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AIMS & SCOPE:

The Green Life Medical College Journal is an english language scientific papers dealing with clinical medicine, basic sciences, epidemiology, diagnostic, therapeutics, public helath and healthcare in relation to concerned specialities. It is an official journal of Green Life Medical College and is published bi-annually.

This Joural is recognized by Bangladesh Medical & Dental Council (BM&DC).

The Green Life Medical College Journal of Bangladesh intends to publish the highest quality material on all aspects of medical science. It includes articles related to original research findings, technical evaluations and reviews. In addition, it provides readers opinion regarding the articles published in the journal.

INSTRUCTION TO AUTHORS:

Papers:

The Green Life Medical College Journal (published bi-annually) accepts contributions from all branches of medical science which include original articles, review articles, case reports, and letter to the Editor.

The articles submitted are accepted on the condition that they must not have been published in whole or in part in any other journal and are subject to editorial revision. The editor preserves the right to make literary or other alterations which do not affect the substance of the contribution. It is a condition of acceptance that the copyright becomes vested in the journal and permission to republish must be obtained from the publisher. Authors must conform to the uniform requirements for manuscripts submitted to biomedical journals (JAMA 1997; 277: 927-34).

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Preparation of manuscript:

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In preparing the manuscript, use double spacing throughout, including title, abstract, text, acknowledgement, references, table and legends for illustrations and font type and size 'Times New Roman 12'. Begin each of the following sections on a separate paper. Number pages consecutively.

The standard layout of a manuscript:

- Title page
- Abstract, including Keywords
- Introduction
- Methods
- Results
- Discussion
- Acknowledgements
- Funding
- List of references
- Tables & Figures
- Illustrations

The pages should be numbered in the bottom right-hand corner and the title page being page one, etc. Start each section on a separate page.

Title page:

A separate page which includes the title of the paper. Titles should be as short and concise as possible (containing not more than 50 characters). Titles should provide a

reasonable indication of the contents of the paper. This is important as some search engines use the title for searches. Titles in the form of a question, such as 'Is drinking frequent coffee a cause of pancreatic carcinoma?" may be acceptable.

The title page should include the name(s) and address(es) of all author(s). Details of the authors' qualifications and post (e.g., professor, consultant) are also required. An author's present address, if it differs from that at which the work was carried out, or special instructions concerning the address for correspondence, should be given as a footnote on the title page and referenced at the appropriate place in the author list by superscript numbers ([1, 2, 3] etc.) If the address to which proofs should be sent is not that of the first author, clear instructions should be given in a covering note, not on the title page.

Abstract:

The 'Abstract' will be printed at the beginning of the paper. It should be on a separate sheet, in structured format (Introduction/Background; Methods; Results; and Conclusions) for all Clinical Investigations and Laboratory Investigations. For Reviews and Case Reports, the abstract should not be structured. The Abstract should give a succinct account of the study or contents within 350 words. The results section should contain data. It is important that the results and conclusion given in the 'Abstract' are the same as in the whole article. References are not included in this section.

Keywords:

Three to six keywords should be included on the summary page under the heading Keywords. They should appear in alphabetical order and must be written in United Kingdom English spelling.

Introduction:

The recommended structures for this section are:

- Background to the study/Introduction
- What is known/unknown about it
- What research question / hypothesis you are interested in
- What objective(s) you are going to address

The introduction to a paper should not require more than about 300 words and have a maximum of 1.5 pages double-spaced. The introduction should give a concise account of the background of the problem and the object of the investigation. It should state what is known of the problem to be studied at the time the study was started. Previous work should be quoted here but only if it has direct bearing on the present problem. The final paragraph should clearly state the primary and, if applicable, secondary aims of the study.

Methods:

The title of this section should be 'Methods' - neither 'Materials and methods' nor Patients and methods'. The Methods section should give a clear but concise description of the process of the study. Subjects covered in this section should include:

- Ethics approval/license
- Patient/population
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- Conduct of the study
- Data handling
- Statistics
- Cognitive Task Analysis (CTA)

Ethical clearance:

Regardless of the country of origin, all clinical investigators describing human research must abide by the Ethical Principles for Medical Research Involving Human Subjects outlined in the Declaration of Helsinki, and adopted in October 2000 by the World Medical Association. This document can be found at: http://ohsr.od.nih.gov/guidelines/helsinki.html. Investigators are encouraged to read and follow the Declaration of Helsinki. Clinical studies that do not meet the Declaration of Helsinki criteria will be denied peer review. If any published research is subsequently found to be non-compliant to Declaration of Helsinki, it will be withdrawn or retracted. On the basis of the Declaration of Helsinki, the Green Life Medical Journal requires that all manuscripts reporting clinical research state in the first paragraph of the 'Methods' section that:

- The study was approved by the appropriate Ethical Authority or Committee.
- Written informed consent was obtained from all subjects, a legal surrogate, or the parents or legal guardians for minor subjects.

Human subjects should not be identifiable. Do not disclose patients' names, initials, hospital numbers, dates of birth or other protected healthcare information. If photographs of persons are to be used, either take permission from the person concerned or make the picture unidentifiable. Each figure should have a label pasted on its back indicating name of the author at the top of the figure. Keep copies of ethics approval and written informed consents. In unusual

circumstances the editors may request blinded copies of these documents to address questions about ethics approval and study conduct.

The methods must be described in sufficient detail to allow the investigation to be interpreted, and repeated if necessary, by the reader. Previously documented standard methods need not be stated in detail, but appropriate reference to the original should be cited. However, any modification of previously published methods should be described and reference given. Where the programme of research is complex such as might occur in a neurological study in animals, it may be preferable to provide a table or figure to illustrate the plan of the experiment, thus avoiding a lengthy explanation. In longitudinal studies (case-control and cohort) exposure and outcome should be defined in measurable terms. Any variables, used in the study, which do not have universal definition should be operationalised (described in such terms so that it lends itself to uniform measurement). Where measurements are made, an indication of the error of the method in the hands of the author should be given. The name of the manufacturer of instruments used for measurement should be given with an appropriate catalogue number or instrument identification (e.g. Keyence VHX-6000 digital microscope). The manufacturer's town and country must be provided, in the case of solutions for laboratory use, the methods of preparation and precise concentration should be stated.

Single case reports:
Single case reports of outstanding interest or clinical relevance, short technical notes and brief investigative studies are welcomed. However, length must not exceed 1500 words including an unstructured abstract of less than 200 words. The number of figures/tables must not be more than 4 and references more than 25.

Animal studies:
In the case of animal studies, it is the responsibility of the author to satisfy the board that no unnecessary suffering has been inflicted on the animal concerned. Therefore, studies that involve the use of animals must clearly indicate that ethical approval was obtained and state the Home Office License number or local equivalent.

Drugs:
When a drug is first mentioned, it should be given by the international non-proprietary name, followed by the chemical formula in parentheses if the structure is not-well known, and, if relevant, by the proprietary name with an initial capital letter. Dose and duration of the drug should be mentioned in sufficient details. If the drug is already in use (licensed by appropriate licensing authority), generic name of the drugs should preferably be used followed by proprietary name in brackets.

Present the result in sequence in the text, table and figures. Do not repeat all the data in the tables and/or figures in the text. Summarize the salient points. Mention the statistics used for statistical analysis as footnote under the tables or figures. Figures should be professionally drawn. Illustration can be photographed (Black and White glossy prints) and numbered.

Discussion and Conclusion:
Comments on the observation of the study and the conclusion derived from it. Do not repeat the data in detail, already given in the results. Give implications of the findings, their strengths and limitations in comparison to other relevant studies. Avoid un-qualified statements and conclusions which are not supported by the data. Avoid claiming priority. New hypothesis or implications of the study may be labeled as recommendations.

Letters are welcome. They should be typed double-spaced on side of the paper in duplicate.

References:
References should be written in Vancouver style, numbered with arabic numerals in the order they appear in the text. The reference list should include all information, except for references with more than six authors, in which case give the first six names followed by et al.

Examples of correct forms of references:
Dorababu M, Prabha T, Priyambada S, Agrawal VK, Aryaa NC, Goel RK. Effect of Azadirachta indica on gastric ulceration and healing of bacopa monnierang in experimental NIDDM rats. *Indian J Exp. Biol 2004; 42: 389-397.*

Chapter in a book:
Hull CJ. Opioid infusions for the management of postoperative pain. In: Smith G, Covino BG, eds. Acute Pain. London: Butterworths. 1985,1 55-79.

All manuscripts for publication should be addressed to the executive editor.

LETTER TO THE EDITOR:
Any reader can provide feedback regarding published articles by writing letter to editor. The reader can also share any opinion in relation to medical science.

Professor M.A. Azhar
Editor-in-chief
Green Life Medical College Journal and
Principal
Green Life Medical College

ABOUT THE COLLEGE

INTRODUCTION

In 2005, about fifty distinguished physicians of the country started a hospital to give specialized care in the private sector. They named it Green Life Hospital and it turned out to be a great success. So in 2009, they decided to establish a medical college which will be a non-government, non-profit, self-financing project and will serve the humanity.

This College came into existence in 2009. The college commences its activities with the enrollment of 51 students in the 1st batch in 2010. Since inception, the college has undergone tremendous development and became a splendid centre for learning and development. At present we are enrolling 110 students each year. Among them, numbers of seats are reserved for overseas students.

We continue to evaluate and improve our programme to ensure the best medical education for the students. Our educational strategy is to create a conducive learning environment and to steer our students to acquire adequate knowledge, skills and temperament to practice medicine and be a competent health care professional group.

Green Life Medical College (GMC) is approved by the Ministry of Health and Family Welfare (MOHFW), Government of Bangladesh and Bangladesh Medical and Dental Council (BMDC) and affiliated to the University of Dhaka.

AIMS AND OBJECTIVES OF THE COLLEGE

Aims:

To create a diverse and vibrant graduate scholars in medical discipline and to create highly competent and committed physicians for the country.

Objectives:

- To provide an appropriate learning environment where medical students can acquire a sound theoretical knowledge and practical skills with empathetic attitude to the people.
- To carry out research in medical sciences to scale up the standard of medical education in the country.

LOCATION

The campus is located at 31 and 32, Bir Uttom K. M. Shafiullah Sarak (Green Road), Dhanmondi, Dhaka. The location is at the heart of the mega city Dhaka and is facilitated with very good communication networks.

The Medical College and the Hospital complexes have been raised in a multistoried fully air-conditioned building with an arrangement of approximately 500 patients. The building is equipped with state-of-the-art infrastructure, excellent with an out-patient department and adequate in-patient facilities.

EDITORIAL

Climate Change and the Emergence of Infectious Diseases

Infectious diseases can be influenced by a variety of factors, including climate, human behavior, biology, and ecology. Climate change is a critical factor that is increasingly coming into focus, as global temperatures continue to rise. Meteorologists predict that we could see an unprecedented increase of 2ºC by the year 2100, which could have significant implications for the spread of serious infectious diseases, some are new and some are re-appearing.

It is important to understand how these changes could impact disease transmission, and to take proactive steps to mitigate the risks. Mosquito-borne diseases, such as malaria, dengue, and viral encephalitides, are particularly vulnerable to changes in climate. As the climate shifts, the geographic range of disease vectors is expected to change, and the reproductive and biting rates are expected to increase. Additionally, climate change may shorten the pathogen incubation period, leading to a higher incidence of disease transmission. These changes pose a significant threat to public health and underscore the need for proactive measures to mitigate the risks.

As the world continues to change, it is essential that the scientific community adapt their approach to evaluating the risks of infectious diseases. This means not only examining how traditional factors such as demographic changes, climate shifts, and technological advancements influence disease dynamics, but also exploring how these factors may interact and collectively impact the emergence, transmission, and global spread of pathogens. While it is widely recognized that global changes are major determinants for infectious diseases, there is still some debate as to the extent to which climate change specifically contributes to disease risk. To better understand and address these challenges, future research must take a more holistic and multidisciplinary approach.

The relationship between climate change and communicable diseases is multifaceted and involves a range of determinants, including environmental, social, and political factors. While climate change is recognized as an important driver of disease dynamics, it is just one of many factors that can impact the transmissibility of infectious diseases. As such, it is important to take a comprehensive and integrated approach that considers all relevant factors when studying and addressing the impacts of communicable diseases. By doing so, we can improve our understanding of these complex relationships and develop more effective strategies for preventing and controlling the spread of infectious diseases in the future.

Bangladesh is a low-lying river delta with an extensive coastline and floodplains that cover 80 percent of the country. As a result, the country is highly vulnerable to the adverse effects of climate change, which are well-documented and include cyclones and floods. However, the impacts of climate change in Bangladesh extend beyond these traditional areas of concern. The changing and erratic weather patterns have also had a significant impact on the physical and mental health of the population. For example, there has been a notable increase in respiratory diseases and mosquito-borne illnesses like dengue fever. These findings underscore the urgent need for proactive measures to address the health impacts of climate change in Bangladesh and other similarly vulnerable regions.

To prepare better for and respond to climate-sensitive diseases, improved data collection systems are needed to track disease evolution and predict potential outbreaks. By leveraging data and analytics, public health officials can be better informed about the risks and take proactive measures to mitigate or prevent the spread of infectious diseases and other climate-sensitive illnesses. Strengthening health systems is critical to anticipating and mitigating outbreaks of infectious and other emerging or reemerging climate-sensitive diseases. This includes enhancing public health infrastructure, improving disease surveillance systems, and investing in research and development to identify new treatments and vaccines. By building a robust health system, countries can better protect their populations from climate-related health risks.

Responding to mental health issues is also an important part of addressing the impacts of climate change. This includes building awareness of mental health challenges

associated with climate change, improving assessment mechanisms to identify those at risk, and facilitating access to resources to address the inadequacies such as counseling or mental health support groups. By taking a comprehensive approach to mental health, we can better support the well-being of individuals and communities impacted by climate change.

To better prepare for future disease outbreaks, it is important to shift focus towards forward-looking research in addition to the retrospective analyses that currently dominate the literature. As we make progress in the fight against long-term endemic infections, we can leverage the institutional structures that were built to address these challenges and adapt them to emerging threats. These structures can be repurposed to provide a framework for identifying and responding to new and emerging disease threats. Additionally, new technologies such as advances in data collection and surveillance can be harnessed to improve our ability to detect and respond to outbreaks in a timely and effective manner. By building on our past successes and embracing new technologies, we can better prepare ourselves for the challenges of the future.

