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What Kind of Doctor Should We Be?

Sujat Paul[1*]

In the recent past, doctors of Bangladesh are facing a lot of problems and obstructions during their clinical practice. It ranges from verbal abuse to physical assault etc. The reasons for this may be i) Patients overload specially in government hospitals ii) Arrogance of patients' attendant (Due to Power, Locality, Politics etc) iii) Lack of interaction and communication with patients and attendants iv) Social deprivation among mass people v) Restless behavior as well as physical and mental stress of the patients. The doctor's community can't solve each and every problem. We can simply protect ourselves by improving our communication skills and strictly following the rules of medical ethics and professional obligations.

Compassion is a driving force of a human being. It includes sympathy, empathy and compassion. According to Dalai Lama, love and compassion are necessities, not luxuries.[1,2]

Without them, humanity cannot survive. Compassion is not only a religious business, it's a human business. This compassion is the bedrock of medicine.[1,2]

Who are the Doctors?

Doctor is an academic title that originates from the Latin word of the same spelling and meaning. The word is originally an agentive noun of the Latin verb doc re, Latin pronunciation: [d ke r] means to teach. They are responsible for providing health care related teaching among patients.

Hippocrates (460-357 BC) defined the physician's role very simply: Doctor must have two objectives in view regarding disease.[3] These are :

"To Do Good or To Do No Harm"

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It has also been described in ancient Charaka Samhita 400-300 BC. Charaka Samhita defined the attributes of an ideal medical student: "He (Medical student) should be of a mild disposition, noble by nature, never mean in his acts, free from pride, strong memory, liberal mind, devoted to truth, likes solitude, of thoughtful disposition, free from anger, of excellent character, compassionate, one fond of study, devoted to both theory and practice, who seeks the good of all creatures.[4]" The Charaka Samhita also includes sections on the importance of diet, hygiene, prevention, medical education and the teamwork of a physician, nurse and patient necessary for recovery to health.

A good doctor should have compassion and professionalism in consultation and communication. Medical professionalism is exemplified through what physicians actually do. How do they meet their responsibilities to individual patients and to communities? The American Board of Internal Medicine (ABIM) established Project Professionalism, which sought to define the components of medical professionalism, including altruism, accountability, excellence, duty, honor/integrity and respect.

Consultation is an important part of the daily activities of a doctor. Components of consultation are, listening to the patient, examining the patient, looking at investigations and finally prescribing. Prescribing is a rational approach to a series of challenges like, establishing a diagnosis, deciding a therapeutic goal and choosing appropriate drugs. For establishing diagnosis doctor has to emphasize on history (Which makes 70 to 80% of diagnosis) and if needed some investigations. Investigations should not be parsimonious, should be context-specific, evidence-based and resource-sensitive.[5,6]

For pronouncing a diagnosis, a doctor should focus on matter of fact, without embellishment, maintain eye contact, reassure the patients, and ensure that patients may not be frightened.[7] For pronouncing a difficult diagnosis, doctor should temper the arrogance of their

knowledge with humility of wisdom, reassure the patients with diseases like autoimmune that, there is nothing the patient could have done to anticipate, avoid or prevent the disease, provide hope not hype, not use accusatory tone to the patients (Patients are victims not the culprit) and assure that it is never too late to treat though earlier is better.[6]

Prognostication is at best an imprecise science. Doctors should avoid this practice of prognostication. Group statistics may not work at an individual level. Doctor should not claim to have astrological power.[3]

One-upmanship is the death knell for a doctor. Doctors should never say "You have been treated wrongly" and should not run down their colleagues. All doctors try to do their best and physical findings may change or appear in the course of time. Hindsight is always better than foresight.

Good decisions come from experience and experience comes from bad decisions. So, a doctor should not criticize the prescriptions of juniors.

When dealing with the patient, common questions should be addressed first, like diet, exercise and other systems of medicine etc. Patients satisfactions should be the first priority. Doctor should not make fun with patient's belief and should not be derisive of other systems of therapy.

A good doctor should refrain from looking at smart phone and not text during a consult. While receiving a call during a consult, it should have to be very brief and avoid personal or pedestrian conversation. Never talk to the patient about diseases in the corridor, over the telephone or mail consultation.

While consulting an elderly people doctor should be well conversant that there may be increased sensitivity to drug effects, reduced drug elimination, problems in drug adherence.[8] Lower starting doses and slower dose titration of drugs are needed in elderly patients.

During consultations for less privileged people, a doctor should go out of their way to make them comfortable and have to be extra polite to those who come from a station of life lower than their own.

Having to be extra considerate and curbing impatience are needed in the last consult of the day. It may be nth patient for a consulting physician, but for the patient it may be the first doctor visit of the day.

Now few points should be considered when practicing medicine in low-resource settings. The problems associated with medical care in low-resource areas cluster in four domains:

i) *Prevention Versus Cure:* Prevention is more accessible, cheaper and more effective than a cure for many diseases. On the other hand, curative medicine is immediate, highly visible and glamorous. In developing countries more emphasis has been given on curative treatment and preventive care is less addressed due to financial obligations.

ii) *Acute Versus Chronic Care:* Acute medical care produces immediate and often gratifying results while treating chronic illness can be time-consuming and less rewarding. Facilities for chronic care are therefore accorded a low priority in many health-care systems.

iii) *The Ideal Versus the Possible:* Most medical management guidelines are derived from studies that were conducted in well-resourced health-care systems. In applying this knowledge to the developing world, there are tensions between best practices and what is possible. For example, anticoagulant therapy may pose risks that were not evident in the studies that underpin guidelines if it is prescribed in areas where reliable laboratories are not available and medications that interact with warfarin are commonly purchased 'over the counter'.[9]

iv) *Channels of Health-Care Provision:* In developing countries health care may be delivered through government-run public clinics (Usually free or subsidized services) or non-governmental organizations (Sometimes subsidized but usually privately funded services).

A second opinion can be considered in some cases. It may be due to patients' interests or the doctor himself may seek other's opinion. "My decision is the best decision" is not applicable in sound practice.[9,5,6]

"Conflict of interest" is a situation in which personal and/or financial considerations have the potential to influence or compromise professional judgment.[10] Doctor should have to listen to their inner voice and not be provoked by any financial, social, political or other influences.

A doctor should abide by the rules of medical ethics. Ethics are obligations of a moral nature that govern the practice of medicine. There are six principles of ethics; Beneficence, Nonmal feasance, Autonomy, Justice, Dignity, Truthfulness and Honesty.[11]

Doctors should not approach the temple of science with the soul of a money chaser.

"Only a good man can be a great physician" should have to be remembered by a doctor.

A good doctor is a trusted professional guide, someone to help navigate medical information, a good listener, a caring person, a person who is available, open-minded, smart, intelligent and knows how to keep things light.

Patient wants to see seven traits in a good doctor. i) Confident (The doctor's confidence gives confidence to the patient) ii) Empathetic (The doctor tries to understand the patient's feelings and experiences physically and emotionally and communicates that understanding to the patient) iii) Humane (The doctor is caring, compassionate and kind) iv) Personal interest (The doctor is interested in people, more than just as a patient, interacts with the patient and remembers the patient as an individual) v) Forthright (The doctor tells what patient need to know in plain language and in a forthright manner) vi) Respectful (The doctor takes patient's input seriously and works with the patient), and Thorough (The doctor is conscientious and persistent).

Doctor should never discuss controversial issues with the patients like abortion, divorce,religion/race, politics, money/economic status, appearance e.g. weight, looks etc, heavy subjects like war etc.

Universal rules of professional obligations should have to be followed by a good doctor.

These are:

- Attitude: Always treat the patients with kindness and respect.
- Behavior: Recognize the human story that accompanies each illness.
- Compassion: How would be a feeling by doctor in patient's situation?
- Dialogue: Acknowledge and understand the individual. Dress and demeanor of a doctor should be soothing to the eyes of any people.

Finally, a good doctor should be physically, mentally, socially and spiritually sound.

In conclusion, doctors should have a balanced life, care for themselves and their families as well as for others. Doctors should be happy, healthy, caring, competent, and good travel companions for people through the journey, that's we call life. Doctors do not have a magic lamp, and there is no genie. They must use their own skills and endeavors to make the good doctors we want and need.

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Sepsis and Septic Shock

Pradip Kumar Dutta[1*] Sudipa Dutta[2] Sutapa Dutta[3]

ABSTRACT

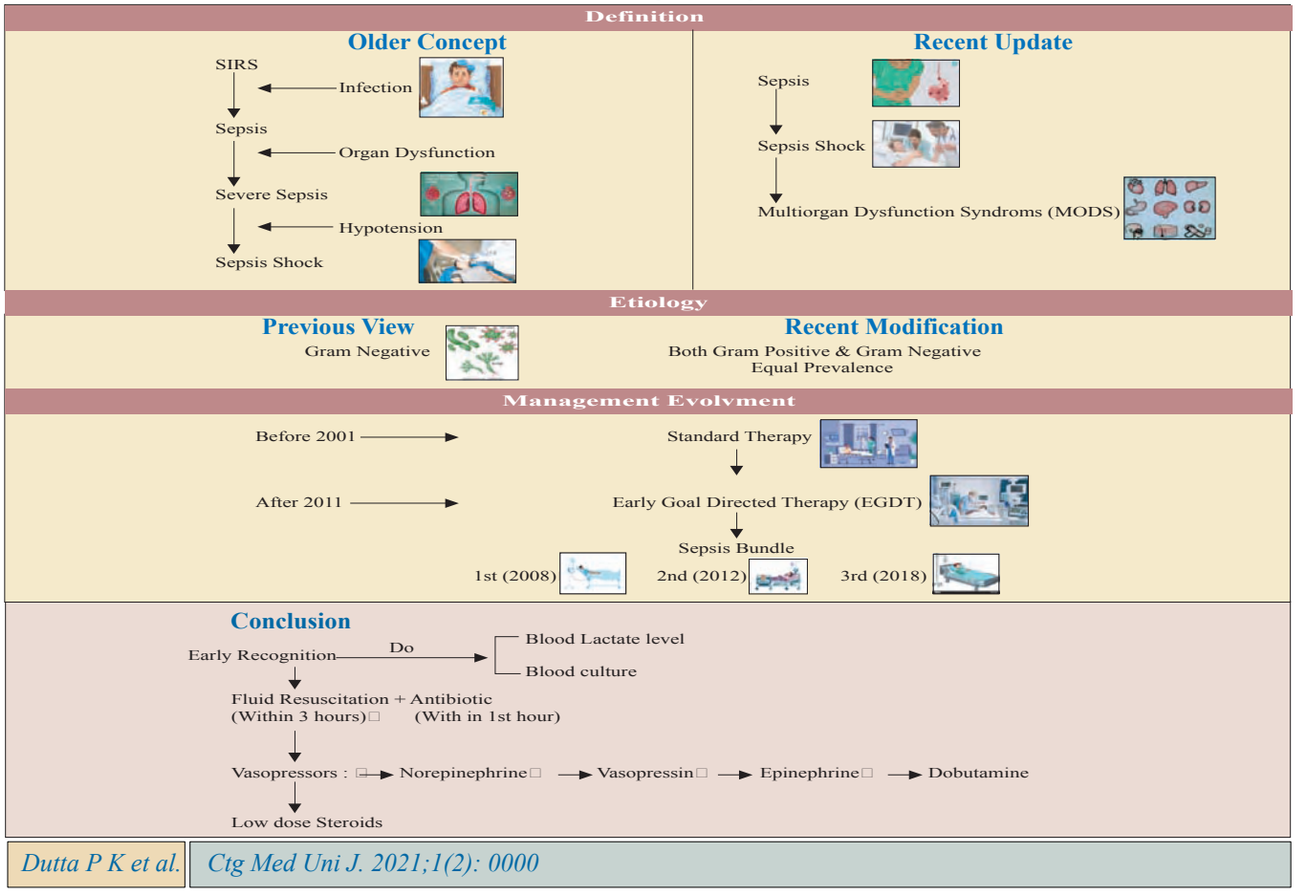
Background: Sepsis is the life threatening organ dysfunction resulting from body's response to infection. From time to time change is met with definition, tools of diagnosis, categorization of severity and early management of sepsis. It is associated with unacceptably high mortality even in developed country. Septicaemia was first coined in 1914. Since then management changed from invasive treatment popularly stated as "Early Goal Directed Therapy (EGDT)" to most recent "Appropriate aggressive medical management" (Bundle sepsis care) as proposed by different ongoing Surviving Sepsis Campaigns (SSC). The present review will focus on this trend of change in definition, diagnosis and treatment of sepsis and septic shock.

Methodology: This current study is a narrative review of published studies and articles by using PubMed and Google scholar. Structured search strategy using appropriate keywords and title.

Conclusion: Removing the causes of sepsis, prompt recognition and early management is mandatory.

GRAPHICAL ABSTRACT

Sepsis and Septic Shock



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Key words : Sepsis; Septic shock; Surviving sepsis campaign; Sepsis bundle.

INTRODUCTION

In 1914 Schottmueller wrote, "Septicemia is a state of microbial invasion from a portal of entry into the blood stream which causes sign of illness."[1] But later on it was found that only about half of patients (30-50%) with signs and symptoms of sepsis have positive results on blood culture. Again not all patients with

bacteremia have signs of sepsis.[2] The incidence of sepsis is reported to be increasing in recent decades probably due to more recognition and more increasing aging population with increased number of comorbidities.[3] Again surviving patients from sepsis develop long term morbidity associated with physical, physiological and cognitive disabilities.[4] American College of Chest Physicians /Society of Critical Care Medicine (ACCP/SCCM) consensus conference in 1991 first proposed definitions for sepsis and Systemic Inflammatory Response Syndrome (SIRS).[5] They defined sepsis associated with organ dysfunction as 'severe sepsis' and progression of severe sepsis to 'septic shock'. In 2001 further task force with representation not only from the ACCP and the SCCM but also from the European Society of Intensive Care Medicine (ESICM), the American Thoracic Society (ATS) and the Surgical Infection Society (SIS) expanded the diagnostic criteria (Such as including positive fluid balance, creatinine increase, hyperlactaemia, 2012KDIGO guideline for oliguria, SvO2, cardiac index and altered mental status) but could not provide the alternative definition because of lack of evidence.[6] Though some of the criteria of sepsis and severe sepsis has been redefined in 2012 by surviving sepsis guideline, but the definition remained unchanged for last two decades.[7]

Ultimately the Third International consensus definitions for sepsis and septic shock (Sepsis -3) has eliminated 'SIRS' from spectrum and replaced 'severe sepsis' to 'sepsis'.[8]

Treatment of sepsis also underwent metamorphosis. In 2001 Early Goal Directed Therapy (EGDT) was proposed which showed that in terms of short time and long time benefits it is superior to standard therapy.[9] Subsequently three large prospective multicenter randomized clinical trials of EGDT in the management of septic shock (Pro CESS [Protocolized Care for Early Septic Shock] ARISE [Australasian Resuscitation In Sepsis Evaluation] and Pro MISe [Protocolised Management In Sepsis]) have all showed that "the use of strict protocolized monitoring (Central venous catheterization, lactate and $ScvO_2$ measures) and management (Targeting a hemoglobin >8 g/dL, $ScvO_2$ >70%) are not superior to usual care as long as patients were managed under closed supervision.[10-12]

In 2004 first surviving sepsis campaign was launched and 1st sepsis bundle was first put forward in 2008.[13] Most recent bundle is 1 hr bundle of sepsis care, a guideline given by SSC in 2018.[14] Our literature review will try to give an overview of this evolvement of definition, and treatment strategy of sepsis care.

SEARCH STRATEGIES

Relevant Literatures were searched through Pubmed and Google scholar search engines. The key search items were" Sepsis; Septic shock; Surviving sepsis campaign and Sepsis bundle." Filters were applied and article types selected were "Review, RCT, Meta-analysis and Clinical trials." Available articles published between 1st January 2000 to 30th September 2022 along with available references of those articles were reviewed. 2nd and 3rd author scrutinized and searched the engines and 1st author synthesized the literatures.

