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Editorial	Contents The Art and Science of Medicine <i>Cyrus Shakiba</i>	03
Original Articles	Assessment of Serum Electrolytes Status in Preeclamptic Pregnant Women <i>Suma Begum, Nazmin Haque, Hasina Yasmin, Sakhina Khatun, Jarin Akther</i>	06
	Effect of Plasma Osmolarity on the Short Term Outcome of Acute Stroke <i>Mohammed Fazle Bari, Ismail Patwary, Md Matiur Rahman, Momtaz Begum</i>	10
	Awareness about Newborn Care among the Mothers in Neonatal Ward of a Tertiary Care Hospital <i>Md Muazzem Hussain, Md Tarek Azad, Tahmina Jahan Chowdhury, Naznin Akther, Rebeka Sultana, Habiba Jamila Khan</i>	17
Case Reports	Bilateral Retinal Detachment in a Pre-eclampsic Patient <i>Nandan Kushum Das, Al-Amin, Sharif Md Sanjid Zaman, Anupoma Dhar, Mushahid Thakur, Paritush Kanti Talukder</i>	23
Miscellaneous	News and Seminars	27
	Instruction for Author(s)	30



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Editorial

The Art and Science of Medicine

The above centuries-old saying known to every doctor had been considered as a reminder that to study, practice or teach medicine, you should have knowledge (Science) of the subject of medicine and the art of delivering it either to the students or the patients. The saying found its true significance century's later when evidence-based medicine (EBM) was mentioned in 1991 by Gordon Guyatt and elaborately described by the EBM working group of the same university (McMaster University of Canada) in 1992. A revolution soon took place that rapidly changed what norms for centuries were. The traditions of blindly and faithfully following seniors, or sometimes strict adherence to the principles of practices of certain hospitals, were challenged, and soon the EBM was followed all over by the majority of clinicians and academicians. The talent of physicians, skills of surgeons and knowledge of teachers were not challenged but was given a solid base on which progress could be made (Documentation, classification and scientific analysis and approval or disapproval of treatment and teaching methodology).

Art and science became essential components of discovery called EBM. In 2007 British Medical Journal published a list of 15 important discoveries of the last 167 years in the field of medicine. Among the critical discoveries and milestones are the discovery of antibiotics, development of vaccines, safe anesthesia procedures, the discovery of DNA, etc. and EBM. The self-explanatory term refers to our treatment approaches based on evidence observed from the results obtained by similar approaches for similar situations. It is a drift from situations where senior doctors only give a final opinion, to surveillance of others' results in similar situations for final decision making. To look for the outcome of the similar procedures of other centers doesn't undermine the talent and sometimes extraordinary intuition of practitioners who can compute the signs and symptoms in their mind and deliver services (Opinion) to patients; ultimately, they are the ones who skillfully and confidently will administer the treatment. EBM will help to process, classify, document and make skills reproducible by others in other places in the field also.

Though initially taken for research but gradually busy clinical doctors also adopted the procedures. Finally, the first database of physicians was established in 1992 in Cochrane, called Cochrane collaborators and soon followed by another center in McMaster University in 1994. What is that to us? How can this help us? The advent of information technology (IT) and the availability of devices from PCs to laptops, tablets and palmtops made access to information very simple, fast and universal. Every doctor at any time can evaluate himself, if his procedures match other centers' results and sometimes ask for help or comparison of treatments and or adopting new treatment options. No matter how busy a doctor is, his treatment modalities and successful outcomes should be based on evidence and be expressible, reproducible and simplified for computing and preservation.

The problem is how to identify the right evidence and assess its usefulness in little time that busy doctor has for this. To find the best treatment possible for the patient is the science of medicine, and how much, how and to whom the doctor offers the treatment is the art of medicine. This is where art and science of medicine fuse. To apply EBM, get familiar with its principles, and look for particular evidence, the following points may be considered:

1. Is the article valid, based on results? The proportional size of the samples, the way they are collected and assessed should be satisfactory by the users.
2. What are the results? Do the results validly convey a clear message and easily understood? One reason doctors lose interest in going through an article is the complicated language used by statisticians who have done the analytical part of the job.