Future research must adopt a global perspective on disease risk. In an interconnected world, the risk of infectious diseases is a shared concern. The COVID-19 pandemic, with the rapid spread of evolved strains across the globe, highlights the need for a collaborative and coordinated approach to infectious disease research and control. Developing a worldwide framework for infectious disease research and control is essential to identify and respond to emerging threats in a timely and effective manner. By working together, we can leverage our collective expertise and resources to minimize the impact of infectious diseases on global health security.

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ORIGINAL ARTICLE

Comparison of Central Venous Catheter Related Deep Venous Thrombosis According to Insertion Site in An Intensive Care Unit of Bangladesh

SAHA DK[1], SAHA M[2], AHSAN ASMA[3], FATEMA K[4], AHMED F[5], NAZNEEN S[6], SULTANA R[7]

Abstract

Introduction: *Central venous catheter (CVC) is usually inserted into subclavian, internal jugular, or femoral vein in critically ill patients. CVCs are associated with intravascular (infectious, thrombotic) and mechanical complications. CVC related deep venous thrombosis (DVT) is a common intravascular complication. The study was done to see the variation in occurrence of CVC related deep venous thrombosis according to different insertion site.*

Methods: *It was a prospective observational study conducted in dept. of Critical Care Medicine, BIRDEM General Hospital; during a period of May, 2016 to July, 2019. Purposive sampling was conducted in patients fulfilling the selection criteria. The CVCs were percutaneously inserted using the Seldinger technique with standard operating procedure. After CVC insertion, patients were followed up daily to see any sign of deep venous thrombosis. After catheter removal [due to any cause including suspected catheter related blood stream infection (CRBSI), DVT, mechanical cause], all the study patients were investigated by duplex ultrasonography (USG) within 2 days for detection of venous thrombosis. The outcome was catheter related deep venous thrombosis (DVT).*

Results: *A total 349 patients, of which 167 (47.9%) patients had CVC in subclavian, 88 (25.2%) in internal jugular and 94 (26.9%) in femoral vein. Total 12 patients were suspected to have catheter related DVT, but 11(3.2%) patients were confirmed as DVT by duplex USG DVT occurred significantly higher in femoral catheter site (8.5%) than subclavian (1.8%) and internal jugular site (0%).*

Conclusion: *The occurrence of catheter related DVT was higher in femoral site than other two sites.*

Keywords: **CVC, Catheter related DVT, ICU**

Journal of Green Life Med. Col. 2021; 6(1): 3- 6

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N.B: As first two authors had equal contributions, both should be regarded as first author.

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Introduction:

Central venous catheter (CVC), also known as central line, or central venous access catheter, is a catheter placed into a large vein (subclavian, internal jugular, femoral vein). It is used to administer medications or fluids, obtain blood for tests and measure central venous pressure (in case of subclavian or internal jugular site). Central venous catheterizations are now common among critically ill patients.

Catheterization is associated with infectious, thrombotic, and mechanical complications.[1] These complications can widely be catagorized into intravascular [includes catheter related blood stream infection (CRBSI), catheter tip colonization, catheter related deep vein thrombosis (DVT)] and mechanical (includes haemorrhage, haemothorax, pneumothorax, cardiac perforation, lost guidewire, catheter tip malposition etc).

The CVC related deep vein thrombosis (DVT) is an important intravascular complication which also has significant impact on morbidity and mortality. Thrombosis resulting from vascular catheter is of two types: fibrin sleeve (thrombin sheath) and vascular occlusive thrombosis (partial or total occlusion by mural thrombi). Most of the indwelling vascular catheters become engulfed in a thrombin sheath soon after insertion.[2] Clinically, catheter related DVT is classified into symptomatic and asymptomatic. Although the importance of catheter related DVT has been debated[1], all thromboses have the potential to embolize[3].

In numerous studies, the incidence of CVC related thrombosis has been evaluated. The percentage of clinically manifest thrombosis in these studies ranged from 0% to 12%[4]. The role of the puncture-site of CVC insertion is still much debated in development of thrombosis. In a randomized trail (level 1) in ICU patients, insertion via the subclavian route had a low risk of major catheter related thrombosis as compared to a femoral route (0% vs. 6%)[5]. Timsit et al. (1998) found the occurrence of catheter related thrombosis in a cohort (level 2) study in patients with subclavian vein CVCs as compared with jugular CVCs (10.5% vs. 41.7%). In both studies patients were routinely screened by ultrasound for CVC related thrombosis. The occurrence of symptomatic deep vein thrombosis was found higher in femoral catheter site in comparison to internal jugular or subclavian sites[3]. Additional factors reported to increase the risk of thrombosis are percutaneous insertion procedure, prior CVC at the same puncture site and a prolonged stay of the CVC for over 2 weeks[4].

The CVC related thrombosis have been reported to be associated with infective colonization of catheter tip. In a study in 265 critically ill patients, the risk of infection and sepsis was 2.6 fold increased in patients with catheter related thrombosis[6]. In addition, CVC related infection may also increase the risk of subsequent clinically manifest thrombosis. In a study, CVC related infection increased the risk of thrombosis markedly in comparison with those without infection (24% vs 3%) (relative risk 17.6)[4].

The aim of this present study was to detect the insertion site wise occurrence of catheter related DVT

Methods:

This prospective observational study was done during the period of May 2016 to July 2019 in Department of Critical Care Medicine, Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General Hospital, Dhaka. A total of 349 adult patients (age ≥18 years) requiring new CVC insertion for fluid management, medications, inotrope support and monitoring were enrolled in the study. Antibiotic coated CVC, tunnelled catheters, implantable devices, radiologically inserted catheters, dialysis catheters were excluded. CVC insertion was performed only after getting informed written consent from patient or his/her relative, when the platelet count was more than 50000/cumm and the international normalized ratio was less than 1.5, as per ICU protocol. All catheterizations were performed either by an ICU consultant, registrar or a medical officer (with a minimum prior experience of at least 25 CVC insertions under the supervision of a consultant). Insertion site selection was individualized by the treating physician. After CVC insertion, all the patients were followed up daily for any sign of catheter related DVT (pain, swelling, redness and tenderness of the affected limb). Removal of CVC was done when appropriate [development of catheter related blood stream infection (CRBSI), or DVT or no longer required]. All the information about the patient were collected by a structured data sheet and analysed by statistical package for the social sciences (SPSS) version 22.

Result:

During the study period, 167 CVC were inserted through subclavian vein, 88 CVC through internal jugular vein and 94 CVC through femoral vein. There was no significant difference among three groups (subclavian / internal jugular / femoral) in terms of age, gender distribution, presence of co-morbid illness (Table I).Though most patients had more than one diagnosis during their admission, the primary cause/diagnosis was recorded. Table II showed the primary diagnosis of the study subjects at admission.The highest on-admission diagnosis was pneumonia (22.6%), followed by AKI (20.9%), stroke (9.7%) and acute pulmonary edema (4.9%). Table III showed 12 patients were suspected to have DVT clinically, but 11 were confirmed by duplex USG; where the occurance is significantly more in femoral than other two sites (p value = 0.002)

Table I

Age, gender and co-morbidities of the study subjects (n=349)

	Site			Total (n=349)	p value
	Subclavian (n=167)	Internal jugular (n=88)	Femoral (n=94)		
Age (years)	60.63 ± 16.06	63.00 ± 14.38	61.89±12.91	61.57±14.84	0.468##
Gender					
Male	99 (59.3)	46 (52.3)	55 (58.5)	200 (57.3)	0.540#
Female	68 (40.7)	42 (47.7)	39 (41.5)	149 (42.7)	
Co-morbidities					
DM	121 (96.8)	65 (97.0)	80 (97.6)	266 (97.1)	0.950#
HTN	98 (94.2)	50 (84.7)	60 (90.9)	208 (90.8)	0.131#
IHD	16 (40.0)	12 (40.0)	8 (26.7)	36 (36.0)	0.444#
Others	13 (40.6)	13 (50.0)	14 (46.7)	40 (45.5)	0.765#

##ANOVA test was done to measure the level of significance

#Chi-square test was done to measure the level of significance

Table II

Primary diagnosis during ICU admission of the study subjects (n=349)

Primary diagnosis	Frequency	Percentage
Pneumonia	79	22.6
Acute Kidney Injury	73	20.9
Stroke	34	9.7
Acute Pulmonary Edema/LVF	17	4.9
Myocardial Infarction	16	4.6
Diabetic Ketoacidosis	13	3.7
Severe hyponatremia	12	3.4
Urosepsis	11	3.2
Meningitis	9	2.6
Hypoglycemia	8	2.3
Hyperglycemic Hyperosmolar State	7	2.0
Others	79	22.6
Total	349	100.0

Table III

Catheter related DVT of the study subjects (n=349)

	Site			Total (n=349)	p-value
	Subclavian (n=167)	Internal jugular (n=88)	Femoral (n=94)		
Signs of catheter related thrombosis	3 (1.8)	1 (1.1)	8 (8.5)	12 (3.4)	0.007
Catheter related DVT	3 (31.8)	0 (0.0)	8 (8.5)	11 (3.2)	0.002

Chi-square test was done to measure the level of significance

Table IV

Duration of CV catheter and associated DVT of the study subjects (n=349)

	Site			Total	p
	Subclavian (n=167)	Internal jugular (n=88)	Femoral (n=27)	(n=94)	value
Duration of CV catheter	7.3 ± 5.1	7.1 ± 3.9	6.4 ± 3.1	7.1 ± 4.3	0.158##
Duration of CVC					
≤10 days	134 (80.2)	67 (76.1)	80 (85.1)	281 (80.5)	0.309#
> 10 days	33 (19.8)	21 (23.9)	14 (14.9)	68 (19.5)	
Catheter related DVT					
≤10 days	2 (1.5)	0 (0.0)	8 (10.0)	10 (3.6)	0.001#
>10 days	1 (3.0)	0 (0.0)	0 (0.0)	1 (1.5)	0.584#
p value	0.551		0.216	0.377	

##ANOVA test was done to measure the level of significance

#Chi-square test was done to measure the level of significance

Discussion:

Complications associated with CVC have a major impact on the hospital course of patients admitted to ICU due to the morbidity, mortality and increased health care costs associated with them.

The overall incidence of catheter related DVT in this study was 3.2% which was within the range (0% to 12%) as occurred in different studies[4]. In this study, the incidence of catheter related DVT in femoral site was 8.5%, subclavian site was 1.8% and internal jugular site 0%; and the occurrence is significantly greater in femoral site (p=0.002). This study produced similar findings as published by others [3,5]. It was found that femoral catheterization was associated with overall thrombotic complications in comparison to subclavian vein catheterization (p <0.001). In a study, the researchers found that the occurrence of symptomatic DVT in subclavian catheters was 0.5%, in internal jugular catheters was 0.9%, in femoral catheters was 1.4%[5]. In this study, the higher occurrence of catheter related DVT in femoral site might be explained by reduced lower limb movement than other body parts causing venous stasis. Moreover, increased thrombogenicity due to microbial colonization might be a cause[7,8].

Incidence of catheter related DVT varies with catheter composition, indication of catheterization (total parenteral nutrition, haemodialysis, cancer or ICU patient), fluids infused (chemotherapy, lipids or heparin), and diagnostic method for thrombosis[6]. In this study, we tried to eliminate these factors. We used only non-tunnelled multi-lumen CVC for all patients. We didn't include haemodialysis catheter or CVC used for total parenteral nutrition, chemotherapy in this study. Routine 0.9% sodium chloride and heparin flush were administered in all CV catheterized patients according to our ICU protocol. We confirmed catheter related DVT by USG study, which was also used for venous thrombosis detection by Timsit et al. (1998), Merrer et al. (2001) and Parienti et al. (2015)[3,4,5]. Prolonged duration of catheter (> 10 days) did not impact on the occurrence of DVT in different insertion sites (Table IV) though prolonged stay of the CVC for over 2 weeks was a risk factor in some studies[8].

Conclusion: CVC associated DVT occurrence were higher in femoral than other two sites.

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Estimation of Depression and Anxiety among Intern Doctors of One Medical College in Bogura City during COVID-19 Pandemic

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Abstract

Introduction: *In December 2019, an outbreak of a novel coronavirus pneumonia occurred in Wuhan City, China, and 28.32 million confirmed cases worldwide and 0.33 million cases in Bangladesh till September 2020. The prevalence of anxiety, fear, depression, insomnia, somatization, and obsessive compulsive symptoms has been higher among health care workers. Medical interns are at the front line in combating COVID-19, which can lead to a high level of stress resulting in anxiety and depression. This study hopes to shed light on the impact of the pandemic on the mental health of our intern doctors.*

Methods: *An 18- question survey- based cross- sectional study was carried out in a tertiary hospital of Bangladesh of intern doctors during the COVID-19 pandemic. The primary objective was to identify the impact of the pandemic on mental health in the form of major depressive disorder (MDD) and general anxiety disorder (GAD). The study incorporated the patient health questionnaire (PHQ-2), which is validated for screening of MDD, and generalized health questionnaire (GAD-2), which is validated for screening of GAD.*

Results: *There were 38 respondents. The mean age was 24.97±0.01247 years with female predominance 26(68.42%). Mostly were unmarried 26(86.42%).History of taking psychiatrics consultation was 06(15.79%) and 05(13.16%) had been suffering from severe insomnia. Total 21(55.26%) were remain every time in anxiety or worry that through them their family members may be affected by COVID-19. In this study 25(65.79%) intern doctors reported as having depressive symptom and symptoms of GAD 19(50.00%). Compared to males, females had statistically significant higher score in; PHQ-2 ≥3 (84.62%), GAD-2 ≥3 (15.38%) (p=.002). Most of the medical interns who had positive for GAD were also positive for MDD. The prevalence of MDD was 100% among the interns who had a previous history of taking psychiatrics consultation and 83.33% regarding GAD (p=.006).*

Conclusion: *This study shows a significant prevalence in symptoms of GAD and depressive symptoms in medical interns during the COVID-19 pandemic than other healthcare professionals.*

Key world: *COVID-19 pandemic; MDD, GAD, Intern doctors*

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Introduction:

In December 2019, an outbreak of a novel coronavirus pneumonia occurred in Wuhan City, China, and spread throughout the whole of country in a short period.[1] The novel coronavirus was oficially named 'SARS CoV-2' by the International Committee on Taxonomy of Viruses, and disease infected by this virus was termed 'COVID-19.[2]

The COVID-19 pandemic has taken its toll on the wellbeing of patients across the world, with 28.32 million confirmed cases worldwide and 0.33 million cases in Bangladesh till September 2020.[3]

Healthcare professionals (HPs) are not immune to both physical and mental health impact of the pandemic. Physicians are struggling to cope to dealing with unprecedented demand for healthcare services which cause significant burden on their shoulders. They re- assigned to duties in such places which is not their area of expertise and beyond their comfort zone, such as covering emergency departments, intensive care units or medical COVID-19 wards.[4]

Prevalence of anxiety, fear, depression, insomnia, somatization, and obsessive compulsive symptoms have been higher among health care workers during this pandemic, especially among those who work in high-risk units, such as emergency department and intensive care unit.[5]

Medical interns are the final year medical students or first year junior doctors.[6] A high level of stress can be developed in medical interns who are at the front line in visiting COVID-19 patients resulting in anxiety and depression. A crisis like the current COVID19 pandemic can intensify tensions due to the risk of exposure to the virus, limitations of educational programs, higher workloads, and concerns about lack of protective equipment.[5]

Research around COVID-19 focuses predominantly on physical health, but the mental health impact of this infection may be far wider reaching than expected and should not be neglected. Since no data are available on psychological status of intern doctors, the study, therefore, hope to shed light on the impact of the pandemic on the mental health of our intern doctors. Through raising awareness of these issues, there is an opportunity to take action before there is a significant detriment to the workforce and our patients.

