpur Medical College Hospital
   ICU-16 beds. Hospital beds 650
2. Bangobandhu Sheikh Mujib Medical College Hospital, Faridpur
   ICU-10 beds, HDU-6 beds. Hospital beds 500
   Private Hospital: 00
C) Gazipur district- Hospitals with ICU-3 (1+2), ICU beds- 22 (10+12).Population- 4046000

**Govt Hospital:**
1. Shahid Tazuddin Medical College Hospital.
   ICU-10 beds. Hospital beds 250
Private Hospital:
1. Dhaka Imperial Hospital, Tongi
   ICU-7 beds. Hospital beds 80.
2. International Medical College Hospital.
   ICU- 5 beds, Hospital beds 250

D) Gopalganj district- Hospitals with ICU-1 (1+0), ICU beds- 10 (10+0). Population- 1346000

**Govt Hospital:**
1. Gopalganj General Hospital
   ICU-10 beds. Hospital beds 250
Private Hospital: 00
E) Kishoreganj district. Hospitals with ICU/HDU -2 (1+1), ICU beds- 18 (10+8), HDU beds - 15 (15+0). Population- 3648000

**Govt Hospital:**
1. Shaheed Sayed Nazrul Islam Medical College Hospital,
   ICU-10 beds, HDU -15 beds. Hospital beds 250
Private Hospital:
1. Jahurul Islam Medical College & Hospital
   ICU-8 beds. Hospital beds 500
F) Madaripur district. Hospitals with ICU- 0, Population- 1393000
G) Manikganj- Hospitals with ICU-2 (1+1), ICU beds- 7 (4+3). Population- 1640000

**Govt Hospital:**
1. Manikgonj General Hospital.
   ICU- 4 beds. Hospital beds 250
Private Hospital:
1. Monno Medical College Hospital.
   ICU- 3 beds . Hospital beds 500.
H) Munshigonj district. Hospitals with ICU- 0, Population- 1669000
I) Narayangonj district- Hospitals with ICU-1 (0+1), ICU beds- 10 (0+10), HDU beds 4(0+4) Population- 3490000

**Govt Hospital:**
1. Narayangonj General Hospital
   ICU- 11 beds. Hospital beds 250
Private Hospital:
1. Proactive Medical College Hospital
   ICU- 10 beds, HDU- 4 beds. Hospital beds 450
J) Narsingdi district- Hospitals with ICU- 0, Population- 2685000
K) Rajbari district -Hospitals with ICU- 0, Population- 1201000
L) Shariatpur- district. Hospitals with ICU- 0, Population- 1385000
M) Tangail district- Hospitals with ICU/HDU -3 (2+1), ICU beds- 30 (22+8), HDU beds -4 (4+0), Population- 4105000

**Govt. Hospital:**
1. 250 Beded General Hospital, Tangail
   ICU-10 beds. Hospital beds 250
2. CMH, Ghatail
   ICU- 12 beds, HDU -4 beds. Hospital beds 300

90
Private Hospital
1. Kumudini Womans Medical College Hospital
   ICU-8 beds. Hospital beds 500

CHATTOGRAM Division:
Hospitals with ICU/HDU-35 (10+25), ICU beds-376 (141+235), HDU beds-84 (32+52), in 11 districts. Population-347,470,000. General bed strength in 35 hospitals 8,975 (4,100+4,875)
A) Bandarban district. Hospitals with ICU- 0, Population- 4,690,000
B) Brahmanbaria district. Hospitals with ICU-0, Population- 3,617,000
C) Chandpur district Hospitals with ICU-0, Population- 2,929,000
D) Chattogram district. Hospitals with ICU/HDU-25 (5+20), ICU beds-268 (71+197), HDU beds-67 (20+47), Population- 8,990,000.
E) Cumilla district- Hospitals with ICU/HDU-7 (2+5), ICU beds-76 (38+38), HDU beds-13 (8+5), Population- 6,559,000

Govt Hospital:
1. Cumilla Medical College Hospital
   ICU- 20 beds. Hospital beds 500
2. CMH, Cumilla
   ICU-18 beds, HDU -8 beds . Hospital beds 300

