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Medical education is strongly associated with the practice of being a competent medical practitioner. Medical education with the scope of necessary hands-on training is essential to prepare a competent physician. Common problems found with clinical teaching are a lack of clear objectives and expectations, focus on factual recall rather than on development of problem-solving skills and attitudes, passive observation instead of active participation of learners, less opportunity for reflection and discussion. This Second Issue of the Centre for Medical Education (CME) Journal focuses on evidence-based practice of medical education with the opportunity of sound practice of research in the field of medical education and health care practices.

Nonalcoholic fatty liver disease (NAFLD) is the most common liver disease worldwide. Farhan Joha conducted a cross-sectional observational study carried out to investigate the association of serum uric acid levels with non-alcoholic fatty liver disease. The study revealed the mean serum uric acid level was significantly ( $p=0.001$ ) higher in NAFLD ( $5.16 \pm 1.62$  mg/dl) compared to healthy controls ( $4.26 \pm 0.96$  mg/dl). Hyperuricaemia was also significantly ( $p=0.014$ ) higher in NAFLD (20.0%) compared to control subjects (4.0%). It may be concluded that serum uric acid is strongly associated with non-alcoholic fatty liver disease.

Prolonged use of antimicrobial prophylaxis is common in our country. In ear surgeries it is still a matter of debate for several aspects. Therefore, needs to reach a consensus regarding the limited use of antimicrobial regimen during ear surgery. A prospective observational study was done by Prof. Dr. Md. Abu Hanif to compare the effectiveness between Per-operative and extended post-operative period antimicrobial usage in mastoid surgery. In this study most of the patients having tympanic membrane retraction (77.5%). Equal number of patients were in per-operative antibiotic group and extended post-operative period antibiotic use group. There was no significant association between antibiotic use and involved ear, diseased tympanic membrane, type of operation. Infection in 3rd & 7th POD is not statistically significant. So, Long-term antibiotic prophylaxis does not have any advantage over only per-operative antibiotic.

Breastfeeding provides optimal and complete nutrition for newborn babies. A cross-sectional study was conducted by Dr. Habiba Anjuman for the assessment of infant feeding practices in a tertiary level private hospital of Bangladesh. A strong association was found between maternal education & occupation with EBF; father's education also showed strong relationship with exclusive breast-feeding pattern. House wife mothers were stick to EBF than those of service holder or day labors. Study revealed that exclusive breastfeeding was not maintained up to recommended age of 6 months. Educated and high-income group were more strictly following the right way of feeding practices guided by WHO recommendation.

Effective teaching learning is one of the most important component for better outcome in medical education. A cross-sectional study was conducted to identify the views of fifth year students and intern doctors about the barriers and suggestions of present teaching learning status of 'Allied Subjects of Surgery' in undergraduate medical education of Bangladesh by Dr. Mohammad Mohibur Rahman. The study revealed that most of the respondent's (>90%) opined that the main barriers of teaching learning of 'Surgery and its Allied Subjects' were inadequate learning material, theories are learned more than practical skills and inadequate evening shift clinical teaching. The main suggestions of the respondents (>90%) to improve the teaching learning status were adequate provision of hands on teaching with sufficient number of learning material and clinical teaching should be held in ward, outdoor and emergency department.

Clinical skills laboratory (CSL) is one of the modern teaching tools of the medical education where different difficult skills can be practiced on models or dummy before practicing on living patient. Endotracheal intubation is one of the important skills for the healthcare providers to be practiced frequently. Clinical skills laboratories (CSL) was used as teaching by Dr. Farhana Selina to evaluate its efficacy for different levels of revised Bloom's taxonomy. Total 78 first-year nursing students were enrolled in to 2 groups: multimedia (MM) and CSL group. Both the groups were taught endotracheal intubation by the same instructor and were tested by 10 multiple choice question (MCQ) test. The mean score of 'remember' and 'evaluating' level were significantly better in the CSL group, whereas the other level scores were better in the MM group. Lower most (remembering) and one of top (evaluating) domain to learning was helpful when CSL was used as teaching tool.

Ocular trauma is an important cause of blindness and ocular morbidity throughout the world. Professor Sabiha Siraj Mohua conducted a descriptive study through retrospective review to assess the pattern of ocular trauma in Rohingya refugees in Bangladesh admitted to Ophthalmology department in a tertiary hospital. Penetrating corneal injury (43.9%) was the most common clinical presentation among the ocular injuries. A total of eleven eyes (15.1%) had no light perception at presentation. Maximum patients of ocular trauma from Rohingya Refugees were due to sharp object induced injury, open globe type and injury taken place at home.

A meta-analysis titled "Diabetes and Tuberculosis: Integrated strategy the best remedy to combat both" by Dr. Afsana Habib Sheuly identified burden of tuberculosis (TB) and co-morbid diabetes mellitus (DM) now a major public health problem. Tuberculosis-Diabetes Mellitus (TB-DM) patients have a higher risk of TB progression, relapse, and death as compared to TB only. The rising prevalence of diabetic cases globally is an alarming threat for rising cases of TB. So, this meta-analysis is aimed to understand the exact prevalence of TB-DM comorbidities in the Asian country as well as globally. Assessing the

Magnitude and risk/associated factors of TBDM comorbidity at country/local level is crucial before making decisions to undertake TBDM integrated services.

Thanadar Ajmiree Flora conducted a case study on cemento-ossifying fibroma of mandible. Ossifying fibroma is a rare benign neoplasm with female predilection in the third and fourth decades of life. In this case a 43 years old male patient reported to the department of Oral and Maxillofacial surgery with complaints of a swelling on the right side of his lower jaw for the past two years. Radiographically represented as an unilocular radiopaque lesion with a well defined thinly corticated margin. An excisional biopsy was performed and Histopathologically confirmed as benign bone lesion which is suggestive of ossifying fibroma.

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# Presentation of Tuberculous Cervical Lymphadenitis in ENT OPD of a Tertiary Hospital in Low and Middle Income Countries

Chakraborty RR<sup>1</sup>, Chakraborty PP<sup>2</sup>

## Abstract

**Background:** Tuberculous lymphadenitis commonly involves cervical lymph nodes. Most patients have positive tuberculin test and normal findings on chest radiographs. Cervical lymphadenitis by Mycobacterium Tuberculosis commonly presents with fever, chills, malaise and weight loss in about 43% patients. Non Mycobacterial infection does not show notable constitutional features other than cold abscess.

**Method:** This cross-sectional study was conducted upon 72 patients attending the ENT-OPD of CMCH with Tubercular Lymphadenitis who were evaluated for analysis of presenting features by clinical data and investigations like complete blood count, tuberculin test, chest X-ray, sputum for AFB and FNAC or Histopathology.

**Results:** Seventy two (72) patients were included in the study of which 27 (37.5%) were male and 45 (62.5%) were female of age ranging from 4 to 65 years. Mean affected age was 23 years. Male to female ratio was 1: 1.7. Evening rise of temperature was found in 67(93%) and weight loss was in 43(59.72%) cases. Cold Abscess in neck were found in 18.05% cases. Raised ESR was observed in 65.28% cases which was less than 40 mm in the 1st hour. Tuberculin test was positive in 64(88.8%) cases. Sputum for AFB was negative in all cases. 61% cases were confirmed by FNAC of enlarged lymph nodes and 39% cases were confirmed by histopathology of excised cervical lymph nodes.

**Conclusion:** Tuberculous Cervical lymphadenitis was common in young female and typical constitutional symptoms of tuberculosis were not always found. ESR result was not much significant in extrapulmonary tuberculosis. FNAC could be considered as an important and cost effective tool for diagnosis.

**Keywords:** Cervical Lymphadenitis, Tubercular lymphadenitis.

## Introduction

Tubercular lymphadenitis commonly involves cervical lymph nodes.<sup>1,2,3</sup> Most patients have positive tuberculin and normal chest radiographs.<sup>4,5</sup> Cervical lymphadenitis caused by Mycobacterium Tuberculosis usually produces fever, chills and malaise and weight loss in about 43% patients but Non Tuberculous Mycobacterial infection does not show notable constitutional features other than cold abscess in the neck.<sup>4</sup>

## Method

Patients attending the ENT OPD, (Chittagong Medical College Hospital) with enlarged cervical lymph node were evaluated clinically with history and physical examination. These patients were further evaluated with complete blood

count, tuberculin test, chest X-ray, sputum for AFB (Acid fast Bacilli) and FNAC or Histopathology. The diagnosed cases of Tubercular lymphadenitis were included in this study to analyse their presenting features. All data were recorded in the preformed questionnaire and was analysed manually.

## Results

During the study period 72 patients were diagnosed with tuberculous cervical lymphadenitis. These patients were enrolled in this study for analysis of their presenting features.

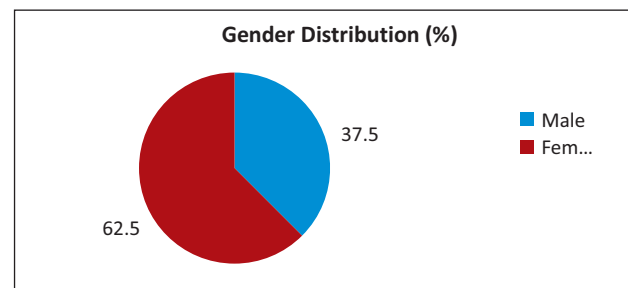


Figure 1: Gender distribution

72 patients were included in the study of which 27 (37.5%) were male and 45 (62.5%) were female of age ranging from 4 to 65 years. Mean affected age was 23 years. Male to female ratio was 1: 1.7.

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Along with cervical lymphadenitis, evening rise of temperature was found in 67(93%) and weight loss was in 43 (59.72%) cases and 13 (18.05%) were presented with cold abscess at neck.

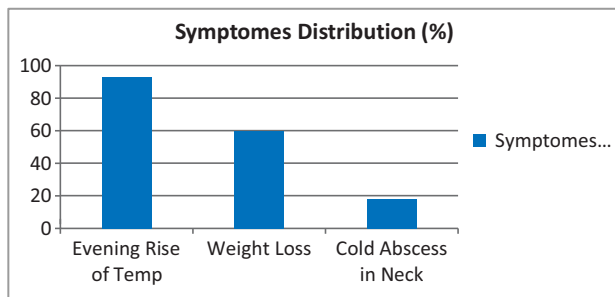


Figure 2: Distribution of Symptoms

Raised ESR was observed in 65.28% cases which was less than 40 mm in 1st hour. Tuberculin test was positive in 64 (88.8%) cases. Sputum for AFB was negative in all cases. 61% cases were confirmed by FNAC of enlarged lymph nodes and 39% cases were confirmed by histopathology of excised cervical lymph. 100% of the patients showed no changes in Chest radiograph.

Table 1: Distributions of Lab Results

Sl No	Test	Category	Result (%)
1	ESR	>40 mm in 1 <sup>st</sup> Hour	34.72
		< 40 mm in 1 <sup>st</sup> Hour	65.28
2	Tuberculin Test	Positive	88.8
		Negative	11.2
3	Sputum for AFB	Positive	0
		Negative	100
4	Chest X-ray	Normal	100
		Opacity	0
5	Confirmation	FNAC	61
		Histopathology of LN	39

## Discussion

This study found that tuberculous cervical Lymphadenitis showed female predominance. Male to female ratio was 1: 1.7. Young females were commonly affected (Affected age was 23 years). Study of Senjuti Dasgupta et al, mentioned that the sex ratio of the patients was 1.6:1 in favour of the female gender which is almost similar to our finding. Study of Imran Ahmed et al, demonstrated that there was an overwhelming majority of female patients with cervical lymphadenopathies department, 83.4% female and 16.6% male with an age range of 13 years to 67 years. A female preponderance of TB lymphadenitis has been reported in several other studies.<sup>1,2,3,4,6,7,8,9,10</sup>

Extrapulmonary Tuberculosis is rare at an age more than 40 year.<sup>6</sup> Reason for female predominance of tuberculous cervical lymphadenitis could be due to the social dynamics of the country. Majority of female in this country tends to stay or work inside their house in closed environment and less ventilation tends to increase the overall risk of developing infectious diseases.<sup>8</sup>

Evening rise of temperature and weight loss were common presentations in this study that were 67(93%) and 43(59.72%) respectively. Study of Imran Ahmed, et al, revealed that 72.57% presented with weight loss and 35.42% presented with fever while neck mass was found in 100% cases in this study. Study of Daniel Mekonnen, et al, identified weight loss in 62%.<sup>8,9</sup> Cold abscess in neck was an important presenting feature and found in 18.05% of patients in this study while in other Indian studies it were 18 to 28.17%.<sup>3,4</sup>

In our study, a rise in ESR was observed in 65.28% which was less than 40 mm hour. This scenario was found in some other studies.<sup>3,5,6,10</sup> Hee Jung Yoon et. al. found 79.3% patients had raised ESR more than 10mm in 1st hour.<sup>11</sup> In the study of Al-Marri MR et al. 67% of patients of extrapulmonary Tuberculosis had an elevated ESR (> or =10 mm/hour) and one-third of children with TB had a normal ESR at the time of diagnosis.<sup>12</sup> ESR result in extrapulmonary tuberculosis was not consistent as much as pulmonary tuberculosis. Therefore raised ESR was not regarded as a sensitive tool for the diagnosis of extrapulmonary tuberculosis. No Sputum for AFB positive cases were identified in this study though AFB were detected in sputum in 25% to 50% cases in other studies of Indian subcontinent.<sup>2,3,10</sup> In those cases cervical lymphadenitis might be due to associated pulmonary tuberculosis.

Tuberculin test was positive in 64 (88.8%) cases in our study. In a study of Shah I, a positive Tuberculin test was seen in 83% patients that was supported by the study of Marais BJ et al.<sup>10,13</sup> This study found no changes in chest radiograph in any of the cases. So a normal chest radiograph may mislead the clinician. Many studies oppose this finding. In childhood, 37% showed significant findings in Chest radiographs in Tuberculosis endemic areas.<sup>13</sup> Significant findings were common in children but it was 15% in adult cases.<sup>7</sup> 14% patient was found with significant chest radiograph finding in the study of Moharajon et al.<sup>3</sup> Some case series also reported significant pulmonary involvement that were evident in chest radiograph.<sup>6</sup>

This study confirmed 61% cases by FNAC of enlarged lymph node and 39% cases by histopathology of excised cervical lymph node. Study of Poras Chaudhary showed 76% and 13% positivity by FNAC and excision biopsy respectively.<sup>4</sup> 54% patients were found to have positive cytological or histological findings suggestive of tubercular lymphadenitis in a study by Maharjan M et al.