Methods:

This survey- based cross- sectional study was carried out in a tertiary hospital of Bangladesh from 25 to 31 August 2020 of intern doctors during the COVID-19 pandemic. The survey was kept brief (18 questions) to promote completion.

The primary objective was to identify and characterize the impact of the pandemic on mental health in the form of major depressive disorder (MDD) and general anxiety disorder (GAD). Demographic data was collected including age, gender, marital status, use of any medicine for depression, COVID-19 status and clinical grade to identify subgroups which were most affected.

The nine- question patient health questionnaire (PHQ-9) is a self- administered questionnaire validated for the assessment of major depressive disorder as per the diagnostic and statistical Manual of Mental Disorders 4 (DsM- IV) criteria in primary care settings. The first two questions, known as the PHQ-2 can be used for screening. PHQ-2 score greater than 2 has sensitivity of 82.9% and specificity of 90.0% for MDD[7].

The seven- item generalized anxiety disorder questionnaire (GAD-7), is a self- administered questionnaire validated for the assessment of GAD. for screening, the first two items known as GAD-2 have been shown to have a sensitivity of 86% and specificity of 83% for GAD[8]. The PHQ-2 and GAD-2 were included in the survey to estimate the prevalence of MDD and GAD in the responders. A question on previously seeking treatment for mental health conditions was included to explore if past experiences sensitized respondents to current stressors.

Complete questionnaires finished within seven days from 25 to 31 August 2020 were recognized as eligible and included in the following analysis. Incomplete questionnaires were excluded. Respondents were allowed to abstain from answering. Abstainers were treated as having not sought support from wellbeing services. The survey was distributed through person to person. Ethical permission has been taken from Institute keeping compliance with Helsinki Declaration for medical research involving human subject 1964, the study subject was informed verbally about the study design, the purpose of the study and right for withdrawing themselves from the project at any time, for any reason, what so ever. Persons who were given informed written consent to participate voluntarily in the study were included as study sample. The SPSS version 20.0 was used for data analysis.

Results:

The presented study was intended to estimate the prevalence of mental health status of intern doctors during this COVID-19 pandemic. In this study we received 38 responses. Mean age were 24.97 years (SD±0.01247). Total 12 (31.58%) were male and 26 (68.42%) were female. Most of them were unmarried 26 (68.42%). Further breakdown by demographics is shown in Table I.

Table I

Breakdown of the demographics of survey respondents. (n=38)

	Number of respondents	Percentage (%)
Age(Yrs)		
24	09	23.68
25	22	57.89
26	6	15.79
27	01	02.64
Gender		
Male	12	31.58
Female	26	68.42
Marital status		
Married	12	31.58
Unmarried	26	68.42

Interns who had previous history of taking psychiatrics consultation was 06 (15.79%) and 05 (13.16%) had been suffering from severe insomnia. Total 21(55.26%) were remain every time in anxiety or worry that through them their family members may be affected by COVID-19. Details distributions are shown in Table II.

Table II

Breakdown according to history of previous psychiatrics consultation, insomnia and anxiety to contamination to family member. (n=38)

	Number of respondents	Percentage (%)
Previous Psychiatrics consultation		
Yes	06	15.79
NO	32	84.21
Insomnia		
Never	13	34.21
Rarely	16	42.11
Often	04	10.53
Every Time	05	13.16
Anxiety to contamination to family member		
Never	06	15.79
Rarely	05	13.16
Often	06	15.79
Every Time	21	55.26

In this study 25 (65.79%) intern doctors found MDD and GAD 19 (50.00%). Details are shown in Figure I.

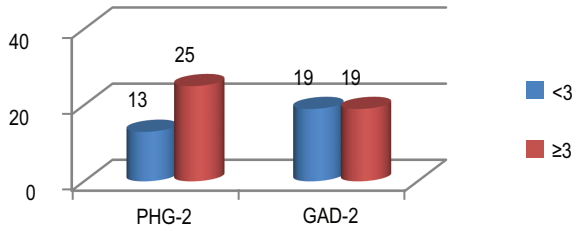

Figure-1: *Distribution according to PHQ-2 & GAD-2 Score. (n=38)*

Compared to males, females had statistically significant higher score in; PHQ-2 ≥3 (84.62%); depressive symptoms, GAD-2 ≥3 (15.38%); anxiety symptoms shown in Table III.

Table III

Distribution of Depressive symptoms and Anxiety symptoms in different gender. (n=38)

	Male (n=12)	Female (n=26)	
Depressive symptoms	03(25.00%)	22(84.62%)	(χ^2=9.564, df=1,
Anxiety symptoms	03(25.00%)	16(15.38%)	p=.002)

There is a positive correlation between depressive symptoms and GAD of medical interns (r=0.670). Total 17 had both depressive symptoms and GAD, 08 respondents had only depressive symptoms and only 02 had GAD. It is observed that most of the GAD intern doctors had been suffering from depressive symptoms. (Table-IV)

Table IV

Correlation between Depressive symptoms and GAD scores of survey respondents. (n=38)

	Mean	Std. Deviation	N
PHQ-2	3.26	2.152	r=.670
GAD-2	2.71	2.229	P=.000

There is significant positive correlation between the intern doctors who had history of taking psychiatrics consultation and MDD or GAD, were 06 (100.00%) had MDD and GAD 05 (83.33%), shown in Table V.

Table V

Distribution of Depressive symptoms and GAD among taking psychiatrics consultation and not taking psychiatrics consultation. (n=38)

	Previous history of psychiatrics consultation		
	Yes (n=06)	No (n=32)	
Depressive symptoms	06(100.00%)	19(59.38%)	$\chi^2=9.471$, df=1, p=.006
Anxiety symptoms	05(83.33%)	14(43.75%)	

Discussion:

The COVID-19 has confronted many HPs with unexpected, life-threatening experiences for which they had not been trained. Although they are used to witnessing trauma and to regularly dealing with loss, the high morbidity and mortality rates of this pandemic, the shortage in personal protective equipment, the fear of they or their family members becoming infected, the absence of an effective treatment/vaccine on the immediate horizon and the new restrictive public health policies activated in most countries, have changed their normal scenario.

Therefore, during the pandemic, the majority of them have experienced unpleasant emotions, including fear, hyper-arousal, intrusive memories and insomnia, as well as some related to sadness or emotional exhaustion. The more they were exposed to unexpected life-threatening situations or uncertainty, the more mental distress they were likely to experience. However, most HPs have chosen to take care of patients with COVID-19 infections despite the risk to themselves and their families.[9]

There were 38 intern doctors in our survey, 57.89% were the age of 25 year with over twice as many females than males taking part. 68.42% were unmarried.

In the current study it was observed that the estimated likely prevalence of GAD (50.00%) and MDD (65.79%) in this cohort was significantly greater than the general population (05.70 and 04.60% respectively)[10,11] which cannot be ignored regardless of the cause.

The prevalence of GAD and MDD was higher among intern doctors who participate in this study compared to Iranian medical students 38% and 27.6% respectively.[5]

Presently most studies report a high prevalence of anxiety (ranging from 30% to 70%) and depressive symptoms (20–40%).[9]

Every time sleep disturbance was found 06.60% among the interns during this COVID-19 pandemic era[12], also found poor sleep quality in medical staffs 2.63±0.98 (M±SD)(t=31.76 & p= <.001) and worrying about family infection 4.64 ± 0.64 (M±SD)(t= 45.13 & P= <.001). In the current study it was observed that 24.09% respondents every time worry about family contamination through them.

This study showed that MDD and GAD is significantly more in female than male (84.62% vs 25.00% and 15.38% vs 25.00% respectively)(p=.002). In a study it is also identified that females scored significantly higher for symptoms of generalized anxiety disorder and major depressive disorder as compared to males.[13] A systematic review by Remes *et al* found that in the general population, females were almost two times more likely to be affected by GAD than men and this was consistent across different countries and co- existing health conditions.[14]

Limitation:

This study was conducted on small cohort single center medical inters and assessed anxiety and depression after 5 months of the first case in Bangladesh. PHQ-2 and GAD-2 is only a screening tool, so exact prevalence and long-term psychological consequences of COVID-19 on medical interns could not be assessed. The confounding factors were also not assessed.

Conclusion:

This study, in the first of its kind, shows a significant incidence in symptoms of GAD and depressive symptoms in medical interns during the COVID-19 pandemic. Action should be promptly taken, and awareness raised, to help prevent adverse mental health outcomes of our medical interns during this challenging circumstances COVID-19 pandemic. A study can be done with large cohort intern doctors of multicenter. To find out the exact figure of depressive symptoms and GAD positive individuals can be assessed with PHQ-9 and GAD-7 with long term follow up. It is better to find out confounding variables to resolve the problem.

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ORIGINAL ARTICLE

Study of Sexual Dimorphism by Bone Length, Width and Height Estimation in Left Talus

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Abstract

Introduction: *Morphometric measurement of maximum anteroposterior length, maximum transverse width, talar height of talus are helpful for reconstruction and rehabilitation procedures, for identifying joint pathologies and help surgeons to plan preoperatively to design accurate talus bone prosthesis and talar implant. The morphometric data of talus can be used to prepare a database that can be used as landmarks for clinical exploration and research.Talus is an important bone for sex determination.*

Methods: *A cross sectional analytical study was carried out in the Department of Anatomy, Dhaka Medical College, Dhaka from January, 2018 to December, 2018. Maximum anteroposterior length, maximum transverse width, talar height were measured on 150 fully ossified dry human left talus by digital slide calipers.*

Results: *Mean (±SD) of maximum anteroposterior length (MAPL), maximum transverse width (MTW) and talar height (TH) was significantly higher ($p<0.001$) in male than in female.*

Conclusion: *Significant morphometric difference exists between male and female tali. The maximum anteroposterior length, maximum transverse width and height of talus were significantly higher in male than in female.*

Key words: *Length of talus, Width of talus, Height of talus*

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Introduction:

The talus is one of the seven tarsal bones in human body and it is the link between the foot and the leg through the ankle joint.[1]The talus has a body, a neck and a head. The superior surface or trochlea of talus is gripped by two malleoli and receives the weight of the body from tibia. It transmits weight in turn dividing the weight between calcaneus on which the talar body rests and the forefoot via an osseoligamentous 'hammock'(spring ligament) that receives the rounded and anteromedially directed talar head.[2]

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Tibio-fibular mortice receives superior, medial and lateral articular surfaces of the body of talus. These articular surfaces have applications in designing ankle braces to ankle implants and in total ankle replacements.[3]

Accurate estimation and derivations of metric features can be obtained straight forwardly from talus, since this bone is compact and more durable. Even for designing and fabrication of prosthesis data of normal dimensions of talus is needed. Therefore the present study is taken up to have a baseline data regarding the dimensions of talus.As the talus is resisting degeneration for a long time unlike other bones the present study was undertaken to study talus for various morphological features.[4]

Talus is an important bone for sex determination. Peckmann et al[5]described that nine parameters of talus were sexually dimorphic. They were talar length, breadth and height, trochlear length and breadth, head-neck length, head height, posterior articular surface length and breadth. The accuracies for sex determination using parameters of talus were 80% to 81.7% in White South Africans stated by Bidmos and Dayal[6], 80% to85.8% in Black South Africans by Bidmos and Dayal[7] and 67.1%- 82.9% for Korean in Lee et al.[8]

Methods:

One hundred and fifty (150) fully ossified dry human left talus of unknown sexes were collected from Dhaka Medical College, Dhaka and Northern Medical College, Dhaka. Broken or incomplete bone, congenitally deformed bone were excluded from the study. Digital slide caliper and digital camera were used for the measurements. Sexes of the collected tali were determined by stepwise discriminant function analysis technique and grouped into male and female. Maximum anteroposterior length (MAPL) was measured by the linear distance between the most anterior point on the head and the most posterior point on the body of the talus.[8] Maximum transverse width (MTW) was measured by the linear distance between the most medial and the most lateral points on the body.[8] Talar height (TH) was measured as the distance between horizontal plane with the bone base and the highest point on the superior surface of the trochlea.[9] Maximum anteroposterior length of talus [MAPL], Maximum transverse width of talus [MTW] and Talar height [TH] were measured three times, then the average value of each variable was taken and recorded in millimeter.

The study was approved by the Ethical Review Committee of Dhaka Medical College, Dhaka.

Results:

The present study was conducted on 150 fully ossified human left talus. Out of 150 left tali, 83 were male and 67 were female. After collection of data, statistical analysis was done by the software SPSS (Statistical Package for Social Sciences) for Windows, Version 22.0.