Private Hospital:
1. Cumilla Moon Hospital:
   ICU- 10 beds. Hospital beds 150
2. Cumilla Trauma Hospital
   ICU-11 beds. Hospital beds 50
3. Cumilla Medical Center
   ICU- 5 beds. Hospital beds 30
4. CD Path Hospital
   ICU-5 beds. Hospital beds 40
5. Central Medical College Hospital
   ICU- 7 beds, HDU-5 beds . Hospital beds 250

F) Cox’s Bazar district. Hospitals with ICU/HDU- 2 (2+0), ICU beds- 22 (22+0), HDU beds - 4 (4+0), Population- 297,9000

Govt. Hospital:
1. Cox’s Bazar General Hospital: (Cox’s Bazar)
   ICU- 10 beds Hospital beds 250
2. CMH Ramu(Cox’s Bazar)
   ICU-12 beds, HDU-4 beds. Hospital beds 300

Private Hospital: 00

G) Feni district. Hospitals with ICU- 1 (1+0), ICU beds- 10 (10+0), Population- 175,400

Govt Hospital:
1. Feni General Hospital
   ICU- 10 beds. Hospital beds 250

Private Hospital: 00

H) Khagrachari district. Hospitals with ICU- 0, Population- 73,8000
I) Laksmithpur district Hospitals with ICU- 0, Population- 22,3000
J) Noakhali district. Hospitals with ICU- 0, Population- 379,9000
K) Rangamati district Hospitals with ICU- 0, Population- 690,000

MYMENSINGH Division:
Hospitals with ICU/HDU 5 (2+3), ICU beds-43 (32+11), HDU beds-24 (18+6), in 4 districts. Population-13,457,000. General bed strength in 5 hospitals 2,500 (1,650+ 850)
A) Jamalapur district- Hospitals with ICU- 0, Population- 271,300
B) Mymensingh district- Hospitals with ICU/HDU - 5 (2+3), ICU beds- 43 (32+11), HDU beds - 24 (18+6), Population- 637,8000

Govt Hospital:
1. Mymensingh Medical College Hospital
   ICU- 20 beds, HDU- 12 beds., Hospital beds 1500
2. CMH, Mommenshai
   ICU- 12 beds, HDU - 4 beds. Hospital beds 150

Private Hospital:
1. Sayeem Clinic & Diagnostic Center
   ICU-4 beds, HDU -6 beds. Hospital beds 100
2. CBMCH
   ICU beds – 5. Hospital beds 650
3. Nexus hospital
   ICU-2 beds. Hospital beds 100

C) Netrokona district Hospitals with ICU-0, Population- 2,759,000

D) Sherpur district -Hospitals with ICU-0, Population- 160,700

RAJSHAHI Division:
Hospitals with ICU/HDU-8 (4+4), ICU beds-80 (51+29), HDU beds-26 (6+20), in 8 districts. Population- 21,607,000. General bed strength in 8 hospitals 32,600 (22,500+1010)
A) Bogra district. Hospitals with ICU/HDU-4 (2+2), ICU beds-33 (20+13), HDU beds-11 (6+5), Population- 390,3000

Govt Hospital:
1. Shaheed Ziaur Rahman Medical College Hospital.
   ICU-4 beds . Hospital beds 500
2. CMH, Bogra
   ICU-16 beds, HDU-6 beds. Hospital beds 500
Private Hospital:
1. Tesla General Hospital, Bogra  
   ICU- 3 beds Hospital beds 40
2. TMSS Medical College Hospital  
   ICU-10 beds, HDU -5 beds. Hospital beds 500

B) Jaipurhat district - Hospitals with ICU- 0, Population-1042000

C) Naogaon district- Hospitals with ICU- 0, Population-2977000

D) Natore district- Hospitals with ICU- 0, Population-1956000

E) Chapai Nawabganj district - Hospitals with ICU- 0, Population-2003000

F) Pabna district - Hospitals with ICU- 0, ICU beds-4 (4+0), Population- 3019000

Govt. Hospital:
1. Pabna General Hospital  
   ICU- 4 beds. Hospital beds 250

Private Hospital: 00

G) Rajshahi district - Hospitals with ICU/HDU - 2 (1+1), ICU beds- 33 (27+6), HDU beds - 5 (0+5), Population-3000000