Fine needle aspiration cytology (FNAC) is widely accepted as the accurate, sensitive, specific and cost effective procedure in the diagnosis of lymphadenopathy which was supported by many studies.<sup>1,3,4,6,7,8</sup>

## Conclusion

Tuberculous Cervical lymphadenitis is common and typical constitutional symptoms of tuberculosis are not always found. Mild rise of ESR is a finding. FNAC is an important and cost effective tool for diagnosis.

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# Advanced Trauma Life Support (ATLS) Related Components in the Curriculum for Undergraduate Medical Education in Bangladesh

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## Abstract

**Background:** Trauma is a leading cause of death and disability all over the world. Prevailing trauma management status can be improved by improving the expertise of junior doctors in this field. A descriptive type of cross sectional study was conducted to assess teachers' (Surgery & Allied subjects) and Medical Officers' (MOs) as well as Emergency Medical Officers' (EMOs) views regarding the advanced trauma life support (ATLS) related components in the Curriculum for Undergraduate Medical Education in Bangladesh.

**Method:** The study was conducted during the period of July 2019 to June 2020. Total 349 respondents were selected from conveniently selected medical colleges, upazila and district hospitals. A self-administered semi-structured questionnaire with five points of Likert scale was used to get the views of respondents. At the same time, the details of the contents of undergraduate medical curriculum-updated 2012 were reviewed to find out the content coverage, teaching & learning methods and assessment system of ATLS related components. Written question papers of summative examination (MCQ & SAQ) of Surgery & Allied subjects (General surgery, Neurosurgery, Orthopedic surgery and Anaesthesiology) of November 2018, May'2019 and Nov'2019 of different medical universities were reviewed to find out the content coverage of ATLS related contents in the phase-4 (Final) examination.

**Results:** Inadequacy of ATLS related contents was present in the existing curriculum and was also reflected in the phase IV (final) examination as evident in the question papers. Out of 349 respondents, 347 (99.4%) were in favour of inclusion of ATLS related contents in the existing curriculum for undergraduate medical education and the majority (96.5%) were in favour of running the teaching as a separate module. The inclusion of all ATLS related components in a modular format in the time of internship was opined by 58% respondents and 29% were in favour of inclusion in phase IV (final term) within the existing surgery card with 4.39±4.35 days duration.

**Conclusion:** To improve the quality of emergency medical support at the field level, addition of this type of practical oriented course requires stakeholders' attention.

**Keywords:** ATLS related components, Curriculum, Undergraduate medical education.

## Introduction:

Trauma is a leading cause of death and disability all over the world. According to the most current information from the

World Health Organization (WHO) and the Centers for Disease Control (CDC), more than nine people die every minute from injuries or violence, and 5.8 million people of all ages and economic groups die every year from unintentional injuries and violence<sup>1</sup>. This burden is disproportionately borne by low/middle-income countries (LMICs), where resources for advances in care are limited despite estimates that improved care could save up to 2 million lives annually<sup>2</sup>. While the limitations on providing excellent trauma care are multifactorial, education of providers has been proven to improve patient outcomes<sup>3</sup>, and a lack of training has been identified as the most common limitation after the lack of equipment itself<sup>4</sup>. If properly implemented, trauma systems can reduce mortality of severe trauma patients by at least 15%.<sup>5</sup> The advanced trauma life support (ATLS) is a training program for the medical provider in the management of acute trauma cases. ATLS has become the standard training course for trauma care in the USA, and has also been taught effectively both in LMICs and to medical student trainees.<sup>6</sup> At this time, 78 countries are actively providing the ATLS course to their trauma providers.<sup>1</sup> ATLS significantly increases knowledge of trauma management, improves practical skills, organization of trauma management, and identification of management priorities. Teaching ATLS

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courses using the interactive approach significantly improved the practical skills compared with the old classical teaching<sup>7</sup>. The ATLS method is accepted as a standard for the “first hour” of trauma care by many who provide care for the injured, whether the patient is treated in an isolated rural area or a state-of-the-art trauma center.

With the advancement of civilization, the day-to-day life is changing also in Bangladesh, dramatically. Road Traffic Accident (RTA), Community violence, Homicide, Drawing, Fires are now the very common features in this country. Reports show that in 2016 from 4,312 road crashes, 6055 died and 15,918 were severely injured. In 2018, 16,193 died from 4,979 accidents.<sup>8</sup> It is not only taking off the precious lives but also gathering unproductive liabilities who are otherwise saved from death. The very dependents, family, society and the whole nation are bearing these unfortunate fate of near and dear ones. Doctors of Bangladesh are getting jobs at different public as well as private hospitals/clinics after passing MBBS. MBBS degree is the first criteria to get a job or practice as a doctor. With this degree they are working as first line healthcare professionals in primary to tertiary hospitals to assess and provide initial hospital care for multiple injured patients. The news published in media show that the local medical units refer the injured patients to the nearby larger hospitals and the most of the patients die on the way. So, question arises that 'are newly passed doctors facing difficulty in handling those patients?' Training physicians to manage multiple trauma patients is an essential part of developing proper trauma systems. The primary end point of any clinical educational activity is its impact on improving health care. ATLS is one of the most common courses taught worldwide.

This study was conducted to explore the quality and quantity of teaching on trauma medicine currently received at the undergraduate level by directly eliciting medical students' experiences of their curriculum (by directly eliciting medical teachers', MOs' & EMOs' views regarding the alignment of undergraduate medical curriculum with ATLS related contents). The increasing success of student-led trauma conferences and various 'modular format' trauma education systems run by many institutions are being used as an opportunity to highlight the known gap in formal undergraduate trauma teaching.

## Method

This descriptive type of cross sectional study was conducted during the period of July 2019 to June 2020. Teachers' of Surgery & Allied subjects were conveniently selected from five medical colleges of Dhaka city and five medical colleges outside Dhaka and Medical Officers' (MOs) as well as Emergency Medical Officers' (EMOs) were from primary & secondary health care settings such as upazila & district hospitals. Sample size was 349, out of which 181 were teachers of relevant discipline and 168 were MOs & EMOs. A self-administered semi-structured questionnaire with five points of Likert scale was used to get the views of

respondents. Teachers and doctors who were present at the time of data collection and wished to participate in the study as respondent after initial briefing were included in the study.

Simultaneously, the details of the contents of undergraduate medical curriculum-updated 2012 were reviewed to find out the content coverage, teaching & learning methods and assessment system of ATLS related components. A check-list was prepared using the contents observed. With the help of that check-list written question papers of summative examination (MCQ & SAQ) of Surgery & Allied subjects (General surgery, Neurosurgery, Orthopedic surgery and Anaesthesiology) of November 2018, May 2019 and November 2019 of four universities of Bangladesh were reviewed to find out the content coverage of ATLS related contents in the phase-4 (Final) examination.

Collected data were checked and edited manually. Incompletely filled up questionnaires were discarded. Data entry, editing, processing and analysis were done by using computer as well as manually according to the objectives and interpretations were done subsequently.

Proper ethical guideline was followed throughout the study procedure.

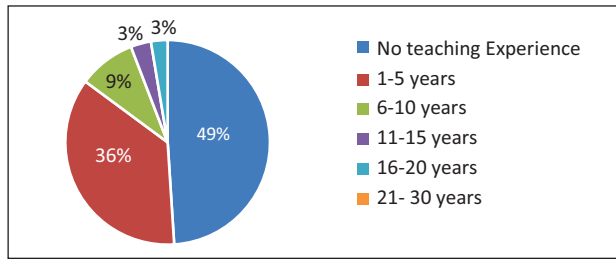
## Results

Analysis of question paper showed that except one university, SAQ always contained some content (ranging from 2.5% to 17.5%) related to ATLS in summative examination (Table 1).

**Table 1:** Marks allocated for contents related to ATLS in Summative Examination in Surgery and Allied Subjects

Name of the Universities	Examination conducted on					
	November 2018		May 2019		November 2019	
	MCQ (%)	SAQ (%)	MCQ (%)	SAQ (%)	MCQ (%)	SAQ (%)
Dhaka						
Rajshahi	3 (15)	8.75 (12.5)	0 (0)	12.25 (17.5)	1 (5)	10.5 (15)
Chittagong	0 (0)	7 (10)	1 (5)	3.5 (5)	0 (0)	1.75 (2.5)
SUS&T	1 (5)	8 (11.4)	1 (5)	3 (4.2)	1 (5)	8 (11.4)
	1 (5)	8 (11.4)	1 (5)	3.5 (5)	0 (0)	0 (0)

Out of 349 respondents there were 30 (08%) Professors, 42 (12%) Associate Professors, 72 (21%) Assistant Professors and 205 (59%) were others (MO & EMO). There were 44 general surgeons, 40 neurosurgeons, 112 orthopedic surgeons, 80 anaesthesiologists and 73 Others (MO & EMO).



**Figure 1:** Distribution of respondents by teaching experience (n=349)

Of the total respondents, 262 (75.1%) opined that existing MBBS curriculum is inadequate for training on ATLS related components, 55 (15.8%) did not think it to be inadequate and rest 32 were not sure regarding inadequacy. The views of the respondents regarding ATLS related contents present in existing curriculum with allotted times are shown in Table 2 and regarding inclusion of ATLS related contents not present in existing curriculum in Table 3. Clinical or practical session was revealed as most preferred method of training (Table 4).

**Table 2:** Distribution of the respondents as per their views regarding ATLS related contents present in existing curriculum with allotted times (n=349)

ATLS related topics with allotted time	Views in favor of			
	Deletion f (%)	No change f (%)	Increase f (%)	Decrease f (%)
Diagnose and provide basic treatment for shock & haemorrhage (2 hrs)	08 (2.29)	165 (47.28)	174 (49.86)	02 (0.57)
Identify the patients with abdominal trauma requiring specialty surgical intervention & refer to appropriate centre (1 hr)	08 (2.30)	192 (55.17)	145 (41.67)	03 (0.86)
Assess & diagnose traumatic haemopneumo-thorax, associated injuries & introduce water seal drain in appropriate case (3 hrs)	24 (6.88)	120 (34.38)	199 (57.02)	06 (1.72)
Provide primary care of head injury & Spinal injury cases (2 hrs)	15 (4.30)	145 (41.55)	187 (53.58)	02 (0.57)
Apply ATLS protocol to provide resuscitation of poly-trauma patient (1 hr)	06 (1.74)	236 (68.41)	102 (29.57)	01 (0.29)
Demonstrate skill in application of splints, slings, traction and cast (2 hrs)	9 (2.57)	162 (46.41)	166 (47.56)	9 (2.57)
Demonstrate basic knowledge and perform Cardio-Pulmonary Resuscitation (CPR) (1 hr)	12 (3.43)	210 (60.17)	124 (35.53)	2 (0.57)

**Table 3:** Distribution of respondents as per their views regarding inclusion of ATLS related contents not present in existing curriculum (n=349)

ATLS related contents to be included in MBBS curriculum	Level of Agreement				
	SDA f (%)	DA f (%)	NAND f (%)	A f (%)	SA f (%)
Preparation- doctors' preparation for a smooth transfer from the pre-hospital to the hospital environment (Pre and Post hospital phase)	3 (0.86)	4 (1.15)	23 (6.59)	131 (37.54)	188 (53.87)
Triage - sorting of patients based on their need for treatment and the resources available to provide that treatment	2 (0.57)	7 (2.01)	12 (3.44)	112 (32.09)	216 (61.89)
Concept of Multiple casualties and Mass Casualties (n=347)	2 (0.58)	4 (1.15)	15 (4.32)	111 (31.99)	215 (61.96)
Primary survey (ABCDEs) with immediate resuscitation of patients with life-threatening injuries (n=348)	2 (0.57)	5 (1.44)	9 (2.59)	62 (17.82)	270 (77.59)
Adjuncts to the primary survey and resuscitation- ECG monitoring, urinary and gastric catheters, pulse oximetry, X-ray examination (n=346)	2 (0.58)	10 (2.89)	34 (9.83)	123 (35.55)	177 (51.16)
Secondary survey (head-to-toe evaluation and patient history)	2 (0.57)	9 (2.58)	20 (5.73)	162 (46.42)	156 (44.70)
Adjuncts to the secondary survey-specialized diagnostic tests(n=346)	2 (0.58)	8 (2.31)	70 (20.23)	169 (48.84)	97 (28.03)
Air way management-emergency tracheostomy (n=347)	3 (0.86)	12 (3.46)	35 (10.09)	104 (29.97)	193 (55.62)
Clear concept of penetrating trauma (n=347)	2 (0.58)	6 (1.73)	22 (6.34)	158 (45.53)	159 (45.82)
Head and spinal trauma - clear concept of Glasgow coma scale, spine stabilization	2 (0.57)	4 (1.15)	11 (3.15)	107 (30.66)	225 (64.47)

**Legend :** SDA= Strongly disagreed, DA= Disagreed, NAND=Neither agreed nor disagreed, A=Agreed and SA= Strongly agreed

**Table 4:** Distribution of respondents as per their views regarding the appropriateness of teaching methods in existing curriculum in relation to ATLS related contents (n=347)

Appropriateness of teaching sessions in relation to ATLS related contents	Level of Agreement				
	SDA f (%)	DA f (%)	NAND f (%)	A f (%)	SA f (%)
Interactive lecture	2 (0.58)	10 (2.88)	19 (5.48)	171 (49.28)	145 (41.79)
Tutorial session	1 (0.29)	6 (1.73)	18 (5.19)	145 (41.79)	177 (51.01)
Clinical/practical session	1 (0.29)	2 (0.57)	21 (6.02)	55 (15.76)	270 (77.36)

**Legend :** SDA= Strongly disagreed, DA= Disagreed, NAND=Neither agreed nor disagreed, A=Agreed and SA= Strongly agreed

More than half of the respondents feel that existing formative as well as summative assessment system is adequate (Table 5). Of the total respondents, 151 (43.3%), 146 (41.8) and 112 (32.1%) respectively viewed that medical graduates achieve relevant knowledge, skill and attitude in handling poly-trauma (Table 6). The respondents' views regarding the barriers in implementation of ATLS related contents in MBBS curriculum are shown in Table 7. Almost all respondents agreed that contents related to ATLS should be included in existing surgery card (99.4%) and contents related to ATLS should be taught with a modular format (96.5%). As per their views the 'ideal duration of ATLS module' is 4.39±4.35 days.