The mean ± SD of maximum anteroposterior length was 54.9±2.2 mm with the range of 51.2 to 62.6 mm in male and 49.0±2.5 mm with the range of 43.5 to 53.8 mm in female. Mean maximum anteroposterior length was significantly higher ($p<0.001$) in male than female (Table I). The mean ± SD of maximum transverse width was 39.8 ±1.2 mm with the range of 36.8 to 44.2 mm in male and 35.5±1.9 mm with the range of 30.9 to 38.5 mm in female. Mean maximum transverse width was significantly higher ($p<0.001$) in male than female (Table I). The mean ± SD of maximum talar height was 30.9 ±1.5 mm with the range of 28.1 to 36.9 mm in male and 27.4±2.3 mm with the range of 22.4 to 32.4 mm in female. Mean maximum talar height was significantly higher ($p<0.001$) in male than female (Table I).

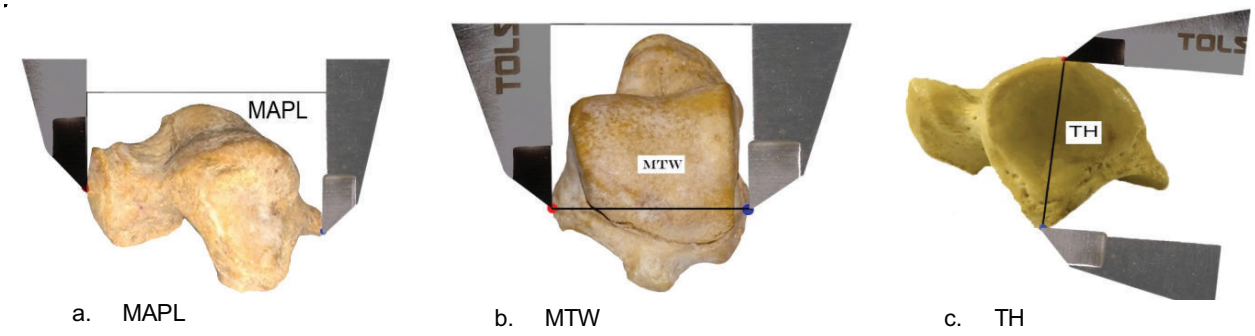

Fig.- 1: *a) measurement of maximum anteroposterior length of talus b) measurement of maximum transverse width of talus c) measurement of talar height*

Table I

Maximum anteroposterior length, maximum transverse width and talar height in male and female

Variables	Male (n=83) Mean±SD	Female (n=67) Mean±SD	p value
Maximum anteroposterior length of talus (mm)	54.9±2.2 (51.2 - 62.6)	49.0±2.5 (43.5 - 53.8)	<0.001***
Maximum transverse width of talus (mm)	39.8±1.2 (36.8 - 44.2)	35.5±1.9 (30.9 - 38.5)	<0.001***
Talar height mm)	30.9±1.5 (28.1 - 36.9)	27.4±2.3 (22.4 - 32.4)	<0.001***

Figures in parentheses indicate range. SD = Standard Deviation.
Comparison of values between male and female was done by Unpaired Student's 't' test
***= significant at p<0.001 n= sample size

Discussion:

Findings of the present study were significantly higher ($p<0.001$) in male than in female. This might be due to stronger and bigger male bones than that of female bones. Men are usually involved in most physical activities and exercises that improve and maintain the growth of bone. Other factors that affect bone growth are: genetic and environmental factors such as dietary pattern and occupation together with hormonal factors like growth hormones, testosterone for male and estrogens for female.[10]

In the present study the mean (±SD) of maximum anteroposterior length, maximum transverse width and talar height of left talus were similar ($p<0.001$) with the findings of Peckmann, et al[5] who carried out a study on Spanish population, Bidmos and Dayal on South African White[6] & Black population[7], Lee, et al[8] on Korean people, Abd-elaleem, et al[11]on Egyptian population, Gualdi-Russo[12] on Italian people, Javia, et al[13] on Indian population. They all found higher values in male than in female ($p<0.001$).

Conclusion:

The present study was an attempt to construct data on different dimensions of fully ossified dry human left talus. Significant morphometric differences exist between male and female tali. The maximum anteroposterior length, maximum transverse width and talar height were found significantly higher in male than female ($p<0.001$). This may contribute to the understanding of the relative status of male and female talus in the context of morphometric variations around the world.

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ORIGINAL ARTICLE

Clinical Presentation of Supratentorial and Infratentorial Pediatric Brain Tumors in a Tertiary Care Hospital of Bangladesh

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Abstract

Introduction: *Intracranial tumors are the second most common malignancy in childhood and the most common solid tumors in children. They are the most frequent cause of morbidity and mortality associated with cancer in this age but there is no epidemiological study of pediatric brain tumors in Bangladesh. The objective of this study was to determine the clinical presentation of supratentorial and infratentorial intracranial pediatric tumors among children of Bangladesh.*

Methods: *A descriptive cross-sectional study was conducted in the Department of Paediatric Haematology and Oncology, National Institute of Cancer Research and Hospital from 2014 to 2018 in which clinical manifestations of 129 pediatric patients with intracranial tumors were recorded.*

Results: *Total 129 patients were analyzed. Tumor location was supratentorial in 62 patients (48.06%) and in infratentorial 67 (51.94%) patients. Total cerebellar syndrome occurred in 47 patients (36.43%). The supratentorial tumors with cerebellar syndrome were nine (6.98 %) patients and infratentorial tumors were 38(29.45%) patients. Cranial nerve palsy was significantly more common (N-24,18.6%) in patients with infratentorial tumors than supratentorial (N-16, 12.40%) tumors. Time needed from symptoms start to diagnosis/start of treatment in supratentorial tumors was more than infratentorial tumors and it was statistically significant.*

Conclusions: *Cerebellar syndrome and cranial nerve palsy were more common in patients with infratentorial tumors and statistically significant when compared with patients with supratentorial tumors. The interval between onset of symptoms and diagnosis or start of treatment of intracranial tumors were longer in supratentorial tumors, which was statistically significantly.*

Keywords: *Tumor, Intracranial tumour, Supratentorial tumour, Infratentorial tumour*

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Introduction:

Intracranial tumors are relatively common in infants and young children.[1] An estimated 160,000 new cases of children below 15 years of age are diagnosed with cancer each year worldwide, with 90,000 deaths attributed to cancer.[2] Intracranial tumors are the second most common neoplasm in childhood; they account for 16.6 to 21% of all malignant neoplasms in children[3] but is still at a very nascent stage in the developing countries with only a few reports on the multidisciplinary approach.[4] In USA its annual incidence is 2.5 cases per 100,000.[5] In addition, they are the most common solid tumors at pediatric age and the most frequent cause of cancer-related morbidity and mortality in this group of patients[6,7] but there are not many studies in Bangladesh which have looked into the clinical presentations, pathological types, sides of involvement of pediatric brain tumors.

Little is known about the causes of brain tumors in children. Children with one of several genetic disorders including tuberous sclerosis and Li-Fraumeni syndrome are at increased risk, as are children who have received therapeutic irradiation to their head. The evidence that frequent cured meat consumption by the mother during pregnancy increases the risk is suggestive but not conclusive. For other potential risk factors, the evidence is limited and/or conflicting. These exposures and characteristics include pesticides, carcinogen metabolizing genes, and polyoma viruses.[8]

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Intracranial tumors location differs considerably in percentage according to the studied population: infratentorial (IT) tumors range from 21 to 67%; supratentorial (ST) tumors, from 30 to 64%, and those invading both spaces, from 2 to 15%, according to conducted studies.[9] Most of the study found that the ST tumors are less than IT tumors and Albright at al reported 30% to 40% of tumors are supratentorial in origin.[10] YU J et al reported 43.8% were suptratentorial[11] in a hospital of Fudan University , China.

In a study by Poretti et al, infratentorial tumors (IT) account for 45– 60% of all pediatric brain tumors, and the most common infratentorial tumors include juvenile pilocytic astrocytoma (JPA), medulloblastoma, ependymoma, and brainstem glioma.[12] The reason why pediatric brain tumors have a propensity to occur in the posterior fossa has not yet been elucidated.[13]

The diagnosis of a brain tumor is often difficult to establish in a child, because many of the signs and symptoms may mimic those of more common childhood illnesses. Brain tumors produce neurologic symptoms that vary depending on the size, location, and invasiveness of the tumor.[14] In a study by El-Gaidi et al from Egypt, in case of supratentorial tumors main presenting features were – headache, vomiting, macrocephaly, disturbed conscious level, diminution of vision, squint, opthalmoplegia, ataxia , weakness and convulsions. On the other hand clinical features of infratentorial tumors were - vomiting, headache, visual disturbances, ataxia, weakness, cranial nerve involvement.[15] The treatment of intracranial tumors depends on the size and type of tumor, as well as on the child's general health status. The goal of treatment is total resolution of the tumor, symptom cessation and function improvement. Surgical intervention is necessary in most tumors and some can be completely removed. Chemotherapy and radiotherapy can be used for certain tumors.[16,17]

The objective of this study was to obtain useful and applicable information to establish clinical diagnosis of patients affected by symptoms consistent with neurological involvement that drive to the suspicion of ST or IT tumors-related intracranial involvement, on any of their initial presentations, in order to help accelerating opportune diagnosis and treatment.

Methods:

This study was conducted in the Department of Pediatric Hematology and Oncology (PHO), National Institute of Cancer Research and Hospital (NICRH) during year 2014 to 2018. Pediatric patients of 0-17 years (less than 18 years) of age diagnosed with brain tumors were included in this study. Intracranial tumors were confirmed by histology and immunohistochemistry (if needed) except few mid brain tumors, which were leveled by radiological diagnosis. Medical records were collected regarding age and gender distribution, clinical presentation, location and pathological types using the most recent 2007 World Health Organization (WHO) Classification of tumors of the Central Nervous System (CNS). Patients with inadequate medical records were excluded from this study

Data were analyzed using SPSS software.

Results:

Total recorded patient of intracranial and spinal tumor at PHO during 2014-2018 were 260. Among them CNS tumor were 137 but during analysis we used data from 129 patients with intracranial tumors and 8 spinal Tumors were excluded from study. These 129 patients, diagnosed with intracranial tumors, with a mean age were 8.73 ± 4.18 years.. There were 40 patients (31.01%) of the female and 89 (68.99 %) of the male gender. Tumor location was infratentorial (IT) in 67 patients (51.94%) and supratentorial (ST) in 62 patients (48.06%). Average time elapsed for start of treatment 6.63±8 months (Range 15 days -48 months). Most of the patients came from Dhaka division (N-24,18.60%) and Chittagong division(N-23,17.83%). All most all children's family were poor (N-103, 79.84%), 18.6% (N-24) were middle income group and only 1.55 %(N-2) patients families were rich. Three patients (2.33%) have family history of cancer. 82.17% (N-106) patients lived in village, rest of the in town.

Table-1 depicted the clinical features of our study patients. Intracranial hypertension manifested mainly as headache and vomiting. Headache occurred in 107 patients (82.95%). Among 107 cases 54 children (41.86%) with IT tumors and 53(41.9%) children with ST tumors (p = 0.89). Vomiting were in 46 (35.65%) children with ST and 51(39.54%) cases with IT tumors.

Cerebellar syndrome in the form of ataxia, dysmetria, dysdiadochokinesia, nystagmus, intention tremor occurred in 9 patients (6.98%) with ST tumors and 38(29.45%) with IT tumors (p = 0.043; 95% confidence interval). Seizures occurred in 4 patients ((3.1 %) with ST tumors and 10 (7.75%) with IT tumors (p = 0.83). Visual disturbances were present in 34 patients (26.35%) with ST tumors and 22 (17.03 %) with IT tumors (p = 0.106). Cranial nerve palsies occurred in 16 patients (12.40%) with ST tumors and 24(18.6%) with IT tumors (p =. 026). Facial nerve was the most common involved nerve.

Table-I

Clinical Feature and scintigraphy of ST and IT tumors

Clinical Feature	Total (n-129)	ST tumors (%)	IT Tumors (%)	P-value
Headache	107(82.95%)	53 (41.09%)	54(41.86%)	0.89
Vomiting.	97(75.18%)	46(35.65%)	51(39.53%)	0.665
Cerbellar Syndrome	47(36.43%)	9(6.98%)	38(29.45%)	0.043
Visual disturbances	56(43.41%)	34(26.35%)	22(17.06%)	0.106
Cranial Nerve Palsy	40(31.0%)	16(12.40%)	24(18.6%)	.026
Seizures	14(10.85%)	4(3.1 %)	10(7.75%)	.83
Fever	18(13.95%	8(6.2%)	10(7.75 %)	.686
Nasal_Block	12(9.3%)	8(6.2%)	4(3.10 %)	.285
Neck pain	2(1.56%)	1(0.78%)	1(0.78%)	
CSF diversion	39 (30.24%)	9(6.98%)	30(23.25%)	0.223
Unconscious	1(0.78%)	00%	1 (0.78%)	
Macrocephaly	49(37.99%)	10(7.75 %)	39(30.24%)	.87
Time needed to diagnosis in months	6.63±8 (mean)	24.1±2.8	3.2±7.5	000
Hydrocephalus.	28 (21.7%)	8 (6.2%)	20 (15.5%)	0.223

Cerebellar Syndrome- Ataxia, Dysdiadokinasia, Dysmetria, Nystagmus, Intention tremor.

Other less common manifestations were: Fever in 8 patients (6.2%) with ST tumors and 10(7.75 %) with IT tumors. Nasal block were 8 patients (6.2%) with ST and 4(3.10 %) with IT tumors. Neck pain was in 1 patient (0.78%) with both ST and IT tumor. Unconscious was present in 1 patient only with IT. Cerebrospinal Fluid (CSF) diversion by shunt was 6.98% in ST and 23.25% in IT. Macrocephaly was found in 37.99% (N-49) cases and time needed for diagnosis i.e. from start of symptoms and start of treatment were means 6.63±8 months, where ST with 24.1±2.8 months and IT with 3.2±7.5 months. Hydrocephalus was detected in 8 patients (6.2%) with ST tumors and 20 (15.5%) with IT tumors.