DISCUSSION

Definition of Sepsis

Previous school of thought was that sepsis is the combination of SIRS and infection, but later on it was evident that sepsis may occur without meeting criteria of SIRS and other illness not causing infection may have criteria of SIRS (Fig 1).[15]

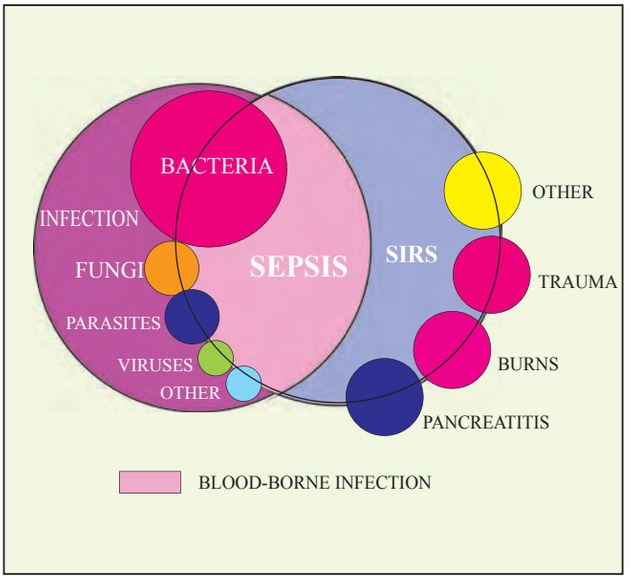

Figure 1 Venn diagram showing the overlap of infection, bacteremia, sepsis, Systemic Inflammatory Response Syndrome (SIRS) and multiorgan dysfunction

Sepsis is now defined as life-threatening organ dysfunction due to dysregulated host response to infection. Organ dysfunction is further defined as an acute change in total Sequential Organ Failure Assessment (SOFA) score of 2 points or greater secondary to the Infection. This is the new definition of sepsis.[8]

Later on for rapid screening of suspected sepsis a new measure called qSOFA (For quick sofa) is used for bedside criteria.[8] The task force offered a easily measurable clinical criteria (Fig 2) to identify patients progressing towards septic shock. They defined septic shock as a subset of patients with persisting hypotension requiring vasopressors to maintain a mean arterial pressure of 65 mm Hg or higher and a serum lactate level greater than 2 mmol/L (18 mg/dL) despite adequate volume resuscitation.[8]

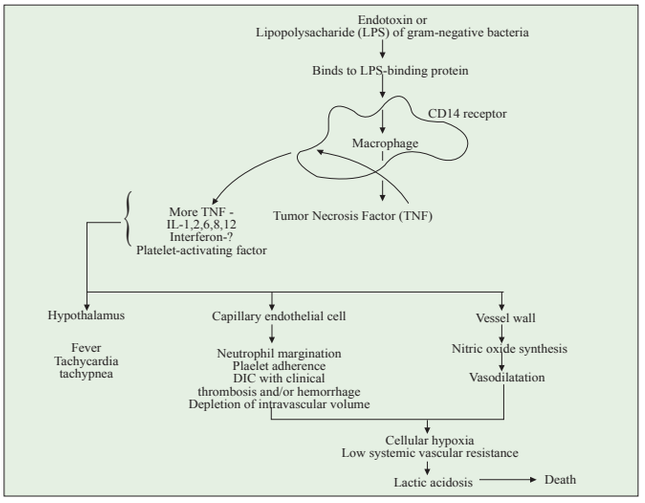

Figure 3 Diagram depicting the pathogenesis of sepsis and multiorgan failure. DIC=Disseminated Intravascular Coagulation, IL =Interleukin[15]

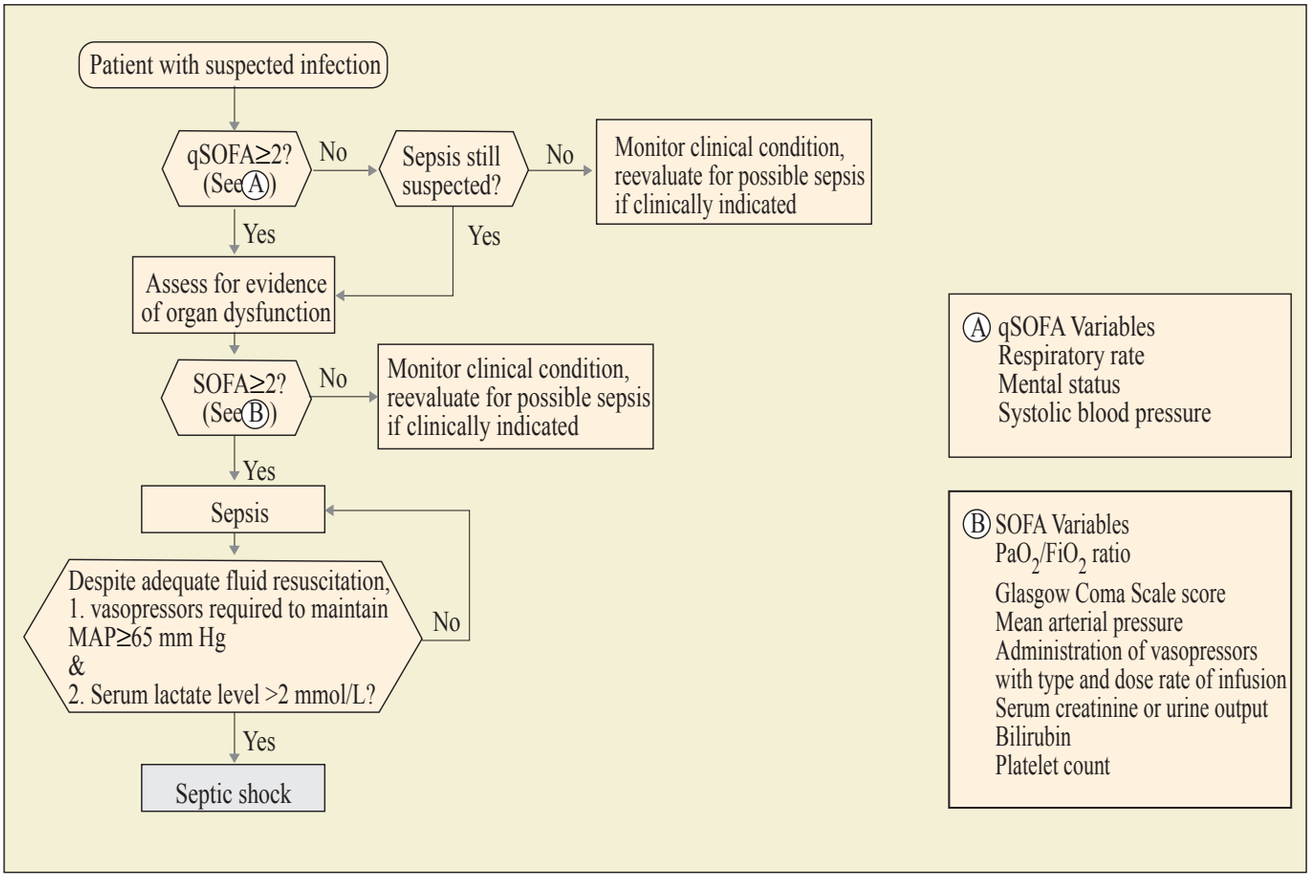

Figure 2 Operationalization of Clinical Criteria Identifying Patients With Sepsis and Septic Shock qSOFA indicates quick SOFA, MAP, mean arterial pressure

Pathophysiology of Sepsis

Pathophysiology of septic shock is a positive feedback loop of complex interaction of host immune response to pathogen (Fig 3).[8]

Etiology

Before the introduction of antibiotics gram positive organisms were the principal organism of septic shock and afterwards gram negative organisms top the list.

Later on due to frequent use of invasive procedures and lines gram positive organisms as a cause of sepsis is rising, so that now gram positive and negative organisms both have the equal prevalence.[16] The above studyalso showed that causes of infection producing sepsis are as follows :

Lower respiratory tract infections	35-50%
Abdominal and GIT infections	20-40%
Urinary tract infections	10-30%
Soft tissue infections	5-10%
Infections of reproductive systems	1-5%
Infections due to foreign bodies	1-5%
CNS infections	1-5%

Management

At the outset sepsis was managed in emergency ward or general hospital bed with standard care. Early resuscitation with fluid and antibiotic till haemodynamically patient is stable. If haemodynamically unstable the patient was transferred to Intensive Care Unit (ICU) for invasive cardiovascular monitoring and even for mechanical ventilation.[15] But with evaluation of EGDT (Fig 4) it was found that EGDT is at least superior to standard therapy with respect to less vasopressor use, mechanical ventilation and pulmonary artery catheterization though EGDT required more fluid in early hours and more RBC transfusion.[9]

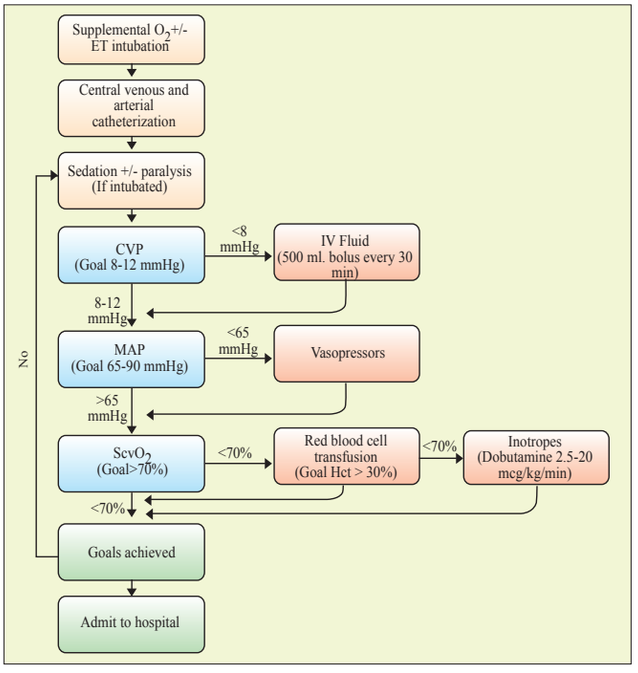

Figure 4 Early goal-directed therapy in the treatment of severe sepsis and septic shock[9]

Later on question appeared regarding ultimate benefit of EGDT.[17] No significant differences between groups were found for 90-day mortality, 1-year mortality or the need for organ support.[15] At this point SSC opined that direct and individualized care is the best treatment. They proposed different sepsis bundle.

1st 6 hr Bundle : The resuscitation bundle includes seven key interventions to be achieved in 6-h while four interventions have to be completed within 24-h in the Management bundle.[13]

For patients with severe sepsis, as many as seven bundle elements must be accomplished within the first 6 h of presentation.Further study proposed out of 7, first four should be completed within 3 hrs [Box 1].[18]

Surviving Sepsis Campaign Care Bundles

To be Completed within 3 hours:
1) Measure lactate level
2) Obtain blood cultures prior to administration of antibiotics
3) Administer broad spectrum antibiotics
4) Administer 30 mL/kg crystalloid for hypotension or lactate ≥ 4 mmol/L.

To be Completed within 6 hours:
5) Apply vasopressors (For hypotension that does not respond to initial fluid resuscitation) to maintain a Mean Arterial Pressure (MAP) ≥ 65 mm Hg
6) In the event of persistent arterial hypotension despite volume resuscitation (Septic shock) or initial lactate ≥ 4 mmol/L (36 mg/dL):
- Measure Central Venous Pressure (CVP)*
- Measure Central Venous Oxygen Saturation ($ScvO_2$)*
7) Remeasure lactate if initial lactate was elevated*.

*Targets for quantitative resuscitation included in the guidelines are CVP of ≥ 8 mm Hg. $ScvO_2$ of ≥ 70% and normalization of lactate.

Box 1 1-6 hr Sepsis bundle

3 hr Bundle: SSC has revised 6 hr bundle to 3 hr bundle in 2015.[19]

Four 3-hour Surviving Sepsis Campaign guideline recommendations: i) Obtain blood culture before antibiotics ii) Obtain lactate level iii) Administer broad-spectrum antibiotics iv) Administer 30 mL/kg of crystalloid fluid for hypotension (Defined as "mean arterial pressure" < 65) or lactate (> 4).

1 hr Bundle : SSC in 2018 has given further 1hr sepsis bundle guideline which is the most recent guideline for sepsis.

The 1-h bundle is composed of the following five elements: i) Measuring the lactate level ii) Obtaining blood culture prior to administration of antibiotics iii) Administering broad-spectrum antibiotics iv) Beginning rapid administration of 30 mL/kg crystalloid fluid for hypotension or lactate 4 mmol/L

v) Administering vasopressors if the patient is hypotensive during or after fluid resuscitation to maintain Mean Arterial Pressure (MAP) at ≥65 mmHg within 1 h from sepsis recognition.[14]

A study suggested Angiotensin II in patients with septic shock non responding to vasopressors.[20]

Controversy still remained regarding different elements of bundle. Recent studies showed the validity of MAP of 80-85 mm for patients with preexisting hypertension.[21] Red blood transfusion is recommended below 7g/dl and platelet transfusion is recommended below 10000/µl.[7] Erythropoietin, fresh Frozen plasma and antithrombin agents are not recommended.[7] Administration of antimicrobial therapy within first of hypotension was associated with survival rate of 79.9% and delay in institution of antimicrobial for each hour delay was associated with average decrease in survival of 7.6%.[22] The 2012 Surviving Sepsis Campaign guidelines recommend combination empiric therapy for neutropenic patients as well as for those with difficult-to-treat, multidrug-resistant microorganisms, such as Acinetobacter and Pseudomonas.[7] In 2021 surviving sepsis guideline nicely depicts antibiotic timing.[22] According to this guideline in case of presence of septic shock antibiotic should be given within 1 hour. If sepsis occurs without shock rapid assessment of infectious vsnon infectious cause of acute illness is determined and antibiotic is administered within 3 hours if concern for infection persists. The guideline also recommends to use procalcitonin estimation over clinical parameters during discontinuation of antibiotics. It also suggests against empiric use of antifungals and antivirals.

Regarding fluid resuscitation according to 2021 surviving sepsis guideline first 30ml/kg fluid should be given within 3 hours. Balanced crystalloid is preferable to normal saline. Albumin is given when substantial amount of crystalloid is required to avoid volume overload. Fluid responsiveness is measured by capillary refill or passive leg-raising maneuver.[15,23]

Vasopressor is started when large volume of crystalloid (Usually > 4 litrs) is required or signs of volume overload appeared. Norepinephrine is the first choice, Vasopressin is added if MAP does not rise and epinephrine is added if patient is still unresponsive. Dobutamine is added if peripheral hypoperfusion persists (Central venous oxygen saturation, Scvo2 <70mmhg) despite MAP and Haemoglobin requirement is met.[15,22] Vasopressor is begun peripherally if central access is not available. However the patient should be transferred to ICU within 6 hours.For adults with septic shock and an ongoing requirement for vasopressor therapy, low dose IV corticosteroids was suggested.[22,24]

The 2021 guideline also suggests against IV immunoglobulin and IV Vitamin C. It suggests pharmacological venous thromboembolism prophylaxis rather than mechanical one and recommends low molecular weight Heparin. It suggests sodium bicarbonate therapy when pH ≤7.2 or Acute Kidney injury (AKIN score 2 or 3) and Insulin when Blood Glucose ≥180mg %. In Hypoxaemicrespiratoty failure High flow nasal oxygen should be started. Continuous renal replacement therapy or Acute Intermittent haemodialysis is advocated when there is indication of Dialysis. This guideline also suggest early (Within 72 hours) initiation of enteral nutrition. The patient should be subjected to post-hospital rehabilitation if ICU stay of >72 hours or on mechanical ventilation >2 days.

CONCLUSION

Sepsis is a global health priority. No one size fits every approach of sepsis care. Though enormous progress happened, still definition, recognition and treatment is challenging to physician. High index of suspicion is necessary for early recognition. Early proper use of fluid along with judicious use of vasopressor, stabilizing the patient, removing the cause of sepsis and doing no additional herm is the principle of management of sepsis and septic shock.

DISCLOSURE

All authors declared no conflict of interest.

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Original Article

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Accuracy of Blood Pressure Measurement among Preclinical and Clinical Medical College Students

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ABSTRACT

Background: Blood pressure measurement is a procedure requiring simultaneous performance of multiple tasks and skills with co-ordination ofvision, hearing and hands. The current paper presents results of a study aimed to check accuracy of blood pressure measurement among preclinical (phase I) and clinical (phase IV) medical college students in two teaching hospitals of Bangladesh. The objectives of the study were to assess accuracy of blood pressure measurement in phase one medical college students, to assess accuracy of blood pressure measurement in phase four medical college students and compare accuracy of blood pressure measurement among phase one and phase four medical college students in two teaching hospitals of Bangladesh.

Materials and methods: It was an cross sectional study performed on 200 (100 from preclinical and 100 from clinical) students of Chattagram International Medical College (CIMC) and Chittagong Medical College (CMC) enrolled by non-probability sampling. The total score of each participant was the sum of scores obtained from all nine elements. The data of all 200 participants were analysed.

Results: A wide range of variations in score was observed in overall assessment; the maximum score was 18/18 and minimum score was 3/18. There were 9 elements to be scored. The key elements found to make significant differences among two phases were element 1, element 5, element 6 and element 9.

Conclusion: This observational study assessed element-wise competency of blood pressure measurement skills in preclinical and clinical as well as compared the findings among these groups.

GRAPHICAL ABSTRACT

Accuracy of Blood Pressure Measurement among Medical College Students

Materials and methods

Cross Sectional Study

Cohort

Phase I :
Medical Students-100

Phase IV :
Medical Students-100

Results

Variables	Phase I	Phase IV	p value
Total Score	11.24	13.47	.000
Mean Score of - Properly Document BP 	.85	1.59	.000
Appropriate BP Recording 	27%	39%	.035

Conclusion : Only 66% of medical students measures appropriate BP.

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Key words: Accuracy; Blood pressure measurement; Clinical medical students; Preclinical medical student.

INTRODUCTION

Arterial blood pressure, one of the "vital signs", is an important indicator of a person's health status. Though Blood Pressure (BP) measurement is the most commonly performed procedure in clinical practice. Inadequate knowledge of blood pressure measurement may have huge impact on diagnosis of hypertension in clinical practice. All the guidelines including 2020 International Society of Hypertension, NICE guideline 2019, Global Hypertension Practice Guidelines ACC/AHA 2017 provide clear instructions for accurate measurement of blood pressure.[1-3] It is a complex procedure requiring simultaneous performance of multiple tasks and skills; requiring co-ordination of vision, hearing and hands. Unfortunately, the ideal steps are not routinely followed in daily clinical practice.[4-6]

A set of properly validated and calibrated instruments including sphygmomanometer and stethoscopes are obligatory requirements for accurate blood pressure measurements. The cuff size should be appropriate enough so that the bladder encircles 80% of arm. After proper placement and wrapping of blood pressure cuff, systolic blood pressure should be estimated by palpatory method. The cuff should be inflated 20-30 mm Hg above estimated systolic blood pressure for determination of systolic blood pressure by auscultatory method, then the cuff should be deflated 2 mm Hg per second. Systolic and diastolic blood pressure should be recorded as onset of first Korotkoff sound and disappearance of all Korotkoff sounds, respectively, using the nearest even numbers. At first visit, blood pressure should be recorded in both arms; the arm that gives the higher readings should be used for subsequent readings.[1-4]

Whether a medical student can check blood pressure properly has significant implications in later professional career.[7-9] In Bangladesh, as per curriculum set by Bangladesh Medical and Dental Council, medical students are taught basic steps of measurement of blood pressure in phase I of curriculum and they apply that knowledge for practical implication during clinical placement in phase three as well as phase four. The current paper presents results of a study aimed to check accuracy of blood pressure measurement among phase one and phase four medical college students in two teaching hospitals of Bangladesh.

MATERIALS AND METHODS

It was an cross sectional study performed on phase one and phase fourstudents of Chattagram International Medical College (CIMC) and Chittagong Medical College (CMC) from 15.09.2019 to 09.02.2020. The enrolled participants were preclinical (Phase I) medical students who completed card of cardiovascular system and clinical (phase IV) medical students who completed at least one placement in medicine department as well as who gave informed written consent to be included in the study. Preclinical students who did not complete card of cardiovascular system, clinical students who did not complete any placement in medicine department and who do not give consent were excluded from the study. In each participating centre, preclinical and clinical students who fulfilled the inclusion criteria were invited for a short discussion with the research team during tiffin break, where the purpose and procedure of study were explained. Among the interested students, 100 from phase one and 100 from phase four (In each phase, 70 from CMC and 30 from CIMC) were enrolled by non-probability method of sampling. A structured checklist was used as data collection instrument; the checklist has nine elements; for each element the assessment score was classified as properly done (Score 2), partially done (Score 1) and not done/ wrongly done (score 0). Appropriateness of reading of BP measurement was assessed for each participant, a variation of BP reading by participant within ± 10 mm Hg for systolic BP and within ± 6 mm Hg for diastolic BP compared to reference BP was considered acceptable to be marked as appropriate.

Ethical clearance and permission was taken by institutional review board of participating centres prior to conduct this study. The data of all 200 participants were analysed by using SPSS version 26. The tests used to analyse data were be t test, ANOVA and ANCOVA to find out the associations and to compare between the preclinical and clinical groups.