Govt. Hospital:
1. Rajshahi Medical College Hospital  
   ICU- 27 beds. Hospital beds 1500

Private Hospital:
1. CDM Hospital  
   ICU-6 beds, HDU-5 beds. Hospital beds 70

H) Sirajgonj district-Hospitals with ICU/HDU-1 (0+1), ICU beds-10 (0+10), HDU beds - 10 (0+10), Population- 3707000

Govt Hospital: 00

Private Hospital:
1. Khaja Yunus Ali Medical College Hospital  
   ICU- 10 beds, HDU-10 beds. Hospital beds 400

BARISAL Division:

Hospitals with ICU/HDU - 2 (2+0), ICU beds- 22 (22+0), HDU beds - 5 (5+0), in 6 districts. Population- 9713000. General bed strength in 2 hospitals 1300 (1300 + 0)

A) Barguna district- Hospitals with ICU- 0, Population-1013000

B) Barisal district- Hospitals with ICU/HDU-2 (2+0), ICU beds-22 (22+0), HDU beds-5 (5+0), Population-2776000

Govt Hospitals:
1. Sher –e Bangla Medical College Hospital (Barisal)  
   ICU-10 beds. Hospital beds 1000
2. CMH, Barisal (Barisal)  
   ICU-12 beds , HDU-5 beds. Hospital beds 300

Private Hospital: 00

C) Bhola district- Hospitals with ICU- 0, Population-2057000

D) Jhalokati district- Hospitals with ICU- 0, Population-778000

E) Patuakhali district - Hospitals with ICU- 0, Population-1823000

F) Pirojpur district - Hospitals with ICU- 0, Population-1266000

RANGPUR Division:

Hospitals with ICU/HDU-6 (4+2), ICU beds-62 (44+18), HDU beds-7 (7+0), in 8 districts, Total population- 18868000. General bed strength in 6 hospitals 3450 (2400+1050)

A) Dinajpur district-Hospitals with ICU-1 (1+0), ICU beds-10 (10+0), Population- 3430000

Govt Hospital:
1. Dinajpur M. Abdur Rahim Medical College Hospital  
   ICU- 10 beds. Hospital beds 500

Private Hospital: 00

B) Gaibandha district -Hospitals with ICU- 0, Population-2975000

C) Kurigram district-Hospitals with ICU- 0, Population-2464000

D) Lalmonirhat district-Hospitals with ICU- 0, Population-1500000

E) Nilphamari district- Hospitals with ICU/HDU-1 (1+0), ICU beds-7 (7+0), HDU beds-2 (2+0), Population- 2204000

Govt Hospital:
1. CMH, Saidpur  
   ICU-7 beds, HDU -2 beds. Hospital beds 150

Private Hospital: 00

F) Panchagarh district -Hospitals with ICU- 0, Population-1188000

G) Rangpur district- Hospitals with ICU/HDU -4 (2+2), ICU beds- 45 (27+18), HDU beds-5 (5+0), Population- 3439000

Govt Hospitals:
1. Rangpur Medical College Hospital  
   ICU- 10 beds . Hospital beds 1500
2. CMH Rangpur  
   ICU- 17, HDU – 5 beds. Hospital beds 300

Private Hospital:
1. Prime Medical College Hospital  
   ICU-6 beds. Hospital beds 500
2. Community Medical College Hospital  
   ICU-12 beds. Hospital beds 500
H) Thakurgaon district - Hospitals with ICU- 0, Population- 1668000

KHULNA Division:

Hospitals with ICU/HDU-8 (5+3), ICU beds-75 (54+21), HDU-37 (27+10), in 10 districts Total population- 18217000. General bed strength in 8 hospitals 2250 (1700+550)