3. How the results may be applied at a practical level for the patient's care? The application of the method should not harm the patients (What harm was delivered to patients during earlier procedures should not be applied to patients under new protocol or study). The results obtained by others should be justified by sample size and other parameters to be risk-free and applicable in another particular situation.

To understand the standard of an article, the reader should know what confidence interval and p value are. P value is the probability of the treatment effect that can occur in a long run of identical trials due to the chance alone. The P value of equal or less than 0.05 is consistent with statistical significance. Confidence interval is the range of values within which we can be confident that the whole population's actual value lies. Ninety five percent is the standard of the confidence interval, which means there is 95% certainty that the actual value of the measured variable lies within the stated range. Once the doctor believes and wants to practice evidence over an opinion, he should know the reliability of reference articles and differentiate between low and high-quality research paper. As already mentioned the easy access to the internet has also added to the problem of unreliability. The internet is also full of unreliable articles without solid grounds. For this, understanding EBM pyramid of evidence is useful.

1. The bottom level of the pyramid, which is very wide and covers large spaces in literature, is an expert opinion that has little place in standardizing a procedure or be used for comparison. Different views from different clinicians and reader can't decide which one to follow, so it is considered the lowest level of evidence. However, such evidence may guide a reader on how to be a good observer, producer or encourage them to ponder on happenings around them. The discovery of penicillin by Alexander Fleming is an example of observations and intellectual analysis that helped everyone.

2. Case series and case-control studies and reports, are at a higher level of evidence: case series (Multiple patients) and case reports (Single patient). Here, there is no comparison with the control group and the report is made, based on variables thought to be linked to the outcome of interest. Though not a reliable tool for comparison and adoption as a technique, it can be a source of further research and hypothesis for future studies. Case-control studies, on the other hand, have a control group, a similar group without the outcome of interest. They are always retrospective. Using this design, the groups are analyzed for previous exposure to a suspected (Harmful) agent or procedure to determine if the agent, procedure is associated with target outcome. This type of study is subject to the effect of confounding variables and other biases.

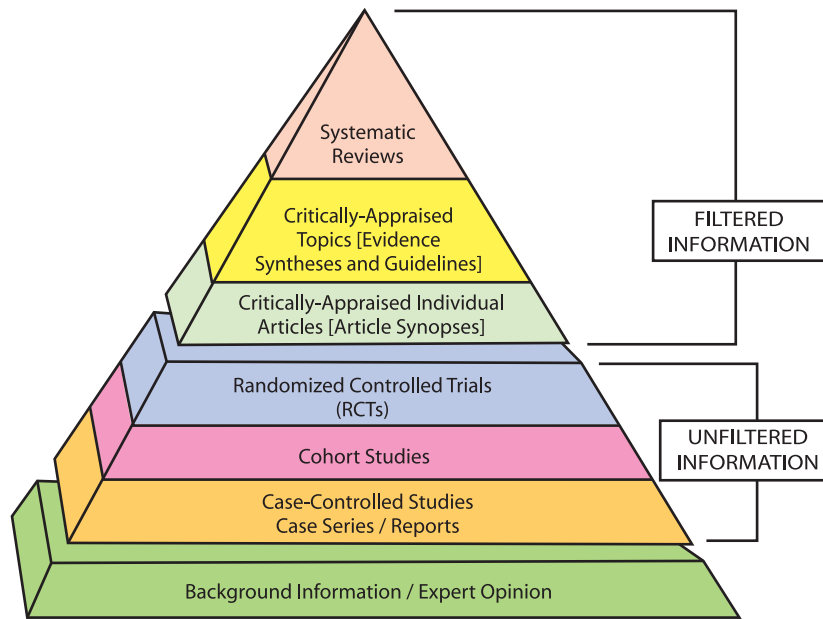
3. Cohort study, a reliable study design that can be both retrospective and prospective. A cohort is a group of individuals that share similar characteristics. In this type of study, equal-sized groups with or without interest exposure are followed up to determine the outcome. In a retrospective cohort study, the outcomes had already occurred before the study was initiated. Cohort studies are useful when looking at rare harmful outcomes. Again confounding variables may distort the relationship between study variables and outcome of interest.