All cases (N-129) were not possible to evaluate about the nature of tumor cells. Five Brain Stem SOL was diagnosed by radiologically and were not possible to take biopsy. Among 124 cases, benign tumors were 19.35% (N-24/124), malignant tumors were 80.65% (N-100/124). Brain stem tumors were 7 in number, 5 tumors were not possible to evaluate pathologically but other two were evaluated as glioma (malignant). Histological varieties of ST tumors (Table-II) were: Astrocytic tumours (23; 17.82%)), Ependymal tumours (20;15.50%), Craniopharyngioma (5,3.86%) Germinoma (4; 3.10%) Meningioma (4; 3.10%). Oligodendroglioma, Ganglioglioma, Malignant peripheral nerve sheath tumor (MPNST), papillary tumor of Pineal Gland, Astroblastoma, Giant Cell Tumor of Soft Tissue- each tumor was one (0.78%) in number. In ST tumors 15(12.10%) were benign and 47(37.90) were malignant tumors. Location of Supratentorial tumors are depicted in Table-III.

Table-II

Distribution of Supratentorial Tumors.

Sl.No	Diagnosis	Number (%)	Remarks
1.	Astrocytic tumours(Pilocytic,Glioblastoma multiformis, Anaplastic, Pleomorphic xanthoastrocytomas,Gient cell)	23(17.82%)	
2.	Ependymal tumours	20 (15.50%)	
3.	Craniopharyngioma	5 (3.86%)	
4.	Germinoma	4 (3.10 %)	
5.	Meningioma	4 (3.10%)	
6.	Oligodendroglioma	1 (.78%)	
6.	Ganlioglioma	1(.78%)	
7.	Malignant peripheral nerve sheath tumor (MPNST)	1(.78%)	
8.	Papillary tumor of Pineal Gland	1(.78%)	
9.	Astoblastoma (Neuroepithelial Tumor)	1(.78%)	
10.	Giant Cell Tumor of Soft Tissue	1(.78%)	
11.	Benign: Malignant	15:47	(Ratio-1: 1.33)
	Total	62 (48.06%)	

For IT tumors (Table-IV), histological types were confirmed by biopsy or Immunohistochemistry except 5 cases, where biopsy were not possible and leveled by MRI report (Brain stem SOL). The Infratentorial tumors were the following: Medulloblastoma (N-38; 29.46%), Astrocytoma, (N-10; 7.75%) Ependymoma (N-10; 7.75%), brain stem SOL (N-7; 5.42%). Schwannoma and Meningioma both tumor was one (0.78%) in number. In IT compartment 9(7.25%) were benign and 53(42.75%) were malignant tumors. Five mid brain tumors were not possible to evaluate.

Table-III

Location of Supratentorial tumors

Sl.	Location of tumors	Number & Percentage
1.	Cerebelum (Frontal, Temporal Parietal, OccipitaL)	42(66.65%)
2.	Sella	11(17.46%)
3.	Thalamus	6(9.53%)
4.	Pineal Region	3(4.76%)
5.	Basal Ganglia	1(1.60%)
	Total	63 (62+1)

N.B: one tumor was both in Sella and Thalamus.

Histological grading of brain tumors (Table-V) were done according to the 2016 CNS WHO classification. Total 97 pathological reports were considered for evaluation as other biopsy reports (N-27) did not mentioned adequate information to do grading. Most common types were Grade-2 (N-36, 37.11%) then Grade-4(N-30, 30.93%), Grade-1(N-19, 19.59%) Grade-3 (N-12, 12.37%).

Table-IV

Distribution of Infratentorial Tumors.

	Diagnosis	Number (%)	Remarks
1.	Meduloblastoma	38(29.46%	
2.	Astrocytoma (Pilocytic, Glioblastoma multiformis, Anaplastic, Pleomorphic xanthoastrocytomas. Cerebellar Astrocytoma.	10 (7.75%)	
3.	Ependymoma	10(7.75%)	
4.	Brain stem Space occupying lesion (5 undiagnosed SOL+2 Glioma)	7 (5.42%)	
5.	Schwannoma	1 (0.78%)	
6.	Meningioma	1 (0.78%)	
7.	Benign: Malignant	9:53	Ratio- 1: 5.88
8.	Total	67 (51.94)	

NB: 5 tumors were not evaluated by biopsy

Table-V

Histological Grading of Brain Tumors (2016 CNS WHO)

	Grade	Frequency (%)	Remarks
1.	Grade-1	19 (19.59%)	Low-grade:56.70%
2.	Grade-2	36 (37.11%)	
3.	Grade-3	12 (12.37%)	High-grade:43.3%
4.	Grade-4	30 (30.93%)	
	Total	97 (100%)	

Surgery represents the initial treatment for the majority of pediatric brain tumors and in some cases it is the only treatment modalities.Table-VI delineated brain tumors removal types.

Table-VI

Tumors Removal

1.	Type of tumor removal	Frequency (%)
2.	Total removal	45 (34.88%)
3.	Gross Total	27 (20.93%)
4.	Partial removal	25 (19.38%)
5.	Only Biopsy	5 (3.88%)
6.	Not mentioned/Not operated	27(20.93%)

Treatment plan was represented in Table-VII.Therapeutic surgery was performed in 114 (88.37%) cases, and 121 patients (93.79 %) have got chemotherapy. Surgery and Radiotherapy without chemotherapy got 8 patients.

Table-VII

Treatment of ST and IT tumors

Treatment Type	Frequency(%)
Surgery+RT+CT	105 (81.40%))
RT+CT	15 (11.63%)
Surgery+RT	8 (6.20%)
Surgery+CT	1 (.77 %)
Total	129 (100%)

Discussion:

Intracranial tumors are the second most common neoplasm in childhood. They are the most common solid tumors at pediatric age and the most frequent cause of cancer-related morbidity and mortality in this group of patients. [11,12,18]

Intracranial tumors location differs considerably in percentage according to the studied population, country and region. In Kuwait the frequency of childhood primary brain tumors is high with 43% ST and 57% IT. [19]

Consistent with the findings of other international pediatric brain tumor studies,[20]in this study supratentorial (ST) were 62 (45.06%) and infratentorial (IT) were 67 (51.94%). Most of the study stated infratentorial tumors are more than supratentorial tumors. Mean age of our patients were 8.73 ± 4.18 years, Male Female ratio was 2.22:1. Most international study reported male predominance. Rickert and Paulus et al [21] in their meta-analysis of 10,582 childhood brain tumors accumulated from 16 international surveys, reported that the M/F ratio was 1.29:1. Conversely, a few studies, albeit with smaller numbers of patients, have reported a slight female predominance.[22,23] Average time elapsed for start of treatment 6.63 months (Range 15 days - 48 months). But Boutahar FZ et al from Morocco found that the median time to diagnosis was 2 months (range, 0.25–20 months).The longest times to diagnosis occurred in children older than 5 years and in patients with supratentorial tumors or low-grade glioma.[24] About 79.84% of patients of this series were poor economically and it may be the causes of delayed diagnosis and start of treatment than other studies. Only 3 patients (2. 33%) have family history of cancer in our study, though, It is not clear if family history of cancer increases risk of cancer in children.[25] Benign tumors were 19.35 % (N-24/124), Malignant tumors were 80.65 % (N-100/124). It is perhaps difficult to calculate the share of over all intracranial benign and malignant tumors. In USA there is also huge variability in the reporting of tumors among U.S. states, with the percentage of nonmalignant tumors varying from 27% to 60% of overall (childhood) CNS tumors.[26]

Clinical signs and symptoms are usually not specific in childhood brain tumor, therefore causing diagnostic delay. Increase intracranial pressure like headache and vomiting were the most common presentation of brain tumors. In our series headache and Vomiting were more (41.86% and 39.54% respectively) in IT than ST (41.09%, 35.65% respectively) tumors. Headache in those cases is characteristically irresponsive to usual medications. There were two patients age below two years and in both the patients presented as inconsolable crying, vomiting and bulging anterior frontanelle. None of the symptoms were statistically significant (p-0.89 and p-0.66 respectively). Sánchez-Sánchez et al[27] found same result in headache and vomiting with ST tumors (42.1%, 63.6% respectively) but much higher figure in IT tumors (68.7%, 84%). The prevalence of intracranial hypertension in posterior fossa tumors coincides with the incidence of hydrocephalus. In our series hydrocephalus was found 15.50% and 6.2% in IT and ST tumors respectively but statistically is not significant (p-0.223). El-Gaidi et al reported from Cairo a much large figure of hydrocephalus (84.30% and 29.60% respectively) in IT and ST tumors.[14]

Cerebellar syndrome like ataxia, dysdiadokinasia, dysmetria,nystagmus,intention tremor were reported more common in IT than in ST tumors (29.45% vs. 6.98%). This data were statistically significant (p-0.043) and finding correlate with the findings of El-Gaidi et al[14] where ataxia in IT and in ST tumors were 33 % and 2.4% respectively.

Seizures were more frequent in IT than ST tumors ((7.75% vs 3.1%) in our study and no statistically significant difference was found. However, the percentages found in this case series are reverse to those reported by other authors, like Sánchez-Sánchez et al [27] who reported convulsion in IT and ST were 9.3% and 21% respectively. Cranial nerves involvement is usually more common in those patients with IT-located tumors. The study we carried out is consistent with these findings of IT and ST tumors were 18.60% and 6.98%, which is statistically significant (p-0.026). Less significant syndrome were visual disturbances (ST vs IT - 26.35% vs 17.03%), Fever (ST vs IT - 6.2% vs 7.75%), Nasal Block (ST vs IT - 6.2% vs 3.10%), Neck pain, (ST vs IT- 0.78% vs 0.78%), Unconscious (ST vs IT- 00 % vs 0.78%). All were statically insignificant.

Time needed for diagnosis for ST was 24.1±2.8 months and 3.2±7.5 months in IT tumors. Many of our patients suffered from symptoms for years without diagnosis of brain tumors by CT scan / MRI evaluation. Mainly these types of patients suffer from ST tumors. Ansell et al in a comparative study conducted between patients with intracranial tumors and patients with symptoms but without an intracranial tumor diagnosis, found an up to 60-month diagnostic delay, due to the atypical, heterogeneous and insidious presentation of some tumors.[28] In this case series, we found that patients with ST tumors took more time (24.1±2.8 months) from onset of symptoms to diagnosis/start of treatment than IT tumors and statistically significant difference was found.

A study from Mexico by Sánchez-Sánchez et al [27] reported that the most common histological variant were astrocytomas where found in 23.5% of patients, medulloblastomas in 11.7%, and gliomas of different lineages in 25.4%. But in our series most common

intracranial tumors were medulloblastomas in 29.46%, then astrocytomas were found in 17.82% of patients and gliomas of different lineages (Ependymoma, Oligodendro giloma, Ganlioglioma) in 17.06%, which is different from reports of the aforementioned author, this data correlate with study of American Association of Neurological Surgeons [29] , where most common types of pediatric tumors were medulloblastomas, low-grade astrocytomas (pilocytic), ependymomas, craniopharyngiomas and brainstem gliomas.

The grade refers to how aggressive the tumor cells appear to be. The higher the grade, the more aggressive the tumor. In this study Low-grade tumors (WHO I/II) were 56.70% and High-grade were 43.30%. This data correlate with study of El-Gaidi et al [14] where Low-grade tumors (WHO I/II) constituted 62.5% of all cases and high-grade tumors (WHO III/IV) 37.5%. Internationaly Low-grade gliomas comprise the most common type of brain tumor in children.

Surgical resection, as a first step in the multidisciplinary treatment, remains the mainstay of treatment.[30-34] In this study Total removal were 34.88%, Gross total were 20.93%, Partial removal were 19.38% and only biopsy were 3.88%. Reports of 20.93% patients were not available due to incomplete operation note by surgeons/not operated at all. In a study of Amsterdam by Neervoort et al[35] pediatric brain tumors surgical intervention reported 66% were total resections, 26% subtotal resections, and 8% partial resection. Total tumor removal in The Netherland was double than ours and a significant number of our study reports were incomplete. All these indicate the need of our neurosurgical service, especially in pediatric neurosurgical aspects.

Future of Pediatric Neuro-Oncology

The field of pediatric neuro-oncology is changing rapidly, especially in the field of molecular biology. Many common primary brain tumors now can be categorized according to molecular markers, which someday soon will serve as the basis of risk stratification in clinical trials. Our improved knowledge in the field of molecular neuro-oncology will lead to discover enormous number of molecular-targeted biologic agents. Some of them currently are being studied in clinical trials for recurrent or refractory disease. It is the hope that one day, more specific targeted biologic therapies will replace conventional chemotherapy or radiation in the treatment of childhood brain tumors. One of the great limitations in achieving success of biologic-based treatments is the ability of these drugs to cross the blood–brain barrier. To overcome this gatekeeper, a number of treatment strategies, including gene-based delivery systems, immunotherapies, and convection-based drug delivery, currently are being investigated.

Limitation:

This study has some obvious limitations. Most importantly, it is the relatively small sample size and lack of data from patients at the start of syndromes. Most of the patients attended our department after removal of tumor. So initial signs and syndromes were collected from patient's or parent's verbal history and prescriptions of General Practioners. Some base line investigation like endocrine abnormalities were not possible to collect.

Conclusions:

Cerebellar syndrome and cranial nerve pulsy are more frequently observed in patients with IT tumors, with a statistically significant when compared with patients with ST tumor. On the other hand the time elapsed between the onset of symptoms and diagnosis of intracranial tumor is significantly longer in children with ST tumors than IT, since symptoms have a more insidious onset and are confused with other benign conditions and it is also statistically significant in this study.

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ORIGINAL ARTICLE

Health Related Quality of Life and Relative Attributes Among Substance Users

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Abstract

Introduction: Substance abuse is one of the most serious public health problems as it has wide spread prevalence and serious health consequences. Many people with substance abuse problems are avail to quit or can change their unhealthy behavior. The purpose of the study to assess the health related quality of life and relative attributes using HRQOLDA scale among the substance users.

Methods: This cross sectional study was conducted in department of community medicine of United Medical College from April 2019 to May 2020. A total of 235 substance users of different ages from 3 addiction rehabilitation centers in Dhaka irrespective of marital status, education, occupation, income, religion, housing types were selected following the define selection criteria. The research instrument was and interview and semi-structure questionnaire based on HRQOLDA scales.