In this study, aneroid sphygmomanometer was used for BP recording, the instruments were checked and calibrated by the investigators before candidates of each carousel checked BP.

RESULTS

A total of 200 subjects from both phases and both centres participated in the study, 42% were male and58% were female, there has been no missing data (Table I).

Table I Distribution of participants by centre and gender (n=200)

Center	Phase	No of participant	Male	Female
CIMC	I	30	11	19
CIMC	IV	30	13	17
CMC	I	70	28	42
CMC	IV	70	32	38
Total number of participant	200	84	116	

It was found that maximum total score was 18/18, secured by 2% participants and minimum total score was 3/18, secured by 1.5% participants; most frequently obtained score was 14/18, secured by 17% participants (Table II).

Table II Total score by the participants (n=200)

Score	Frequency	Percentage
3	3	1.5%
4	1	5%
5	3	1.5%
6	3	1.5%
7	6	3%
8	9	4.5%
9	9	4.5%
10	23	11.5%
11	8	4%
12	24	12%
13	25	12.5%
14	34	17%
15	26	13%
16	13	6.5%
17	9	4.5%
18	4	2%

Mean total score in phase one students was 11.24 and mean total score in phase four was 13.47 (Table III). Individual component wise mean scores were analysed; significant differences were observed among phase one and phase four in element 1(Ensure that patient avoided caffeine, exercise and smoking for at least 30 minutes before measurement), element 5 (Estimation of systolic blood pressure by palpatory method) element 6 (Inflation of cuff 20-30 mm Hg above estimated systolic blood pressure for determination of systolic blood pressure by auscultatory method) and element 9 (Properly document BP readings).

Table III Mean scores of individual components of blood pressure measurement (n=200)

No	Element	Mean score in Phase I	Mean score in Phase IV	Significance (p value)
1	Ensure that patient avoided caffeine, exercise and smoking for at least 30 minutes before measurement	0.62	1.11	0.000
2	Patient sits on a chair, with back supported, arms supported, feet flat on the floor, for > 5 minutes	1.08	1.26	0.121
3	Removal of all clothing covering location of cuff placement	1.72	1.77	0.521
4	Proper placement and wrapping of cuff on the patient's arm	1.79	1.86	0.251
5	Estimation of systolic blood pressure by palpatory method	1.58	1.89	0.00
6	Inflation of cuff 20-30 mm Hg above estimated systolic blood pressure for determination of systolic blood pressure by auscultatory method	1.45	1.77	0.001
7	Deflation of cuff 2mm Hg per second for auscultatory readings	1.32	1.16	0.101
8	Record blood pressure in both arms	1.02	1.03	0.930
9	Properly document BP readings	0.85	1.59	0.000
	Total score obtained by the participant	11.24	13.47	0.000

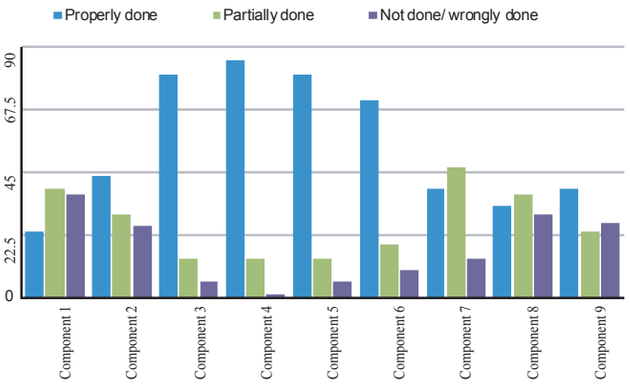

Figure 1 Component-wise overall performance of participants (n=200)

Figure 1 shows component-wise overall performance of candidates. The component showing maximum number of candidates with "properly done" score was component 4: Proper cuff placement (85%). The component showing maximum number of candidates with "Not done/ wrongly done" score was component 1: Ensure the pre-requisites (38%).

Appropriateness of reading of BP measurement was assessed (Table IV). BP recording was appropriate in 66% and inappropriate in 34% participants.

Table IV Proper reading of blood pressure measurement (n=200)

Appropriate/ Not Appropriate	Percentage
BP recording by participant is appropriate	66%
BP recording by participant is not appropriate	34%

DISCUSSION

Among 200 participants of phase I and phase IV MBBS students, a wide range of variations in score was observed in overall assessment. While each and every step is essential in blood pressure measurement, Only 2% participants obtained 100% score. It indicates that a more structured and practical teaching is necessary to ensure proper learning of core competency in blood pressure measurement in student life. Analysis of individual component wise mean scores revealed significant differences among phase one and phase four; these variations might reflect variations in in teaching learning activities as well as learning environment while basic steps of blood pressure measurement was taught in two phases.

The key observations re-emphasis on ensuring proper pre-requisites before measurement of blood pressure of a patient, which was most commonly missed by most of the participants. Phase IV students significantly

performed better in inflation of cuff 20-30 mm Hg above estimated systolic blood pressure for determination of systolic blood pressure by auscultatory method, which might have been the reflection of their continuous practice and hands-on training during ward placement. Proper documentation of BP reading is a commonly ignored part in blood pressure measurement; many graduates often fail to properly write down the BP readings. Proper training in documentation skill from the very early stages of learning may prepare a strong knowledge base and practice skills for the future.

A study was performed by Gazibara T, Rancic B, Maric G, et al on 791 fourth year and final year medical students of the Faculty of Medicine, University of Belgradeto estimate the level of knowledge of the blood pressure (BP) measurement technique. The least correct answers among students of both years were related to the fact that the stethoscope membrane should not be placed under the cuff . The highest proportion of correct answers (97.5%) in the fourth year was related to the fact that BP should be measured twice during patient examination.[10]

In a study performed by Bottenberg MM, Bryant GA, Haack SL and North AM in assessing third year pharmacy students' ability to accurately measure blood pressure using a blood pressuresimulator arm, there was a significant difference between the accuracy of High Systolic Blood Pressure (HSBP) measurement and Normal Systolic Blood Pressure (NSBP) measurement (meanHSBP difference 8.4 ± 10.9 mmHg vs NSBP 3.6 ± 6.4 mmHg; $p<0.001$).[11]

Whatever may be the teaching instrument real patient or simulation technique, whatever may be the lesson plan from textbook or recent guideline, students need to be thoroughly get accustomed to the basic skills of blood pressure measurement by a structured and integrated co-ordination between pre-clinical and clinical phases.

LIMITATION

This study did not exclude academic performance or previous academic record of students as a confounding factor. It is a small study; the results of this study might not be representative of the national data.

CONCLUSION

There was no significant difference between preclinical and clinical students wqith respect to pre-measurement preparation of the patients. Clinical students differs from pre-clinical students only in systolic BP measurement which is clinically significant.

RECOMMENDATION

The focal points of observation from this study might be taken into consideration for future planning as well as integration in teaching learning activities of BP measurement in the study centres.

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CONTRIBUTION OF AUTHORS

MK-Conception, acquisition of data, data analysis, drafting & final approval.
MD-Interpretation of data, critical revision & final approval.
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DISCLOSURE

The authors declered no conflict of interest.

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Original Article

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Postoperative Outcome of Inguinal Hernia Repair by Desarda Technique

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ABSTRACT

Background: Inguinal hernia is a common problem that demands intervention, either by open or laparoscopic technique. The aim of the study is to evaluate the feasibility of Desarda techniques after hernia repair.

Materials and methods: This observational study was conducted in the Department of General Surgery of Chattagram International Medical College Hospital for a period of six months from January to June-2019. Hernia repair perform by Desarda Technique as per inclusion and exclusion criteria. The sample was calculated statistically and the data was prepared according to the results.

Results: A total of 52 patients were analyzed. In first POD wound pain was found in 20 patients (38.5%) hematoma was found in 1 patient (1.92%) and seroma was in 3 patients (5.77%). In third POD, 6 patients (11.54%) had wound pain, 1had hematoma (1.92%) 3 had seroma (5.77%) and 1 patient (1.92%) was found having wound infection. In seventh POD 3 patients (5.77%) had wound pain, no patients had hematoma, 2 patients (3.84%) had seroma and 1 patient (1.92%) had wound infection. Postoperative hospital stay was 1.5 ± 0.91 days.

Conclusions: This study concluded that primary outcome of Inguinal hernia repair by Desarda's technique is simple and reliable alternative.

GRAPHICAL ABSTRACT

Postoperative Outcome of Inguinal Hernia

Materials and methods

Observational Study

Patients - 52

Observation

To see the complication of Desarda technique after hernia repair

Results

Variables	Desarda no (%)	Lichtenstein repair (Historical control)
Wound pain 	29(55.70%)	60 -70%
Hematoma 	2(3.80%)	5 - 6%
Seroma 	8(15.38%)	15 - 20%
Wound infection 	2(3.80%)	5 - 6%
LOH (Days) (Mean ± SD) 	1.5 ± 0.91	2.85 ± 7.0

Conclusion : Desarda and Lichtenstein technique of hernia repair are compareable with respect to wound pain and Seroma formation but Desarda technique is superior to Lichtenstein, repair with respect to less hematoma formation, wound infection and lenth of hospital stay.

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Key word: Desarda; Herniotomy; Herniorraphy; Inguinal hernia.

INTRODUCTION

Inguinal hernias are the most common types of hernias met with in most parts of the world. Because of their frequency, inguinal hernias remain an important health problem. The expected risk for inguinal hernia is 27% for males and 3% for females.[1] Complication rate per year all over the world vary from 100 to 300 per 100,000 citizens.[2] In the European Hernia Society guidelines, hernioplasty techniques, the Lichtenstein technique in particular and endoscopic methods were

recommended for the surgical management of symptomatic inguinal hernia in adult men. In contrary to this firm opinion presented by the EHS, the Shouldice herniorrhaphy method has been acknowledged to be acceptable as well.[3] However in most cases, surgical repairs are not carried out to prevent strangulation, but because of patients' request, to relieve discomfort.[4] Watchful waiting therefore is a recommended reasonable option, especially for minimally symptomatic hernias, due to the significant risk of chronic post herniorraphy pain (>10%) and the low risk of incarceration (<0.2% per year).[5] The choice of the method of repair depends mainly on the experience of the surgeon; however, the ideal accepted method for modern hernia repair should be simple, safe, cost effective, tension free, with very low incidence of recurrence. The Lichtenstein tension free mesh repair to a great extent achieves all these goals.[6, 7] The Lichtenstein polypropylene mesh however has its shortcomings which include; its high cost, not present in many parts of the undeveloped world, tendency to crumple or to fold, and movement that may lead to mesh failure as the groin is a very mobile area, and chronic groin sepsis, that may require mesh removal.[8] The synthetic prostheses used to repair inguinal hernia may create new clinical complications, such as discomfort, and abdominal wall stiffness, which may influence everyday activities of the patient.[9] Surgical-site infections, often with clinical symptoms delayed for long time, are more frequent after insertion of mesh in the inguinal canal.[10] New modification is the Desarda's technique, which introduced in the beginning of the current century and proved to be a new standard surgical option for tissue-based groin hernia repair (Herniorrhaphy).[11] Desarda described his genuine technique that satisfies the criteria mentioned above and does not require a prosthetic mesh and does not use weakened muscles or fascia transversalis for tissue repair. It has low cost with minimal incidence of complications [12, 13]. The technique requires less complicated dissection or suturing; no mesh is needed, easy to learn and has results similar if not better than Lichtenstein repair. It also gives similar results to Lichtenstein in terms of recurrence, with the significant benefit of not introducing permanent foreign-body material [14,15].

The aim of this study is to evaluate the feasibility of Desarda tissue repair of primary inguinal hernia.

MATERIALS AND METHODS

This is a observational study held on Surgery Unit and Surgery Outpatient Department of Chattagram International Medical College Hospital. Chattogram from January to June 2019. All patients underwent inguinal hernia surgery were included in this study after fulfilment of selection criteria. The 52 samples were included by purposive sampling technique. This study includes those male patients above 18 years of age with uncomplicated inguinal hernia and exclusion criteria were i) Patient with Recurrent inguinal hernia ii) Patient with obstructed or strangulated inguinal hernia iii) Sliding hernia with massive defect iv) Patient age <18 years.

The present study described the operation where a transverse crest line inguinal incision was given and layer was open according to traditional technique. The inguinal cannel was open and hernial sac was excised, 1- to 2-cm strip of external oblique aponeurosis lying over the inguinal canal is isolated from the main muscle but left attached both medially and laterally. Medial incision is made in external oblique aponeurosis along the medial crus of superficial ring; another incision is made on external oblique aponeurosis leaving a 1.5–2 cm of strip. After that medial end of the strip is sutured with conjoint tendon by non-absorbable suture (2/0 Proline, round-bodied: Ethicon) and lateral end with inguinal ligament, reinforcing the posterior wall of the inguinal canal.

All the data were checked and were entered into computer statistical analysis of the results being obtained by using windows based computer software devised with Statistical Package for Social Sciences - 15(SPSS Inc, Chicago, IL, USA).

Ethical clearance had taken from ethical committee of Chattagram international medical college before starting sample collection.

RESULTS

Table I Age distribution of patients

Age	Frequency	Percent (%)
<30 years	14	26.9
31-40 years	9	17.3
41-50 years	11	21.2
51-60 years	11	21.2
>61 years	7	13.5
Total	52	100.0

Regarding age group of the study patients 14(26.9%) were <30 years, 9(17.3%) were 31-40 years, 11(21.2% were 41-50 years and 7(13.5%) were >61 years of age.(Table I).

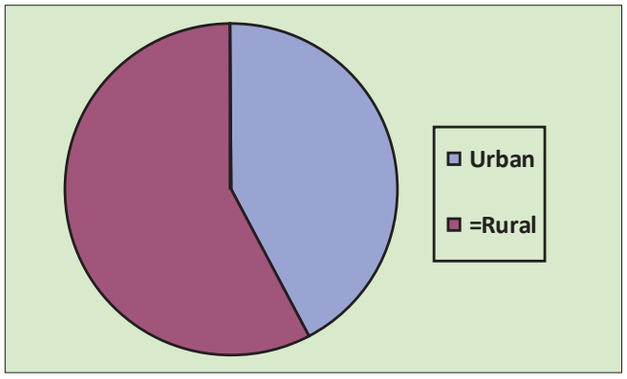

Figure 1 Locality

Here regarding locality, 2(42.3%) patients were from urban areas and 30(57.7%) were from rural areas (Fig 1).

Table II Nature of works

	Frequency	Percent (%)
Hard	9	17.3
Moderate	13	25.0
Sedentary	30	57.7
Total	52	100.0

Regarding nature of works 9(17.3%) were doing hard work, 13(25.0%) were doing moderate works and 30(57.7%) were engaged in sedentary works (Table II).

Table III Occupation of the study patients

	Frequency	Percent (%)
Businessman	10	19.2
Daily Labour	9	17.1
Service	9	17.3
Farmer	1	1.9
Rickshaw puller	1	1.9
Teacher	3	5.8
Shop keeper	6	11.5
Student	8	15.2
Unemployed	7	13.5
Total	52	100

Table III showing occupations of the study patients were 10(19.2%) were doing business, 9(17.1%) were daily labourer, and another 9(17.1%) were service holder, one patient were farmer and another one was a rickshaw puller, 3(5.8%) were teacher, 6(11.5%) were shop keeper, 8(15.2%) were student and 7(13.5%) patients were unemployed.

Table IV Comorbid diseases

	Frequency	Percent (%)
DM	23	44.2%
HTN	9	17.1%
IHD	1	1.9%
COPD	5	9.6%
Others	6	11.5%
None	3	5.8%

Table IV showing comorbid diseases where DM was found in 23(44.2%) HTN was found in 9(17.1%) IHD was found in one patient, COPD was found in 5(9.6%) patients and other comorbidity was found in 6(11.5%) of patients.

Table V Complications after surgery

Variables	1st POD	3rd POD	7th POD	After 1motnh	After 6month
Wound pain	20	6	3	0	0
Hematoma	1	1	0	0	0
Seroma	3	3	2	0	0
Wound infection	0	1	1	0	0

Table V showing complications after surgery where in 1st POD wound pain was found in 20 patients, hematoma was found in 1 patient, seroma was in 3 patients and no wound infection. In 3rd POD 6 patients had wound pain, 1 had hematoma, 3 had seroma and one patient was found having wound infection. In 7th POD 3 patients had wound pain, no patients had hematoma, 2 patients had seroma and one patient had wound infection.

DISCUSSION

A total of 52 patients were evaluated in the present study and all were male patients having inguinal hernia. All are underwent hernia repair by Desarda's techniques. In the study regarding age group of the study patients 14(26.9%) were <30 years, 9(17.3%) were 31-40 years, 11(21.2% were 41-50 years, and 7(13.5%) were >61 years of age. In our study mean age was 48 years but a study done by Mitura et al. found mean age was 58 years.[16] Here regarding locality, 2(42.3%) patients were from urban areas and 30(57.7%) were from rural areas. Regarding nature of works 9(17.3%) were doing hard work, 13(25.0%) were doing moderate works and 30(57.7%) were engaged in sedentary works. In a study done by Szopinski et al. found student was 7(7.6%), sedentary workers 34(34.2%), moderate workers 25 (25.7%) heavy worker 2(1.9%).[17] These finding corresponds with the present study. Regarding comorbid diseases DM was found in 23(44.2%), HTN was found in 9(17.1%), IHD was found in one patient, COPD was found in 5(9.6%) patients and other comorbidity was found in 6(11.5%) of patients. A study done by Szopinski et al. found that hypertension 12(11.4%), DM 6(5.7%), IHD 9(8.6%), COPD2 (1.9%).[17] In the present study these findings are a little more which may be due to sampling technique which was purposive in type.

Complications after surgery were analyzed in first POD wound pain was found in 20 patients, hematoma was found in 1 patient, seroma was in 3 patients and no wound infection. In third POD 6 patients had wound pain, 1 had hematoma, 3 had seroma and one patient was found having wound infection. In seventh POD 3 patients had wound pain, no patients had hematoma, 2 patients had seroma and one patient had wound infection. In a study done by Cunninghum et al. found minimum pain in early postoperative condition like the present study.[18] A study done by Abbas et al. found development of seroma in 2(4%) cases but in our study we found seroma in 1(1.92%) cases.[19] Desarda's suture is an undetached strip of the external oblique aponeurosis between the muscle arch and the inguinal ligament to give a strong and physiologically dynamic posterior wall. Desarda's result in a tension free repair without the use of any foreign body was simple to perform.[20] In the present study no wound infection was found but a study done by Gondal et al. then and found 3.3% grade 2 infection and 6.7% grade 1 infection.[21] As meticulous care and strict asepsis was maintained in the present study no wound infection was found.