4. Randomized Controlled Trials (RCTs), controlled study designs took another step forward, and RCT was introduced to the practice of medicine. Double-blind RCTs became the gold standard of research design with achievements, like trials, leading to the knowledge of the effectiveness of Salk polio vaccine. RCTs more openly contradicted conventional wisdom in favor of the evidence-based practice.

5. Critically appraised individual articles (Article synopsis, evidence synthesis), the intuition-based treatment gradually replaced by evidence-based medicine and there came a surge in publications and their availability online even before standard publishers print them, the question of selectivity came, how and whom to rely on? EBM which initially a set of notes for internal medicine residents and beginners, and was introduced in 1990 to enlighten them towards the more logistic use of diagnostic, prognostic and therapeutic technologies which in time made students smarter than older teachers! Still, too much of a good thing had happened too fast and too wide and had to be appraised. Critical appraisal was noted in 1980 by David Sackett, which described systematic examination of the medical literature to extract evidence, information etc. This became a very useful tool in EBM.

6. Systematic review, meta-analysis. The top of the EBM systematic review pyramid was developed by social sciences. The scientists developed tools for analyzing and drawing quantitative results from a large number of publications and their results. This, in turn, substantially improved the knowledge and made evidence of a large

number of groups at different localities easy to compile, design, understand procedures, and know results and find approval or disapproval of specific procedures. A systematic review is particularly important because it makes it possible for a large number of smaller groups to be included in studies and thoughts, to get the best viable option of care, and treatment for the Gravity Centre around which the universe of medicine rotates our patients.



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Original Article

Assessment of Serum Electrolytes Status in Preeclamptic Pregnant Women

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ABSTRACT

Preeclampsia is a pregnancy specific syndrome and one of the most common causes of maternal and foetal morbidity and mortality. It's exact etiology is not known, but it may be associated with alteration in electrolytes status. Aim of the study was to evaluate role of serum calcium, sodium, potassium and chloride in preeclampsia and to compare them with those in normal pregnancy. It was a comparative cross sectional study conducted at the Department of Biochemistry, Sylhet Women's Medical College Hospital from June 2019 to August 2019. Patients attending in the obstetrics and gynaecology outpatient department were invited to participate in the study. A total of 60 subjects were involved in the study. The study subject comprised of two groups. Thirty were preeclamptic women considered as group-I and 30 were normotensive pregnant women considered as group-II. Serum calcium, sodium, potassium and chloride were analyzed in two groups. The results showed that, serum calcium, potassium were significantly decreased ($P < 0.001$) and serum sodium, chloride were significantly increased ($P < 0.001$) in preeclamptics as compared to normal pregnant women. It may be concluded that, dietary restriction of sodium, a dietary supplementation of calcium and potassium in the form of milk, cheese, soybean products, leafy vegetables, etc. during pregnancy, could result in a reduction in the incidence of pregnancy induced hypertension.

Keywords: Calcium, Sodium, Potassium, Chloride, Preeclampsia.

[Jalalabad Med J 2020; 17(1): 06-09]

INTRODUCTION

Preeclampsia is known as pregnancy-induced hypertension (PIH) or toxemia which is one of the leading causes of foetal and maternal mortality and morbidity¹. It is defined as the triad of hypertension,

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proteinuria and oedema occurring after 20 weeks gestation². The most common medical causes of maternal death around the world are haemorrhage, obstructed labour, infection and hypertensive disorders related to pregnancy, such as preeclampsia and eclampsia which is contributing to 80%³. It is a universal problem and it complicates at least 5-7% of all the pregnancies⁴. In Bangladesh preeclampsia and eclampsia cause about 16% of maternal death⁵. Despite its prevalence and severity, the pathophysiology of this

multi-system disorder is still poorly understood⁶. The patho-physiological mechanism is characterized by a failure of the trophoblastic invasion of the spiral arteries, leading to mal adaptation of maternal spiral arterioles, which may be associated with an increased vascular resistance of the uterine artery and a decreased perfusion of the placenta⁷. Pregnancy is a unique state where sodium retention is occurred with an increase in total body sodium secondary to volume depletion and reduction in GFR. Though electrolytes contribute significantly in the functioning of the vascular smooth muscles and have been found to play an important role in etio-pathogenesis of hypertension⁸.