Results: Mean age of the respondents was 32.29 ± 11.47 years and majority were within the age of 23-28 years (34%). educated were (95.1%), married (51.1%), monthly income <10000 taka (45.1%). In occupation, (89.3%) were employed, (79.6%) abuse ganja, (67.2%) started using drug by friend. Drug used per day 1-5 times (66.0%), restlessness developed when not using drug (62.1%). Majority (70.6%) used of illicit drug to feel better mentally in last 30 days. (57.9%) significant difference were showed in age (F=15.36, p=.000). Started using substance due to friend influence (t=6.435, p=.000) and family issues (t=5.749, p=.000) showed significant difference.

Conclusion: Health related quality of life among substance users were not satisfactory. Most of the substance users have problem in relation to socio-demographic characteristics to health-related quality of life in the domain of physical and mental health. Optimistic findings that the majority of respondents had an absolute belief that using drug reduce social activities and it is possible to quit drug for some people. Strong government legislation, awareness through mass media, family counseling, coordination by different law enforcing agencies can combat substance use and increase health related quality of life indicator in a good position in Bangladesh.

Key words: Drug, Substances, Health related quality of life scale.

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Introduction:

Substance abuse is recognized as an important public health and social problem in Bangladesh. The incidence of drug abuse has been increasing day by day in a developing country like Bangladesh. Drug addiction hampers the mental wellbeing of an individual as well as it causes lots of physical complication. In terms of geographical location, Bangladesh is situated in the central point of the world's biggest growing narcotics zone the golden crescent (Afganistan, Pakistan and Iran) and the golden triangle (Myanmar, Laos and Thailand)[1]. So the county has become a major transit point for drug dealers. The major illicit drugs available in Bangladesh are opium derivative (heroin, pethidine), cannabis (marijuana, ganja, chorosh, bhang, hashish), stimulant (yaba, cocaine) sleeping pills, cough syrup (phensidyl, Dexpotent etc.) and few others. The problem is increasing day by day and threating the nation[2,3]. About 230 million people or 5% of the world's adult population are estimated to have used an illegal drug use at least once in 2010. Alcohol and other substance use determine economic and social development and contribute to crime, instability, insecurity and they also cause major burden to society causing

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economic cost, health cost. Crime related cost and loses is productivity. Health related quality of life (HRQOL) is a useful indicator of overall health because it captures information on the physical and mental health status of individuals, and or the impact of health status on quality of life. HRQOL is usually assessed via multiple indicators of self-perceived health status and physical and emotional functioning. Together, these measures provide a comprehensive assessment of the burden of preventable diseases, injuries and disabilities[4,5]. Substance abuse affects all aspects of a person's life and creates problems in physical, psychological, environmental health and social relationship. In Bangladesh showed that the most common problems which contribute to a decreased HRQOL are the physical problems among the users[6]. All areas of life, work/ study, homework, marriage, finance and others as well as emotional and legal problems, are also common for both man and woman who use substance users. Substance users have less energy, disturbed sleep, are less able to perform daily activities and have reduced capacity for work[7]. Day by day our working age group is being destroyed by addiction. If proper steps are not taken, our country has many drug rehabilitation centers there is a lack of proper awareness among the people how to rehabilitate an addict and help make them independent and productive. To rehabilitate an addict and create a good health related quality of life, tis physical, psychological, environmental health and social relationships need to improve. This study aims to provide basic information about the effects of substance abuse and to identify what problems face the user and the harmful effects of substance abuse on their health related quality of life. This help to plan and provide effective treatment.

Methods:

This was a cross sectional study conducted in the Department of Community Medicine, United Medical College, Dhaka, Bangladesh from April 2019 to May 2020. Study population was substance user attending the central treatment center, Tejgaon, Dhaka, Sheba and Lighthouse Rehabilitation Center, Uttara, Dhaka. Respondent was selected purposively. Data was collected by face-to-face interview using semi-structured questionnaire using HRQOLDA scale. Collected data was checked, edited, coded and recoded for quality management. Descriptive statistics and inferential statistics including t-test and one-way ANOVA test was done through SPSS Version 20.

Result:

Among the respondents 34% were in the age group 23-28 years, 17% were in the age group 16-22 years, 23% were within the age group 29-36 years and 25% were within the age group >37 years. The mean age was found 32.29 ± 11.74 years. Most of the respondents were Islam religion 86.4%. 21.3% completed primary education level, 4.7% can sign only, 11.5% completed JSC, 17.4% completed SSC, 19.1% completed HSC, 25.8% completed graduation and above. 51.1% were married, 45.1% were single and 3.8% were separated or divorced. More than one third of the respondents 45.1% earned monthly less than 10,000 Tk. 31.9% earned monthly 10001-20000 TK. Among the respondents 30.2% were day labor, 27.2% were businessman, 12.8% were service holder, 10.6% were unemployed, 13.6% were student, 5.5% were from other profession.

Table-I

Socio-demographic characteristics of the respondents.

Socio-demographic characteristics	Frequency (f)	Percentage (%)
Age group (years)		
16-22	40	17
23-28	82	34
29-36	54	23
>37	59	25
Mean ± SD; Range (min, max)	32.29 ± 11.47 (16-60)	
Religion		
Islam	203	86.4
Hindu	32	13.6
Education status		
Can sign only	11	4.7
Primary	50	21.3
J.S.C.	27	11.5
S.S.C.	41	17.4
H.S.C	45	19.1
Graduate or above	61	25.8
Occupational status		
Unemployed	25	10.6
Service holder	30	12.8
Day labor	71	30.2
Business	64	27.2
Student	32	13.6
others	13	5.5
Marital status		
Married	120	51.1
Single	106	45.1
Separated / divorce	9	3.8
Monthly income		
Less than 10000 Tk.	106	45.1
10001 to 20000 Tk.	75	31.9
20000 to 30000 Tk.	20	8.5
30001 to 40000 Tk.	15	6.4
More than 40000 Tk.	19	8.1
Total	235	100.0

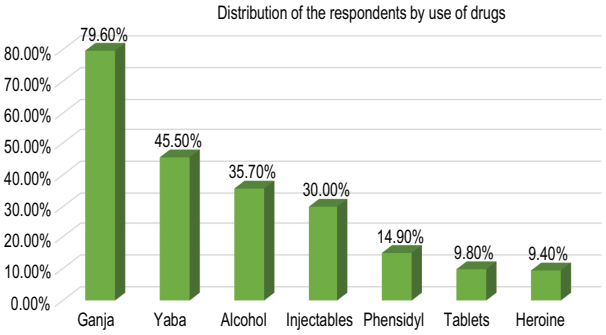

Figure-1: *Distribution of the respondents by use of drugs.*

The bar diagram showing majority of the respondents use ganja 79.6% followed by Yaba 45.5 %, alcohol 35.7%, injectable drug (Morphine, Pathedine) 30.0 %, Phensidyl 14.9 %, Tablet 9.8 % and rest heroine 9.4%.

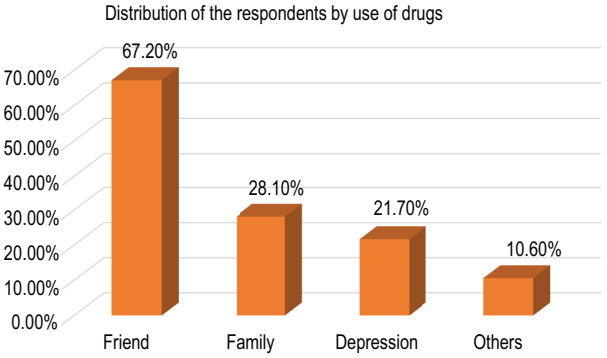

Figure-2: *Distribution of the respondents who started using drug by various causes.*

Bar diagram showing more than two third respondents 67.2% started using drug by friend followed by family issues 28.1%, depression 21.7% and rest 10.6% other causes.

Table-II

Distribution of the respondents by number of time of using drug per day

Number of time of usingdrug per day	Frequency	Percentage %
Less than 1 time	24	10.2
1 to 5 times	155	66.0
More than 5 times	56	23.8
Total	235	100.1

Majority of the respondents that mentioned that they used drug per day 1 to 5 times 66.0 %, followed by 10.2% used less than 1 time and 23.8% used more than 5 times.

Table-III

Distribution of the respondents by what happen when not using drug

What happen when not using drug	Frequency	Percentage %
Restlessness	146	62.1
Loss of temper	81	34.5
Insomnia	100	42.6
Other issues	69	29.4
Total	235	100.0

Majority of the respondent mentioned that they had restlessness when not used drugs 62.1% followed by 42.6% had insomnia, 34.5% had loss of temper, 29.4% had other issues.

Table-IV

Distribution of the respondents by by use of illicit drugs to feel better mentally in last 30 days

Use of illicit drug to feel better mentally in last 30 days	Frequency	Percentage %
15 times or more	84	35.7
8 to 14 times	4	1.7
3 to 7 times	48	20.4
1 to 2 times	30	12.8
Never	69	29.4
Total	235	100.0

Out of 235 respondents majority 166 (70.6%) used of illicit drug to feel better mentally in the last 30 days, out of which 12.4% respondents used of illicit drug 1 to 2 times, 20.4% used 3 to 7 times, 1.7% used 8 to 14 times and rest 35.7% used 15 times or more 29.4% mentioned that they were never used of illicit drug to feel better mentally in last 30 days.

Table-V

Distribution of the respondents by believe if drug use reduce social activities

Believe if drug use reduce social activities	Frequency	Percentage %
A little bit	5	2.1
A fair bit	32	13.6
Pretty much	62	26.4
Absolutely	136	57.9
Total	235	100.0

Out of 235 respondents majority respondents absolutely believe that if drug use reduces social activities 57.9%, 26.4%, mentioned pretty much, 13.6 % mentioned a fair bit and 2.1% mentioned a little bit.

Table VI showed that average score of health related quality of life were lower in age group 23-28 (66.378+/- 8.98) than other age groups. Persons within the age group 29-36 years (76.76+/-7.60) showed the highest score than the age group 16-22 years (73.1750+/- 4.39), age group 23-28(66.378+/8.98) age group more than 37 years (71.0169+/-11.99). Age (F=15.36, P=.000) showed the significant difference, (done by one way ANOVA test).

Table VII showed that average score of health related quality of life were lowest in respondents who started using substances due to family issues (65.5758±11.77) than friend influence (73.7342±7.708) and depression (70.000±10.905). Those who started due to friend influence (t=6.435, P=.000) and family issues (t=5.749, P=.000) showed significant difference. No significant difference was showed in those who started using substances due to depression (t=.894, P=.372); done by t test.

Table-VI

Relation between socio-demographic characteristics (Age) of the respondents with total mean score of health related quality of life (HRQOL) of drug abuse

Age (years)	N	Mean	SD	Test statistics
16-22 years	40	73.1750	4.39	
23-28 years	82	66.3780	8.98	F=15.36
29-36 years	54	76.7593	7.60	P=.000
>37 years	59	71.0169	11.99	
Total	235	71.0851	9.78	

Table-VII

Relation between cause of starting using drugs of the respondents with total mean score of HRQOL of drug abuser

Cause of starting drugs		N	Mean	SD	Test Statistics
Using drugs by friend's influence	Yes	158	73.7342	7.70839	T= 6.435
	No	77	65.6494	11.30413	p=.000
Using drugs due to depression	Yes	51	70.0000	10.90504	T= .894
	No	184	71.3859	9.46711	p=.372
Using drugs by family issues	Yes	66	65.5758	11.77228	T= 5.749
	No	169	73.2367	7.95468	p=.000

Discussion:

The study showed that one third of the respondents were within the age group 23-28 years 34%, were within the age group 16-22 years, 23% were within the age group 31-40 years and 25% were within the age group >37 years. The mean age was found 32.29 ± 11.47 years (Table-I). In a study by Nazmun Nahar Naz from Dhaka university, most participants (n=39) are aged between 25-35 years old, 38 participants are aged between 18-24 years and 24 participants age e" 36 years[8]. The mean SD of age range is 28.8 ± 7.9[8]. Other studies Kadri Bhagyalaxmi and Kedia, 2003 have shown in India, out of 560 subjects, 46 % of user where in the age group of 26 to 35 years. The mean age of users was (32.8 ± 6) years[9]. Another study in Bangladesh showed that out of 500 users, all of them between 15 to 35 years old and the mean age was 28.4 ± 6.7 years[10]. A report by the World Health Organization (WHO) suggests that most of the drug users in Bangladesh are predominantly men aged between 18 and 30. Although estimates vary widely, it is thought that approximately 5 million people in Bangladesh are dependent on drugs, mostly young people. This is a growing trend that is alarming and shows no sign of improvement at this time. According to the 2011 National Survey on Drug use and health, 22.5 million American age 12 and above (8.7% of the total population) had used an illegal drug or abused a prescription drug in the month the survey was conducted those numbers have since risen[3]. Most of the respondent's religion were Islam 86.4% and rest were Hindu 13.6%, majority of the respondents 51.1% were married, 45.1%. According to the study of Nazmmun Nahar Naz, out of 101 participants, 36.6% users were married, 40.6% were unmarried, 12.9% were divorced and 9.9% participants lived together[8].

In the study among the respondents, 21.3% completed primary education level, 4.7% respondents can sign only, 11.5% completed JSC, 17.4% completed SSC, 19.1% completed HSC, 21.3% completed graduation and above. Respondents completed primary and graduation were showed the majority percentage. Bawan's 2002 study on 75 women in India found that half of them were illiterate. Another study, Kadri, Bhagyalaxmi and Kedia 2003 study showed that out of 560 subjects, most of the users were educated up to primary or secondary level[6]. Among the respondents 30.2% were day labor, 27.2% were businessman, 12.8% were service holder, 10.6% unemployed, 13.6% were student, 5.5% were from other profession. In fact, the majority of drug users were unemployed according to the Journal of Health, Population and Nutrition (JHPN)[9]. According to Naz's study 28.7% were employed, 15.8% were students and 8.9% participants were unemployed[8]. Bawan 2002 found that out of 75 women in India 67 % employed, 45% are commercial sex workers and 15 % involved in peddling at the road side[2,11]. The study showed more than one third of the respondents 45.1% earned monthly less than 10000 Tk., 31.9% earned monthly 10001-20000 Tk., 8.5% earned monthly 20001-30000 Tk., 6.4% earned monthly 30001-40000 Tk. According to the 2001 National survey on drug use and health, the statistics showed that the rate of alcohol abuse was 10% higher in those that were employed than it was for the unemployed[12,13]. In another study, published in the American journal of preventive Medicine, approximately 78% of individuals with an income of 7500 US dollar and above reported that they consumed alcohol, compared with 45% of those with an annual income of less than US$ 30000. More than 80 % of college graduates reported that drunk, in comparison to less than 52% of those who had a high school education or less[14,15].