Duration of hospital stay revealed Mean ± SD of hospital stay was 1.5 ± 0.91 days. In a study done by Abbas et al. then and found the hospital stay 2.58 ± 0.70 days which was a little more than the present study.[19] The effect of polypropylene placement or other synthetic mesh inside human body for a lifetime is still unknown. Also the Desarda method, a tissue-based technique, can be used in a contaminated surgical field, usually seen during operations for strangulated hernias.

LIMITATIONS

- Emergency cases were not included
- Due to time limitations long term follow up and study with large sample including all types of patients could not be done.

CONCLUSION

From the point of view of findings of this study it can be concluded that Desarda's technique has less post-operative complications like hematoma, seroma and wound infection, also less wound pain. It has shorter duration of hospital stay and technically simpler.

RECOMMENDATIONS

- Multicentre study with wide sample size
- Involving multiple discipline
- Extensive study including emergency cases.

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CONTRIBUTION OF AUTHORS

SMA-Conception, acquisition of data, data analysis, drafting & final approval.
MMR-Interpretation of data, critical revision & final approval.
MHM-Design, analysis of data, critical revision & final approval.
MNHB-Interpretation of data, critical revision & final approval.

SB-Acquisition of data, drafting & final approval.

DISCLOSURE

All the authors declared no competing interest.

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Original Article

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Related Factors and Socio-Demographic Differentials of Rape Victims Attending in Forensic Medicine Department of Chittagong Medical College, Bangladesh

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Narayan Chandara Das[5] Susmita Chowdhury[1]

ABSTRACT

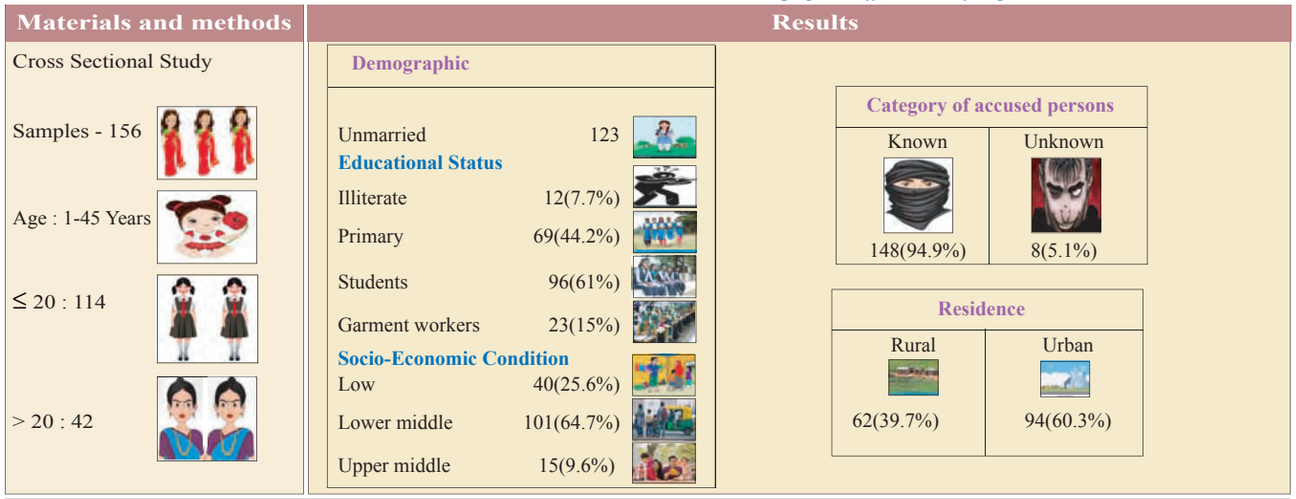
Background: Rape is one of the serious cognizable offences having social, psychological, physical and legal aspects of the problem. In Bangladesh, police statistics on cases registered on Violence Against Women (VAW) show that rape is the second most commonly reported form of violence against women. Purpose of the study was to explore the related factors and socio- demographic differentials of rape victims attending in Forensic Medicine Department of Chittagong Medical College.

Materials and methods: This cross-sectional descriptive study was carried out in the Department of Forensic Medicine, Chittagong Medical College from July 2019 to June 2020. About 156 victims were enrolled.

Results: In this study, out of 156 victims, maximum were in the age group of 11-20 years (57.7%) with mean (±SD) age of 17.66 (±7.981) years (Range: 1-45). Most of the victims were Muslim (93.6%), 97.4% was non-tribal and 44.2% of women had primary level of education. Majority (78.8%) were unmarried. Maximum (64.7%) victims belongs to lower middle class and 60.3% were from urban residence. About (61%) victims were students and 15% were garment worker. Mean (±SD) time gap for medical examination of the victims was 31.1 (±49.999) days. Most of the place of incidence were victim's house (55.1%), maximum motive was sexual gratification (71.8%), 94.9% accused person was known to the victim and in 91% case single alleged person was involved, maximum (35.9%) accused persons were boyfriend and (27.6%) were neighbor. But father was the assailant in case of nine incidence.

GRAPHICAL ABSTRACT

Related Factors and Socio-Demographic Differentials of Rape Victims



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Conclusion: Maximum motive behind rape was sexual gratification and after taking proper history it was revealed that about two third incidence was forceful and one third was mutual. There was a considerable delay between the time of incident and the time of examination which would have led to the destruction of very important medical evidence.

Key words: Rape victims; Related factors; Socio-demographic differentials.

INTRODUCTION

In Bangladesh rape is prevailing with an alarming condition. It is the most common and vicious form of violence against woman in Bangladesh.[1] Rape is not a medical diagnosis; it is a legal term. It is a serious sexual

offence having social, psychological, physical and legal aspects of the problem.

According to section 375 of Bangladesh Penal Code a man is said to commit 'rape' who except in the case here in after excepted, has sexual intercourse with a woman under circumstances falling under any of the five following descriptions - firstly, against her will, secondly, without her consent, thirdly, with her consent, has been obtained by putting her in fear of death or of hurt, fourthly, with her consent, when the man knows that he is not her husband, and that her consent is given because she believes that he is another man to whom she is or believes herself to be lawfully married, fifthly, with or without her consent, when she is under sixteen years of age.[2]

According to Ain O Salish Kendra (ASK), at least 732 women were raped in 2018. Of them, 63 were killed after rape while seven died by suicide after rape.[3] In 2017, a total of 818 women were raped across the country, among which 47 were killed after rape and 11 committed suicide. In 2016, a total of 659 women were raped, according to the report. Whereas, 255 women were victims of sexual assaults in 2017, a figure which was 244 in 2016. Among those, 12 committed suicide, and three women among 13 were killed as they tried to protest.[4] In 2018, 426 victims were attended to the Forensic Medicine department for medical examination. Whereas in 2017 and 2016, the number was 381 and 442 respectively.

It is one of the silent sexual crimes against women and girls. The victim or family members of the victim remain silent due to the lack of provision of protection for victims and witnesses, social stigma associated with rape and prevailing patriarchal attitudes, protracted court proceedings, inadequate investigations by the police, lacunae in the law, particularly the absence of rape shield provisions, etc.[5,6]

A retrospective study was carried out on 330 sexually assailed alleged rape victims' report forms, who reported at Faridpur Medical College, Bangladesh from 2007 to 2011 for medical examination. Among the study subjects, maximum number (70.0%) of alleged rape cases were under the age of 20 years. More than two-thirds (64.60%) of the assailants were known to the victims, most of the incidents (64.20%) occurred in the victims' houses and nearby places. The study also revealed that minimum number of victims (14.20%) reported within 24 hours for medical examination.[7]

The impacts of sexual violence can occur at many levels. There are individual impacts that can be physical and psychological.[8,9] So, the aim of the study is to explore the related factors and socio-demographic differentials of alleged rape cases attending in Forensic Medicine Department of Chittagong Medical College, which might give a picture representing the country wide scenario with the ultimate aim to create public awareness about the brutal crime (Rape).

MATERIALS AND METHODS

This cross-sectional descriptive study was carried out in the Department of Forensic Medicine, Chittagong Medical College from July 2019 to June 2020. About 156 victims were enrolled by purposive sampling.Data was collected by face-to-face interview through a structured questionnaire. After collection, data was checked, verified and edited as per specific objectives and key variables. Data analysis was done with SPSS (Statistical Package for Social Science), Ver. 25 and by using the MS Excel. The results were expressed as frequency, percentage and mean ± SD.Before commencing the study, ethical approval was obtained from proper authority.

Inclusion criteria

- Rape victims attending the Department of Forensic Medicine, Chittagong Medical College

Exclusion criteria

- Victims refused to give consent.

RESULTS

Among 156 victims, maximum was in the age group of 11-20 years (57.7%) with mean (±SD) age of 17.66 (±7.981) years (Range: 1-45). Most of the victims were Muslim (93.6%), 97.4% was non-tribal and 44.2% of women had primary level of education. Majority (78.8%) were unmarried. Maximum (64.7%) victims belongs to lower middle class and 60.3% were from urban residence. About (61%) victims were students and 15% were garment worker, 53 victim's father's occupation was business and 38 were service holder, 116 victim's mothers were home maker and 24 were garment worker and (42%) victim's husbands were garment worker and 26% were business person. Mean (±SD) time gap for medical examination of the victims was 31.1 (±49.999) days. Most of the place of incidence were victim's house (55.1%), maximum motive was sexual gratification (71.8%), 94.9% accused person was known to the victim and in 91%

case single alleged person was involved. maximum (35.9%) accused persons were boyfriend and (27.6%) were neighbor. But father was the assailant in case of nine incidence. Maximum incidence (59.6%) was forceful. Majority (94.2%) had no history of addiction. Most of them (88.5%) reported to the police station.

Table I Age of the victims (n = 156)

Characteristics		
Age (Years)	Mean (±SD)	17.66 (±7.981)
	Range	1-45
Age category (Years)	5	4 (2.6%)
	6-10	20 (12.8%)
	11-20	90 (57.7%)
	21-30	31 (19.9%)
	31-40	9 (5.8%)
	>40	2 (1.3%)

Table II Socio-demographic characteristics of the victims (n = 156)

Characteristics		
Religion	Islam	146 (93.6%)
	Sanatana	7 (4.5%)
	Buddhism	3 (1.9%)
Ethnicity	Nontribal	152 (97.4%)
	Tribal	4 (2.6%)
Educational qualification	Illiterate	12 (7.7%)
	Primary	69 (44.2%)
	SSC	64 (41.0%)
	HSC	8 (5.1%)
	Graduate	3 (1.9%)
Marital status	Unmarried	123 (78.8%)
	Married	23 (14.7%)
	Widow	3 (1.9%)
	Divorced	3 (1.9%)
	Separated	4 (2.6%)
Monthly family income	Low	40 (25.6%)
	Lower middle	101 (64.7%)
	Upper middle	15 (9.6%)
Residence	Rural	62 (39.7%)
	Urban	94 (60.3%)

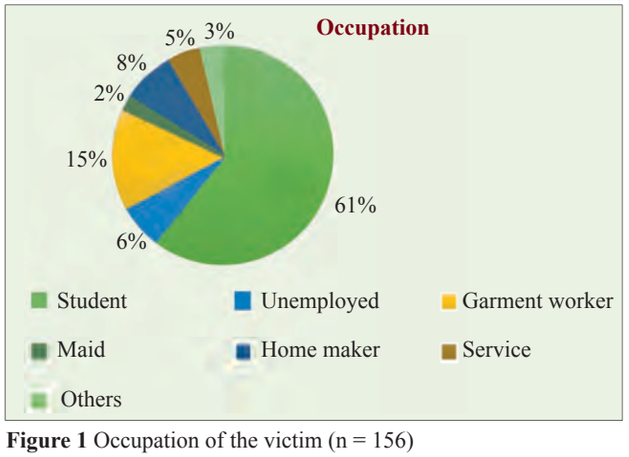

Figure 1 Occupation of the victim (n = 156)

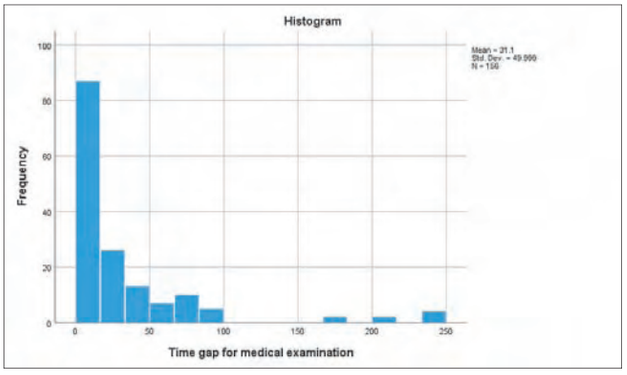

Figure 2 Time gap for medical examination (n=156)

Table III Related information of incidence (n = 156)

Characteristics		
Place of incidence	Victim's house	86 (55.1%)
	Assailant's house	17 (10.9%)
	Other place	53 (34.0%)
Motive behind rape	Sexual gratification	112 (71.8%)
	Forceful marriage	2 (1.3%)
	Willful marriage	18 (11.5%)
	Marriage assurance	24 (15.4%)
Category of accused person	Known	148 (94.9%)
	Unknown	8 (5.1%)
Number of alleged persons	Single	142 (91.0%)
	2-3	7 (4.5%)
	Gang (>3)	7 (4.5%)

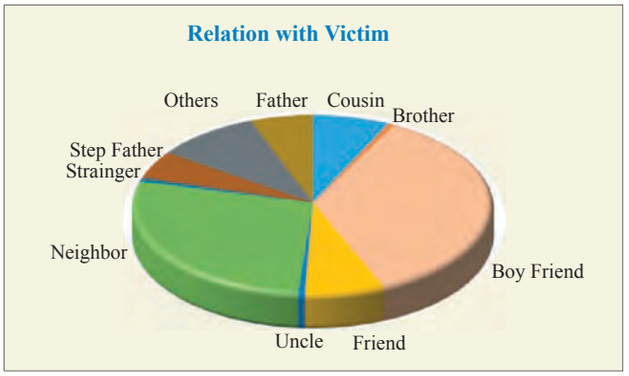

Figure 3 Relation with the victim (n=156)

DISCUSSION

Sexual assaults which have shown an alarming rise are a serious public health problem with hazardous socioeconomic and health related consequences around the world.[10] Rape is one of the cognizable offences and profile of its motives varies from case to case.[11]

This cross-sectional descriptive study was conducted between the periods of July 2019 to June 2020 for duration of 12 months in the Department of Forensic Medicine, Chittagong Medical College, Chattogram.

The present study was conducted to explore the related factors and socio- demographic differentials of rape victims attending in Forensic Medicine department of Chittagong Medical College. Total 156 victims, aged 1-45 were included in the study.

In this study, maximum victim was in the age group of 11-20 years (57.7%) with mean (±SD) age of 17.66 (±7.981) years (Range: 1-45). These figures were compared favorably with other workers. A study showed the age of the alleged victims ranges from 5 years old child to 40 years old woman with the mean ± SD age of 14±3 years. The majority (60.0%) of alleged rape cases was in the age group of 11-20 years followed by 21-30 years of age group (20.0%) and 10.0% cases were below the age of 10 years.[7] In other studies, reveals that majority of the victims are within 16-20 years age group (55.26%). Children & premenopausal age group are also victimized.[11] Another study revealed eighty one percent were less than 18 years of age and among them 17% were less than 12 years of age, a majority 43% were in 12-16 years age group, 21 % in 16-18 years age group, out of total 13 % are in 18-30 years age group. 4% in 30- 40 year group and only 2% were more than 60 years of age.[12]

Present study showed, that most of the victims were Muslim (93.6%), 97.4% was non-tribal and 44.2% of women had primary level of education. Majority (78.8%) were unmarried. Similar demographic scenario was revealed in the study. They showed majority of the victims (64.8%) were unmarried.[7] In a study young unmarried girls working the garment factories and students were abducted and raped.[11]Maximum (64.7%) victims belongs to lower middle class and 60.3% were from urban residence. Also, in a study showed that low socio-economic back ground-poor (82.89%) were the main victim of rape.[11] Another study found that, 71.63% were from low socioeconomic group.[12]

Mean (±SD) time gap for medical examination of the victims was 31.1 (±49.999) days in present study. Similarly, a study revealed that majority (85.80%) of the alleged rape cases were reported for medical examination after 24 hours.[7] Another study by found that only 6 % of victims were examined within 24h of the incident and 23% were examined within 24h-72h, 19% in 72h to 1 week and considerable number of (107) (38%) victims were examined after 1 month of the incident.[12]

Table III shows that, most of the place of incidence were victim's house (55.1%), maximum motive was sexual gratification (71.8%), 94.9% accused person was known to the victim and in 91% case single alleged person was involved. In the study showed more than two-thirds (64.60%) of the assailants were known to victims. The place of incidence of offences was highest (64.2%) in the victim's houses and nearby fields. A total 94 (29.0%) cases were gang rape participating by two or more assailants.[7] A study revealed that getting sexual gratification was the main motive in most of the cases (73.68%), other motives were forceful marriage (6.58%), defamation (2.63%), etc.[11] Another study by Vadysighe et al. (2015) found that 96% knew the assailant and 34% occurred in victim's house.[12]

Regarding relation with victim, maximum (35.9%) accused persons were boy friend and (27.6%) were neighbor. But father was the assailant in case of nine incidence. Similarly, in another study, 36% were boy friends.[12]

LIMITATIONS

- The findings may not generalize conclusion for the national level
- Time and financial constraints
- Some findings may alter by the victims.

CONCLUSION

Most of the victims were young, school going unmarried girls who belonged to the low middle class group and from urban area. In a majority of incidences, the assailant was a known person and boyfriend as well as neighbor were the maximum accused person. But more over it was alarming that father was the assailant in case of nine incidence. The assault had occurred in a place known to the victim. Maximum motive behind rape was sexual gratification and after taking proper history it was revealed that about two third incidence was forceful and one third was mutual. There was a considerable delay between the time of incident and the time of examination which would have led to the destruction of very important medical evidence.

RECOMMENDATIONS

- Public awareness about rape, expanding counseling and advocacy services for the victims, would be effective in increasing willingness of victim to report to proper place in due time with preserving the evidence.

- The conscious people of the society and the law enforcement authorities must take more interest to protect females from sexual offences.
- Female education and women empowerment can alert the vulnerable population about the brutal crime.

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CONTRIBUTION OF AUTHORS

HMH-Conception, design; acquisition of data, data analysis; manuscript writing & final approval.
SM-Conception, critical revision & final approval.
MWC-Data analysis, manuscript writing & final approval.
AD-Interpretation of data, critical revision & final approval.
NCD-Design, drafting & final approval.
SC-Acquisition of data, drafting & final approval.