**Table 5:** Distribution of respondents as per their views regarding the adequacy of assessment system of present curriculum in relation to ATLS related contents (n=347)

Expected assessment system regarding ATLS related contents	Level of Agreement				
	SDA f (%)	DA f (%)	NAND f (%)	A f (%)	SA f (%)
Formative assessment (in course) of existing curriculum is adequate to assess the competencies of ATLS related contents	8 (2.31)	77 (22.19)	72 (20.75)	110 (31.70)	80 (23.05)
Summative assessment (end course) of existing curriculum is adequate to assess the competencies of ATLS related contents	10 (2.90)	83 (24.06)	67 (19.42)	121 (35.07)	64 (18.55)

**Legend:** SDA= Strongly disagreed, DA= Disagreed, NAND= Neither agreed nor disagreed, A=Agreed and SA= Strongly agreed

**Table 6:** Distribution of the respondents as per their views regarding the achievement of relevant competencies by medical graduates to handle the traumatic patients through this existing curriculum (n= 349)

Statement related to competencies achieved by medical graduates	Level of Agreement				
	SDA f (%)	DA f (%)	NAND f (%)	A f (%)	SA f (%)
The curriculum is capable of producing medical graduate with relevant knowledge to handle polytrauma	17 (4.47)	110 (31.52)	71 (20.34)	95 (27.22)	56 (16.05)
The curriculum is capable of producing medical graduate with relevant skill to handle poly-trauma	19 (5.44)	129 (36.96)	54 (15.47)	104 (29.80)	43 (12.32)
The curriculum is capable of producing medical graduate with expected attitude while handling poly-trauma	22 (6.30)	119 (34.10)	96 (27.51)	72 (20.63)	43 (12.32)

**Legend :** SDA= Strongly disagreed, DA= Disagreed, NAND=Neither agreed nor disagreed, A=Agreed and SA= Strongly agreed

**Table 7:** Distribution of the respondents as per their views regarding the barriers in implementation of ATLS related contents in MBBS curriculum (n=349)

Statement related to barriers in implementation of ATLS related components	Level of Agreement				
	SDA f (%)	DA f (%)	NAND f (%)	A f (%)	SA f (%)
Number of experienced teachers are not adequate	0 (0.00)	32 (9.17)	31 (8.88)	127 (36.39)	159 (45.56)
Resources providing ATLS related teaching & learning are not adequate	0 (0.00)	5 (1.43)	19 (5.44)	150 (42.98)	175 (50.14)
Cooperation from authority is not adequate (n=343)	3 (0.87)	36 (10.50)	78 (22.74)	131 (38.19)	95 (27.70)
Absence of ATLS related 'Module' format teaching and learning (n=348)	1 (0.29)	16 (4.60)	35 (10.06)	156 (44.83)	140 (40.23)
Inadequacy of ATLS related 'integrated teaching'	0 (0.00)	12 (3.44)	29 (8.31)	167 (47.85)	141 (40.40)



## Discussion

Trauma management can be improved by implementing a trauma system that includes injury prevention, education, pre-hospital care, transportation, hospital care, and rehabilitation. While the limitations on providing excellent trauma care are multifactorial, education of providers has been proven to improve patient outcomes.<sup>3</sup> Lack of training has been identified as the most common limitation after the lack of equipment itself.<sup>4</sup> Implementing a trauma system is one of the challenging issues and curriculum can play very vital role to educate medical students to overcome these challenges.

Findings of this study are basically based on analysis of status of training in existing MBBS curriculum including assessment system and the perceived views of medical teachers, MOs and EMOs. Those were primarily concerned with teaching of trauma and were of first line of healthcare professionals. Study revealed that existing curriculum contains topics which are 'Diagnose and provide basic treatment for shock & haemorrhage', 'Assess & diagnose traumatic haemopneumo-thorax, associated injuries & introduce water seal drain in appropriate case', 'Provide primary care of head injury & spinal injury cases', 'Demonstrate skill in application of splints, slings, traction and cast', 'Identify the patients with abdominal trauma requiring specialty surgical intervention & refer to appropriate centre', 'Apply ATLS protocol to provide resuscitation of polytrauma patient', 'Demonstrate basic knowledge and perform Cardio-Pulmonary Resuscitation (CPR)'.<sup>9</sup> Some topics that are not present in the existing curriculum but practiced worldwide were identified like, 'Preparation (pre and post hospital phase)', 'Triage', 'Concept of multiple casualties and mass casualties', 'Primary survey (ABCDEs) with immediate resuscitation of patients with life-threatening injuries', 'Adjuncts to the primary survey and resuscitation', 'Air way management', 'Head and spinal trauma', 'Secondary survey', and 'Adjuncts to the secondary survey'. Present study revealed that all respondents either strongly agreed or agreed for inclusion of the topics those are not present in the existing curriculum.

The times given to the students for the topics of trauma teaching and management which are already present in the existing curriculum were viewed as insufficient by the respondent of present study. The topics which are not present in the curriculum but found required in this study, were either strongly agreed or agreed to be included in the curriculum as opined by the respondents.

The ATLS programme, developed by the American College of Surgeons Committee on Trauma, had a profound effect on the improvement of physician care for the traumatized patients throughout the world, and, therefore, has been declared a prerequisite for surgical certification.<sup>10</sup> It is widely considered to be the gold standard for the practice of acute trauma management.<sup>10</sup> Rural hospitals play a valuable role in the evaluation, stabilization and continued care of trauma patients. These studies advocate the need of ATLS

related contents to be taught to address the traumatized patients. The present study also supports these.

Out of 347 respondents 171(49.28%) agreed that the method of teaching in interactive lecture was appropriate, 177(51.01%) strongly agreed the method of teaching of interactive discussion and 270 (77.36%) strongly agreed the method of teaching in hands-on-training were appropriate in relation to ATLS related contents' teaching. Therefore, this study is showing the present teaching method of ATLS related components as appropriate. Regarding adequacy of summative assessment with respect to the present ATLS related contents, out of 347 respondents, 121 (35.07%) respondents agreed that summative assessment system was adequate. Marks allocated for contents related to ATLS in summative examination in surgery & allied subjects of different medical universities in Bangladesh are supporting this. Current study showed that, out of 349 respondents 110(31.52%) disagreed that the curriculum is capable of producing medical graduates with relevant knowledge to handle poly-trauma. Whereas 129(36.96%) and 119(34.10%) respondents disagreed that the curriculum is capable of producing medical graduates with relevant skill and attitude respectively to handle poly-trauma. This is indicating that, the undergraduate medical students are not growing with adequate knowledge, skill and attitude to handle poly-trauma and the existing curriculum of undergraduate medical education should be reviewed and more emphasis should be given on skills especially on the clinical subjects keeping in mind common health problem of Bangladesh. Contrary to this, dealing with teaching and learning of trauma and trauma management with a short course of 1 to 3 days duration brings significant improvement in performance in cognitive, clinical and surgical skill.<sup>7</sup>

In present study, out of 349 respondents 159(45.56%) strongly agreed that number of experienced teachers were not adequate, 175(50.14%) strongly agreed that resources providing ATLS related teaching & learning were not adequate, 131(38.19%) agreed that cooperation from authority were not adequate and 167(47.85%) agreed that inadequacy of ATLS related 'integrated teaching' were the barrier in implementation of ATLS related contents in MBBS curriculum. A study by Rasul MG also recommended to enrich learning opportunities in respect of qualified teachers, clinical environment, teaching and training aid in medical institutes which is consistent with the current study finding.<sup>11</sup> The teaching of trauma evaluation and management is one of the most neglected areas in undergraduate medical education in most medical schools in the world. Several authors have drawn attention to the inadequacy of trauma training in the undergraduate curriculum but little progress has been made by most medical schools.<sup>12</sup> Respondents of this study were in favour of increasing time of present topics in the existing curriculum and for inclusion of other topics which definitely bring significant improvement in performance in cognitive, clinical and surgical skill.

In this current study, out of 349 respondents 347(99.4%) viewed for inclusion of ATLS related components within existing surgery card. Again, 335(96.5%) viewed for this teaching in a modular format with 2+ days of duration. Study is very pertaining to the world wide thinking of incorporating trauma teaching and management system in undergraduate medical education for better handling of poly-trauma. Trauma is an important issue that has been neglected in the training of medical students. The Basic Trauma Life Support (BTLS) course for the undergraduate medical students at International Medical University (IMU), Malaysia is one module. The American College of Surgeons has devised the Trauma Evaluation and Management (TEAM) course, an adaptation of ATLS tailored for an undergraduate audience. This course is far shorter and less resource intensive than ATLS, and has been shown to be effective in teaching trauma management principles to senior medical students.<sup>13</sup> Trauma Evaluation and Management (TEAM) course has been successfully taught to students throughout the USA and Canada as well as in LMICs. In Brazil, a very controversial concept within undergraduate medicine is a “parallel curriculum”. One way of implementing the “parallel curriculum” focuses on the role of the Academic Leagues. The Advanced Trauma Life Support (ATLS) course for senior medical students was conducted in the 4th of medicine at the University of Manitoba, Canada with suggestion of incorporating the course in the Canadian undergraduate 4th year medical curriculum. The Emergency Trauma Training Course (ETTC) was designed in Taiwan by the Taiwan Society of Emergency Medicine to train physicians and registered nurses who care for trauma patients in the emergency department (ED). They implemented the course, ETTC, for their medical students' internship. Similar training courses focusing on different types of trauma patterns have been developed in other countries, including Japan and in Europe.<sup>14,15</sup>

## Conclusion

Bangladesh College of Physicians & Surgeons (BCPS) has been organizing a course on ATLS since the beginning of 2018 under the supervision of American College of Surgeon. So far the organization has conducted the course of 8 batches each with around 16 students. In the current year BSMMU has started the course in a small scale under the supervision of the same organization. These sporadic trainings will have little effect on the community as there is tremendous deficiency of specialist doctors to handle poly-trauma. There is a suggestion from the institutions for incorporating the subject in the curriculum to have greater community impact. These extracurricular teaching indicates the paucity of trauma-addressed teaching in the existing curriculum in Bangladesh.

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# Psychological Status of Parents of Children Hospitalized for COVID-19 in Bangladesh

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## Abstract

**Background:** COVID-19 caused unprecedented changes in every sphere of life and simultaneously triggered a wide variety of psychological problems. Parents are naturally prone to be anxious about their children amidst this pandemic situation; when their children are affected by Covid-19 and hospitalized, their anxiety and depression are increased. **Purpose:** To assess the level of anxiety and depression among the parents of hospitalized COVID-19 infected children.

**Method:** This cross-sectional study was conducted on 160 parents of Covid-19 infected children of Mugda Medical College Hospital, Bangladesh Shishu Hospital & Institute and Kurmitola General Hospital from April 2020 to October 2020. Detail history was taken from all the study subjects. Results were presented by appropriate tables and figures.

**Results:** The study found that among the 160 participants, every one in five parents (19.37%) were suffering from moderate to severe anxiety, while 43.1% of parents were suffering from moderate and moderately severe depression. More than fifty per cent of the respondents were suffering from minimal anxiety (54.38%) and 43.8% of parents were suffering from minimal depression. City dwellers were more prone to developing both anxiety and depression.

**Conclusion:** Many parents of hospitalized COVID-19 infected children were suffering from moderate to severe anxiety and depression. They need to be addressed and provide appropriate support.

**Keywords:** Anxiety, Depression, Parents of covid affected children, Psychological support

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## Introduction

COVID-19 was declared as a “Public Health Emergency of International Concern” by The World Health Organization (WHO) on 30th January, 2020.<sup>1</sup> Most countries and territories of the world have been affected by the ordeal of Coronavirus Disease (COVID-19). Until 31st October 2020, more than 461.2 million affected people and nearly 1 million recorded deaths.<sup>2</sup> Bangladesh represents one of the top 22 affected countries globally, accounting for about 1% of its COVID-19 disease burden.<sup>3</sup> As of 9th November 2020, 5.1% of cases were confirmed in Bangladesh, among people belonging to the age group 11-20 years, and 2% in the age group of 0 - 10 years old (of the reported cases). The subsequent death rates were 0.7% and 0.4% (approximately) in the respective age groups of 11 - 20 years and 0-10 years.<sup>3</sup>

The outbreak itself and the measures taken to combat and bring it under control have been perceived as exceedingly stressful for many individuals. As such, it is reasonable to suggest that the COVID-19 pandemic will have implications not only for physical health but also for mental health and overall well-being.<sup>4,6</sup> People are also at high risks of developing long-term mental health issues, owing to prevalent restrictions, uncertainties of returning to normal life, and deaths that could be avoided otherwise, under usual circumstances.<sup>8</sup>

During the COVID-19 pandemic, families and children are particularly vulnerable, accounting for detrimental physical and psychological well-being effects.<sup>4,9</sup> The

COVID-19 crises have also specifically hit families with young children who face dual caregiver and breadwinner demands.<sup>10</sup> Though the pandemic originated outside of the family system, given the novelty and uncertainties concerning the disease, it is likely to be perceived as a significant stressor for many parents and children.<sup>11</sup> Again, the indirect effects of the COVID-19 pandemic are presumed to be experienced by families who have not had direct exposure to the virus.<sup>12</sup> For example, in countries outside of the United States, COVID-19 has led to serious mental health burdens,<sup>13,14</sup> alongside the prevalence of anxiety, depression, and sleep problems ranging from 18% to 35%, specifically among the younger individuals that are preoccupied with thoughts regarding the disease.<sup>15</sup> Parents experiencing elevated stress, concurrent anxiety, and depressive symptoms have also shown lesser amounts of responsiveness to their children's needs, which in turn is a strong predictor of child abuse potential.<sup>16</sup> However, not all parents faced with cumulative stressors from COVID-19 may be at risk of higher perceived stress or poor parenting, thereby suggesting that protective factors may mitigate the impact of COVID-19 on parental stress and child abuse potential. Adaptive coping strategies and supportive family environments may, therefore, crucially serve as protective factors for such families and have a differential influence on the ensuing potentials of abuse.<sup>11</sup>

This study is to assess the level of anxiety and depression among the parents of hospitalized COVID-19 infected children.