A) Bagerhat district- Hospitals with ICU- 0, Population-1675000

B) Chuadanga district- Hospitals with ICU- 0, Population-1299000

C) Jessore district- Hospitals with ICU/HDU -1 (1+0), ICU beds- 20 (20+0), HDU beds 15 (15+0), Population-3182000

Govt Hospital:

1. CMH, Jessore
   ICU-20 beds, HDU – 15 beds. Hospital beds 500

Private Hospital: 00

D) Jhenaidah district- Hospitals with ICU- 0, Population-2111000

E) Khulna districts-Hospitals with ICU/HDU -5 (3+2), ICU beds- 42 (26+16), HDU beds -14 (4+10), Population-2650000

Govt Hospital:

1. Khulna Medical College Hospital
   ICU- 4 beds. Hospital beds 500

2. Shaheed AbuNaser Specialized Hospital
   ICU-10 beds. Hospital beds 250

3. Navy Hospital Upasham
   ICU-12 beds, HDU-4 beds. Hospital beds 100

Private Hospital:

1. Khulna City Medical College Hospital
   ICU-10 beds, HDU -10 beds. Hospital beds 250

2. Gazi Medical College Hospital
   ICU-6 beds. Hospital beds 250

F) Kustia district- Hospitals with ICU- 0, Population-2318000

G) Magura district- Hospitals with ICU- 0, Population-1091000

H) Meherpur district-Hospitals with ICU- 0, Population-750000

I) Narail district- Hospitals with ICU- 0, Population-856000

J) Satkhira district. Hospitals with ICU/HDU -2 (1+1), ICU beds- 13 (8+5), HDU-8 (8+0), Population- 2285000

Govt Hospital:

1. Satkhira Medical College Hospital
   ICU-8 beds. HDU-8 beds. Hospital beds 350

Private Hospital

1. China Bangla Hospital
   ICU- 5 beds. Hospital beds 50

Table 1

<table>
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<tr>
<th>Private/ Govt.</th>
<th>Name of hospital</th>
<th>ICU beds</th>
<th>HDU beds</th>
<th>Total hospital beds</th>
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Table 2

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**COVID DEDICATED CRITICAL CARE BEDS DURING PEAK OF COVID PANDEMIC (2020-2021)**

As per information posted in web site of Director General, Directorate oh Health, Ministry of Health and family welfare (www.dghs.gov.bd) during the peak of COVID-19 pandemic, announced introduction of 1186 ICU beds (749 govt. + 437...
private) and 695 HDU beds (582 govt.+113 private) and 13026 general hospital beds dedicated to COVID care across the country on temporary basis. According to unofficial information all or most of these facilities either became function less or ceased to exist after the pandemic was over in early 2022 both at Govt. or private level.

COVID dedicated critical care beds (both ICU and HDU) were established from the following sources.

A) One and only newly established Govt. hospital named Dhaka City Corporation North (DNCC) COVID-19 Hospital with 212 ICU beds, 288 HDU beds and 554 General beds.

B) Two already existing Govt. hospital with critical care facilities totally converted into COVID hospital eg. Kuwait Bangladesh Moitree Hospital, Sheikh Russell Gastro liver hospital, Dhaka.

C) Non COVID ICU/HDU in Govt. Hospital converted into COVID ICU. Examples include Kurmitola General Hospital, Dhaka.

D) New established COVID ICU/HDUs established in Govt. hospitals without prior non COVID ICU/HDU facilities. Eighteen such Govt. hospitals were provided with new COVID critical care services.

E) Newly established COVID ICU/HDUs in Govt. and private hospitals in addition to existing non COVID ICU/HDU. For example: BSMMU, United Hospital, BIRDEM General Hospital, Ever care Hospital, Square Hospital Dhaka etc.