The current study showed the distribution of the respondent according to their use of drug. Among the respondents, the study showed majority of the respondents used ganja 79.6 %, followed by 45.5% Yaba, 35.7% alcohol, 30.0% injectable drug, 14.9% phensidyl, 9.8% tablets and rest 9.4% consume heroine (Figure-1). The causes of starting drugs were also found out through the questionnaire. More than two third respondents started using drug by friend influence 67.2%, followed by family issue 28.1%, depression 21.7% and rest other causes 10.6% (Figure-2). The study showed that majority of the respondents that mentioned that they used drug per day 1 to 5 times 60.0 % followed by 10.2% used less than 1 time and 23.8% used more than 5 times (Table-II). Symptoms when stop using drugs were found in this study, majority 62.1 % mentioned that they had restlessness when not using drugs followed by 42.6% had insomnia, 34.5% had loss of temper and 29.4% had other issues (Table-III). Out of 235 respondents 70.6% respondents used of illicit drug to feel better mentally in last 30 days, out of which 12.4% respondents used of illicit drug 1 to 2 times, 20.4% used 3 to 7 times, 1.7 % used 8 to 14 times and rest 35.7% used 15 times or more. 29.4 % respondents mentioned that they were never used of illicit drug to feel better in last 30 days (Table-IV). Out of 235 respondents, majority 57.9% absolutely believed that if drug use reduces social activities. 26.4% mentioned a fair bit and rest 2.1 % mentioned a little bit (Table-V). Significant difference was shown in age (F=15.36, P= .000). Average score of health related quality of life were lower in age group 23-28 year (66.378 ± 8.98) than other age groups. Person within the

age group 29-36 (76.76 ± 7.60) showed the highest score than age group more than 37 years (71.0169 ± 11.99) (Table-VI). Significant difference was showed in this study is those who started using substances due to friend influence (t= 6.435, P=.000) and family issues (t= 5.749, P=.000). Average score of health related quality of life were lowest in respondents who started using substances due to family issues (65.5758 ± 11.77) than friend influence (73.7342 ± 7.708) and depression (70.000 ± 10.905). No significant difference was showed in those who started using substances due to depression (t=.894, P=.372) (Table-VII).

Conclusion:

Most of the substance users have problem in relation to socio-demographic characteristics to health related quality of life in the domain of physical pain, sleeping problem, aggressiveness, lack of concentration, deterioration of physical and mental health. Optimistic finding that using drugs reduce social activities. For preventing addiction, awareness through mass media, parental education about addiction, family counselling at rehabilitation period, co-ordination by the different law enforcing agencies, strong legislation by the Government can combat substance use and increase health related quality of life (HRQODL) indicator in a good position in Bangladesh.

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REVIEW ARTICLE

Dengue: A Clinical Review on Clinical Manifestations and Diagnosis

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Abstract

Dengue is an acute viral illness transmitted by infected Aedes mosquitoes. Clinical manifestations of dengue infection in patients range widely, from asymptomatic or mild febrile sickness to serious consequences. The symptoms appear suddenly and include high grade fever, headache, retro-orbital pain, myalgia, arthralgia, and occasionally a rash. Once the fever has subsided, haemorrhagic signs typically start to appear. Intense abdominal pain, persistent vomiting, noticeable restlessness, or lethargy during defervescence are signs of impending shock. Hence, evaluating warning signs is crucial for detecting serious disease that requires supportive care early on. The beginning of plasma leakage or the critical phase is indicated by an increase in haematocrit above the baseline and a decreasing trend in platelet count. Expanded dengue syndrome refers to atypical manifestations with multiple organ involvement. Since many different viral illnesses can present similarly, making a clinical diagnosis of dengue can be difficult. So, antigen detection or serologic testing is used in the laboratory to diagnose dengue.

Keywords: DENV(Dengue Virus), DF(Dengue Fever), DHF(Dengue Haemorrhagic Fever), DSS(Dengue Shock Syndrome), Dengue Expanded syndrome, Plasma leakage

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Introduction:

Dengue is a mosquito (Aedes aegypti or Aedes albopictus) borne febrile illness caused by infection with one of four dengue viruses (DENV).[1-3] Infection may be asymptomatic or present with a wide range of clinical manifestations including a mild febrile illness to a life-threatening shock syndrome. Numerous viral, host, and vector factors are believed to contribute risk of infection and its severity.

There are four serologically distinct DENV types of the genus Flavivirus, named DENV-1, DENV-2, DENV-3, and DENV-4. There is cross-protection among the four DENVs, which weakens and disappears over a short period following infection; therefore, individuals living in a dengue-endemic area are at risk for infection with any and all DENV types.

Classification:

World Health Organization (WHO) published a classification scheme in 1997 describing three categories of symptomatic DENV infection: dengue fever (DF), dengue haemorrhagic fever (DHF), and dengue shock syndrome (DSS).[4]

This classification was much criticized though it was data driven and evidence based [5]. The term DHF suggests that haemorrhage is the cardinal manifestation of severe dengue; but in reality, plasma leakage leading to intravascular volume depletion and potentially shock is the most specific feature of severe dengue and most patients with severe illness requiring intervention do not meet all criteria for DHF.[6-8]

For these reasons, WHO published a revised classification scheme in 2009 describing the following categories: dengue without warning signs, dengue with warning signs, and severe dengue.[9] It was proposed for early recognition of warning signs to optimize triage and

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management decisions. This classification has also been criticized for a lack of clarity in the criteria for severe dengue and for obscuring distinct disease phenotypes within each category.[10]

In 2011, the WHO South-East Asia Regional Office published new guidelines for the prevention and control of dengue and introduced the concept of the expanded dengue syndrome which includes patients with severe organ involvement (liver, kidney, brain, or heart) without evidence of plasma leakage, prolonged shock, comorbidities, and/or coinfections were cited as common risk factors.[11]

WHO 1997 classification:

Dengue fever — DF (also known as "break-bone fever") is an acute febrile illness defined by the presence of fever and two or more of the following but not meeting the case definition of DHF.[4]

- Headache
- Retro-orbital or ocular pain
- Myalgia and/or bone pain
- Arthralgia
- Rash
- Haemorrhagic manifestations (eg, positive tourniquet test, petechiae, purpura/ecchymosis, epistaxis, gum bleeding, blood in emesis, urine, or stool, or vaginal bleeding)
- Leukopenia

Dengue haemorrhagic fever — The cardinal feature of DHF is plasma leakage due to increased vascular permeability as evidenced by haemoconcentration (≥20 percent rise in haematocrit above baseline), pleural effusion, or ascites [4]. DHF is also characterized by fever, thrombocytopenia, and haemorrhagic manifestations (all of which may also occur in the setting of DF) .[4]

The presence of intense abdominal pain, persistent vomiting, and marked restlessness or lethargy, especially during defervescence, should alert the physician for possible impending DSS.[12]

The criteria for DHF comprise a narrow definition that does not encompass all patients with clinically severe or complicated DENV infections.[5,13]

According to the guidelines, a DHF diagnosis requires all of the following be present:

- Fever or history of acute fever lasting 2 to 7 days, occasionally biphasic
- Haemorrhagic tendencies evidenced by at least one of the following:
- A positive tourniquet test – The tourniquet test is performed by inflating a blood pressure cuff on the upper arm to a point midway between the systolic and diastolic pressures for 5 minutes. A test is considered positive when 10 or more petechiae per 2.5 cm (1 inch) square are observed. The test may be negative or mildly positive during the phase of profound shock. It usually becomes positive, sometimes strongly positive, if the test is conducted after recovery from shock. It is estimated that the tourniquet test is positive in 80 percent of patients with dengue.[7]
- Petechiae, ecchymoses, or purpura.
- Bleeding from the mucosa, gastrointestinal tract, injection sites, or other locations.
- Haematemesis or melena.
- Thrombocytopenia (100,000 cells per mm3 or less) – This number represents a direct count using a phase-contrast microscope (normal is 150,000 to 400,000 per mm3).
- Evidence of plasma leakage due to increased vascular permeability manifested by at least one of the following:
- A rise in the haematocrit equal to or greater than 20 percent above average for age, sex, and population.
- A drop in the haematocrit following volume-replacement treatment equal to or greater than 20 percent of baseline.
- Signs of plasma leakage such as pleural effusion, ascites, and hypoproteinaemia.

Dengue shock syndrome — DSS is DHF with marked plasma leakage that leads to circulatory collapse (shock) as evidenced by narrow pulse pressure or hypotension.

For a diagnosis of DSS, all of the above four criteria for DHF must be present plus evidence of circulatory failure manifested by:

- Rapid and weak pulse
- Narrow pulse pressure (20 mmHg)
- Hypotension for age – Hypotension is defined to be a systolic pressure 80 mmHg for those less than 5 years of age or 90 mmHg for those greater than or equal to 5 years of age.

  (Narrow pulse pressure is observed early in the course of shock, whereas hypotension is observed later or in patients who experience severe bleeding.)
- Cold, clammy skin and restlessness.

WHO 2009 classification:

Dengue without warning signs — A presumptive diagnosis of dengue infection may be made in the setting of residence in or travel to an endemic area plus fever and two of the following[9]:

- Nausea/vomiting
- Rash
- Headache, eye pain, muscle ache, or joint pain
- Leukopenia
- Positive tourniquet test

Dengue with warning signs — Dengue with warning signs of severe infection includes dengue infection as defined above in addition to any of the following[9]:

- Abdominal pain or tenderness
- Persistent vomiting
- Clinical fluid accumulation (ascites, pleural effusion)
- Mucosal bleeding
- Lethargy or restlessness
- Hepatomegaly >2 cm
- Increase in haematocrit concurrent with rapid decrease in platelet count

Severe dengue — Severe DENV infection includes infection with at least one of the following[9]:

- Severe plasma leakage leading to:
- Shock
- Fluid accumulation with respiratory distress
- Severe bleeding (as evaluated by clinician)
- Severe organ involvement:
- Aspartate aminotransferase (AST) or alanine aminotransferase (ALT) ≥1000 units/L
- Impaired consciousness
- Organ failure

Clinical Manifestations:

General principles

Clinically apparent dengue is more common in adults[14]; among children, most infections are asymptomatic or minimally symptomatic.[15,16]

A primary DENV infection is the first wild-type infection an individual sustains; a secondary infection is the second wild-type infection caused by a different DENV type. Secondary infections separated in time by more than 18 months represent the highest risk for developing a severe clinical outcome.[13,17,18]

The incubation period of DENV infection ranges from 3 to 14 days; symptoms typically develop between 4 and 7 days after the bite of an infected mosquito.[19]

Patients with suspected dengue should be assessed as soon as possible. Early recognition of progression to severe disease and patients at increased risk for severe disease is essential.

Phases of infection — There are three phases of DENV infection: a febrile phase, a critical phase, and a recovery phase. The critical phase may not be present in all categories of infection.[9]

Febrile phase — The febrile phase of DENV infection is characterized by sudden high-grade fever (e”38.5°C) accompanied by headache, vomiting, myalgia, arthralgia, and a transient macular rash in some cases.[28-30] Children have high fever but are generally less symptomatic than adults during the febrile phase. The febrile phase lasts for three to seven days, after which most patients recover without complications.

Headache, eye pain, and joint pain occur in 60 to 70 percent of cases.[16] Rash occurs in approximately half of cases; more common during primary infection. When present, rash generally occurs two to five days after the onset of fever.[16] It is typically macular or maculopapular and may occur over the face, thorax, abdomen, and extremities; it may be associated with pruritus. Additional manifestations may include gastrointestinal symptoms (including anorexia, nausea, vomiting, abdominal pain, and diarrhoea) and respiratory tract symptoms (cough, sore throat, and nasal congestion).

Haemorrhagic manifestations may be observed in the febrile phase and/or critical phase. The range and severity of haemorrhagic manifestations are variable.[5,7,20] Major skin and/or mucosal bleeding (gastrointestinal or vaginal) may occur in adults with no obvious precipitating factors and only minor plasma leakage. In children, clinically significant bleeding occurs rarely, usually in association with profound and prolonged shock. Two Cuban studies noted spontaneous petechiae or ecchymoses in approximately half of patients.[21,22] Other less frequent manifestations included hematemesis (15 to 30 percent), heavy menstrual bleeding (40 percent of women), melaena (5 to 10 percent), epistaxis (10 percent), or haematuria.[23] Comorbid or pre-existing medical conditions (such as peptic ulcer disease) may increase the risk for haemorrhage. Significant thrombocytopenia is not always present when haemorrhagic manifestations occur; if present, it increases the risk of haemorrhage.

Physical examination may demonstrate conjunctival injection, pharyngeal erythema, lymphadenopathy, and hepatomegaly.[24] Facial puffiness, petechiae and bruising may be observed.[25] A tourniquet test should be performed.[20,26]

A biphasic ("saddleback") fever curve has been described in approximately 5 percent of cases; in such patients, acute febrile illness remits and then recurs approximately one to two days later; the second febrile phase lasts one to two days.[27]

Leukopenia and thrombocytopenia (≤100,000 cells/mm^3) are common.[24,27-31] Serum aspartate transaminase (AST) levels are frequently elevated; the elevations are usually modest (2 to 5 times the upper limit of normal values), but marked elevations (5 to 15 times the upper limit of normal) occasionally occur.[27,28] Elevated liver enzymes are common in the febrile phase; synthetic liver dysfunction (ie, elevated activated partial-thromboplastin time) and decreases in fibrinogen are not frequently identified.