## Method

This was a cross-sectional descriptive study was conducted in Mugda Medical College, Dhaka Shishu Hospital and Kurmitola General Hospital from April 2020 to October 2020. A total of 183 parents of COVID-19 infected and hospitalized children were enrolled in the study, among which 21 parents did not give consent and thereby have been excluded. Parents already suffering from anxiety neurotic disorders and getting treatment with anti-anxiety and anti-depressant drugs were also excluded from this study. Two patients became critically ill; thus, their parents withdrew themselves. Finally, data were collected from the remaining 160 parents. The participating parents had gone through: A detailed socio-demographic and clinical characteristics questionnaire, the Generalized Anxiety Disorder-7 questionnaire to measure anxiety and the Patient Health Questionnaire-9 (PHQ-9) screens for depressive symptoms.

The main study outcomes measured were a) anxiety and b) depressive symptoms among the parents. Descriptive statistics (means, standard deviations, and percentages) described the sample demographic characteristics and study variables. The respondents/ participants provided their written, informed consent to participate in this study and had the right to withdraw themselves at any time during the study.

### Scale for the measurement of anxiety and depression

To understand the mental health of the parents of children hospitalized during the COVID-19 pandemic, we have used

the "Patient Health Questionnaire-9 (PHQ- 9) depression scale" and "Generalized anxiety disorder- 7 Scale" for the assessment of depression and anxiety, respectively.

### GAD-7 Anxiety Severity Scale:

Symptoms of generalized anxiety were measured using the Generalized Anxiety Disorder 7-item Scale (GAD-7)<sup>17</sup>. Participants indicate how often they have been bothered by each sign over the last two weeks on a four-point Likert scale (0 = Not at all, to 3 = Nearly every day). Possible scores range from 0 to 21, with higher scores indicative of higher levels of generalized anxiety. Scores of 5, 10, and 15 represent cut points for mild, moderate, and severe anxiety, respectively. Higher scores indicate a greater presence of anxiety symptoms. Categories of anxiety for this scale include: 0-5 indicate minimal concern, 5-9 indicate mild anxiety, 10-14 indicate moderate anxiety, and 15-21 indicate severe anxiety.<sup>17</sup>

### PHQ-9 Depression Severity:

This is calculated by assigning scores of 0, 1, 2, and 3 to the response categories of "not at all," "several days," more than half the days," and "nearly every day," respectively. PHQ-9 total score for the nine items ranges from 0 to 27. According to PHQ-9, depressed parents are categorized as minimal (score 1-4), mild (score 5-9), moderate (score 10-14), moderately severe (score 15 - 19), and severe (score 20 -24). Our goal was to determine the prevalence of depression and anxiety of parents and compare that with the mental status of the general population of Bangladesh during COVID-19. We also tried to search for a parent's mental status with their place of living, socioeconomic and educational background, etc. A clinician translated all study tools into Bengali (the state language of Bangladesh), as per the WHO guidelines related to translation and back-translated.

## Results

**Table I:** Socio-demographic profile of the respondents (n=160)

Characteristics		Number (N)	Percentage (%)
Gender	Male	78	48.8%
	Female	82	51.2%
Place of Residence	City/Metropolitan	90	56.3%
	Town	28	17.5%
	Village	42	26.3%
Educational Status	Primary	16	10.0%
	Secondary	57	35.6%
	Higher Secondary	23	14.4%
	Bachelor	40	25.0%
	Masters	24	15.0%
Socio Economic Status	High	11	6.9%
	Middle	121	75.6%
	Low	28	17.5%

The GAD- 7 scores of the respondents ranged from 0-18 with an average score of 5.04 ( $\pm 4.7$  SD). As per the GAD score of the respondents, their level of anxiety was clustered as follows (n=160). (shown in Table- 2). It revealed that more than fifty per cent of the participants experienced minimal anxiety, only a few (3.12%) experienced severe anxiety.

**Table 2:** Severity of anxiety among the respondents according to GAD-7 score (n=160)

Severity category	Frequency	Percentage (%)
Minimal (0-4)	87	54.38
Mild (5-9)	42	26.25
Moderate (10-14)	26	16.25
Severe (15-21)	05	3.12

The PHQ-9 score of the respondents ranges from 0-21, with an average score of 8.01 ( $\pm 6.31$  SD). As per the PHQ score of the respondents, their level of depression was clustered as follows (Table-3). Most of the respondents experienced minimal depression followed by moderate levels of depression.

**Table 3:** Severity of depression among the respondents using PHQ-9 (n=160)

Severity(score)	Frequency	Percentage (%)
Minimal (1-4)	70	43.8
Mild (5-9)	21	13.1
Moderate (10-14)	48	30
Moderately Severe (15-19)	21	13.1
Severe (20-27)	0	0

**Table 4:** Comparison of male and female respondents in terms of GAD & PHQ scores (n=160)

Gender	GAD Score (Mean $\pm$ SD)	t** value/p value	PHQ Score (Mean $\pm$ SD)	t* value/p value
Male	4.08 $\pm$ 4.97	-2.59/	5.01 $\pm$ 6.22	-4.302/
Female	5.95 $\pm$ 4.16	0.008**	9.09 $\pm$ 5.75	0.001**

\*= independent sample t test, \*\*= significant at 0.05 level

**Table 5:** Comparison of PHQ and GAD according to distribution of residence(n=160)

Gresidence	GAD Score (Mean $\pm$ SD)	F (2, 157) value	PHQ Score (Mean $\pm$ SD)	F (2, 157) value
City	7.09 $\pm$ 4.48	26.381 <sup>s</sup>	10.28 $\pm$ 5.66	39.586 <sup>s</sup>
Town	2.43 $\pm$ 3.33		3.96 $\pm$ 5.25	
Village	2.38 $\pm$ 3.44			

s=significant at 0.05 level

It was found that nearly 3/4th of the male respondents experienced minimal depression, followed by mild and moderately severe depression (table no. 6). In contrast, among the females, 72.9% suffered from depression followed by mild & moderately severe depression and minimal depression (61.9% each and 28.6%, respectively). None of the males and females experienced severe depression as measured using the PHQ-9 scale.

**Table 6:** Relationship of gender with the severity of depression among the respondents (n=160).

Gender	Level of Depression of the respondents				x <sup>2</sup> value/p value
	Minimal	Mild	Moderate	Moderately Severe	
Male	50 (71.4%)	8 (38.1%)	13 (27.1%)	8 (38.1%)	25.3/0.000013 <sup>s</sup>
Female	20 (28.6%)	13 (61.9%)	35 (72.9%)	13 (61.9%)	

s=significant at 0.05 level

The severity of anxiety among males was high in the minimal category, followed by moderate, mild, and severe (15.2%, 12.7% & 3.8%, respectively). Among the females, the highest anxiety was in the minimal category (40.7%), followed by mild, moderate, and severe (Table 7).

**Table 7:** Relationship of gender with the severity of anxiety of the respondents (n=160)

Gender	Level of Depression of the respondents				x <sup>2</sup> value/p value
	Minimal	Mild	Moderate	Moderately Severe	
Male	54 (68.4%)	10 (12.7%)	12 (15.2%)	3 (3.8%)	16.924/0.001 <sup>s</sup>
Female	33 (40.7%)	32 (39.5%)	14 (17.3%)	2 (2.5%)	

s=significant at 0.05 level

## Discussion

The study found that among the 160 participants, 16.25% of parents were suffering from moderate anxiety, while 3.12% of parents were suffering from severe anxiety. So, it is evident that one in five parents (19.37%) were suffering from moderate to severe anxiety. On the other hand, 43.1% of parents suffered from moderate and moderately severe depression. More than fifty per cent of the respondents suffered from minimal anxiety (54.38%) and depression (43.8%).

Among the parents, 68.4% (54 out of 79) male and 40.7% (33 out of 81) female parents experienced minimal depression based on GAD-7 score. 3.8% (3 out of 79) fathers and 2.5% (2 out of 81) mothers experienced severe forms of anxiety. On the other hand, 43.8% (70 out of 160) of parents experienced minimal depression, but none had severe depression.

City dwellers had more anxiety than the town or village dwellers. There were statistically significant differences among city, town, and village residents regarding their PHQ-9 and GAD-7 score. Respondents of both sexes were equal to develop anxiety as well as depression.

The prevalence of anxiety in the general population in China ranged from 2 to 37%.<sup>15,18-26</sup> In Italy, the prevalence of anxiety was found in the range of 7.2 to 11.5%<sup>27</sup>, in Spain 1.2 to 4%<sup>28</sup>, and in India ~28%.<sup>23,25</sup> The prevalence of depression ranged from 8.3 to 48.3% in the respondents from China.<sup>15,18,19,22,29</sup> In India, depression was reported in 25%, Italy 15.4 to 17%, and in Spain 1.7% extreme depression to 8.7% mild depression.<sup>23,27,28,30</sup>

Previous studies suggest that depression, anxiety disorders, substance abuse, increased suicidal tendencies and PTSD commonly follow major economic crises or natural disasters<sup>31,32</sup>. With the ongoing quarantine nationwide, this study was conducted to assess the psychological status of parents in Bangladesh during the COVID-19 outbreak. Probably this is the first study to report the psychological experiences of parents of a child with COVID-19 in Bangladesh. Emerging evidence suggests that anxiety levels in adults in the general population have increased since 'lockdown'<sup>33</sup>, with health anxiety in the adult population estimated to have increased by around 10%<sup>34</sup>. The psychological impact of 'lockdown' for adults is likely to be profound and long-lasting for many<sup>4</sup>. Adults are likely to be experiencing stress and general pressures associated with lack of access to normal activities of daily living and financial concerns due to the economic consequences of lockdown<sup>4</sup>. In addition, many parents have the pressure of home-schooling their children while also working themselves. A study by Zubayer et al., among the Bangladeshi population, has found no statistically significant difference in the prevalence of depression, anxiety, and stress by gender<sup>35</sup>. However, this study does not necessarily reflect the anxiety and depression of parents of covid-19 infected hospitalized children. This study shows that city dwellers had significant anxiety and depression over town or village dwellers. A similar conclusion has been drawn by Özdin and colleagues, who have reported that the people living in urban areas of Turkey have developed significant depression.<sup>36</sup>

Although most of the parents of hospitalized children had experienced minimal anxiety and depression, a reasonable number were also suffering from moderate to severe anxiety and depression. Therefore, these anxious and depressed parents of hospitalized children need to be addressed, and proper psychological support must be ensured.

## Conclusion

This study findings shows that many parents of hospitalized COVID-19 infected children are suffered from moderate to severe depression. If the parents are mentally disturbed, it will be detrimental to their physical health and cause long-

term emotional damage. Moreover, these parents will not be able to take proper care of their children. There is also evidence of child abuse by mentally disturbed parents. Therefore, considering the physical and mental health of the parents and the well-being of the child, it is essential to provide proper psychological screening, adequate counselling and proper treatments to the parents of the children admitted to the hospital.

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# Purpose of Referral to Ophthalmology Department in A Tertiary Hospital

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## Abstract

**Background:** Many eye disorders, systemic diseases, and injuries that affect the eye might start with modest signs and symptoms that are hard to detect. To reduce the risk of vision impairment or possibly blindness, the majority of these disorders and traumas require immediate and proper management. Appropriate referrals can provide patients and physicians with comprehensive quality health care management.

**Purpose:** To find out the pattern of referral to Department Ophthalmology of Chittagong Medical College Hospital (CMCH).

**Method:** This descriptive study was conducted on all referred patients (N=903) attending to ophthalmology department of CMCH over a period of 1 year from 1<sup>st</sup> July, 2020 to 30<sup>th</sup> June, 2021 by retrospective analysis of record. All the relevant data were evaluated, compiled and statistical analysis were done.

**Results:** Out of 903 patients referred, 59% were males and 41% were females. The highest referral was found in the age group 0-10 years (34.9%). The highest referral was from the pediatric department (35.9%) and the lowest was from department of cardiology, psychiatry and pediatric surgery (0.4%). Maximum patients were referred for fundus examination (46.0%) followed by management purposes (34.7%).

**Conclusion:** Referral does not mean transferring responsibilities. But it is sharing responsibilities in patient care. Patients and physicians equally can benefit from an effective referral system. In this study the maximum number of patients were referred from the department of pediatrics and mostly for fundus examination.

**Keywords:** Referral, Ophthalmology department

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## Introduction

A referral can be defined as a process in which a health worker at a one level of the health system, having insufficient resources (drugs, equipment and skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in, or take over the management of the client's case.<sup>1</sup> The effectiveness of referral is based on whether the objectives of referral are achieved or not (a) to get expert opinion, (b) to get an additional skill-oriented service, (c) to get admitted and managed at a higher-level center, and to get a diagnostic intervention done.<sup>2</sup>

Chittagong Medical College Hospital is situated in the port city of Chattogram in the south-eastern part of the country, Bangladesh and one of the oldest medical colleges in the country. This has become one of the largest hospitals in the country and a referral hospital in the greater Chattogram area, providing health care services to a larger population of 40 million. As years passed by, new treatment facilities kept being added.

Eye-related complaints compose approximately 1-6% of complaints of patients referring to general emergency ward around the world.<sup>3-5</sup> In a previous study, ophthalmic emergencies attending the casualty department of a district general hospital was 6.1%.<sup>6</sup>



Regard the scarcity of such information in Bangladesh, this study was conducted to identify the pattern and reasons of patient's referrals to ophthalmology department of CMCH. We believe that the results of the study will help identify measures to increase the efficiency of emergency eye care provision to patients.