DISCLOSURE

All the authors declared no competing interest.

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Original Article

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Efficacy of the Modified Version of Ready to Use Therapeutic Food in the Management of Severely Malnourished Children

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Salauddin Parvez[5] Shamonti Das Sharma[6] Dipa Dev[7]

ABSTRACT

Background: Intervention with Ready to Use Therapeutic Food (RUTF) in combination with breastfeeding and other best practices including appropriate medical measures at the stage of uncomplicated Severe Acute Malnutrition (SAM) will prevent mortality and morbidity. Though RUTF is accepted as an efficacious intervention, its cost is a matter of concern. To compare the efficacy of modified RUTF with UNICEF/WHO RUTF in the management of uncomplicated SAM.

Materials and methods: A prospective interventional study was done in the Paediatric Department of Southern Medical College Hospital (SMCH) Chattogram from 15th July 2019 to 15th March, 2020. Thirty uncomplicated SAM children were taken as cases and thirty uncomplicated children were taken as controls with comparable anthropometric measurements with good appetite. The weight, height and Mid Upper Arm Circumference (MUAC) of both the groups were compared and analysis was done using appropriate statistical software.

Results: The height showed slightly higher for WHO-UNICEF food than RUTF food over the time of initial, week-4 and week-8. The weights were significantly different over the week ($F = 331.61$, $p < 0.001$). The mean MUAC were significantly different over the week ($F = 12630.0$, $p < 0.001$).

Conclusion: It was found that the milk powder which should contribute to 50% of the protein of RUTF proposed by WHO/UNICEF can be partially substituted by gram/ chick pea powder having the same propensity of growth. Partial substitution of milk powder by gram minimize the cost of treatment of SAM.

Key words: Mid upper arm circumference; Protein energy malnutrition, Ready to use therapeutic food; Severe acute malnutrition.

GRAPHICAL ABSTRACT

Efficacy of RUTF with UNICEF / WHO, RUTF

Materials and methods

Prospective Interventional Study

Experimental 30

Control 30

Intervention RUTF

Aim
Comparing the efficacy of RUTF with UNICEF / WHO, RUTF

Results

Comparison of Modified RUTF and UNICEF/WHO, RUTF with respect of height, weight and MUAC

		Mean	Std. Deviation	t-Test	p-value
Height (cm)					
Initial Height	RU	80.4667	20.83885	0.00	1.00
	WU	80.4667	20.83885		
Gender	M	87.1667	24.35903	2.11	0.039
	F	76.0000	16.68532		
Weight (Kg)					
Initial Weight	RU	8.1167	4.06364	-0.165	0.87
	WU	8.2900	4.08389		
Gender	M	9.7708	4.88729	2.568	0.013
	F	7.1583	3.00165		
MUAC (mm)					
Initial MUAC	RU	113.63	0.55605	-1.032	0.306
	WU	113.87	1.10589		
Gender	M	113.96	1.19707	1.521	0.134
	F	113.61	.54917		

Conclusion : Addition of modified RUTF instead of UNICEF/WHO RUTF in servere acute malnutrition does not reduce the propensity growth of children, rather it can minimise the cost of treatment.

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INTRODUCTION

Protein Energy Malnutrition (PEM) is a significant problem of the country affecting under 5 children causing morbidity and mortality. Community survey is essential to find out the cases of uncomplicated Sever Acute Malnutrition (SAM) for early intervention to prevent mortality and morbidity. Intervention with Ready to Use Therapeutic Food (RUTF) and other essential treatment is of immense help.[1]

Typical primary ingredients for RUTF are peanuts, oil, sugar, milk powder, vitamin and mineral supplements. Half of the protein is provided from milk powder. RUTF is effective for the management of uncomplicated malnourished children having normal appetite. Because it contains all the nutrients required for recovery, has a good shelf life without spoiling after opening, minimum risk of bacterial growth due to its dryness of the content, does not require refrigeration, liked by children, safe and easy to use without medical supervision and can be used in combination with breastfeeding and other best practices for young children.[1]

UNICEF is fully supportive of the efforts where local possibilities exist to create sustained improve nutrition for children. Other Organizations are also working with the local suppliers based in other countries. The food should be crushable or soft and easy for young children to consume without any preparation.[2] Children up to 5 years of age, have a greater need of food due to greater energy and nutritional requirements for growth and development and for developing immune system. The lack of nutrients has negative influence on all body functions causing serious pathological conditions such as oedema and death.[3]

Composition of therapeutic foods are often made of mixture of protein, carbohydrates, lipids, vitamins and minerals. The mixing process allows protein and carbohydrates of the food to be driven into the lipid matrix.[4] The protein, carbohydrates, lipids and other components of the RUTF improve its functional improve its functional properties including its refractive index.[5-7] The size of the food particles in the mixture should be less than 200 micrometer to maintain its consistency through vigorous stirring.[4] Using this method, the therapeutic foods are produced and packaged without the use of water which would eliminate spoilage issue.

RUTF is a subset of therapeutic foods which is energy-dense and micronutrients enriched pastes made of peanuts, sugar, oil and milk powder that have nutritional value similar to traditional F-100 milk based diet and food used in the inpatient therapeutic feeding programs.[8] The formulation of RUTF was derived from the F-100 and makes use of the same ingredients with addition of peanut butter.[9] Peanut butter changes the physical and functional properties of the food to viscous liquid product rather than powder.

RUTF and Milk powder were checked periodically for salmonella contamination using standard microbiological methods in reliable laboratories. Unshrivelled Peanuts of normal appearance and colour were stored in cool and dry environment for prevention of growth of fungus especially Aspergillus species for avoiding Aflatoxin.[10] The self life of this locally produced RUTF without airtight is 03 to 04 and can be extended up to 24 months by proper packaging.

Measuring a single mineral, such as zinc, potassium, by atomic absorption is reliable, inexpensive way to monitor vitamin and mineral content, since minerals are added as premix product.[11] In case of non availability of absorption spectrophotometer a calorimetric assay for Vitamin C may be substituted.[12] Every country has Bureau of standards which regulates the production of food including inspections of factories, operating standards and license for production of food.[13]

The standard treatment of SAM children adopted by WHO consists of two phases. The therapy used in the initial phase F-75, a milk based liquid formulation containing 0.9 protein/100 ml and 75 kcal/100 ml and parenteral antibiotics followed by second phase of the treatment using milk based liquid F-100 containing 2.9 gram protein/100 ml and 100 kcal/100 ml after improvement of appetite with which the child remains until the child is no more wasted begining in the hospital to be completed at home.[14] The parents are provided with the idea of feeding the child with local version of the RUTF consisting of flour supplements of locally available foods made of legumes and cereals as a replacement for milk based foods which may be effective at improving recovery and weight gain when compared to the alternative dietary approaches.[15] To compare the efficacy of modified RUTF with UNICEF/WHO RUTF in the management of uncomplicated SAM.

MATERIALS AND METHODS

A prospective interventional study was done in the Paediatric Department of Southern Medical College Hospital (SMCH) from 15th July 2019 to 15th March 2020. Thirty children were taken as cases and thirty children were taken as controls. In both the groups equal numbers of boys and girls were included. The anthropometric measurements were also comparable.

Inclusion Criteria

i) Age: 6 to 59 months
ii) Gender: Both male and female
iii) Children having good appetite.

Exclusion Criteria

i) Age below 6 months and above 59 months
ii) Children with complications like sepsis, hypoglycaemia, electrolyte disorders, bipedal oedema etc
iii) Children having loss of appetite.

The cases were given modified RUTF in which part of the milk powder was replaced by podered gram/ chick pea. The controls were given full strength of milk powder as specified by WHO/UNICEF. The peanuts were chosen avoiding the black and squeezed/ shrivelled varieties to avoid aflatoxin consumption. Same principles were applied for chick peas. Another deviation was that both the groups were given multivitamins multi minerals syrup instead of multiminerals premix as specified by WHO/UNICEF because of unavailability of the premix in the market. Moreover the moisture content were minimized by packaging the mixture in a tight polythene bags. The feeding of the foods were counseled to each mother and the supervision of the feeding were managed by mother leaders in the community with regular and periodic telephonic monitoring by the consultant. Weight of the children were measured and recorded weekly while height and Mid Upper Arm Circumference (MUAC) were measured four weekly. All the children were given a course of Amoxicillin for 7 days. After the second week of enrolment all the children were given iron and folic acid.

The study was approved by the Ethical committee of the Southern Medical College.

Table I Ingredients of the Modified RUTF and WHO/UNICEF RUTF

(A) Main Ingredients of Modified RUTF in each sachet

Ingredient	Amount	Calorie
Milk powder	30 gm	120 kcal
Gram powder	25 gm	100 kcal
Sugar	20 gm	80 kcal
Soya oil	15 gm	135 kcal
Peanut	12.5 gm	112.5 kcal
Total	102.5 gm	547.5 kcal

(B) Main Ingredients in WHO / UNICEF RUTFin each sachet

Ingredient	Amount	Calorie
Milk powder	55 gm	220 kcal
Sugar	20 gm	80 kcal
Soya oil	15 gm	135 kcal
Peanut	12.5 gm	112.5 kcal
Total	102.5 gm	547.5 kcal

Descriptive statistics (Mean and standard deviation) were done for all quantitative variables. Repeated Measures Analysis of Variance (RMANOVA) was used to know differences in height, weight, and MUAC at different time (Week) points. The model included height, weight and MUAC as measures, and time (Week) was used as the within-individual effects factor. Food type, gender and age variables were considered as between-subjects factors. The age variable was categorized by taking the median age (10 m) as a cut-off point. Multiple comparisons of Tukey's test were used to find the significant difference of pairwise time differences. An independent two-sample t-test was used for each measurement of height, weight and MUAC regarding the gender and two types of food. Pearson's pairwise correlation was used within the measurement of height, weight, and MUAC.

RESULTS

Table II Comparison of food type (RUTF and UNICEF) gender with respect to height, weight and MUAC in each measurement

	Food type	Mean	Std. Deviation	t Test	p value	Gender	Mean	Std. Deviation	t Test	p value
Height (cm)										
Initial height	RU	80.4667	20.83885	0.00	1.00	M	87.1667	24.35903	2.11	0.039
	WU	80.4667	20.83885			F	76.0000	16.68532		
Week 4	RU	81.3667	20.80531	-0.025	0.98	M	88.1667	24.55281	2.12	0.039
	WU	81.50	20.98727			F	76.9444	16.60283		
Week 8	RU	82.35	20.79960	-0.028	0.978	M	89.1458	24.57707	2.11	0.039
	WU	82.50	20.98727			F	77.9444	16.57915		
Weight (Kg)										
Initial weigh	RU	8.1167	4.06364	-0.165	0.87	M	9.7708	4.88729	2.568	0.013
	WU	8.2900	4.08389			F	7.1583	3.00165		
Week 1	RU	8.7333	4.34728	-0.265	0.79	M	10.5875	5.19651	2.634	0.011
	WU	9.0300	4.31678			F	7.7444	3.17269		
Week 2	RU	9.4000	4.64929	-0.330	0.74	M	11.3917	5.55713	2.597	0.012
	WU	9.7933	4.57738			F	8.4000	3.37063		
Week 3	RU	10.0833	4.95379	-0.395	0.694	M	12.2750	5.97977	2.629	0.011
	WU	10.5867	4.90761			F	9.0417	3.54944		
Week 4	RU	10.8200	5.28155	-0.448	0.656	M	13.1833	6.38290	2.621	0.011
	WU	11.4267	5.21489			F	9.7500	3.76575		
Week 5	RU	11.6367	5.64657	-0.466	0.643	M	14.1875	6.84241	2.630	0.011
	WU	12.3133	5.59000			F	10.5000	4.01803		
Week 6	RU	12.5033	6.03115	-0.473	0.638	M	15.2375	7.31959	2.619	0.011
	WU	13.2400	6.02887			F	11.2944	4.34557		
Week 7	RU	13.4600	6.44620	-0.459	0.648	M	16.3292	7.76713	2.573	0.013
	WU	14.2233	6.43957			F	12.1833	4.72474		
Week 8	RU	14.2767	6.74975	-0.573	0.569	M	17.4208	8.24779	2.587	0.012
	WU	15.2833	6.84937			F	13.0194	4.93777		
MUAC (mm)										
Initial muac	RU	113.63	0.55605	-1.032	0.306	M	113.96	1.19707	1.521	0.134
	WU	113.87	1.10589			F	113.61	.54917		
Week 4	RU	119.53	0.57135	-0.728	0.470	M	119.54	.50898	-0.494	0.623
	WU	119.63	0.49013			F	119.61	.54917		
Week 8	RU	125.60	0.49827	-0.261	0.795	M	125.54	.50898	-0.967	0.338
	WU	125.63	0.49013			F	125.67	.47809		

Table II shows that the average height and weight were higher for WHO-UNICEF food than RUTF food over the time whereas the average MUAC expressed almost similar results. The height and weight measurement was significantly different in terms of gender, but height, weight and MUAC measurement were not significantly different in terms of two types of food at all-time points. The Pearson's correlation between times measures of height, weight, and MUAC were significantly correlated ($p<0.001$).

The heights and weights were significantly different over the week respectively. Post hoc comparisons of Tukey's test showed pair-wise significant mean differences in height and weight respectively ($p < 0.001$). No significant mean differences were found for food type regarding height, weight, and MUAC. The average weight was higher for male and age (≤10 m) than female and age (> 10 m) over the time. Significant mean differences were found for gender regarding height, weight ($F=4.46$, $p = 0.039$, $F= 6.795$, $p = 0.012$). Significant mean differences were found for age regarding height, weight and MUAC respectively ($F= 157.08$, $p< 0.001$, $F = 121.85$, $p<0.001$, $F = 33.925$, $p < 0.001$). No interaction was found between time and food type, time and gender and time and age regarding height, MUAC wherever the interaction between time and gender, and time and age were found in weight ($F = 6.409$, $p = 0.013$, $F = 99.67$, $p < 0.001$).

DISCUSSION

Community Based Management of Acute Malnutrition (CMAM) is an unavoidable alternative for a large proportion of children. Moreover complicated cases of SAM need community based care after discharge from facility based care. Current evidence suggests that more than 80% of total SAM cases are not associated with medical complications and can be

managed at home.[16] Development of Ready-to-Use Therapeutic Food (RUTF) makes management of SAM more effective out of hospitals. RUTF has been used as a substitute to therapeutic diets (F-75/F-100) in African settings and these for the community-based care of children[17,18]. The limited preliminary evidence based on few studies carried out in India suggested that, locally produced RUTF could be acceptable and effective in community-based management of uncomplicated SAM.[19,20]

LIMITATIONS

Though the study includes three slum areas surrounding the Southern Medical College Hospital, the study was done in a single centre. Moreover the cases and controls were limited because of high dropout and fund constraints. In addition, the specific multivitamin multi minerals premix could not be given because of non availability of premix in the country which is substituted by multivitamin multi minerals available produced by the local pharmaceutical companies.

CONCLUSION

In our study, it was found that the milk powder which should contribute to 50% of the protein of RUTF proposed by WHO / UNICEF can be partially substituted by chick pea/gram powder having the same propensity of growth with reduction of cost of treatment of SAM.

RECOMMENDATION

Local version of the RUTF having 50% gram/chick pea powder replacing milk powder will be equally effective in the management of SAM in resource poor countries.

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CONTRIBUTION OF THE AUTHORS

JDS-Conception, design, manuscript writing & final approval.
JD-Data analysis, critical revision of the version & final approval.
NA-Acquisition of the data, manuscript writing & final approval.
SCB-Data analysis, interpretation of the data, critical revision of the version & final approval.
SP-Acquisition of data, manuscript writing and final approval.
SDS-Acquisition of the data, data analysis, manuscript writing & final approval.
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DISCLOSURE

All the authors declared no competing interest.

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Original Article

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New Regime of Fluid and Nutrition Management Can Reduce the Mortality of Eclampsia

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ABSTRACT

Background: Eclampsia is one of the most important causes of maternal mortality in Bangladesh. This study is designed to observe a new regime of fluid and nutrition management along with specific management and close clinical monitoring without intensive care management can improve the condition of eclamptic patients and reduce the mortality and morbidity in the resource poor setting.

Materials and methods: This is a clinical trial was carried out at the department of Obstetrics & Gynecology of Cumilla Medical College Hospital from September, 2019 to August 2020. Total 274 patients with eclampsia whose Glass-Grow Coma Scale (GCS) score in between 3 to 10 were assigned for study during the study period.

Results: The mean age of the eclamptic patients of both group was 23.6 years, 48% cases were primi-gravida, 72% patients coming from low socioeconomic family, 75% having no antenatal check-up. Among them, antepartum eclampsia was observed in 62% followed by 36% postpartum eclampsia and intrapartum eclampsia only 2%. The average number of convulsion before admission was 5-10 times and 62% patients came to hospital 6 hours or more after beginning of convulsion. The mean GCS score of these patients during admission was around 5 or less, which was improved to 14.5 within 36 hours with receiving proposed new regime of treatment protocol.

Conclusion: New regime of fluid and nutritional management along with close monitoring can significantly reduce the morbidity and mortality of eclamptic patients.

Key words : Eclampsia; Fluid and nutrition therapy; Glass-grow coma scale; Resource poor settings.

GRAPHICAL ABSTRACT

New Regime of Management and Eclampsia

Materials and methods

Clinical Trial

Samples 274 ♀

GCS Score Patient 3 to 10

Internvention Group 137 :

New regime (0.9% Sodium chloride 1 liter + 25% Glucose 250ml 12 hourly +5% Amino acid 500 ml + Manitol 125ml 8 hourly arround 24 hours) along with Dexamethasone

Control Group 137 :

Hartman's solution 1 liter + 5% Dextrose in aqua 500ml + 5% Dextrose in saline 500 ml total 2 liter of fluid plus last 24 hours output

Results

Complications in Intervention and Control group

Complication	Intervention Group	Control Group
Pulmonary Oedema		06
Renal Failure	02	05
HELLP Syndrome		04
CVA	01	04
DIC		03
Heart Failure		01
Referred to ICU	01	18

Clinical outcome of Experimental Group

Time	Mean GCS	Mean Number of Convulson (Times)	Mean BP (mm of Hg)	Mean Proteinurea (gm/day)
On admission (O time)	5.6	>10	170/110	13.4
At 24 hours	10.3	4.5	160/100	9.6
At 36 hours	14.5	<2	140/95	2.3

Comparison of Mortality

Intervention Group	Control Group
0	7

Conclusion : New regime of fluid and nutritional management significantly reduces morbidity and mortality of Eclamptic patients.