Between days 3 and 7 of the illness, the physician must watch for signs of vascular leakage. Significant vascular leakage reduces intravascular volume and decreases organ perfusion. Corresponding clinical manifestations may include persistent vomiting, increasingly severe abdominal pain, tender hepatomegaly, development of pleural effusions and/or ascites, mucosal bleeding, and lethargy or restlessness; laboratory findings may include a high or increasing haematocrit level (≥20 percent from baseline) concurrent with a rapid decrease in the platelet count.[21,22,32]

Critical phase — The vast majority of infections that progress to a critical phase result from second DENV infections that occur more than 18 months after a resolved first infection. However, a subset of critical infections occurs in children less than one year of age, at the time maternal antibody is below protective levels and the child experiences a primary wild type infection. Severe DENV infection may also occur after primary infection in individuals with significant medical comorbidities.

Around the time of defervescence (typically days 3 to 7 of infection), a small proportion of patients develop a systemic vascular leak syndrome characterized by plasma leakage, bleeding, shock, and organ impairment.[28] The critical phase lasts for 24 to 48 hours.

Initially, adequate circulation is maintained by physiologic compensation, resulting in pulse pressure narrowing (systolic pressure minus diastolic pressure ≤20 mmHg); the patient may appear well, and the systolic pressure may be normal or elevated. However, urgent resuscitation is needed; once hypotension develops. Irreversible shock may follow despite aggressive attempts at resuscitation.[4]

Haemorrhagic manifestations may be observed in the febrile phase and/or critical phase.

Plasma leakage may be detected by imaging which includes ultrasonography (of the chest and abdomen) and chest radiography. In one study including 158 patients with suspected DHF in Thailand, ultrasonography around the time of defervescence was helpful for detection of pleural effusion and peritoneal fluid; right lateral decubitus chest radiography was also useful for detection of pleural effusion.[33] Plasma leakage was detected by ultrasound as early as three days after onset of fever; pleural effusions were more common than ascites. Gallbladder wall thickening may also be evident.[34]

Moderate-to-severe thrombocytopenia is common during the critical phase; nadir platelet counts ≤20,000 cells/mm^3 may be observed, followed by rapid improvement during the recovery phase.[1]

Reversion of the critical phase of altered vascular permeability corresponds with rapid improvement in symptoms.

Recovery phase — During the recovery phase, plasma leakage and haemorrhage resolve, vital signs stabilize, and accumulated fluids are resorbed. A confluent, erythematous pruritic rash with small islands of unaffected skin may appear during the recovery phase.

The recovery phase typically lasts two to four days; patients may have profound fatigue for days to weeks after recovery.

Additional manifestations — Additional manifestations of DENV infection (typically occurring in the critical phase or later) may include liver failure, central nervous system involvement, myocardial dysfunction, acute kidney injury, and others.[35-39]

Liver failure has been described following resuscitation from profound shock which may be caused by prolonged hypoperfusion or hypoxia rather than a direct viral effect.[35,38] Acute abdominal pain mimicking an acute abdomen has been described as a clinical manifestation in case series.[40,41]

Neurologic manifestations associated with DENV infection include encephalopathy and seizures; permanent neurologic sequelae have been described.[35,36,42-44] In case series, the frequency of these manifestations is approximately 1 percent.[37] Clinical manifestations include

fever, headache, and lethargy; some patients may have no characteristic features of DENV infection.[36] In such cases, the diagnosis has been supported by serologic testing, culture, or detection by polymerase chain reaction in cerebrospinal fluid.[36] Other neurologic syndromes that have been reported to be potentially associated with DENV infection include stroke, acute pure motor weakness, mononeuropathies, polyneuropathies, Guillain-Barré syndrome, and transverse myelitis.[36,37,39,45]

Cardiovascular manifestations (including myocardial impairment, arrhythmias, and, occasionally, fulminant myocarditis) have been described in patients with DENV infection.[46-48] One study in Brazil which included 81 patients with DENV noted elevated levels of troponin or B-type natriuretic peptide in 15 percent of cases.[47] Another study including 181 children with DENV infection noted transient left ventricular systolic and diastolic dysfunction was common and correlated with severity of plasma leakage.[49]

Acute kidney injury (AKI) has been reported in up to 3 percent of dengue cases [50-53]. Mechanisms of AKI may include shock, rhabdomyolysis, glomerulonephritis, and acute tubular necrosis.[54]

Retinal vasculitis and hemophagocytic lymphohistiocytosis have been described in association with DENV infection.[55-57]

Bacterial coinfection with or following DENV infection occurs but is rare. Risk factors include pre-existing comorbidities and severe illness at presentation. Persistent fever, rising white blood cell count, and signs and symptoms uncommon for dengue should prompt evaluation for bacterial coinfection.[58,59]

Secondary hemophagocytic lymphohistiocytosis is a potentially fatal hyperinflammatory condition and has been recognized in cases of severe dengue.[60,61]

Immunized individuals — Dengue vaccines may not provide complete protection from dengue disease; immunized individuals may present with attenuated disease. In addition, there is a theoretical possibility that immunization with a poorly immunogenic dengue vaccine could increase the risk of severe dengue infection with subsequent exposure to wild-type virus. Issues related to dengue vaccination are discussed separately.

Diagnosis:

Clinical approach — The diagnosis of DENV infection should be suspected in febrile individuals with typical clinical manifestations (fever, headache, nausea, vomiting, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestations, positive tourniquet test, leukopenia) and relevant epidemiologic exposure (residence in or travel within the past two weeks to an area with DENV infection).

A provisional diagnosis of DENV infection is usually established clinically. In regions and seasons with a high incidence of DENV infection, the positive predictive value of clinical criteria is high, particularly for illnesses meeting all criteria for dengue haemorrhagic fever (DHF).[62]

Early clinical presentations of dengue, chikungunya, and Zika virus infection may be indistinguishable. If feasible, laboratory diagnostic confirmation is warranted, but often the results are not available soon enough to guide initial clinical management.

Laboratory testing — Laboratory diagnosis of DENV infection is established directly by detection of viral components in serum or indirectly by serology. The sensitivity of each approach depends on the duration of the patient's illness as well as when in the course of illness, the patient presents for evaluation. Detection of viral nucleic acid or viral antigen has high specificity but costly; serology has lower specificity but is more accessible and less costly.

During the first week of illness, the diagnosis of DENV infection may be established via detection of viral nucleic acid in serum by means of reverse-transcriptase polymerase chain reaction assay (typically positive during the first five days of illness) or via detection of viral antigen non-structural protein 1 (NS1; typically positive during the first seven days of illness). In primary infection, the sensitivity of NS1 detection can exceed 90 percent; in secondary infection, the sensitivity of NS1 detection is lower (60 to 80 percent).[63-65]

Immunoglobulin (Ig)M can be detected as early as four days after the onset of illness.[1] Detection of IgM in a single specimen obtained from a patient with a clinical syndrome consistent with dengue is widely used to establish a presumptive diagnosis.

The likelihood of IgG detection depends on whether the infection is primary or secondary. Primary DENV infection is characterized by a slow and low titre antibody response; IgG is detectable at low titre beginning seven days after onset of illness and increases slowly. Secondary DENV infection is characterized by a rapid rise in antibody titre beginning four days after onset of illness, with broad cross-reactivity.

Serologic tests are unreliable for diagnosis of acute DENV infection in individuals who have been vaccinated with a dengue vaccine within the previous several months.[66] In

addition, serologic diagnosis of dengue may be confounded in the setting of recent infection or vaccination with an antigenically related flavivirus such as yellow fever virus, Japanese encephalitis virus, or Zika virus.

DENV infection can be established by virus isolation (culture); in general, this is not warranted as a clinical diagnostic tool since results are usually not available in a clinically meaningful time frame.

Dengue viral proteins can be detected in tissue samples using immunohistochemical staining.[67] Liver tissues appear to have the high yield; biopsy is rarely indicated in patients with suspected DENV infection, so this method is generally used only for post-mortem diagnosis.

Differential Diagnosis — The differential diagnosis of DENV infection includes:

- Other viral haemorrhagic fevers – Other viruses capable of causing haemorrhagic fever include Ebola virus, Marburg virus, Lassa virus, yellow fever virus, Crimean-Congo haemorrhagic fever, hantavirus (haemorrhagic fever with renal syndrome), and severe fever with thrombocytopenia syndrome virus (SFTSV)
- Chikungunya
- Zika virus infection
- Malaria
- Typhoid fever
- Leptospirosis
- Parvovirus B19
- Acute HIV infection
- Viral hepatitis
- Rickettsial infection
- Sepsis due to bacteraemia
- Influenza
- Coronavirus disease 2019 (COVID-19)

Conclusion:

Mortality and morbidity of dengue fever can be decreased through promoting awareness of the varied clinical presentations and regular observation of early warning indicators.

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Delayed Death followed by Hanging: A Case Study Report

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Abstract

Hanging is one of the most common methods of suicide in Bangladesh. Because of painless and instantaneous nature as well as availability of ligature material it is one of the chosen methods of suicide. In most cases death occurs immediately but sometimes delayed death also may occur. We report a case study on delayed death after the attempted suicidal hanging of a 25 years old young female. According to police inquest report and hospital records the woman was brought into hospital in unconscious state with alleged history of attempted suicidal hanging, with the complain of her face was congested with froth on her mouth, cyanosed, on her neck a ligature mark was found. An X-ray chest appeared with bilateral diffuse infiltrates, suggestive of pulmonary edema. Her neurological and respiratory conditions declined. After three days of the occurrence she developed a cardio-respiratory failure leading to death. After that, a postmortem examination was performed in the department of forensic medicine at Dhaka Medical College. Although the delayed death due to hanging is rare case, increasing awareness of such cases and could be reported early among the people.

Key words: Delayed death, Hanging, Suicide.

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Introduction:

Hanging is the form of an asphyxia which is caused by the suspension of the body by a ligature material which encircles the neck where the constricting force being the weight of the body.[1] Complete or partial suicide is the act of intentional taking of one's own life. The term "suicide" originated from modern Latin *suicidum*, where *sui* means "of oneself" and *cidium* means "a killing," from the word *caedere* means "to kill, chop or stab".[2]

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Suicidal hanging is considered to be preferable and painless method of killing oneself. Hypoxia is a common condition refers to the inadequate supply of oxygen to the tissue or perhaps an impairment of oxygen utilization by cells for any reason.[3] Causes of death are "asphyxia, venous congestion, combined asphyxia and venous congestion, cerebral anaemia, reflex vagal inhibition, fracture or dislocation of cervical vertebrae".[4] Delayed death occurs due to "aspiration pneumonia, infection, edema of lungs, oedema of larynx, hypoxic encephalopathy, infection of brain, abscess of brain, and cerebral softening".[4]

Case Report:

A 25 years old female was brought into hospital with alleged history of attempted suicidal hanging**.** She found hanged by using scarf (Orna) which was attached to the ceiling fan. As the occurrence went unnoticed, the length of the hanging was unknown.

According to police inquest report and hospital records she was found unconscious, frothing at the mouth, with facial congestion and cyanosis in the peripherals. An X-ray chest appeared with bilateral diffuse infiltrates, suggestive of pulmonary edema. Her neurological and respiratory conditions declined. After three days of the occurrence she developed a cardio-respiratory capture

driving to death. After that, a postmortem examination was performed in the department of forensic medicine at Dhaka Medical College.

On external examination, an oblique ligature mark above thyroid cartilage on the neck was seen with no other external injuries. On further dissection of neck structures using bloodless dissection of neck, internally there was parchmentization in the skin underlying the ligature mark. Nasopharynx, larynx, trachea and bronchi were congested with inflammatory signs. Congested and edematous lungs and other internal organs were found as congested.

The opinion concluded the cause of death was due to complications following hanging.

Discussion:

In spite of the fact that hanging is a common method of suicide, however, in the literature, a few cases have been recorded in which death occurred after a certain period of time or the patient survived after extended resuscitation steps.[5,6,7] Most hospital deaths have been linked to pulmonary complications such as pulmonary oedema, bronchopneumonia, acute respiratory distress syndrome (ARDS), and cerebral oedema.[8]Wahlen BM & Thierbach reported a certain survival period ranging from 18 hours to 4 days post hanging that resulted in delayed death.[9] Harish et al. recorded two cases of delayed death that had survived for different periods, 7 days and 14 days respectively.[10] Both of the cases concluded that cerebral anoxia was the cause of death. In another report, Polson et al. found a case where a 63 years old woman died 15 days later from cerebral damage due to cerebral anoxia.[11] In six cases of suicides related cases of delayed hanging death reported by Maxeiner, all of which were unconscious through out the period till death.[12]Despite early rescue and resuscitation, a case reported four instances of delayed death after suicide hanging in which the development of pulmonary edema (POPE) lead to death.[13]

Cervical injuries are uncommon in suicide hangings, and death is frequently a prolonged process that takes 8-10 minutes. Suicidal hanging deaths are caused by hypoxia and cerebral ischemia induced by compression of the airway and main blood vessels of the neck caused by a ligature wrapped around the neck, with the force of compression equal the body weight.[14] Bhoi et al. described it this hypoxia as leading to encephalopathy.[5] Moreover, Walton reported that in case the circulation is established, the patient may survive for a time in a semi comatose state after a period of five to 15 minutes of anoxia.[15]

Pulmonary edema appearing after a non-lethal hanging is a rare occurrence. This is most likely due to the low survival rate of suicide or accidental hanging victims.[16]Exhalation against an obstructed airway is assimilated to Valsalva which creates positive alveolar and pleural pressures, leading to pulmonary blood volume being significantly reduced, venous return to the right side of the heart being reduced, and ventricular preload decreasing.[17]As a result, just as the case of laryngeal mass resection or post-adenotonsillectomy, airway pressure falls abruptly, venous return increases, and the preload rises in response to the quick discharge once the obstruction is cleared. This causes an increase in hydrostatic pressure in the pulmonary circuit, which leads to pulmonary edema.[17, 18]

Two recovery cases after near-hanging injury in childhood were documented by Digeronomo and Mayes.[19] According to them, an important prognostic factor for subsequent recovery is a positive response to initial resuscitation.[19]

Conclusion:

In conclusion, fatal period in hanging is not fixed, delayed death occurs due to various complications. Duration of suspension, compressive force and early resuscitation, level of the constriction force applied are also important factors.

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