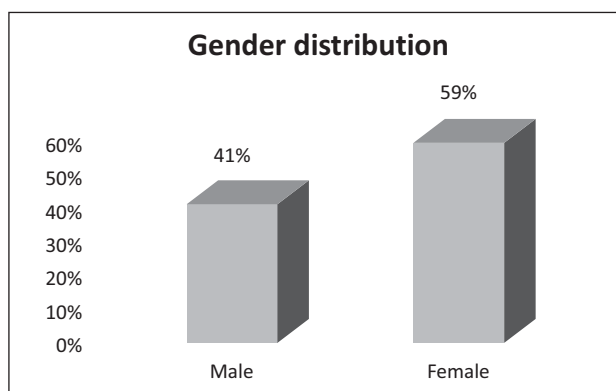
## Method

This descriptive type of retrospective study was carried out on referral patients from other specialties attended in the Department of Ophthalmology, CMCH from 1<sup>st</sup> July, 2020 to 30<sup>th</sup> June, 2021. Total 903 patients were included in this study using register records of referral patients in Ophthalmology department, CMCH. A structured data collection form was used to record: age, gender, department of referral and reason for referral. Direct referrals from other public or private hospitals or outpatient departments were excluded. Only patients admitted into CMCH under various departments were included in this study. Data collected from register records were exported as Microsoft Excel sheets from the data collection form, and statistical analysis was performed using the IBM SPSS-23.0 software. Variables were presented as numbers and percentages.

## Results

**Table I:** Age distribution (n=903) of the study subjects (n=903)

Age (in years)	Number of patients	Percentage (%)
0-10	315	34.9
11-20	153	16.9
21-30	112	12.4
31-40	113	12.5
41-50	101	11.2
51-60	71	7.9
>60	38	4.2
<b>Total</b>	<b>903</b>	<b>100</b>



**Figure I:** Gender distribution of the study subjects (n=903) (Male=370, Female=533)

**Table II:** Distribution of referral department among study group (n=903)

Referral department	Number of patients	Percentage (%)
Pediatrics	324	35.9
Neurosurgery	138	15.3
Medicine	126	14
Neurology	71	7.9
Orthopedics	49	5.4
Burn & Plastics	35	3.9
Endocrinology	34	3.8
Nephrology	34	3.8
ENT	23	2.5
Gynecology & Obstetrics	21	2.3
Surgery	10	1.1
Oral and Maxillofacial surgery	08	0.9
Dermatology and Venereology	07	0.8
Hematology	06	0.7
Physical Medicine	05	0.6
Cardiology	04	0.4
Psychiatry	04	0.4
Pediatric Surgery	04	0.4
<b>Total</b>	<b>903</b>	<b>100</b>

\*\*ENT: Ear, Nose and Throat

**Table III:** Distribution of causes of referral

Referral department	Number of patients	Percentage (%)
Fundus examination	415	46.0
Ocular trauma	204	22.6
Slit lamp examination	180	20.0
ROP screening	118	13.1
DR screening	102	11.3
Cranial nerve palsy	52	5.8
KF ring	38	4.2
Congenital anomaly	09	1.0
Proptosis	36	4.0
Drug induced toxicity	35	3.9
Orbital cellulitis	19	2.1
Headache	15	1.6
Management purposes	313	34.7

ROP: Retinopathy of prematurity; DR: Diabetic retinopathy; KF ring: Kayser-Fleischer ring

Note: Causes of referral were multiple for some patients.

## Discussion

In the present study, most of the referral patients' age groups were 1-10 years of age. The 45-64 years age group was highest referral found by Joshi.<sup>8</sup> That study was done in the outpatient department of a teaching hospital. However, our study was conducted on hospital-admitted patients only. In another study, mean age was 42.4±20.6 years.<sup>9</sup>

In this study, the referred patients usually were female (59%) with a male to female ratio of 1:1.5. Jafari et al.<sup>10</sup> found 75.6% of male patients. In another study, the majority of the patients that were referred were female (52.02%).<sup>8</sup>

The Paediatric department referred the most patients (35.9%), followed by the neurosurgery department (15.3%), and the medicine department (14%). Referrals of Paediatric department were usually from Neonatal Intensive Care Unit (NICU) and Paediatric Intensive Care Unit (PICU). The lowest referral was from department of Cardiology, Psychiatry and Paediatric surgery (0.4%). In a study conducted by Joshi et al.<sup>8</sup> the highest referral was from the medicine OPD (58.22%) and the lowest was from psychiatry (2.05%); which was similar to our study.

In the present study, maximum patients were referred for fundus examination (46%) followed by management purpose (34.7%). Fundus examinations were mostly for exclusion of papilledema. A significant number of referred patients were also referred for ocular trauma (22.6%) and slit lamp examination (20%). Head injury associated with ocular trauma was mostly referred from Neurosurgery department. Our result is similar to Joshi et al.<sup>8</sup> that the referral for fundus examination is highest (27.4%).

In CMCH, a huge number of patients were admitted daily, mostly in critical conditions. Referral is needed for diagnosis as well as management purposes of systemic diseases based on ocular findings. For this reason, this study was conducted to identify the pattern of referral to the Ophthalmology department, CMCH.

## Conclusion

Patients from other specialties often referred to the department of Ophthalmology mostly for fundus examination followed by slit lamp biomicroscopic examination as this expertise only perfect among ophthalmologists. These examinations are essential for complete diagnosis of systemic diseases as well as their management. In this study, maximum patients were referred from the department of pediatrics and mostly for fundus examination.

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## Disclosure

All the authors declared no competing interest.

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# Current Practice of Integrated Teaching Learning in Undergraduate Medical Education in Bangladesh: Teachers' Views

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## Abstract

**Background:** To promote in-depth learning there is a need to teach the students by correlating the various subjects to create interest and promote active learning which can be achieved by integrated teaching. It is one of the major reform in medical education.

**Objective:** The study was conducted to assess views of teachers about the current practice of integrated teaching learning in undergraduate medical education in Bangladesh.

**Method:** Teachers of randomly selected from eight medical colleges of Bangladesh were respondents of the study to seek information regarding current practice of integrated teaching learning in undergraduate medical education in Bangladesh. The study was conducted during the period, July 2018 to June 2019 using self-administered semi structured questionnaire and in-depth interview.

**Results:** Study revealed that 101 (72.6%) teachers were aware of existing integration of different subjects in each phase of the existing curriculum. Ninety two (66.1%) teachers responded that integrated sessions were conducted in large group sessions which matched with result of in-depth interview. Out of total respondent 63.4% teachers opined that all the departments always follow the curriculum for integrated teaching. About 92% of teachers opined that the students were highly benefited from the integrated teaching learning sessions. Insufficiency of infrastructure, allocated time for integrated teaching, teachers' training and inter-departmental co-ordination have been identified by respondents as major barriers for implementing integrated teaching learning.

**Conclusion:** Study recommended more awareness and training regarding integrated teaching learning for both teachers and students. Study also recommended choosing contents for integrated teaching which have much clinical importance and which have been taught repeatedly in different departments.

**Keywords:** Integrated Teaching Learning, Undergraduate Medical Education.

## Introduction

The medical curriculum is vast and students are expected to learn many subjects at the same time. The teachers are also involved in a number of activities apart from teaching like research, administrative, updating their knowledge etc. In doing so, teaching undergraduate medical students

frequently remains a separate academic department without integration to interrelate or unify subjects. Hence current medical education imparts knowledge in a disjointed manner and does not allow students to develop the skills to investigate, analyze and prepare to perceive the patient as a whole.<sup>1</sup> There is a need to teach the students by correlating the various subjects to develop interest and promote active learning. This can be achieved by teaching the same topic in sequential manner from different faculty members of different departments. Medical education all over the world recognizes that the integration in medical education is one of the major education reforms required.<sup>2</sup> Integration as defined by Harden is “the organization of teaching matter to interrelate or unify subjects frequently taught in separate academic courses or departments”.<sup>3</sup> Integrated curricula have been implemented in medical education in developed and developing countries. In their implementation of integration, most schools follow an organ system or an approach based on clinical conditions. However, improving and strengthening integration is always a challenge.<sup>4</sup> Since 2002, integration was introduced in curriculum to ensure the harmonious functioning of the educational processes. But the status of effective implementation of integrated teaching learning is yet not sorted out by any study. The aim of this study was to find out teachers' views regarding current practice of integrated teaching learning in undergraduate medical education in Bangladesh.

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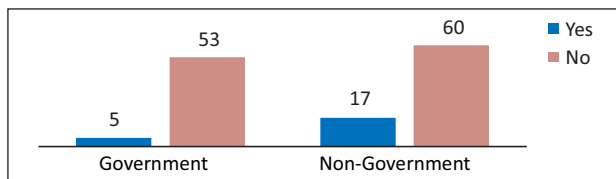
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### Method

It was a cross sectional descriptive study. Study period was from July 2018 to June 2019. The study places were four government and four non-government medical colleges of Bangladesh. Medical teachers of the selected medical colleges were the study population. Sample size was 139 medical teachers. A self-administered semi-structured questionnaire was prepared for data collection. Questionnaires was distributed amongst the teachers and after filling those were collected. In-depth interview schedule was used to collect data from the teachers to gain the insight about the present status of integration in undergraduate medical education.

Medical colleges and teachers were selected conveniently. After collection, data were checked and then entered into the software of the computer for analysis. SPSS program (IBM SPSS statistics 19) was used for data analysis. Likert scale was used to measure responses.

### Results



**Figure 1:** Distribution of teachers by their getting training in Integrated teaching and type of Institution

Figure 1 Multiple bar diagram shows that out of 139 teachers, 5 teachers from Government medical colleges and 17 from Non-government medical colleges had got training in integrated teaching learning, the remaining respondents didn't get any sorts of training

**Table 1:** Distribution of the respondents regarding content and allocated time for integrated teaching learning sessions in different subjects in different phases

Statement related to contents and allocated time for integrated teaching learning sessions in different subjects in different phases	Level of agreement with corresponding scores					Total f (%)
	SDA f (%)	DA f (%)	NAND f (%)	A f (%)	SA f (%)	
I am strongly aware of existing integration in each phases of the existing curriculum.	2 (1.4)	16 (11.5)	20 (14.4)	90 (64.7)	11 (7.9)	139 (100)
I am strongly aware of contents of my subject for integration.	0 (0)	11 (7.9)	18 (12.9)	93 (66.9)	17 (12.2)	139 (100)
I am strongly aware of allocated time for integrated teaching learning sessions	0 (0)	11 (7.9)	34 (24.5)	62 (44.6)	32 (23)	139 (100)

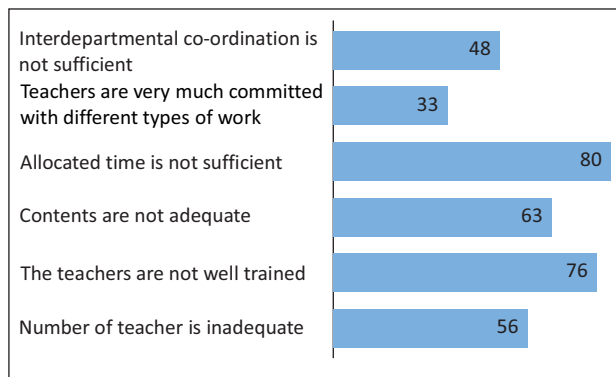
Table 1 shows out of 139 teachers 90 (64.7%) agreed and 11(7.9%) strongly agreed that they were aware of existing integration in each phases of the existing curriculum, 93(66.9%) agreed and 17 (12.2%) strongly agreed that they were aware of contents of their subjects integrated teaching.

**Table 2:** Distribution of the respondents regarding the extent of practice of integrated teaching learning in undergraduate medical education

Statements related to teaching learning issues	Level of agreement with corresponding scores					Total f (%)
	SDA f (%)	DA f (%)	NAND f (%)	A f (%)	SA f (%)	
I have conducted the integrated session according to the curriculum	1 (0.7)	20 (14.4)	19 (13.7)	88 (63.3)	11 (7.9)	139 (100)
Integrated sessions are always conducted in large group sessions	5 (3.6)	26 (18.7)	16 (11.5)	69 (49.6)	23 (16.5)	139 (100)
Integrated sessions are always conducted in small group sessions	1 (0.7)	15 (10.8)	32 (23.0)	67 (48.2)	24 (17.3)	139 (100)
All the concerned department remain present during conducting integrated teaching learning session.	4 (2.9)	18 (12.9)	29 (20.9)	61 (43.9)	27 (19.4)	139 (100)
Students actively participate in the integrated teaching learning session.	3 (2.2)	7 (5.0)	33 (23.7)	61 (43.9)	35 (25.2)	139 (100)
I think students are highly benefited from the integrated sessions	2 (1.4)	0 (0)	9 (6.5)	91 (65.5)	37 (26.6)	139 (100)
Teachers are highly prepared for the integrated teaching learning sessions	4 (2.9)	18 (12.9)	29 (20.9)	63 (45.3)	25 (18.0)	139 (100)

Table 2 shows out of 139 teachers 88 (63.3%) agreed and 11 (7.9%) strongly agreed that they had conducted the integrated session according to the curriculum, 69 (49.6%) agreed and 23(16.5%) strongly agreed that integrated sessions were conducted in large group sessions, 91 (65.5%) agreed and 37(26.6%) strongly agreed that students were highly benefited from the integrated sessions.





\* Multiple Response

Figure 2 Distribution of the respondent regarding barriers of integrated teaching learning in undergraduate medical education

### Result of In-depth interview:

Almost all the teachers passed comment that contents for integration in existing curriculum should be modified. One professor told that “Contents should be chosen by giving emphasis on applied aspects.” All of them told that the integrated sessions that taking place in different medical colleges rarely follow the curriculum and methodology of integration. The sessions are mainly disease based presentation which are conducted by students in large group sessions which must be conducted by teachers through appropriate methods. Teachers were not always prepared for integrated teaching learning sessions. As sessions were only presentation based, there were less interaction between teachers and students. All teachers are not interested in integrated teaching learning and as these sessions had no impact on assessment, students are not eager to participate actively in these sessions. All the teachers agreed that the main barrier to implement integrated teaching learning is teachers are not aware about integration, so that they are not much interested to conduct integrated session. One of professor said “*Teacher should know about the integration ladder.*” About 25% said that subject distribution in 2<sup>nd</sup> and 3<sup>rd</sup> phase hamper integration. All of them told that interdepartmental co-ordination is not sufficient. All of them recommended for more training on integrated teaching for the teachers, administrative initiative as well as initiative from the teachers for better practice of integrated teaching in undergraduate medical education in Bangladesh.