**CRITICAL CARE BEDS (PRE COVID): DIVISION/DISTRICT LEVEL PER ONE LAC POPULATION (TABLE 4)**

<table>
<thead>
<tr>
<th>Division</th>
<th>Districts</th>
<th>Critical Care Beds (ICU+ HDU)</th>
<th>Critical Care bed ratio per 100000 population</th>
</tr>
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<tr>
<td>1) Sylhet</td>
<td>1) Habigonj</td>
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<tr>
<td></td>
<td>2) Moulvibazar</td>
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<td></td>
<td>3) Sunamgonj</td>
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<td>4) Sylhet</td>
<td>163 (129+34)</td>
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<tr>
<td>2) Dhaka</td>
<td>1) Dhaka</td>
<td>1690 (1219+471)</td>
<td>12.24</td>
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<tr>
<td></td>
<td>2) Faridpur</td>
<td>32 (26+6)</td>
<td>1.45</td>
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<td>3) Gazipur</td>
<td>22 (22+0)</td>
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<td>460 (376+84)</td>
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<td>1) Bandarban</td>
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<td>3) Chandpur</td>
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<td>4) Chattogram</td>
<td>335 (268+67)</td>
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<td>5) Cumilla</td>
<td>89 (76+13)</td>
<td>1.36</td>
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<td>6) Cox’s Bazar</td>
<td>26 (22+4)</td>
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<td>7) Feni</td>
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<td>4) Mymensingh</td>
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<td>5) Rajshahi</td>
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<td>1) Bogra</td>
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<td>2) Jaipurhat</td>
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<td>5) ChapaiNawabgonj</td>
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<td>6) Pabna</td>
<td>4 (4+0)</td>
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<td></td>
<td>8) Sirajgonj</td>
<td>20 (10+10)</td>
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SUMMARY OF SURVEY (PRE COVID CRITICAL CARE BEDS)

Govt. hospital and ICU/HDU expressed in bold. Rest are privately run.

Total no of Hospitals with critical care beds (ICU and HDU) = 208 (79 +129).

Out of 208 hospitals only 86 hospitals (27+59) have both ICU and HDU facilities.

Bangladesh population as per worldometer 2022 : 167900000

<table>
<thead>
<tr>
<th>District</th>
<th>ICU Beds</th>
<th>HDU Beds</th>
<th>Total ICU &amp; HDU Beds</th>
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<tr>
<td>Barisal</td>
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1) Barguna 00 00  
2) Barisal 27 (22+5) 0.97  
3) Bhola 00 00  
4) Jhalokhati 00 00  
5) Patuakhali 00 00  
6) Pirojpur 00 00  
|  
Rangpur | 69 (62+7) | 0.36 |  
1) Dinajpur 10 (10+0) 0.29  
2) Gaibandha 00 00  
3) Kurigram 00 00  
4) Lalmonirhat 00 00  
5) Nilphamari 9 (7+2) 0.40  
6) Panchagarh 00 00  
7) Rangpur 50 (45+5) 1.45  
8) Thakurgaon 00 00  
|  
Khulna | 112 (75+37) | 0.61 |  
1) Bagerhat 00 00  
2) Chuadanga 00 00  
3) Jessore 35 (20+15) 1.10  
4) Jhenaidah 00 00  
5) Khulna 56 (42+14) 2.11  
6) Kushia 00 00  
7) Magura 00 00  
8) Meherpur 00 00  
9) Narail 00 00  
10) Satkhira 21 (13+8) 0.92  
|  
Bangladesh | 2856(2139+717) | 1.70 |  
Total no of ICU beds = 2139 (965 +1174)  
Total no of HDU beds = 717 (315+402).  
Total no of critical care beds (ICU and HDU combined) in Bangladesh = 2856 (1280 +1576).  
Total no of hospital beds (including Govt. and private) in 208 study hospitals = 65100 approx.  
Total no of hospital beds in Bangladesh including hospitals with or without critical care facilities (as of 2019) = 143394 (includes 65100 beds of study hospitals).  
Population of Bangladesh = 167900000(approx.) as per Worldometer 2022
9
No of hospital beds per 100000 (one lac) population = 85.4  
No of critical care beds-non COVID, per 100000 (one lac) population = 1.70  
Percentage of critical care beds among total hospital beds in study hospitals = 4.34%  
Percentage of critical care beds among total hospital beds across Bangladesh = 1.97%