It has been postulated that fluctuations in maternal serum ions may be the precipitating cause of elevated blood pressures in preeclampsia^{9,10}. In developing countries, dietary deficiencies of calcium and magnesium have been established to have a role in blood pressure regulation in pregnant women with a consequent development of preeclampsia¹¹. Very recently, electrolyte imbalance is also gaining focus in the evolution of preeclampsia¹². The role of electrolytes in maintaining the normal vasculature and regulating the blood pressure is established by various researches¹³. Due to the possible important role of electrolytes in preeclampsia, we measured the serum electrolytes in preeclamptic patients and compared with normal pregnant women to see the alteration of serum electrolytes in normal pregnant and preeclamptic women.

MATERIALS AND METHODS

It was a comparative cross sectional study conducted at the Department of Biochemistry, Sylhet Women's Medical College Hospital from June 2019 to August 2019. Patients attending in the obstetrics and gynaecology outpatient department were invited to participate in the study. Informed written consent was obtained from all the subjects. Total 60 subjects were enrolled in the study and divided into two groups. Group-I was for preeclamptic women and group-II was for normotensive pregnant. Women having history of

multiple foetus's, hypertension, renal diseases, liver diseases, cardiovascular disease, severe anaemia, diabetes, systemic or endocrine disorders and other pre-existing medical conditions which might be able to alter the study parameters were excluded from the study. Five ml venous blood sample was collected under aseptic conditions. Specimens were processed at the laboratory within 2-3 hours of sampling to avoid delay and hence possible haemolysis as well as electrolyte leakage. The normal values of different parameters under standard conditions are: serum total calcium (Ca^{++}) 9-11mg/dl, serum sodium (Na^+) 135-145 mmol/l, serum potassium (K^+) 3.5-5 mmol/l, serum chloride (Cl^-) 95-105 mmol/l and serum bicarbonate (HCO_3^-) 24-28 mmol/l. Statistical analysis was done by using SPSS version 22. The results were expressed as Mean \pm SD. It was statistically evaluated by student's t test. $p < 0.05$ was considered as statistically significant.

RESULTS

A total of 60 pregnant women were recruited for the study. This consisted of 30 preeclamptics and 30 normotensive pregnant women. The clinical characteristics were shown in Table-I. There was no significant difference of age between two groups, a significant difference was observed in the blood pressure (BP) parameters. Table-II showed a significantly increased ($p < 0.001$) serum sodium levels in preeclamptics (150 ± 3.37) women compared to normotensive pregnant women (144.46 ± 6.96) mmol/l. There was a significantly reduced ($p < 0.001$) serum potassium levels in preeclamptic (3.16 ± 0.22) women mmol/L compared to normotensive pregnant women (3.73 ± 0.29) mmol/l. We also found significantly increased serum chloride (106.13 ± 7.27) in preeclamptics women compared to normotensive pregnant women (97.8 ± 4.86) mmol/l. There was no significant difference of bicarbonate between two groups. Serum calcium levels were significantly lower (8.24 ± 0.45) mmol/l in group-I ($p < 0.001$) in comparison with group-II (9.69 ± 0.62) mmol/l.

Table-I: Clinical characteristics of study subjects (n=60).

Parameters	Preeclamptic	Normal Pregnant	p-value
	Group-I Mean \pm SD	Group-II Mean \pm SD	
Age (Years)	30.97 \pm 5.51	29.93 \pm 2.60	0.358
Systolic blood pressure (mm of Hg)	147.6 \pm 5.85	121.67 \pm 6.13	<0.001
Diastolic blood pressure (mm of Hg)	97.8 \pm 6.39	69.00 \pm 6.62	<0.001

Table-II: Serum concentration of the electrolytes in the study subjects (n=60).