### Discussion

Curriculum integration is an approach of teaching and learning that is based on both philosophical and practical issues. It can generally be defined as an approach that draws together knowledge, skills, attitudes and values within or across subject areas to develop a more powerful understanding of key ideas. Curriculum integration occurs when components of the curriculum are connected and related in meaningful ways by both the students and teachers.<sup>5</sup> Integration has successfully been implemented

in many medical schools with the evidence of better learning outcomes in medical students.<sup>6</sup>

In this study, it was found that about 75% teachers were aware of existing integration of different subjects in each phases of the existing MBBS curriculum (Table 1). In-depth interview revealed maximum experienced teachers were aware of integrated teaching in existing undergraduate medical curriculum.

About 70-80% teachers stated that they were aware about the contents and allocated time for integrated teaching learning sessions in different subjects in different phases in existing undergraduate medical curriculum (Table 1) According to in-depth interview most of the teachers viewed that contents for integration in existing curriculum should be modified and one professor told that “*Contents should be chosen by giving emphasis on applied aspects.*” So, contents for integrated teaching learning in different subjects should be chosen which have much clinical importance and which have been taught repeatedly in different departments.

More than 60% teachers (Table 2) opined that all teachers of the concerned department should remain present during conducting integrated teaching learning sessions. Another study revealed that more than 85% faculty members responded in favour of the statement that all topics must be taught collaboratively by multiple teachers of different departments.<sup>7</sup>

In this study, more than 90% teachers opined that students were highly benefited from the integrated sessions (Table 2). The learning by integrated teaching had potential to improve the knowledge, skills and comprehensive learning. The students found it exhaustive if the planning and implication of integrated teaching are not done properly. It may lead to better learning outcomes if sessions are properly planned and implemented. This might be useful to improve their critical reasoning skills and to be a better-qualified health professional.<sup>8</sup>

Around 80% teachers' responded that the allocated time was not sufficient, more than 76% opined that the teachers were not well trained, 48% teachers responded that interdepartmental co-ordination was not sufficient (Table 2). Similar result was found from in depth interview. Same type of result was also found in study which showed that 39% faculty perceived that it is too difficult to coordinate amongst different departments; even intra-departmental coordination was equally difficult.<sup>9</sup>

### Conclusion

The participants in the study responded spontaneously towards different issues related to current practice of integrated teaching. Most important thing is that the study could raise the awareness about integrated teaching learning. Integrated teaching could be more effective if teachers were well trained and with more students'

participation. Issues like teachers' training and establishment of active medical education unit in every medical college might be considered for proper implementation of integrated teaching learning. It may bring much promise for raising students, who will be able to apply their knowledge to serve the community.

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# Rapid Detection of Hepatitis B Virus (HBV) DNA by Loop Mediated Isothermal Amplification (LAMP)

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## Abstract

**Background:** Nucleic acid amplification test (NAT) is one of the most useful tools in clinical medicine. The development of molecular methods for HBV DNA detection is clinically valuable for monitoring the progress of the disease while patient are on or off of anti-viral therapy and detecting early treatment failure. It is thus necessary to develop a rapid, precise diagnostic device to enable earlier treatment and better patient care. The Loop mediated isothermal amplification (LAMP) test is a good alternative of Real time PCR (qPCR) because of its simplicity, rapidity, high specificity and low cost. LAMP procedure is very simple and rapid where in the amplification was completed in less than 1 hour under isothermal conditions.

**Method:** In this study LAMP assay for detection of HBV DNA was developed and optimized. To observe its effectiveness, a total of 100 plasma samples were studied for the rapid detection of HBV DNA by LAMP method with different stages of HBV infection.

**Results:** Among the samples, 56 (56%) were positive for HBV DNA by LAMP assay, within which 45 samples were positive and 11 were negative for HBV DNA in commercial qPCR. The sensitivities and specificities of LAMP assay was observed 100% and 80% respectively considering qPCR as gold standard. The result of LAMP assay was same when the assay was performed in heating block and conventional thermal cycler.

**Conclusion:** Comparatively higher sensitivity and lower reaction time make LAMP an attractive option for field diagnosis. This unique and portable detection method has the potential for use in point-of-care settings for blood screening and patient follow-up, mainly in resource-limited environments for HBV diagnostics and therapeutic monitoring.

**Keywords:** LAMP assay, HBV DNA, NAT, POC

## Introduction

Hepatitis B virus (HBV) is one of the most common viral pathogens in the world. It has infected more than two billion people worldwide. An estimated four million people have chronic HBV, an infection which shows strong correlations to cases of hepatocellular carcinoma (HCC) and cirrhosis.<sup>1</sup> Bangladesh is in the intermediate prevalence region for HBV infection, having the lifetime risk of acquiring HBV between 20-60%. HBV is responsible for 31.25% of acute hepatitis, 76.3% chronic hepatitis, 61.15% liver cirrhosis and 33.3% hepatocellular carcinoma in previous studies of

Bangladesh.<sup>2</sup> Presently, diagnosis and monitoring of HBV infections are based on traditional serologic methods that target viral antigens and antibodies. It is thus necessary to develop a rapid, precise diagnostic device so as to enable earlier treatment and better patient care.<sup>3</sup>

Molecular detection methods based on isolation and amplification of nucleic acid such as PCR, isothermal amplification and hybridization can detect infection at early stages. Although it has advantages, each method has some problems like PCR needs improved instrument<sup>4</sup>.

Loop-mediated isothermal amplification (LAMP) was first introduced in 2000, and it has been successfully used for the detection of many pathogens. A heating block or water bath is necessary only for LAMP assay which can maintain constant temperature between 60° to 65°C. Here nucleic acid amplification reaction is performed at a single constant temperature. This reaction is done without template DNA denaturation and using the polymerase with 6 primers known as FIP, BIP, F3, B3, LF and LB.<sup>4</sup>

For in-field screening, it has become the preferred method<sup>5</sup> because of its isothermal condition, amplification efficiency and specificity. It has a higher DNA yield rate (10 g/25 l) than traditional PCR (0.2 g/25 l). In addition, it has been demonstrated to have resistance to inhibitors in the blood (e.g., heme) because *Bacillus stearothermophilus* (Bst) DNA polymerase is used in the reaction.<sup>5</sup>

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It has been described for the detection of HBV<sup>6</sup>, Dengue virus<sup>7</sup>, Mycobacterium tuberculosis<sup>8</sup>, severe acute respiratory syndrome virus<sup>9</sup>, human influenza viruses<sup>10</sup>, avian influenza viruses<sup>11</sup> and herpes viruses.<sup>12</sup>

The present study was aimed to develop a rapid method based on LAMP to detect HBV DNA in plasma and to compare sensitivity, specificity with currently available qPCR.

## Method

### Sampling:

The study was conducted from April 2016 to January 2017 and samples were collected from Department of Virology, BSMMU & laboratory studies were carried out at the same place. 100 HBV positive patients categorized into five different groups (Group 1- Group 5) having 20 samples in each group for assay development and evaluation. Groups were; group 1 HBsAg +ve, HBeAg +ve, HBV DNA+ve, group 2 HBsAg +ve, HBeAg +ve, HBV DNA-ve, group 3 HBsAg +ve, HBeAg -ve, HBV DNA+ve, group 4 HBsAg +ve, HBeAg -ve, HBV DNA-ve and group 5 HBsAg -ve, Anti HBc (Total) +ve. Plasma was processed and stored in -20°C till tested.

### HBV DNA detection by real time PCR (qPCR):

QIAamp Viral DNA Mini Kit (QIAGEN, Valencia, CA, USA) was used for isolation of HBV DNA. Real time PCR was performed according to the manufacturer's instructions using Genebio kit, USA.

### LAMP Primer set:

Primers were designed manually based on the alignment of HBV genomic sequences from different genotypes. The primer FIP consisted of F1c (the complementary sequence of F1) and F2: 5-CTCCCGATACAGAGC(A/T)GAGG-TTGCCTTCTG ACTTCTTTCC-3. The primer BIP consisted of B1c (the complementary sequence of B1) and B2: 5

TTGTTACCTCACCATAC(A/G)GCATGGGTCTTCC AAATTA CT(A/T)CC-3. The outer primers F3 and B3 were 5-CTTCTGTGGAGTTACTCTCTT-3 and 5-GTGACTACTAATCCCTGG-3, respectively, which jointly functioned as the starter of the LAMP reaction. The loop primers were Loop F: 5-GGTGTTCGAGGAGAT CTCGAA(C/T)A-3, and Loop B: 5-TCTGTGT TGGGTGAGTTGA-3, which together supplied the additional synthesis sites to accelerate the reaction.

### LAMP reaction:

Our in-house LAMP assay was optimized in a total volume of 25 µl, containing 20 mM Tris-HCl, 10 mM KCl, 10 mM (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 1 M betaine (Sigma-Aldrich), 0.1% Triton X-100, 1.6 mM each of FIP and BIP, 0.2 mM each of F3 and B3, 0.8 mM each of Loop F and Loop B, 400 M dNTPs, 4

mM MgSO<sub>4</sub>, 8U Bst DNA polymerase (New England Biolabs, Beverly, MA). After initial heat-denaturation of the target DNA at 95°C for 5 minutes, and at 100°C for 5 minutes, mixture was centrifuged at 12000 rpm for 10 minutes. Around 10-15 µl supernatant was collected and later on 5µL template used for LAMP assay. The reaction was carried out at the optimal temperature of 63°C for 60 min, and terminated by heat inactivation of the enzyme at 80° C for 2 min. The reaction was performed in a (i) conventional thermal cycler (Nyx technik,USA) and also in (ii) heating block (Thermo scientific, USA). The product was electrophoresed in 2% agarose gel (0.5X TBE) stained with Ethidium Bromide.

### Optimization of the LAMP assays conditions:

An evaluation of the effects of different concentrations of MgSO<sub>4</sub> (5.25, 5.5, 5.75 and 6 mM), *Bst* enzyme (6U & 8U) and the ratio of outer and inner primers (1:2, 1:4, 1:6) was carried out to optimize the LAMP reaction. The final parameters for the reaction were: 6 mM of Mg<sup>2+</sup>, 4:1 ratio of inner and outer primers and 8.0 U of *Bst* polymerase per reaction were used.

### LAMP sensitivity and specificity:

During LAMP procedure, the same primers and reagents are used in two different equipment's to perform LAMP reaction such as heating block, and conventional thermal cycler. However, LAMP assay showed similar sensitivity and gave same results in all the equipment's.

To observe the analytical specificity, other viral nucleic acids were run together and no other viral nucleic acids were detected in HBV LAMP assay.

### Statistical analysis:

Data were analyzed by SPSS version 20, USA. Sensitivity, specificity and positive and negative predictive values of LAMP was determined using qPCR as the gold standard for diagnosis of HBV. The relative sensitivity and specificity of the tests were determined as follows (TP is True Positive, TN represents True Negative, FN is False negative and FP is False Positive). A: Sensitivity=TP/(TP+FN) ×100; B: Specificity=TN/(TN+FP)×100, C: Positive predictive value=TP/(TP+FP)×100, D: Negative predictive value=TN/(TN+FN)×100. The degree of agreement between two tests was determined by Cohen's kappa coefficient ( $\kappa$ ) values with 95% confidence intervals and expressed as k value. Kappa values express the agreement between two tests i.e. LAMP and qPCR result. k value interpreted as follows <0.20= poor, 0.21-0.40= fair, 0.41-.60= moderate, 0.61-0.80= good and 0.81-1.00= indicates a very good agreement.<sup>14</sup>

## Results

The Electrophoresis of the LAMP products showed typical ladder pattern after agarose gel electrophoresis (Figure 1). Among these samples, 56 (56%) were positive and the rest of samples were negative for HBV DNA by LAMP assay.

Within these 56 positive samples, 45 samples were positive and 11 were negative for HBV DNA in commercial qPCR (Table 1 and 2). To observe the analytical specificity, other viral nucleic acids were run together and no other viral nucleic acids were detected in HBV LAMP assay (Figure 2). To observe the analytical sensitivity, we performed LAMP assay on two equipment's and all the samples were positive for HBV DNA (Table 3).

## Discussion

The prevalence of HBV infection in underprivileged communities and regions of the world has generated heightened concerns in healthcare facilities worldwide. ELISA and PCR are performed now which are time consuming, expensive; require skilled personnel and elaborate equipments<sup>13</sup>. Therefore, there is a need for a rapid and cost-effective detection tool to detect HBV infection, disease prognosis and anti-viral therapy monitoring in endemic as well as resource-limited settings. Our Previous study proved that the qPCR was able to detect 9.16% potential OBI cases, whereas LAMP assay identified HBV-DNA in 35.83% case among 200 cases.<sup>15</sup> So the present study was aimed to develop and optimize LAMP assay for rapid detection of HBV DNA from human plasma and to compare the effectiveness with qPCR for detection of HBV.

Initially optimization for LAMP assay was done for three factors i.e Mg<sup>2+</sup> concentration, inner vs. outer primer ratio and *Bst* DNA polymerase amount. After several experiments, HBV LAMP was optimized at 6 mM concentration of Mg<sup>2+</sup>, the ratio of inner vs. outer primer was 4:1 and amount of *Bst* DNA polymerase was 8.0 U. After optimization all these, LAMP assay was performed. Among 100 samples, 56 (56%) were positive and the rest of samples were negative for HBV DNA by LAMP assay. Within these 56 positive samples, 45 samples were positive and 11 were negative for HBV DNA in commercial qPCR. So LAMP assay detect 11 more samples than qPCR. To observe the analytical specificity, other viral nucleic acids were run together and no other viral nucleic acids e.g HIV, HCV and BK virus were detected in HBV LAMP assay.

Considering real time PCR as gold standard, the relative sensitivity and specificity of LAMP assay for HBV DNA was 100% and 80% respectively. The sensitivity and specificity showed >90% in case of Porcine circo virus<sup>16</sup>, *Plasmodium falciparum*<sup>17</sup>, *Neisseria meningitidis*.<sup>18</sup>

The HBV DNA viral load of the 45 qPCR positive samples was ranged between 10<sup>2</sup>-10<sup>9</sup> IU/ml. This commercial qPCR kit is able to detect HBV DNA viral load >10<sup>2</sup> IU/ml. Therefore 11 samples remained undetected in qPCR but detected in LAMP assay which indicates high sensitivity of HBV LAMP assay when the HBV DNA quantity is <10<sup>2</sup> IU/ml. LAMP is highly sensitive & able to detect DNA at as few as 6 copies in the reaction mixture.<sup>19</sup> Comparing with qPCR, a good agreement was observed between these two tests (k value= 0.78, 78%; p value <0.001) which indicate

that the LAMP assay can be an alternative of qPCR (Table 1).