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INTRODUCTION

Maternal mortality is a global challenge with figures as high as 2,95,000 deaths in 2017. Everyday approximately 810 women died from preventable causes related to pregnancy and childbirth and 99% of these deaths occur in developing countries. Preeclampsia and Eclampsia are the second leading cause of maternal mortality claiming 46,900 deaths worldwide.[1]

The Bangladesh Maternal Mortality Survey (BMMS) 2016 revealed that among the 5000 to 6000 maternal deaths each year in Bangladesh, 1000 to 1200 are due to eclampsia. Eclampsia is the second most common direct cause of maternal death in Bangladesh followed by post-partum hemorrhage. It is responsible for about 24% of all maternal death. Though globally the incidence has been reduced to 0.2-0.5 percent of all deliveries, but In Bangladesh comparing 2010 and 2016, incidence of eclampsia is increased from 39 to 46 percent.[2] The term eclampsia is derived from a Greek word meaning "flushing of light" probably translating to its sudden and unpredictable inception.[3] The first mention of eclampsia dates almost 4000 years back.[4] The precise patho-physiology of preeclampsia and eclampsia is obscure and hence also called 'disease of theories'.[4,5] Eclampsia is the occurrence of seizure in the Presence of preeclampsia (PE). It is a multi-system disorder with complex pathogenesis, which is not completely understood. It may be normally thought to be triggered by oxidative stress, endothelial dysfunction, severe cerebral vasospasm, haemorrhage, ischaemia or oedema.[4,6] It is a life-threatening emergency that contributes to be a major cause of serious maternal & fetal morbidity and mortality. The most common causes of maternal mortality in eclampsia are pulmonary oedema, Cerebrovascular Accident (CVA) post-partum shock, DIC, renal failure and sepsis.[7,8] Proper fluid management is important in severe PE and eclampsia because of low plasma volume and cardiac output which increase the likelihood of fetal distress and oliguria particularly after vasodilatation. However endothelial damage, low oncotic pressure and excessive fluid administration increase the risk of pulmonary edema. Widespread disturbance of the maternal vascular endothelium, Plasma volume depletion is responsible for hypertension, altered vascular reactivity, activation of the coagulation cascade which accompany in PE and alternatively the hypertension is secondary to a contracted vascular bed which results in impaired utero-placental perfusion. Volume expansion and reduction in blood pressure have been attempted with and without central haemodynamic monitoring to improve the condition of the eclampsia.[9]

Cumilla Medical College Hospital (CuMCH) is the peripheral referral hospital where patients from all around the district of Cumilla referred here particularly when complicated. Eclampsia is one of the important causes of maternal death in CuMCH. Most of the eclamptic patients are treated with conventional fluid management in this hospital. Critically analysis the maternal death review from eclampsia, it is found that majority of the death can be prevented by proper fluid and required medical management. If we can manage the patient properly by effective fluid and medication along with close monitoring, maternal mortality and morbidity can be reduced in resource-poor settings where ICU facility is limited.

To reduce the maternal mortality of eclampsia, we propose a new regime of fluid and nutritional management alternative to regular conventional fluid therapy in addition to other required medications to the eclamptic patients whose Glass-grow Coma Scale (GCS) is <5. Information obtained from this study may help in recognizing the magnitude of the problem, effectiveness of the new regime to manage the patients and reduce the maternal mortality of eclampsia in Cumilla Medical College Hospital and also in low resource settings where ICU facility is limited.

MATERIALS AND METHODS

A cross sectional study was carried out at the Department of Obstetrics & Gynecology of Cumilla Medical College Hospital (CuMCH) during a period of One year from Sertember, 2019 to August, 2020. Approval was taken from the Institutional Review Committee (IRB) of Cumilla Medical College (CuMC). After taking informed written consent from patient's legal attendances, total 274 patients with eclampsia who's GCS score in between 3 to 10 were included for the study. From which, We enrolled randomly half of the eclamptic patients, number 137 having GCS score from 3 to 10 were treated with new regime (0.9% Sodium Chloride 1litre + 25% glucose 250ml 12 hourly + 5% amino-acid 500ml + Mannitol 125ml 8 hourly around 24 hours) along with

Dexamethasone and in addition to other regular medications such as anticonvulsant, antihypertensive were selected as Case. Another half of the eclamptic patients 137 having same GCS score treated with conventional protocol like Hartman's solution 1 litre + 5% Dextrose in aqua 500ml + 5% Dextrose in saline 500ml total 2 litres of fluid plus last 24 hours output with strict fluid balance maintain intake-output chart were selected as Control. Key exclusion criteria were Patients with convulsion other than eclampsia e.g. Epilepsy, Septicemia, Meningitis, Encephalitis, High fever or others and patients with GCS score more than 10. After formulation of aim of the study, a clinical data sheet was made for recording all the information of the eclamptic patients. We followed a systemic guideline and closely monitored those patients until the outcome. The primary end point of the study was the mean change from the baseline in the average number of GCS score and the secondary end points were the mean change the lower of blood pressure, mean number of convulsion & Proteinuria. Safety and maternal complications profiles were evaluated according to reported adverse events, vital signs, physical examination and

relevant laboratory investigations. Results are presented in the sequence in which end points were evaluated. Each comparison was performed only if the preceding comparison had a two sided p value of 0.05 or less. A 95% confidence interval and p-value of <0.05 were considered as statistically significant. T-test, Z-test and Chi-square test were done in between two groups were compared to measure the significant level. Collected data were checked, coded manually and analyzed using computer based software SPSS, version-20.

RESULTS

The prevalence of eclampsia came out to be 4.13%. Baseline Socio-demographic and Clinical characteristics were similar among the two groups. Table-1 shows the frequency distribution of variables related to socio-demographic characteristics of eclamptic patients. Table showing the mean age of the affected patients belongs to 23.6±4.6, most of the patients were primi gravida (48%), coming from low socio-economic family (73%), Primary educated only 44%, 75% patients having no antenatal check-up. Table II shows the commonest gestational age was between 32-36 (40.23%) weeks which was followed by 37-42 (36.57%) and least observed was within 24-32 (17.71%) weeks. The mean gestational age at delivery was 35.8±3.7. Figure I shows, Antepartum eclampsia manifested as the most common type affecting 62% cases, followed by 36% women developed eclampsia in the postpartum period and a mere 2% exhibited intrapartum eclampsia.

Table III is showing the improvement of the patients of study group after taking the new regime of fluid management. The patients who have receiving the conventional protocol, 23 patients out of 137 develop serious complications like four patients had HELLP syndrome, four patients had CVA, three patients developed DIC, one patient had heart failure and five patients had acute renal failure. Pulmonary oedema was observed in six patients of control group in present study. Among the conrol group, 18 patients referred to ICU or higher facility for management of complications. But using the new regime, only three patients develop complications, among them two patients develop acute renal failure which was managed locally and improved completely. But one patient develop cerebral stroke that was referred to higher facility for better management (Table- IV). Case fatality was observed in seven mothers. Table V showing, Maternal mortality was calculated to be 2.6% (n=7) in control group.

Pulmonary oedema emerged as the major culprit behind the maternal mortality comprising 1.1% (n=3) of eclamptic death. DIC was noted in one patient and renal failure accounting one patient. Cause of death could not be identified in two patients' possibly multiorgan failure. There is statistically significant difference ($p<0.05$) in obstetrics outcome of eclamptic patients treated with new regime of fluid and nutritional management than the patients receiving conventional regime.

Table I Socio-demographic characteristics of the Study Population (n=274)

Age distribution	Number of patients	Percentage (%)
16-20 years	82	30%
21-25 years	96	35%
26-35 years	82	30%
>35 years	14	05%
● The Mean Age of the patients is 23.6 years of both the group.		
Parity	Number of patients	Percentage (%)
1st gravid	132	48%
2nd gravid	93	34%
3rd gravid	33	12%
4th gravid	16	06%
● Most of the patients are Primigravida 48% (P-value=0.02)		
Educational Status	Number of patients	Percentage (%)
Primary	121	44%
Secondary	107	39%
>Above	05	02%
Illiterate	41	15%
● Among them, 44% patients are primary educated.		
Economic Status	Number of patients	Percentage (%)
Lower	200	73%
Middle	74	27%
High	00	0%
● 73% patients came from Low Socio-economic Status.		
Antenatal Check-up (ANC)	Number of patients	Percentage (%)
No ANC	205	75%
ANC	69	25%
● 75% patients had no antenatal Check-Up.		

Table II Gestational Age from Admission to Delivery (Total number of Antenatal+ Intranatal Patients = 170+05=175)

Gestational Age	Number of Patients	Percentage (%)
24-32 weeks	31	17.71%
32-36 weeks	70	40.23%
37-42 weeks	64	36.57%
Unknown	10	5.71%

● The commonest gestational age during admission was between 32-36 weeks

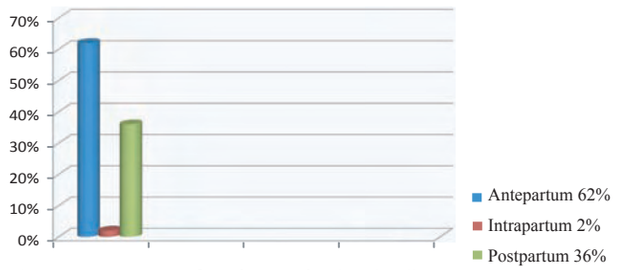

Figure 1 Type of Eclampsia (n=274)

Figure-1 showing Antepartum Eclampsia manifested the most common type affecting 62%.

Table III Baseline Clinical Presentation of the Eclamptic Patients of Study group and Improving of their Sequential Outcome (n=134)

Time	Mean Glasgow coma scale	Mean number of convulsion (times)	Mean Blood Pressure (mm of Hg)	Mean Proteinuria (gm/day)
At Admission (0 time)	5.6	>10	170/110	13.4
At 24 hours	10.3	4.5	160/100	9.6
At 36 hours	14.5	<2	140/95	2.3

Table III showing the Stepwise Improvement of Clinical Manifestations of 134 Patients out of 137 Study group after treating New Regime of management.

Table IV Maternal Complications both in Study group (Case) & Observation group (Control)

Complications	Study group (n=3)	Observation group (n=23)
Pulmonary Oedema		06
Renal Failure	02	05
HELLP Syndrome		04
CVA	01	04
DIC		03
Heart Failure		01
Referred to ICU	01	18

Table IV showing that among the study group (137) only three patients developed maternal complications and only one patient referred to ICU for better management.

Table V Cause of Maternal Death in Observation (Control) group (n=07)

Cause of Death	Number of Patients
Pulmonary Oedema	03
DIC	01
Renal Failure	01
Unidentified cause	02

No Maternal Death in Study group.

DISCUSSION

Eclampsia is a life threatening emergency that contributes to be a major cause of serious maternal morbidity and is still the leading cause of maternal and perinatal mortality in Bangladesh. In developed countries the incidence of eclampsia has fallen due to improved maternal care in pregnancy. But case fatality due to eclampsia reported by different studies reveals high values in low income countries.[10] In our study, among 6635 obstetric patients, 274 patients were admitted with eclampsia wih GCS score in between 3-10, yielding an prevalance of 4.13%. Mean age of the

affected patients belongs to 23.6 years, most of the patients were primipara coming from low socio-economic condition, having no/irregular antenatal check-up which reflecting the substandard level of obstetric care in our country. In this series, about 30% mothers were teenager (<20 years of age). Significant association was observed in primigravid and nullipara (p=0.02). Similar findings were reported in Vivan et al study.[3] This study highlighted the time interval between admission to delivery in eclamptic mothers that can determine the maternal and fetal outcome. 62% patients came late to the hospital. The median time interval between admissions to delivery was 6.6±11.4 hours after onset of first convulsion because of Ignorance of grave sequence of the disease. According to BMMS 2016, 19% maternal death occurs in transit due to delay in reaching the appropriate care.[2] Due to cut short the interval between convulsion and delivery, 68% patients in our hospital, delivered by emergency cesarean section. Sometimes baby might be sacrificed for mother's survival and terminate the pregnancy prematurely irrespective of gestation. Perinatal mortality was also being high in comparison to general perinatal causes which is similar to others studies.[5-12] 21% perinatal death occur in our study period due to complication of eclampsia and prematurity. It is observed that Eclampsia tends to increase in cold weather and with greater rain fall, but tends to decrease during the dry season. Maternal outcome depends on timing between onset of convulsion and receiving the treatment earlier. In Preeclampsia and eclampsia, plasma volume and colloidal osmotic pressure is being reduced. Because of weak buffering mechanism, peripheral oedema may occur and in severe cases there is oedema of brain, lungs and glomerular endotheliosis may also occur. Crystalloid does not contain any large particles such as proteins, therefore do not stay within the blood vessels and can leak out of the plasma into the tissues. Crystalloid solutions move more quickly across the endothelium. But Colloid substances increase the colloid oncotic pressure and effectively move fluid from the interstitial compartment to the plasma compartment by pulling the fluid into the blood vessels therefore increasing blood volume.[9,11,12] On basis of the pathophysiology, we managed the study patients (n=137) in eclampsia ward with new regime 0.9% Sodium Chloride 1litre + 25% glucose 250ml 12 hourly + 5% amino-acid 500ml + Mannitol 125ml 8 hourly around 24 hours along with dexamethasone and in addition to other regular medications. By strictly maintaining this proposed new balanced fluid regime and close monitoring, 49% patients improve within 36 hours. No maternal death occurred in study group and only one patient referred to higher centre for better management. But follow the conventional protocol, 23 patients of control group (n=137) of same GCS score develop serious complications and among them 18 patients referred to ICU or higher centre for better management of complications. Patients with fatal complications like HELLP Syndrome, Pulmonary oedema, CVA, Renal failure and DIC were difficult to manage. These serious complicating factors had a greater influence on mortality than convulsion itself.[12] Those Maternal complications are commonly implicated as cause of death in eclampsia in most of the studies which was more or less similar to our study.[13,14] During the study period, total maternal death of our department was 18. Among them seven patients (0.27%) died due to serious complications of eclampsia who receiving the conventional protocol in comparative observation (control) group. Pulmonary oedema was the main cause of death which may be prevented by treating with our proposed new fluid and nutritional regime.

LIMITATION

Among the limitations of the study is that the sample size was small in both case and control group. Single centre study with a limited number of cases makes our study findings difficult to generalize with the expatriate population.

CONCLUSION

Death from eclampsia in pregnancy still continues to be alarmingly high which is a sign of substandard care in community and hospital. Input of our new regime of adequate fluid and proper nutrition along with other required management and close monitoring can significantly reduce the morbidity and mortality of eclamptic patients in resource poor settings where intensive facility is limited.

RECOMMENDATION

Regarding fluid and nutritional management, more research is needed to improve patient's management and outcome.

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CONTRIBUTION OF AUTHORS

SN-Conception, acquisition of data, drafting & final approval.

RS-Design, data analysis, interpretation of data, critical revision & final approval.

FI-Acquisition of data, data analysis, drafting & final approval.

DISCLOSURE

All the authors declared no competing interest.

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Original Article

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Correlation between Cytomorphological and Biochemical Findings of Lymphocytic Thyroiditis

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ABSTRACT

Background: Hashimoto's Thyroiditis (HT), a synonym of chronic lymphocytic thyroiditis is the second most common thyroid lesion diagnosed on FNAC after goiter. The aim of this study was to correlate the cytological grades of lymphocytic thyroiditis with TSH, ATPO & ATG values.

Materials and methods: This descriptive type of observational study was conducted in the Department of Pathology, Cumilla Medical College, Cumilla from 1st January, 2019 to 31st October, 2020. In this study, 50 samples were taken fulfilling the inclusion and exclusion criteria. The patients who were diagnosed cytomorphologically as lymphocytic thyroiditis was the target population and those who fulfilled the inclusion and exclusion criteria were considered as the study population. Serum TSH, ATPO & ATG were done from Centre for Nuclear Medicine & Allied Scienses, Comilla.

GRAPHICAL ABSTRACT

Cytomorphological and Biochemical findings of Lymphocytic Thyroiditis

Materials and methods

Observational Study

Samples 50

Female 48

Male 02

Age - 21-30 Years

Results

Cytomorphological Grading	
Grade I	32(64%)
Grade II	14(28%)
Grade III	4(8)%

Antibody Positivity	
Anti TPO raised	45(90%)
Anti TG raised	33(66%)

Comparison of Cytomorphological grading with raised antibody

Cytomorphological Grade		Raised Anti TPO	Raised Anti TG	Raised both ATPO & ATG
Grade I	32	28	18	15
Grade II	14	13	11	10
Grade III	4	4	4	4

Conclusion : There is no significant correlation between cytomorphological grade and biochemical parameters, so both should be taken in consideration to diagnose lymphocytic thyroiditis.

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Results: Out of 50 cases, 2(4%) were male and 48(96%) were female with male to female ratio of 1:24. Among these patients, the highest number of patients 34(68%) was in the age group 21-30 years. Cytomorphologically 32(64%) were in grade-I, 14(28%) were in grade-II and 4(8%) cases were in grade-III.Most of the cases 45(90%) showed raised anti-TPO and 33(66%) cases showed raised anti-TG.The statistical correlation between the grades of thyroiditis and the biochemical parameters was found to be insignificant (p value > 0.05) in Chi-square test.

Conclusions: To diagnose a case of lymphocytic thyroiditis a multidisciplinary approach wherein clinical, radiological, biochemical & cytological parameters should be taken into consideration.

Key words: ATPO & ATG; Cytomorphology; Lymphocytic thyroiditis; TSH.

INTRODUCTION

Hashimoto's thyroiditis, a synonym of chronic lymphocytic thyroiditis or autoimmune thyroiditis, is the second most common thyroid lesion diagnosed on FNAC after goiter.[1,2] It is an organ-specific immunologically mediated inflammatory disease which is characterized by Hurthle cell change and an increased number of mature & transformed lymphocytes impinging on follicular cells.[3] It is diagnosed in about 3% of population with the prevalence increasing in older women upto 16%. But the prevalence of the disease varies depending on the diagnostic methods used and the population under study.[4]

Although HT can occur at any age, the common age group documented in the literature ranges between 45 and 65 years. The disease exhibits an obvious female predilection, with a female:male ratio ranging between 4:1 and 20:1. Clinically, it most often manifests with diffuse thyromegaly, although nodular, asymmetric thyroid enlargement is not uncommon, with the latter presentation often clinically mimicking thyroid malignancy. The natural history of HT is a progression to hypothyroidism although its incidence varies in different studies.[5]

The initiating event is thought to be due to sensitization of cluster of differentiation 4 (CD4)+ T-helper cells to thyroid antigens. The effector mechanisms for thyrocyte destruction includes CD8+ T-cell mediated cytotoxicity, cytokine mediated cell death, and antibody dependent cell-mediated cytotoxicity caused by binding of antithyroid antibodies, antithyroglobulin, antithyroid peroxidase, and anti-Thyroid Stimulating Hormone (TSH) receptor antibodies to thyrocyte surface.[6]

HT is characteristically seen in cytology smears as the presence of a mixed population of mature and transformed lymphocytes, Hurthle cells, follicular cells with fine chromatin, anisonucleosis, and epithelioid cell collections and giant cells. Despite its superiority, FNA has some diagnostic pitfalls in diagnosing HT. Cytomorphologic features of sub-acute lymphocytic thyroiditis sometimes overlap with HT. Inflammatory infiltrate in sub-acute thyroiditis is not uniformly lymphocytic but is mixed and with evidence of more severe tissue destruction.Cytological features along with biochemical, ultrasonographic, and clinical features help in making a diagnosis. So, correlation between cytomorphological grades and biochemical parameters is a very crucial matter.[7]

The aim of this study was to correlate the cytological grades of lymphocytic thyroiditis with TSH, ATPO and ATG values.