Discussion

Bangladesh is a south Asian nation with a population of approx.167900000 (167.9 million) as per Worldometer 2022*. It is a lower middle income country with per capita income is 2824 US $. Critical Care bed capacity in Bangladesh is reflected in inadequate number of total hospital beds and it is reflected in low per capita income of our general population. According to our survey we report 2859 non COVID (Pre COVID) critical care beds (ICU + HDU) for the whole population of our country. We have 1.70 non COVID critical care beds per one lac population as opposed to 85.4 general beds per one lac population in the whole country.

The critical care bed distribution across the country is very much heterogeneous. Dhaka district has the highest non COVID critical care bed concentration (12.32 per one lac population). Districts of Chattogram, Sylhet, Khulna, Faridpur/Rangpur, Cumilla, Rajshahi, Bogra, Jessore, Satkhira and Barishal have 3.72, 3.70, 2.11, 1.45, 1.36, 1.27, 1.13, 1.10, 0.97 and 0.92 critical care beds per one lac population respectively. Out of sixty four districts of Bangladesh thirtyeight districts with total population of 70518000 have no critical care beds within the geographic areas of the districts.

Dhaka district with the highest concentration of critical care non COVID beds with a population of 13798000 has 20 Govt. hospital and 74 private hospitals with critical care facilities. Chattogram district with second highest concentration of critical care beds with a population of 8990000 has 5 Govt. hospitals and 20 Private hospitals with critical care facilities. In order to reach a bench mark (not determined yet) critical care bed capacity Bangladesh need to compare itself with other countries especially with lower middle income countries of Asia*.11
It is generally accepted that the number of ICU beds as a percentage of total number of beds in a hospital shall be between 5% and 12% depending on the level of care offered by the hospital. Lack of critical care beds may result in delayed or refused admissions to ICUs for appropriate patients and increased preventable mortality. Our survey found that there are 4.34% critical care beds among total study hospitals with critical care facilities across Bangladesh.

The discrepancy in critical care bed numbers across Bangladesh reflects overall health care disparity in different regions. We have observed that there are many districts with limited number of hospital beds also have no critical care facilities in those hospitals. It is also our observation from literature search that Bangladesh suffers from lack of sufficient trained doctors and nurses in critical care delivery.

Until and unless Bangladesh is able to increase critical care bed capacity uniformly across the country we have to rely on stepwise introduction of service improvements in other health care areas of critical care deprived districts, leveraging human resources through training all over the country. We need to let go of developed practices that are currently hindrances including advanced technologies that cannot be readily maintained. We should patronize development of relevant technology that is affordable and maintainable.

Results of our survey is expected to be an eye opener for health care policy makers of our country. Critical care bed concentration need to be decentralized by opening more ICUs in district and upozila (sub district) levels. Instead of closing down COVID critical care facilities that were established temporarily at the height of COVID pandemic, those facilities should be incorporated with the facilities which existed at the pre pandemic period. Our health care policy makers need to pay attention to developing required man power to run the existing ICUs and HDUs efficiently and also before planning to establish newer ICUs both at Govt. and private capacity and at district and upozila level.

We believe that two hundred general hospital beds per one lac population and five critical care beds per one lac population of Bangladesh within next 10 years is an expected and achievable goal considering current progress in per capita income in our country.

One significant limitation of our survey is that with the exception of few well known ICUs of big cities like Dhaka, Chattogram, Sylhet etc, we were not able to spot check accuracy of bed strengths of majority of critical care facilities, Govt. or private across the country.

Conclusion

Our survey concludes that growth and distribution of critical care beds (ICUs + HDUs) across Bangladesh are still heterogeneous and very much inadequate compared to the critical care need of the population. Health care planners of the country need to plan for developing adequate critical care man power as well as establish more critical care facilities among existing hospitals and establish newer critical care facilities in critical care deprived areas.

References

9) Bangladesh population: https://www.worldpopulation.info/worldpopulation>Bangladesh population.