Our assay could not be monitored via assessment of turbidity, as there was no visible turbidity after the reaction. The same thing also happened in case of detection of capripox viruses by Das *et al.*, 2011.

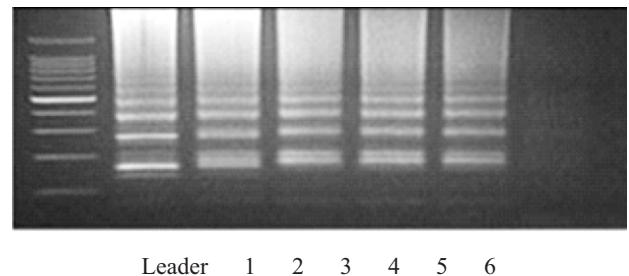
In addition to establish a molecular test in peripheral settings like POCs, avoiding nucleic acid isolation steps is preferred. Thus in present study plasma sample collected from HBV infected individuals were heat treated and subjected to LAMP assay following the protocol of Nyan *et al* (2014) where traditional DNA isolation step was avoided. For establishment of POC testing, heating block is good. All these 56 samples, positive in both conventional thermal cyclers and in heating block. So detection ability of all equipment's was same.

Prevention of HBV infection is a major concern in HBV endemic countries. Bangladesh as an intermediate endemic country, needs to set up molecular techniques in POC, and fields to establish diagnosis of HBV. Henceforth, this assay can be used for blood screening and detection of HBV infection in highly endemic populations and for therapeutic monitoring of patients undergoing antiviral treatment for HBV in resource-limited settings.

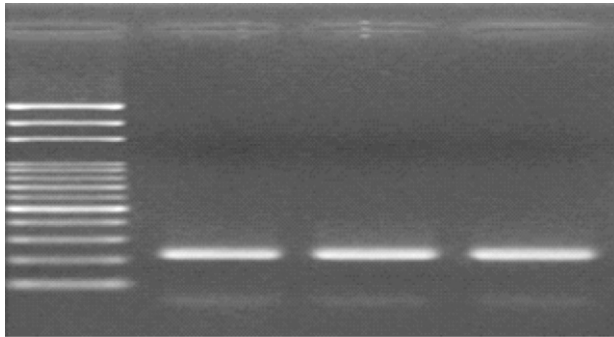
## Conclusion

With respect to this result and comparing PCR with LAMP can be stated that LAMP technique in spite of simplicity and not needing to improved instruments has higher sensitivity over PCR and could be a proper replacement for it in future. LAMP test is a rapid, sensitive and specific method and also low cost for diagnosis of HBV DNA. As this assay can detect OBI, it has immense potential to become a tangible tool at POC for diagnosis of HBV and treatment monitoring in healthcare.

## Figure Legend:



**Figure 1:** LAMP assay in heating block and detection by agarose gel electrophoresis (showing typical ladder pattern of HBV DNA; Lane M: 3000-100 bp ladder marker, lane 1-5: HBV DNA positive sample, lane 6: Negative control).



Leader Lane 1 Lane 2 Lane 3

**Figure 2:** Analytical specificity of HBV LAMP assay. Lane M-3000-100 bp ladder marker; lanes 1-3 represent HIV, HCV and BK virus respectively.

**Table 1:** Agreement between LAMP assay and qPCR for detection of HBV DNA. Sensitivity, specificity, Positive predictive values (PPV) and Negative predictive values (NPV) of LAMP.

LAMP assay	Real time PCR		Total N= 100	Kappa value*
	Detected	Undetected		
Detected	45	11	56	0.783
Undetected	0	44	44	
Total	45	55	100	
*P < 0.001				
Sensitivity 100%			PPV 80.4%	
Specificity 80%			NPV 100%	

(k value <0.20= poor, 0.21-0.40= fair, 0.41-.60= moderate, 0.61-0.80= good and 0.81-1.00= indicates a very good agreement)

**Table 2:** Comparison of HBV DNA detection between qPCR and LAMP among different study groups.

Groups	Criteria		Results	
	HBsAg	HBeAg	qPCR	LAMP
<b>Group I</b> N=20	Positive	Positive	20 Positive	20 Positive
<b>Group II</b> N=20	Positive	Positive	20 Negative	4 Positive 16 Negative
<b>Group III</b> N=20	Positive	Negative	20 Positive	20 Positive
<b>Group IV</b> N=20	Positive	Negative	20 Negative	20 Negative
<b>Group V</b> N=20	HBsAg Negative Anti HBc (Total) Positive		5 Positive 15 Negative	12 Positive 8 Negative

**Table 3:** Sensitivity of two instruments

LAMP Assay	Total Samples	HBV DNA positive Samples	Samples other than HBV
1) LAMP assay in Conventional Thermal cycler followed by agarose gel electrophoresis	100	56	0
2) LAMP assay in Heating Block followed by agarose gel electrophoresis	100	56	0

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# Blended Learning (BL) in Medical Education in Bangladesh: a New Journey with an Innovative Approach

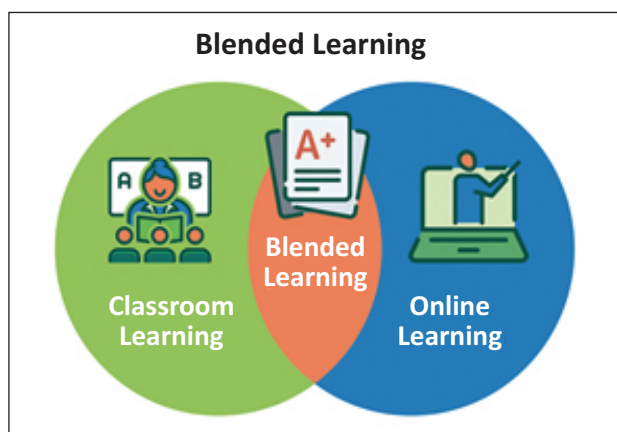
Talukder HK<sup>1</sup>, Sobhan SS<sup>2</sup>, Talukder MAS<sup>3</sup>

“Blended learning is an approach to learning that combines face to face and online learning experiences. Each complement other.<sup>1</sup>

Blended learning is a combination of different delivery media or instructional methods, including face-to-face and online, virtual, or digital learning. Physical and virtual interfaces must complement each other for teaching and learning (Singh, 2021; Tayebnik & Puteh, 2013).<sup>2</sup>

Blended learning is the practice of using both online and in-person learning experiences when teaching students. It is also called hybrid learning and mixed-mode learning<sup>3</sup>.

Blended Learning is an integrated approach to teaching and learning that includes multiple mode of instruction and learner's practice<sup>4</sup>.



## Aims of Blended Learning

- Blended learning ideally empowers both teachers and students to improve learning outcomes.

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- Blended learning allows teachers to spend less time giving whole-class lessons, and more time meeting with students individually or in small groups.
- Blended learning allows institute to teach more students more efficiently at a lower cost

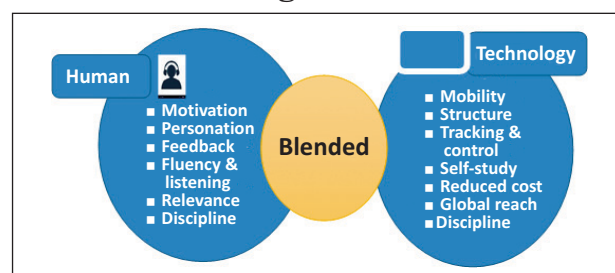
## Importance of Blended Learning<sup>4</sup>

- Improves ability to personalize learning.
- Potential for individual progress
- Keeps learners engaged with use of variety of content type
- Instructor has the ability to assess learner trends and act accordingly.

## Disadvantages of Blended Learning<sup>5</sup>

- Access to resources- A blended learning model often requires students to utilise technology outside of the classroom
- Supporting individual learners-- There is no catch-all approach to education
- A lack of direct contact
- Abuse/inappropriate use of blended learning

## Blended Learning<sup>4</sup>



## Challenges in Implementing Blended Learning<sup>4</sup>

- Management buy-in
- Managing and monitoring participant progress.
- Learners do not taking training itself seriously
- Resisting the urge to use technology by learners
- Looking at how to tech, not just WHAT to teach.
- Inadequate time, management skills
- Problems with accepting responsibility for personal learning
- Difficulty with more sophisticated technologies

## Challenges of implementing Blended Learning in medical education

Each type of education has three domains such as knowledge, skill and attitude. Knowledge can be taught smoothly in blended learning more than skill & attitude. Even in assessment of students' knowledge domain can be assessed in larger scale smoothly in blended way than those of skills and attitude.

## Journey of Blended Learning in Bangladesh<sup>6</sup>

On July 1, 2021, the ministry of Education organized its first virtual meeting to propose and discuss work that needs to happen to establish a blended education ecosystem in Bangladesh.

On 17 August, 2021, under the leadership of the Ministry of Education, the conception of a Blended Education Master plan was introduced during a virtual meeting and an interministerial blended education National Taskforce was formed which consisted of the Ministry of Education, the Ministry of Primary and Mass Education, Health & Family Welfare Division of Ministry of Health & Family Welfare, the Ministry of Post and Telecommunication, the ministry of planning and the information and communications technology division. This also included the formation of following seven subcommittees-

1. Pre-primary, Primary and non-formal education
2. Secondary education
3. Higher Education
4. Madrasah Education
5. Technical Education
6. Medical Education
7. Research & Development

The sub-committees were provided terms of reference (TOR) and associated guidelines, so that they can go about planning for the master plan, based on their particular sector. Each of the first six sub-committees were also divided into five working groups, based on the key elements;

Honorable Secretary, Health Education and Family Welfare Division, Ministry of Health & Family Welfare is the Chairperson & Director General, Directorate General of Medical Education (DGME) is the member secretary of medical education subcommittee with other concerned members.

A meeting of Medical Education Sub-committee on blended learning was held at the ministry presided by honorable Secretary, Health Education and Family Welfare Division, Ministry of Health & Family Welfare.

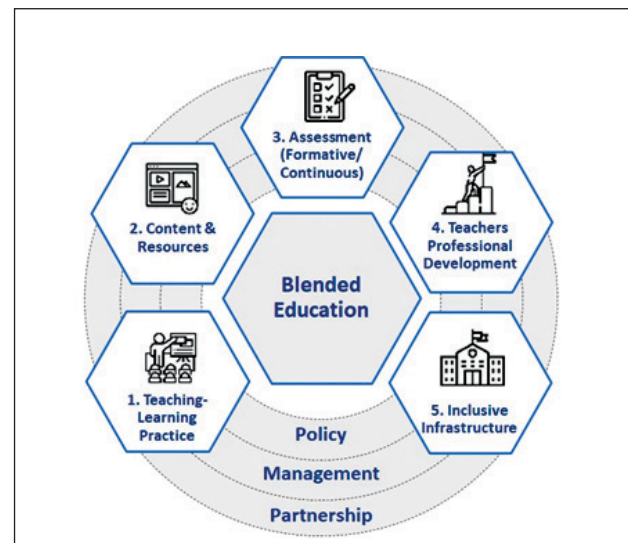
On the basis of the recommendation of the above meeting a Technical Committee on blended learning to work for medical education subcommittee was formed with

Director, CME as Chairperson and Professor, curriculum development and evaluation, as member secretary with other concerned members approved by the ministry.

Medical education subcommittee & technical committee members participated in the different online & offline meetings & workshop of National Task Force. As per the guidelines of those meetings and workshops a plan for medical education was developed and submitted tools National Taskforce as a part of the master plan on blended learning which was submitted to Honorable Prime Minister, Government of the People's Republic of Bangladesh.

To formulate the plan on blended education the following five key elements are addressed.<sup>6</sup>

1. Teaching- Learning Practices, which aim to prepare learners for the future with 21<sup>st</sup> century problem-solving skills through synchronous and asynchronous interaction.
2. Education Content and Resources, which are accessible, affordable, reusable, interactive and personalized educational content and resources for all
3. Assessment, continuous/formative and summative among which formative assessments are real-time and performances-based through the use of artificial intelligence tools.
4. Teacher Professional Development, which is blended, personalized and continuous
5. Inclusive infrastructure, which includes ensuring open, accessible, and inclusive physical and virtual learning spaces for all, including systems for connectivity, electricity, bandwidth and devices such that learners and teachers have access to these learning spaces



**In addition to these key elements, there are three enabling factors<sup>6</sup>:**

1. Policy, which should be comprehensive and practitioner-driven. This includes this master plan as well

2. Management, which include real-time and data-driver progress tracking and guidance
3. Partnerships, which include public-private-people partnership, as no one entity will be able to execute this master plan alone

Technical committee in consultation with Medical Education subcommittee on blended learning formed the following five working groups<sup>7</sup> -

1. Undergraduate medical education (MBBS)
2. Undergraduate Dental Education (BDS)
3. Alternative medicine education
4. Nursing and midwifery education
5. Allied health professionals (IHT & MATS) education

For postgraduate education concerned universities, bodies & authorities will take the essential steps.

Under the guidance of the medical education subcommittee with the supervision and collaboration of Technical working group each of the five working group developed their plans on blended learning for the year 2023, 2027, 2030 with the vision of 2041.

## Issues for Blended Learning in Medical Education in Bangladesh

- Identification of contents for teaching & assessment with appropriate time allocation
- Developing and making available of resource materials for blended learning
- Orientation of teachers & students on blended learning
- Institutional set up, connectivity & readiness for blended learning- at central & peripheral level
- Financial & logistic support for blended learning
- Endorsement, governance & monitoring through concerned regulatory bodies

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# Community Based Medical Education: An Approach of Gonoshasthaya Samaj Vittik Medical College in Undergraduate Medical Study

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## Abstract

**Background:** Community based medical education is a learning strategy where students learn professional competencies in a community setting. This programme brings the students to different classes of community people. This study aims to provide an overview of community based medical education of Gonoshasthaya Samaj Vittik Medical College.

**Methods:** In this study, data were collected from past day's CBME programme, profile books of Gonoshasthaya Kendra and Gonoshasthaya Samaj Vittik Medical College and also explored by the authors. The programme is held at the rural health centres of Gonoshasthaya Kendra among the populations of catchment areas.