MATERIALS AND METHODS

This prospective type of observational study was carried out in the Department of Pathology, Comilla Medical College, Cumilla from 1st January, 2019 to 31st October, 2020. Sampling was done by consecutive sampling technique.The patients who were diagnosed cytomorphologically as lymphocytic thyroiditis during the study period was the target population and those who fulfilled the inclusion and exclusion criteria were considered as the study population. Patients of all ages and both sexes diagnosed cytomorphologicallyas lymphocytic thyroiditis were included. Patients already under treatment of Hashimoto's thyroiditis and those who were seriously ill were excluded from the study.

After all aseptic measures 23 gauge needle was placed in the lesion and then the materials were aspirated with a 5 ml disposable syringe.After placing aspirates on the slides, thin smears were prepared by gentle friction of two slides.Then smears were fixed in 95% ethyl alcohol and stained with Papanicolaou stain. Every patient diagnosed cytomorphologically as lymphocytic thyroiditis was sent for testing of serum TSH, anti-TPO and anti-TG. These biochemical investigations were done at Institute of Nuclear Medicine and Allied Sciences, Comilla. Ultrasonographicfindings of every patient was recorded.Data were collected in a pre-designed data collection sheet and analysedby using SPSS 20.0. Quantitative data are expressed as frequency and percentage. Comparison between cytomorphological and biochemical parameters were performed with Chi-squaretestand $p<0.05$ was considered to be significant.

RESULTS

The age of the study patients ranged from 13 to 60 years. Considering each decade as an age group, patients were divided into five groups in this study to see the frequency of cases. Out of 50 cases, 2(4%) were male and 48(96%) were female with male to female ratio of 1:24. Among these patients, the highest number of patients 34(68%) was in the age group 21-30 years.

Table I Age distribution of study cases

Age groups	Frequency	Percentage (%)
11-20	13	26
21-30	17	34
31-40	10	20
41-50	07	14
51-60	03	06
Total	50	100.0

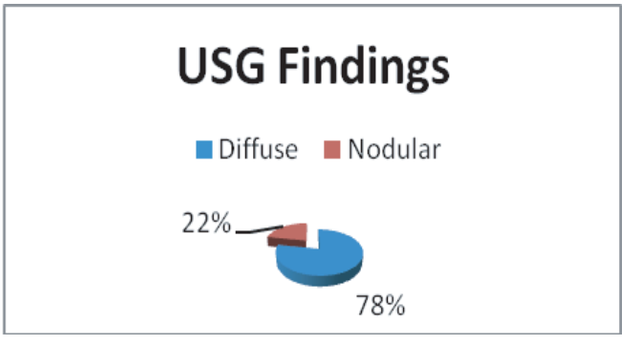

Figure 1 Distribution of study cases according to USG Findings

Among the study cases 31(62%) were clinically hypothyroid, 10(20%) were hyperthyroid and 9(18%) were euthyroid.

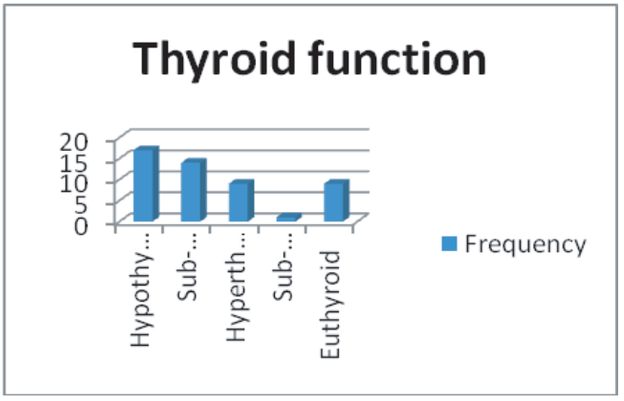

Figure 2 Distribution of study cases according to thyroid function

Cytomorphologically most of the cases 32(64%) were in grade-I, 14(28%) were in grade-II and 4(8%) cases were in grade-III.

Table II Distribution of study cases according to cytomorphological grading

Cytomorphological grading	Frequency	Percentage (%)
Grade-0	00	00
Grade-I	32	64
Grade-II	14	28
Grade-III	04	08

Most of the cases 45(90%) showed raised anti-TPO and 33(66%) cases showed raised anti-TG.

Table III Distribution of study cases according to antibody test

Antibody	Raised	%	Normal	%
Anti-TPO	45	90	05	10
Anti-TG	33	66	17	34

Table IV Comparision between biochemical and cytomorphological findings

Serological values	Cytomorphological grading			
	Grade-I	Grade-II	Grade-III	Total
Raised ATPO, Raised TG, Raised TSH	7	6	3	16
Raised ATPO, Raised TG, Normal TSH	3	1	1	05
Raised ATPO, Normal TG, Raised TSH	7	2	0	09
Raised ATPO, Normal TG, Normal TSH	4	0	0	04
Normal ATPO, Raised TG, Raised TSH	3	1	0	04
Raised ATPO, Raised TG, Decreased TSH	5	3	0	08
Raised ATPO, Normal TG, Decreased TSH	2	1	0	03
Normal ATPO, Normal TG, Raised TSH	1	0	0	01
Total	32	14	04	50

The statistical correlation between the cytomorphological grades of thyroiditis and the biochemical parameters was found to be insignificant (p value > 0.05) in Chi-square test.

DISCUSSION

Our patients were aged between 13 years and 60 years and were predominantly females. Forty eight patients were females and only two were males. This female predominance was observed in most of the studies in the literature. Our commonest age group was 21-30 years which is similar to the findings of Sood et al.[6] But many other studies found that the most common age group was 31-40 years.[3,7] However, they feel that this suggestion needs to be reconsidered since iodine-fortified salt has been introduced in India since many years. Also, there are other views regarding the increase in incidence of HT. This includes excess iodine intake, particularly in coastal areas.[7]

In a study by Li et al., it was noted that subjects who were ATPO and ATG positive at baseline developed thyroid dysfunctions more frequently than seronegative subjects. According to them, high iodine intake was a risk factor for developing hypothyroidism in antibody-positive subjects. A constant exposure to excessive iodine intake in turn increased the incidence of positive ATG.[7] HT is in fact considered a common cause of hypothyroidism in areas where iodine levels are sufficient.[8]

In our study twenty-two percent of the patients presented with nodular disease. This is significantly higher when compared to a study from India by Bhatia et al.

where only 2.63% presented with nodular disease.[3] However, there are other studies in the literature wherein 32.6% of the patients presented with nodular disease.[8]

This is supported by our observation that in the present study a normal TSH value was observed in 18% cases, while ATPO value was elevated in 90% of cases and nodular disease was observed in 22% of cases. Other authors have also observed that in the early stages of the disease, TSH value may be normal and ATPO antibodies may be positive.[6]

In the present study, we found that most of the cases (62%) are hypothyroid or sub-clinical hypothyroid. Similar finding is seen in a study by Thomas et al. in India.[9]Another Indian study on cytology proven Hashimoto's thyroiditis showed that 90% were diffuse and 3% were nodular. Study from Malaysia has reported that Indians have increased prevalence of diffuse goiter while Chinese have more of nodular presentation.[10]

Ninety percent of the patients in our study showed an elevated ATPO value. Other studies have also shown the similar percentage of patients with increase in ATPO values.[6,7] The patients presenting at an early stage have raised ATPO values, even before there is serological evidence of hormonal imbalance. Intrathyroidal immune destruction occurs much earlier to detectable serological evidence. Ten of our patients presented with decreased TSH values and elevated ATPO values and showed features of hyperthyroidism. Four of them had grade-2 thyroiditis, and six had grade-1 thyroiditis. This phenomenon is seen in the active early stage of the disease wherein there is acute autoantibody mediated destruction of thyroid follicular cells.

In our study, majority of patients (64%) presented with grade-1 disease. In many studies majority of the patients presented with grade-2 disease.[3,11,12,13] However, in the study by Sood and Nigam, 40% of the patients had grade-3 thyroiditis.[6]

Though the present data indicate no significant statistical correlation between the cytological grades and the biochemical parameters, and we feel that this study is limited by the sample size. A larger sample size may be required to provide a definite result. In a study by Singh et al. observed that the grading of thyroiditis and lymphocytic infiltration showed no correlation with the clinical severity of HT, while a high Lympho: Epithelial (L:E) ratio was strongly correlated with thyroid peroxidase positivity ($p = 0.004$).[5] Another study by Pandit et al.showed no correlation between lymphocyte number and Antimicrosomal Antibody (AMA) titer.[14] However, in the study by Kumar et al. the statistical correlation between the cytological grades of lymphocytic thyroiditis and the functional and antibody status and in the study by Bhatia et al. wherein the cytological grades were compared with clinical, biochemical, ultrasonographic and radionuclide parameters no significant statistical correlation was observed.[15,3]

LIMITATIONS

It was not possible to do this study with a larger sample due to pandemic COVID-19 situation.

CONCLUSION

To diagnose a case of lymphocytic thyroiditis a multidisciplinary approach wherein clinical, radiological, biochemical, cytological, and radionuclide parameters should be taken into consideration. In spite of the different diagnostic modalities FNAC still remains as the gold standard for lymphocytic thyroiditis. Though there is a strong association of antithyroid antibodies, especially ATPO with HT, the present study and previous similar studies have failed to establish any significant correlation between the cytological grades and biochemical parameters.

RECOMMENDATIONS

FNAC is a simple and reliable diagnostic tool for diagnosis of lymphocytic thyroiditis. But biochemical parameters are important aids for diagnosis of it. In spite of failure of most of the studies to find out a significant correlation between cytomorphological and biochemical parameters these are useful adjuncts in the diagnosis of Hashimoto's thyroiditis or lymphocytic thyroiditis.

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CONTRIBUTION OF AUTHORS

AMS-Conception, acquisition of data, data analysis, drafting & final approval.
JDG-Interpretation of data, critical revision & final approval.
MFBE-Design, analysis of data, critical revision & final approval.
MHR-Interpretation of data, critical revision & final approval.
LS- Data analysis, drafting & final approval.
MMR-Acquisition of data, drafting & final approval.

DISCLOSURE

All the authors declared no competing interest.

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Original Article

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Pain Dimension and Severity of Orofacial Pain in Odontogenic and Non-odontogenic Condition

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ABSTRACT

Background: The orofacial region is associated with a rich innervation and very common site of pain which may be either odontogenic and non-odontogenic, current or chronic. The aim of this study was to evaluate the dimension and severity of orofacial pain in different odontogenic and non-odontogenic condition.

Materials and methods: 236 patients from OPD (Out-Patient Department) with the complaint of pain in orofacial region were included in this study. All selected patients were diagnosed by clinical and radiographic examination for evaluate the cause of pain. The dimension and severity of pain was evaluated by preformed questionnaire and posted to data sheet for statistical analysis. The data was analyzed by GraphPad Prism 8. Statistical significance was determined by Holm-Sidak method, with alpha =0.05.

Results: The results showed that 89.60% and 10.60% patients had pain due to odontogenic and non-odontogenic causes respectively. Among those 86.15% patients had current odontogenic pain 11.85% had chronic odontogenic pain, 44% patients had current non-odontogenic pain and 56% had chronic non-odontogenic pain. In current odontogenic and current non-odontogenic pain affective dimension and PAINAD score was statistically significant (p value 0.0003 and 0.010). PAINAD score and Facial Pain score was significantly more in chronic non odontogenic pain compare to chronic odontogenic pain (p value 0.012 and 0.001 respectively).

Conclusion: Orofacial pain either current or chronic is complex experience of a multidimensional nature always associated with emotional, cognitive and psychological state.

GRAPHICAL ABSTRACT

Dimension and Severity of Pain

Materials and methods

Observational Study

Samples 236

Results

Variables	Odontogenic Pain 	Non-Odontogenic Pain 	p-value
Percentage of patients	89.60%	10.60%	
Current affective dimension (Mean ± SD)	2.08 ± 1.5	4.00 ± 3.89	.0003
Chronic affective dimension (Mean ± SD)	1.20 ± 1.11	2.78 ± 2.11	.003
Facial Pain 			
Current 	1.65 ± 1.55	2.54 ± 2.2	.072
Chronic 	1.04 ± 1.3	2.15 ± 1.87	.001

Conclusion : In current odontogenic and Non-odontogenic pain affective dimension are statistically significant. Facial pain score is significantly more in chronic non-odontogenic pain.

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Key words: Chronic pain; Current pain; Non-odontogenic pain; Odontogenic pain.

INTRODUCTION

Anticipation of aversive events, such as pain, can be important for survival because it helps people to prepare ahead to prevent negative potential consequences. The term "pain" is currently defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in term of such damage by International Association for Study of Pain (IASP).[1,2]

The orofacial region are associated with a rich innervation that is associated with a disproportionately large sensorimotor representation in Central Nervous System (CNS) and has exquisite sensory discrimination and sensitivity.[3] One of the most common site of pain is oro-facialregion which is either acute or chronic.Current orofacial pain is considered to be pain during the past month in the face, mouth or jaw which has lasted for one day or longer.[3] Chronic pain is considered to be pain present for longer than six months and pain intensity may be influenced by nociception, environmental and psychological factors.[4] Moreover, chronic pain is defined as persistent or recurrent pain lasting longer than 3 months.[5] This definition has been chosen because it provides a clear operationalization that is in line with widely used criteria and includes the majority of relevant conditions.

Untreated dental decay has been reported as the most important reason for toothache, which can impact daily routine activities. Toothache is a common problem and, depending on geographic location, may be highly prevalent.[6] However, it is unclear what proportion of reported toothache is truly chronic and more data are needed.[7] From currently available data, duration of constant toothache is present fordays up to seeking care. A similar study estimated days of tooth pain before presenting for treatment to an emergency dental clinic.[8]

Painful injuries results in emotional distress which is the most unwanted feature of sensation,feeling, thoughts and image that pain provokes.[7] While emotional aspects of pain may be difficult for patients to describe, they can be discriminated from sensory qualities at the level of experience and self-report.[8] Anger, fear, and sadness were predictive of the effective components of self-reported measures of chronic pain.[9] State also are differentially sensitive to social and therapeutic influences.[10]

Physiological pain is a complex system consisting of well organized physiological and biochemical phenomenon. Adding to the difficulty of diagnosing a pain condition is the potential of neuropathic pain developing in the oral cavity with associated hyperalesia, allodynia, trigeminal neuralgia, Post Traumatic Trigeminal Neuralgia (PTTN) and noceciptive pain from teeth and periodontal tissue. [11-13] There are two relatively simple, patient self-report, pencil and paper instruments which are available for dentist to utilize in clinical setting: Short Form of McGill Pain Questionnaire (SF-MPQ) and Visual Analogue Scale (VAS).[14,15] Other form of pain assessing tool named Pain Assessment in Advanced Dementia (PAINAD)[16]. Scale used in patient who are cognitively impaired with advanced dementia, as a result of their condition can experience more pain or prolonged pain due to its under treatment. Pain related behavior can be assessed in by Observable Pain Behavior tool.[17]

The objective ofthis study was toevaluate the pain dimension and severity of orofacial pain in different odontogenic and non-odontogenic condition.

MATERIALS AND METHODS

A prospective observational study.Patient was selected purposively those who attained in Outdoor.Study was ethical cleared by IRB from Chattagram International Medical College. 236 Out Department's patients (OPD) from January 2019 to December 2019 for the complaint of Pain in Orofacial region was included in this study. Those patient who was not interested to participate and unable to answer the questions from questionnaire was excluded from this study.

A diagnosis was made of orofacial pain by clinical and radiographical examination. Trigeminal Neuralgia was diagnosed from pain description by patient. Prior to being examination, all patients were completed a questionnaire that made an in depth inquiry into their facial pain characteristics and related co-morbidity. A Short-Form McGill pain questionnaire was used to identified description associated with pain.Co-morbidities were measured in the orofacial region used Yes/No questions on facial trauma and teeth grinding. Data were collected by Preformed Questionnaire.The data were used for analysis including only those subjects who had consulted for their pain. The posted data were analysed by multiple 't' test in GraphPad Prism 8. Statistical significance determined using the Holm-Sidak method, with alpha=0.05.

RESULTS

A total of 236 individual with the complain of pain in orofacial region responded to the questionnaire, among those 89.60% (n=211) patients had pain due to odontogenic causes, 10.60 (n=25) non odontogenic causes (Table I).

23.11% (n=43) patient had co-morbidity and 36.02% (n=67) with the history of previous dental treatment in

current odontogenic pain. 12% (n=3) patient had co-morbidity and 36% (n=9) with the history of previous dental treatment in chronic odontogenic pain. (Table II).

Age of patients with current odontogenic pain was 37.12 ± 13.33; 40.56 ± 15.06 for chronic odontogenic pain those was statistically non-significant (p Value 0.230, 95% CI -0.9125 to 2.240) when compared between both groups (Table III).

Pain behaviour of current odontogenic pain in PAINAD scale was 1.44 ± 1.47 and facial pain score was 1.65 ± 1.55. In chronic odontogenic pain PAINAD scale was 0.88 ± 1.36 and facial pain score was 1.04 + 1.3). Pain behaviour of current and chronic odontogenic pain was statistically non significant in PAINAD scale (p value 0.061, 95% CI level -0.029 to 1.247) and Facial Pain Score (p value 0.061, 95% CI level -0.029 to 1.247 (Table III).

Age of patients with current non odontogenic pain was 42.54 ± 13.02; 44.28 ± 13.02 for chronic non odontogenic pain those was statistically non-significant (p Value 0.497, 95% CI -3.306 to 6.786) when compared between both groups (Table III).