Parameters	Preeclamptic	Normal Pregnant	p-value
	Group-I Mean±SD	Group-II Mean±SD	
Sodium (mmol/l)	150±3.37	144.46±6.96	<0.001
Potassium (mmol/l)	3.16±0.22	3.73±0.29	<0.001
Chloride (mmol/l)	106.13±7.27	97.80±4.86	<0.001
Bicarbonate (mmol/l)	26.4±1.45	25.56±1.92	0.064
Calcium (mg/dl)	8.24±0.45	9.69±0.62	<0.001

DISCUSSION

Preeclampsia is a transient but potentially dangerous complication of pregnancy that affects 5-7% of pregnancies. It is a multifactorial process and multi-organ dysfunction with no individual factor strictly essential or sufficient for causing it. Thus, estimation of electrolytes in pre-eclampsia provides a very useful index for the study of physiological and pathological changes during pregnancy¹⁴. In the present study, there was significant increase in Na⁺ levels in preeclamptic patients compared to normal pregnant subjects. Hypertension observed in this group could be due to sodium retention though the retention was likely due to vasoconstriction leading to reduction of glomerular filtration rate and stimulation of renin-angiotensin-aldosterone mechanism. The net effect was decreased intracellular fluid and increased extracellular fluid volume⁸. Sodium retention, by means of the release of digitalis-like factor, and potassium deficit or hypokalaemia inhibited the sodium pump of arterial and arteriolar vascular smooth-muscle cells, thereby increasing the sodium concentration and decreasing the potassium concentration in the intracellular fluid. PIH is accompanied by amplification of the sodium retention and substantial alterations in intracellular water and electrolyte concentration. These changes are related to changes in cell membranes, which appears to be responsible for some pathological changes in preeclampsia¹⁵. Some of the best documented alterations involve changes in handling of sodium ion both on the systemic and intracellular levels¹⁶. Of the total body content of potassium in humans, 90% is sequestered inside the cell and sodium is predominantly located extracellularly. This preferable location of sodium and potassium depends on the active transport of the Na⁺/K⁺ ATPase or sodium potassium pump. Pregnancy induced hypertension may be an early sign of abnormality in the transport of sodium and potassium across the vascular smooth muscle cell

membrane, which is responsible for regulation of blood pressure¹⁷. Hypertension and hypokalaemia observed in a study on preeclamptic pregnant women of Saudi Arabia¹⁰ is in accordance with some other studies^{12,18}. Neeru Bhaskar et al. suggested the restriction of sodium could decrease the incidence of preeclampsia¹⁹. Our study was consistent with Kashyap et al.⁸, and Manjareeka et al.²⁰, who found that significantly lower serum calcium, potassium levels and higher sodium and chloride level. We also found a significant increase in chloride levels in preeclamptic women in comparison to normal pregnant women. Increase in chloride levels may probably be due to delay in excretion of sodium because of decreased renal blood flow²¹. Increased presence of serum chloride may result in increased osmolality leading to suppressed dilatation of vessels. Role of chloride in hypertension is not clearly understood. Anjum et al. also showed that serum calcium, potassium were significantly decreased (p<0.001) and serum sodium was significantly increased (p<0.001) in preeclamptics as compared to normal pregnant women²². Some study showed low serum calcium level in preeclamptic women compared to normal pregnant women^{12,16}. In our study statistically significant reduced levels of serum calcium were seen in Group I as compared to Group II. The findings are consistent with the reports of some researchers. Low serum calcium may cause high blood pressure by stimulating parathyroid hormone and renin release which in turn increases intracellular calcium in vascular smooth muscle. This causes vasoconstriction, increase of vascular resistance and rise in blood pressure in preeclamptic mother²³.

CONCLUSION

The present study concludes that in preeclamptic pregnant women, there is reduction in serum potassium, calcium and increase in sodium and chloride level. They may have an important causative role in

preeclampsia. Adjuvant supplementation of Ca^+ , K^+ with dietary restriction of sodium may minimize further progression of preeclampsia. Constant monitoring of serum Ca^+ , Na^+ , K^+ and chloride hence may reduce severity of manifestations and complications of preeclampsia.