**Features of Community Based Medical Education of Gonoshasthaya Samaj Vittik Medical College (GSVMC):** Gonoshasthaya Samaj Vittik Medical College implements a structured four month long community based medical education that takes place with equal duration in four phases of the MBBS course. By staying in the rural health centres, the students go to the community with paramedics and faculty. They observe paramedics' works, do epidemiological field survey and residential field site training. In the final phase, students are accompanied by clinical doctors and are mostly oriented to clinical learning. The students also stay a day with a village family. There they participate in household works, cooperate in cooking and eat with them whatever is cooked. Every student is assigned to 10 families to build a friendly relationship with them. Besides, the students learn through elderly health care, MCH care, attending school health programme, meeting with freedom fighters, meeting with TBAs/SBAs and visiting local government-run hospitals and community clinics. The health problems those are observed in day time are discussed in the classroom at evening.

**Conclusion:** The community based medical education programme of Gonoshasthaya Samaj Vittik Medical College has been implemented systematically from its beginning. The programme brings the students closer to the community people. The upcoming doctors learn the better understanding of the health needs and priorities of the community.

**Keywords:** Community based medical education, Gonoshasthaya Kendra, Gonoshasthaya Samaj Vittik Medical College, Undergraduate medical study.

## Introduction

The traditional model of medical education is entirely classroom-based and teaching hospitals oriented education.

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In Community Based Medical Education (CBME), students learn professional competencies in a community setting that prepare the medical graduates for providing patient care in local communities.<sup>1</sup> The Community Based Learning (CBL) Working Group at Johns Hopkins University states that "It is a pedagogical model that connects classroom-based work with meaningful community involvement and exchange".<sup>2</sup> World Health Organization described CBME as a means of implementing a community-oriented medical education programme which consists of learning activities that take place within the community where not only students but also teachers, members of the community and representatives of other sectors are actively engaged throughout the educational experience.<sup>3</sup>

The World Health Assembly held in 1978 at Alma Ata (now Almaty) proclaimed Primary Health Care (PHC) as way to achieve Health For All (HFA).<sup>4</sup> To achieve this goal, one of the strategies was to foster the educational program for health care providers to make them responsive to the needs of populations they serve.<sup>2</sup> In 1979, a group of medical schools those were already reforming their curricula towards community needs, were trying to be more socially relevant

and created a network, named “Towards Unity for Health (TUFH)”. In the founding meeting of TUFH in Kingston of Jamaica, the term Community Based Medical Education (CBME) was officiated.<sup>5</sup>

In CBME activities, the community is used as a learning environment where medical students, faculty members and community people participate actively throughout the educational processes in providing medical education that is relevant to community needs.<sup>6</sup> CBME allows students to experience a more personal relationship with patients, to recognize the importance of treating people instead of a disease and in addition can show how the social environment has a significant impact on health and healthcare.<sup>7</sup> The community-orientated programme offers a broader range of learning opportunities for students to acquire knowledge, skills and attitudes as well as promoting a more patient-orientated perspective.<sup>8</sup> Even though, medical schools aimed to improve the health of the community, they did not routinely involve community members in the identification of local health priorities.<sup>9</sup> Six medical schools from Bangladesh, Brazil, Egypt, India, Pakistan and South Africa already started CBME.<sup>2</sup> Some medical schools of Thailand, Malaysia and Iran also started community based medical education.<sup>10-12</sup> Consequently, the programme is becoming popular.<sup>13</sup> The general objective of this case study is to provide an overview of community based medical education (CBME) of Gonoshasthaya Samaj Vittik Medical College (GSVMC).

## Method

In this case study, data were collected from the past day's CBME programme of GSVMC. Data were also collected by reviewing Gonoshasthaya Kendra (GK) and GSVMC's profile book. The characteristics of CBME were also explored by the authors of this study who have been working for a long time in this medical college and actively participated in this programme. The CBME of GSVMC is held at the rural health centres of Gonoshasthaya Kendra among the population of catchment areas.

## Case Study: Community Based Medical Education of GSVMC

Intending to implement CBME, medical students go to the community with respective faculty members and local Gonoshasthaya Kendra paramedics. They interact with community people and learn at the community setting to transform medical education to be people oriented.<sup>14</sup> Bangladesh Medical & Dental Council (BM&DC) approved MBBS curriculum designed 30 days of CBME named as Residential Field Site Training (RFST). Following all mandates of BM&DC, GSVMC has extended the programme up to four months. Table 1 shows the duration of CBME in BM&DC approved MBBS curriculum and GSVMC.

**Table 1:** CBME in BM&DC approved MBBS curriculum and GSVMC

Phase	BM&DC approved MBBS curriculum	GSVMC
1 <sup>st</sup> phase	Nil	30 days
2 <sup>nd</sup> phase	30 days	30 days
3 <sup>rd</sup> phase	Nil	30 days
4 <sup>th</sup> /Final phase	Nil	30 days

**Socio-demographic survey:** This is a field site epidemiological survey. Students conduct this survey in all phases of CBME. They go to the village in small groups. Local paramedics introduce them to the community people and they collect data on household details, maternal health, child health, family planning, morbidity, mortality, health seeking behavior etc. At the end, the students make a report of the survey and present the findings in presence of distinguished guests from government and non-government organizations and local leaders.

**Residential Field Site Training (RFST):** Out of 30 days CBME programme, BM&DC approved MBBS curriculum introduced 10 days of RFST in the second phase of undergraduate study. The GSVMC has extended it up to 30 days. Under the direct supervision of the department of community medicine, the second phase students implement RFST. As part of the second professional examination, students prepare a report of the RFST study to face a practical examination of community medicine.

**Community based clinical learning:** The students of the final phase have to spend 30 days in the community. They are accompanied by clinical doctors. The CBME of this phase is mostly oriented to clinical learning. At day time, during visits to the schools and households in the village, they observe health problems as well as clinical cases. These health problems are discussed at the evening session.

**Staying a day in a village family:** One family is selected for two to three students. There they stay from morning to evening. The students know the health problems and treatment seeking behaviour of the family members. They also participate in household works, cooperate in cooking and eat with them whatever is cooked. In this programme, there are some extra family expenses for meals of the students. The proportionate cost of food is paid to the family in advance.

**A friendly relationship with 10 families:** In all phases of CBME programme, each student builds a friendly relationship with 10 families. During the field visit, students identify the families of different socio-economic status. They know about the health, education and food of the family members. They exchange family facts with them, they also exchange detailed address for future communication.

**Parallel works during community visits:** With local GK paramedics, small groups of students visit households of different socio-economic status, from destitute to rich families. There, they provide basic health care services to the vulnerable group of people. They cut the nails of elderly people, measure the pulse and blood pressure of pregnant women. They meet with local dignitaries, traditional birth attendants (TBAs)/skilled birth attendants (SBAs) and freedom fighters. They pay tribute to the grave of freedom fighters. They take part in antismoking health awareness programme. They learn cycling and swimming there. The students attend in school health programme and teach the school students to wash their hands, cut their nails and advise them to take care of their teeth properly.

## Discussion

**Gonoshasthaya Kendra (GK):** GK, the architect of the Gonoshasthaya Samaj Vittik Medical College came into being during the glorious Liberation War of Bangladesh in 1971.<sup>15</sup> Starting with two tents at Savar of Dhaka, GK has now extended its health care services at 647 villages throughout 43 rural health centres across the country.<sup>14, 15</sup> During CBME, students stay at the rural health centres of GK.

**Gonoshasthaya Samaj Vittik Medical College (GSVMC):** GSVMC is one of the oldest private medical colleges in Bangladesh. This medical college was approved in 1989 and after completing the necessary infrastructures, it started its academic journey from 1998.<sup>2,16</sup> At that time, it was affiliated with Gono Bishwabidyalay (University). This community based medical college is approved by the Ministry of Health and Family Welfare and Bangladesh Medical & Dental Council. The college is affiliated with the University of Dhaka from the session of 2019-2020.<sup>16</sup>

**Overview of CBME:** Following the curriculum and all the mandates of BM&DC, GSVMC designed its own course contents where the students need to be exposed to the village community.<sup>2</sup> GSVMC is the first and only medical college in Bangladesh to implement such a structured CBME programme.<sup>16</sup> The four month long CBME programme takes place in four phases of the MBBS course. One month in the first phase before starting first year class, one month in the second phase, one month in the third phase and one month in the final phase.<sup>16</sup> Each phase has specific objectives. BM&DC approved MBBS curriculum introduced 30 days CBME in undergraduate medical study that is run by the department of community medicine. Out of 30 days, 10 days RFST, 10 days study tour and 10 days for visiting different institutes or organization of public health importance.<sup>17</sup>

CBME programme of GSVMC started from its beginning. There is one week preparatory class before going to the community. Thereafter, students and teachers depart to the selected rural health centres of GK. Arriving at the destination, they are introduced to the GK paramedics and

local dignitaries. Students are divided into small groups. Seats are allocated for them. Every morning, they do agricultural works at the local GK premises. Afterwards, students visit the community with respective faculty members and GK paramedics. The paramedics introduce the students to the community people. At the community, they learn through socio-demographic surveys, residential field site training (RFST) studies and community based clinical learning. In the community with the help of paramedics, students provide elderly health care like measuring blood pressure, cutting nails, and combing hair. With the help of faculty, students also provide maternal and child health (MCH) care, do field site urine tests for albumin and give advice on alarming signs of pregnancy.

Students also stay a day in a village family. Local GK paramedics identify the families in the village. One family is selected for two to three students. They stay there from morning to evening. This day is completely for them. They listen to the stories of the struggle for survival, they observe it. Even for a day, the students become part of the battle of life. Besides, each student is assigned to 10 families of different socio-economic status. They make friendly relationships with the assigned families, they maintain this relationship for future communication. The students know household details like total family member, socio-economic status, occupation, education, nutrition, food habit, lifestyle, sanitation, source of water, treatment seeking behavior and treatment cost.

In an attempt of global delivery of CBME, the Regional Office for the Eastern Mediterranean of WHO documented and shared some experiences from six medical schools/colleges: GSVMC of Bangladesh, Ribeirão Preto-University (Faculty of Medicine), of São Paulo (FMRP-USP) of Brazil, Suez Canal University (Faculty of Medicine) of Egypt, Christian Medical College (CMC) at Vellore of India, Aga Khan University in Karachi of Pakistan and Stellenbosch University (Faculty of Medicine and Health Sciences) of South Africa.<sup>2</sup> Sri Manakula Vinayagar Medical College and Hospital (SMVMCH) of India introduced a similar CBME programme in selected villages where students were divided into small groups and were allotted to families for CBME and the groups of students was supervised by trained tutors.<sup>18</sup> A study of Avalon University School of Medicine in the Caribbean found 84.6% of students believed community services enhanced their clinical skills and increased their confidence in communication skills.<sup>19</sup>

**Strength and challenges:** CBME brings the students closer to different classes of community people where they learn about social pluralism, social stratification and poverty. By CBME, future doctors discover a better understanding of the needs and priorities of the community. Almost all of the students come from towns and they had studied there. Majority of them had never lived in the village. Getting such of the students in the village is another big challenge. To organize an environment for the student's

learning in the community setting is also a challenge. The other big challenge is to have dedicated teachers who are willing to work in the community and also to learn from the community.

**Policy implications:** As the CBME programme brings the students closer to the community, the government, as well as the policy makers, can expand this programme in the undergraduate medical study to enhance the retention of medical doctors at the community level.

## Conclusion

GSVMC designed a structured four month long community based medical education programme. In an attempt of transforming medical education to be community oriented, the CBME programme has been implemented systematically from its beginning. It requires a new type of pedagogy to expand the strategy nationwide.

## Conflict of interest

The authors have no conflict of interest.

## Acknowledgment

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Ensure that the following items are present:

- One author has been designated as the corresponding author with contact details:
  - E-mail address
  - Full postal address
- All necessary files have been uploaded:
  - Blinded Manuscript:
    - ◆ Include keywords
    - ◆ All figures (include relevant captions)
    - ◆ All tables (including titles, description, footnotes)
    - ◆ Ensure all figure and table citations in the text match the files provided
    - ◆ Indicate clearly if colour should be used for any figures in print



- Abstract- not more than 300 words
- Supplemental files (where applicable)

### ***Further considerations***

- Manuscript has been 'spell checked' and 'grammar checked'
- All references mentioned in the Reference List are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)
- A competing interests statement is provided, even if the authors have no competing interests to declare
- Journal policies detailed in this guide have been reviewed
- Referee suggestions and contact details provided, based on journal requirements

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## **Article Preparation**

### ***Article types***

Article type	Word length	Tables/ figures	References	Peer reviewed
Original research	4,500	5	Up to 100	Yes
Review article	3,500	5	Up to 100	Yes

### **Original research**

Papers should be clear, precise and logical and should not normally exceed 4,500 words. Original research papers should be presented as follows and using the Submission Template:

1. Covering letter- the letter must contain: why the submission is appropriate for publication in CME Journal; what is known about the topic discussed; what your study adds; and confirmation that the paper has not been published elsewhere
2. Separate title page- bearing title, all authors' initials, surname, main degrees (two only), the name and location of the institution(s) where the work was done and the declaration of interests. The author to whom proofs and correspondence should be sent should be clearly indicated with correct address, e-mail, and telephone.

### ***Manuscript***

- Abstract (max 300 words). This should include: Background (Objectives, Study design), Methods, Results, Conclusions
- Keywords. 3-6 keywords should follow the abstract
- Introduction
- Methods

- Results
- Discussion
- Conclusion and recommendation
- Acknowledgements including declarations: Statements of ethical approval, funding and competing interests (Optional)
- References

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Registration in a public trials registry is a condition for publication of clinical trials in this journal in accordance with International Committee of Medical Journal Editors recommendations.

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A maximum of 5 tables/figures can appear within the manuscript. Additional tables/figures can be included as online supplementary material. Authors should indicate at approximately what point in the text the table should appear.

Tables must be comprehensible without reference to the text if possible. References can be cited in the tables if needed. Number tables consecutively in accordance with their appearance in the text. Place footnotes to tables below the table body and indicate them with superscript lowercase letters. Avoid vertical rules. Be sparing in the use of tables and ensure that the data presented in tables do not duplicate results described elsewhere in the article.

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Please follow the guidance for original research in the preparation of the manuscript including a structured abstract.

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