Pain behaviour of current non odontogenic pain in PAINAD scale was 2.63 ± 1.74 and facial pain score was 2.54 ± 2.20. In chronic non odontogenic pain PAINAD scale was 2.35 ± 2.13 and facial pain score was 2.85 ± 1.87. Pain behaviour of current and chronic non odontogenic pain was statistically non-significant in PAINAD scale (p value 0.727, 95% CI level -1.921 to 1.361) and Facial Pain Score (p value 0.706, 95% CI level -1.373 to 1.993) (Table III).

The affective dimension of current non odontogenic pain (4.00 ± 3.89) was significantly different (p value 0.0003) from current odontogenic pain. In pain behaviour, PAINAD score of Current non odontogenic pain (2.63 ± 1.74) was statistically significant (p value 0.010) from current odontogenic pain (1.44 ± 1.47) (Table IV).

The affective dimension of chronic non odontogenic pain (2.78 ± 2.11) was significantly (p value 0.003) different from chronic odontogenic pain. In pain behaviour, PAINAD score (2.35 ± 2.13) and Facial Pain score (2.85 ± 1.87) of chronic non odontogenic pain was significantly (p value 0.012 and 0.001) different from PAINAD score (0.88 ± 1.36) and Facial Pain Score (1.04 ± 1.30) of chronic odontogenic pain (Table V).

Table I Type of pain and number of patients those were involved as study sample

Number (Percentage)	Current Odontogenic	Chronic Odontogenic
Odontogenic 211 (89.40%)	186 (88.15%)	25 (11.85%)
	Male Female	Male Female
	61(32.79%) 125(67.21%)	15(60%) 10(40%)
Non odontogenic 25 (10.60%)	Current non odontogenic 11 (44%)	Chronic non odontogenic 14 (56%)
	Male Female	Male Female
	4(36.37%) 7(63.63%)	2(14.29%) 12(85.71%)

Table II Co-morbidity and prior dental treatment in odontogenic and non-odontogenic pain

Number (Percentage)				
Odontogenic 211 (89.40%)	Current Odontogenic 186 (88.15%)		Chronic Odontogenic 25 (11.85%)	
	Comorbidity	Prior Treat	Comorbidity	Prior Treat
	43 (23.11%)	67(36.02)	3(12%)	9(36%)
Non odontogenic 25 (10.60%)	Current non odontogenic 11 (44%)		Chronic non odontogenic 14 (56%)	
	Comorbidity	Prior Treat	Comorbidity	Prior Treat
	1 (9.09%)	9(81.81%)	2 (14.28%)	10(71.43%)

Table III Comparison of dimension and severity between current and chronic odontogenic pain

Duration of Pain (Number)	Age (Mean± SD)	VAS (Mean± SD)	Sensory Mean± SD)	Affective (Mean± SD)	PRI-T (Mean± SD)	PAINAD score (Mean± SD)	Facial Pain Score (Mean± SD)
Current odontogenic Pain (186)	37.12 ± 13.33	6.87 ± 1.91	9.66 ± 4.33	2.08 ± 1.50	12.85 ± 5.49	1.44 ± 1.47	1.65 ± 1.55
Chronic odontogenic Pain (25)	40.56 ± 15.06	5.24 ± 2.24	7.88 ± 4.16	1.20 ± 1.11	9.8 ± 5.22	0.88 ± 1.36	1.04 ± 1.30
p-value	0.230	0.0001*	0.053	0.005*	0.010*	0.072	0.061
95% CI level	-9.125 to 2.240	0.810 to 2.449	-0.030 to 3.590	0.266 to 1.493	0.717 to 5.302	-0.052 to 1.172	-0.029 to 1.247

Statistical significant was determined using the Holm-Sidak methods, with alpha = 0.05, VAS= Visual Analogue Scale, PRI-T= Pain Rating Index Total.

Table IV Comparison of dimension and severity between current and chronic non odontogenic pain

Duration of Pain (Number)	Age (Mean± SD)	VAS (Mean± SD)	Sensory (Mean± SD)	Affective (Mean± SD)	PRI-T (Mean± SD)	PAINAD score (Mean± SD)	Facial Pain Score (Mean± SD)
Current non odontogenic Pain (11)	42.54 ± 13.02	5.72 ± 2.32	8.36 ± 4.22	4.00 ± 3.89	13.00 ± 8.50	2.63 ± 1.74	2.54 ± 2.20
Chronic non odontogenic Pain (14)	44.28 ± 13.02	5.85 ± 2.32	7.42 ± 5.40	2.78 ± 2.11	11.92 ± 6.87	2.35 ± 2.13	2.85 ± 1.87
p-value	0.497	0.896	0.640	0.325	0.728	0.727	0.706
CI level	-3.306 to 6.786	-1.904 to 2.164	-5.042 to 3.162	-3.733 to 1.293	-7.432 to 5.272	-1.921 to 1.361	-1.373 to 1.993

Statistical significant was determined using the Holm-Sidak methods, with alpha = 0.05, VAS= Visual Analogue Scale, PRI-T= Pain Rating Index Total.

Table V Comparison of dimension and severity between current odontogenic and current non odontogenic pain

Duration of Pain (Number)	Age (Mean± SD)	VAS (Mean± SD)	Sensory (Mean± SD)	Affective (Mean± SD)	PRI-T (Mean± SD)	PAINAD score (Mean± SD)	Facial Pain Score (Mean± SD)
Current odontogenic Pain (186)	37.12 ± 13.33	6.87 ± 1.91	9.66 ± 4.33	2.08 ± 1.50	12.85 ± 5.49	1.44 ± 1.47	1.65 ± 1.55
Current non odontogenic Pain (11)	42.54 ± 13.02	5.72 ± 2.32	8.36 ± 4.22	4.00 ± 3.89	13.00 ± 8.50	2.63 ± 1.74	2.54 ± 2.20
p-value	0.191	0.056	0.333	0.0003*	0.914	0.010*	0.072

Statistical significant determined using the Holm-Sidak methods, with alpha = 0.05, VAS= Visual Analogue Scale, PRI-T= Pain Rating Index Total.

Table VI Comparison of dimension and severity between Chronic odontogenic and Chronic non odontogenic pain

Duration of Pain (Number)	Age (Mean± SD)	VAS (Mean± SD)	Sensory (Mean± SD)	Affective (Mean± SD)	PRI-T (Mean± SD)	PAINAD score (Mean+SD)	Facial Pain Score (Mean± SD)
Chronic odontogenic Pain (25)	40.56 ± 15.06	5.24 ± 2.24	7.88 ± 4.16	1.20 ± 1.11	9.8 ± 5.22	0.88 ± 1.36	1.04 ± 1.30
Chronic non odontogenic Pain (14)	44.28 ± 13.02	5.85 ± 2.32	7.42 ± 5.40	2.78 ± 2.11	11.92 ± 6.87	2.35 ± 2.13	2.85 ± 1.87
p-value	0.429	0.440	0.767	0.003*	0.284	0.012*	0.001*

Statistically significant was determined using the Holm-Sidak methods, with alpha = 0.05. VAS= Visual Analogue Scale, PRI-T= Pain Rating Index- Total.

DISCUSSION

Pain is a complex sensory, emotional, and behavioural process. Pain can differfrom being a protective process (Acute pain) to a destructive means (Chronic pain). Depending upon the underlying anatomical action, acute pain can often be essentially treated, and pain often resolves when healing or end of the obstacle occurs.[18] In this study, 86.15% (n=186) of patients had current odontogenic pain, 44% (n=11) of patients had current non-odontogenic pain. Conversely, 11.85% (n=25) of patients had chronic odontogenic pain, 56% (n=14) of patients had chronic non odontogenic pain (Table I).

Co-morbidity and Prior Dental Treatment

Pain may be defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage.[19] Pain persisting in a bodily region after surgical treatment has been well documented and is associated with further suffering, reduced quality of life and disability.[20] Dental treatment that involves the distal aspect of the second and third branches of the trigeminal nerve innervating teeth. It has been estimated that at least 5% of patients experience persistent tooth pain after Root Canal Treatment (RCT).[21] In this study, 30.02% (n=67) patients had the history of previous dental treatment in current odontogenic pain and 81.81% (n=9) in current non-odontogenic pain. 36% (n=9) patients had the history of previous dental treatment in chronic odontogenic pain and 71.43% (n=10) in chronic non-odontogenic pain.

Comorbidity is defined as the co-occurrence of more than one disorder in the same individual.[22] In this study 23.11% (n=43) patients had co-morbidity in current odontogenic pain and 12% (n=3) in chronic odontogenic pain. (Table 2). 9.09% (n=1) patients had comorbidity in current non-odontogenic pain and 14.28% (n=2) in chronic non odontogenic pain (Table II). The comorbid relationships with pain like bodily pain, irritable bowel syndrome, fatigue and chronic fatigue were documented in this study.

Dimension and Severity of Odontogenic and Non-odontogenic Pain

The affective-motivational dimension, often referred to simply as 'unpleasantness' or given the level 'affective', captures how 'bad' or how 'unpleasant' the pain is. It is captured the motivational aspect of pain.[23,24]

In this study, Severity of Current Odontogenic Pain was more severe than Chronic odontogenic pain; those were significant difference (Table III). The affective dimension score of current odontogenic pain significantly more than chronic odontogenic pain. The total Pain Rating Index (PRI-T) was significantly more than chronic odontogenic pain (Table III).

Severity of current and chronic non odontogenic pain was moderate in rating; those were statistically non-significant. The sensory and affective dimension score, PRT-I of current and chronic non-odontogenic was non significantly difference (Table IV).

Cognitive manipulation to extend the affective dimension of pain (i.e. to make it more unpleasant but not more 'intense' caused an increase in ACC activation; a cognitive manipulation to decrease the affective dimension (i.e. Perform it less unpleasant but no less intense) caused a decrease in ACC activation.[25] In our study, affective dimension of current non odontogenic pain was more than current odontogenic pain and those was statistically significant. But 'intense' of pain was less in current non odontogenic pain rather than current odontogenic pain (Table 5).Affective dimension of chronic non odontogenic pain was significantly different from chronic odontogenic pain (Table VI).

It was studied that memory for the intensity of past physical pain depends critically on the intensity of present pain.[26] In our study, 81.81% patient of current non odontogenic pain had the history of previous dental treatment and 71.43% patient of chronic non odontogenic pain. Consequently, 36.02% patient of current odontogenic pain had the history of previous dental treatment and 36% patient of chronic odontogenic. In this study showed like to previous study[27]. Among controls, significant gender and ethnic group differences in psychosocial measures were observed in same studied. In our study results also showed that intensity of current odontogenic pain measured by Visual Analogue Scale (VAS) and Pain Rating Index Total (PRI-T) was significantly more than chronic odontogenic pain (Table III). Affective dimension was significantly more in Current non odontogenic pain but less sensory compare to the current Odontogenic pain. But Pain Rating Index Total (PRI-T) is more in non-odontogenic pain (Table VI) than odontogenic pain. Chronic odontogenic pain's sensory dimension was more than chronic non odontogenic pain.Interestingly affective dimension of chronic non-odontogenic pain was significantly more than chronic odontogenic pain, but Visual Analogue Score (VAS) and PRI-T was more in chronic non-odontogenic pain than chronic odontogenic pain (Table VI).

Behaviour and Facial Coding of Severity of Orofacial Pain

The sensory and affective dimensions are inextricably linked, and self-ratings of pain severity and unpleasantness are often found to be strongly correlated.[28] It was an interesting finding in our study that Affective dimension was related to PAINAD and Facial Pain Score (FPS) when comparing between current odontogenic pain and current non odontogenic pain, chronic odontogenic pain and chronic non odontogenic pain. PAINAD score of current non-odontogenic pain was significantly more than current odontogenic pain. Affective dimension of same comparison was significantly more in non-odontogenic pain but non-significant in sensory dimension of pain (Table V). Similar result has been found in comparison of chronic odontogenic pain and chronic non odontogenic pain.

LIMITATIONS

This study was conducted in confined region. So actual picture were not found.

CONCLUSION

Orofacialpain (whether current or chronic) is also complex experience of a multidimensional nature, which is always subjective, always associated with emotional and cognitive factors, and always a psychological state. Psychological approaches for orofacial pain either odontogenic or non-odontogenic pain include a wide rangeof methods from simply informing patients about their condition to comprehensive counselling.

RECOMMENDATION

Study could have conductedin multiple centre of wider region.

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CONTRIBUTION OF AUTHORS

MASIH- Conception, design, acquisition of data, data analysis, manuscript writing & final approval.
MAH-Data analysis, critical revision & final approval.
SJ- Data analysis; manuscript writing & final approval.
PPS-Interpretation of data, critical revision & final approval.

DISCLOSURE

All the authors declared no competing interest.

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A cover letter should include the corresponding author's full address. Cell no and Email ID.

A short running head of no more than 40 characters (Including letter and spaces) should be mentioned.

Manuscript

Manuscripts should be in accordance with Vancouver style. The length of the text should be 2500 words for Original Paper, 3000 for Review Article, 1200 for Case Reports and 1000 for Letters to Editor excluding abstract, table, figure and references. Compose text in MS Word in Times New Roman style with the font size of 12 having a double space.

Title Page

- The title of the article should be precise, sensitive and specific.
- It should not be more than 20 words.
- Avoid abbreviations and puncituation mark in title.
- Name of the authors and coauthors with his or her highest academic qualification, designation and institutional affiliation.
- In title case (Not All Capitals) :
  eg. Atlas of Chronic Kidney Disease and End Stage Renal Disorder in United State.

Abstract

Structured abstract should consist of four paragraphs including Background with Objective, Materials and methods, Main Result with Discussion and Principal Conclusion in case of Orginal Article. Articles on clinical trials should contain abstracts that include the items that the CONSORT group has identified as essentials (http://www. consort-statement.org).

For Case Report three paragraphs, including Background with Objective, Case Report and Conclusion. They should briefly describe respectively, the problem being addressed in the study, how the study was perfomed, the salient results and what the authors conclude from the results. Three to six key words should be included below the abstract arranging in alphabetical order. The abstract should not exceed 200 words. Avoid abbreviations and references in abstract.

Text

Original Papers should be divided into sections: Introduction, Materials and methods, Results, Discussion, Limitation, Conclusion, Recommendation, Acknowledgment, Authors Contribution & Disclosure.

The sections of a Review Article should be: Introduction, Search strategy, Discussion, Conclusion & Disclosure. Case Report should be presented in format like: Introduction, Case Report, Images, Discussion, Conclusion & Disclosure.

Introduction

- Word limit 150 (For Case Report) to 500 (For Original Article and Clinical Trail).
- Provide a context or background for the study (That is, the nature of the problem and its significance). It should be very specific, identify the specify knowledge in the aspect, reasoning and what the study aim to answer.
- State the specific purpose or research objective of or hypothesis tested by, the study or observation, the research objective is often more sharply focused when stated as a question.
- Both the main and secondary objectives should be clear.
- Provide only directly pertinent primary references and do not include data or conclusions from the work being reported.

Materials and methods

- Clear and concise description of participants and procedure.
- Study design.
- Duration and place of study.
- Ethical approval.
- Patient consent.
- Statistical analysis.

(Word limit 250-300).

Results

The Results section should present the collected data and analysis only. Results for all measures should be reported in a concise, straight forward manner, using tables or figures when appropriate. Avoid data redundancy. Do not repeat data of the tables and figures in summarization of result section. (Word limit 200-250).

Tables

They should be prepared on separate pages, to be attached at the end of papers. They should follow the text references following their first citation and numbered consecutively using Roman numericals (eg. Table I, II) on the top of the table followed by a brief title. Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes and use the following symbols, in sequence :

*, †, ‡, §, _, , **, ††, ‡‡, §§, _ _, , etc.

Identify statistical measures of variations, such as standard deviation and standard error of the mean.

Figures

They should be prepared on separate pages, to be attached at the end of papers. They should be numbered using Arabic numericals (e.g. Figure 1, 2) on the bottom of the figure followed by a brief title. In case of already published figure, acknowledge the original source and submit writen pubmission from copyright holder. Legends for figure should be mentioned with the brief title of the figure.

Total numbers of the tables and figure should be within six in Original and Review article. In case of special need there has to be an explanatory note about the extra numbers of tables or figures. In Case report only one table is allowed. No punctuation mark, in the brief title of table & figure.

Discussion

- Avoid unnecessary explanation of someone else work unless it is very relevant to the study.
- Provide and discuss with the literatures to support the study.
- Mention about limitation of your study.

(Word limit 500-700)

Conclusion

- Give conclusion of your study.
- Any recommendation for future research.

Acknowledgement

- Acknowledge any person or institute who have helped for the study.

Contribution of authors

The persons involved with all the following

i) Initial research design / Conception / Acquisition of data / Data interpretation / Analysis.

ii) Manuscript drafting / Critical revision of content.

iii) Final approval.

Above cited categories must be met. Each author should have participated sufficiently in the work to take public responsibility for appropriate portiions of the content.

Any authors name seemed to be guest and ghost authors, eg. Not relative with discipline of the matter will jeopardise the acceptance of the manuscript.

Disclosure

The authors should disclosed the competing interests or any funding source.

References

References should be prepared in accordance with the Vancouver style. At least 3/5 nos of current references (2018 and above) are to be mentioned with other references in the manuscript. Number of references should be at least 15, but not more than 30 in case of Orginal and Review article. In Case report references should be within the limit of 10 to 15. Number of the references consecutively in the order in which they first appear in the text. Identify them in Arabic numerical Super scripted at the end of the sentences after the fullstop [eg[1,2]].

Book references

Book references : Book references should have the name of the chapter authors, chapter title, editors, book name, the edition, place of publication, the publisher, the year and the numbers of the relevant pages. Mention the name of first six authors, put 'et al' after that if there are more authors. Entries in the list should be numbered consecutively. Personal communications and unpublished works should only be mentioned in the text.

Example : Book reference : Bernstein D. Epidemiology and Genetic Basis of Congenital Heart Disease. In : Kliegman, St Geme, Blum, editors, Nelson Text Book of Pediatrics, 21st edition, Vol-1, Philadelphia, PA, USA : Elsevier, 2016;2367-2371.

Journal refernece : Rahman MM, Giti S, Kabir SMR, Rashid M. Hematiological Changes Associated with Hepatitis by Hepatitis E Virus. Bangabandhu Sheikh Mujib Med Univ J. 2018; 11:291-294.

Internat reference : World Health Organization. Infant and young child feeding. 24 August 2020.
Available from https : //www.who.int/news-room/fact-sheets/detail/infant and young child feeding. (Accessed on 15th December 2020).

Plagiarism Policy

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Chittagong Medical University Journal

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DECLARATION

I/We the undersigned, solemnly affirm that I/We have read and approved the article under the title

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submitted for publication in the CMU Journal

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