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Original Article

Effect of Plasma Osmolarity on the Short Term Outcome of Acute Stroke

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ABSTRACT

After acute stroke, patients are at risk of development of dehydration which is usually hyperosmolar. This abnormal physiological environment may influence early neurological deterioration and unfavorable outcome after acute stroke. We evaluated the association of raised plasma osmolarity with acute stroke outcome at 28 days. We enrolled two independent groups of acute stroke patients. Fifty patients of acute stroke with high plasma osmolarity (Plasma osmolarity ≥ 296 mmol/L) were included in the hyperosmolar group and another 50 patients with normal osmolarity included in the normal osmolar group (Plasma osmolarity ≥ 280 to < 296 mmol/L). We applied quota method of sampling to enroll the samples. Plasma osmolarity was calculated on admissions who were admitted within 24 hours after acute stroke. Chi square test and logistic regression test were done to evaluate the association of osmolarity and outcome (Death and functional status). Functional status was measured with Birtheil Index score scale. Thirty four deaths were observed during the study period. Among the death cases, 21 acute stroke patients were hyperosmolar (Mean osmolarity 303.43 with $SD \pm 6.60$) on admission and 13 acute stroke patients were normalosmolar on admission (Mean osmolarity 289.13 with $SD \pm 5.76$). Statistical analysis showed admission hyperosmolarity was not associated with fatal acute stroke outcome crude OR 2.06 (p value 0.09) and adjusted OR 0.923 (95% CI 0.338 to 2.523, p value 0.87). Among the 66 survivor, 21 were towards dependent and 8 patients were towards independent after 28 days in hyperosmolar group. Logistic regression analysis showed hyperosmolarity was not associated with poor functional outcome of acute stroke than that of normal osmolarity group with adjusted OR 0.250 (95% CI 0.054 to 1.164). So raised plasma osmolarity was not associated with acute stroke mortality and poor functional outcome.

Keywords: Hyperosmolarity, Birtheil Index Score.

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INTRODUCTION

Stroke is a global problem and is the 2nd most common cause of death in the world and top most cause of disability^{1,2}. In Bangladesh stroke is the third leading

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cause of death and WHO ranks the mortality rate due to stroke in Bangladesh as number 84 in the world³. Recent studies showed that there is change in the stroke incidence among high-income and low to middle income countries over the past four decades, with a 42% decrease in stroke incidence in high-income countries and greater than 100% increase in low to middle income countries⁴. The incidence of stroke is predicted to rise because of the rapidly aging population, dietary and lifestyle behaviours. The

estimated economic loss in Bangladesh stands to 408 million US dollar per year due to stroke morbidity and mortality⁵. For the last few decades, considerable number of researches has been done with drug therapy and treatment strategy in respect to management of acute stroke. The development of stroke unit is the landmark in reducing mortality and morbidity of acute stroke patients⁶. There is evidence that organized management in stroke units improves survival and reduces dependency of acute stroke patients⁷. Monitoring and stabilizing the acute physiological parameters such as blood pressure, temperature, plasma glucose, oxygen saturation, hydration status, and electrolyte imbalance have become a part of standard stroke management⁸.

Patients presenting with acute ischemic stroke are predominantly either euvolaemic or hypovolaemic. Hypovolaemia predispose to hypoperfusion and exacerbate the ischaemic brain injury, cause renal impairment and potentiate thrombosis⁹. On the other hand there is a decreased sensation of thirst and often dehydration present among the elderly population and elderly patients presenting with acute ischaemic stroke. They have high plasma osmolality levels which are possibly a contributing factor to cerebral ischaemia¹⁰. Initial dehydration is frequently hyperosmolar, caused by an inadequate intake of water due to drowsiness, dysphagia and reduction of thirst or presence of infection¹¹. Dehydration, which is very common among acute stroke patients, increases blood viscosity by affecting plasma osmolality, thus affects cerebral haemodynamic and alters cerebral blood flow^{12,13}. Rowat et al. found that, out of 2591 patient 36% patients were dehydrated on the day of admission and 62% were dehydrated at some point during their admission period¹⁴. Though hyperglycaemia, hypertension, smoking increase mortality and associated with poor outcome in acute stroke^{15,16,17}, some studies also showed that raised plasma osmolality independently related to mortality and is associated with severe stroke and poor outcomes at hospital discharge^{7,8,14}.

There is no gold standard biomarker for detection of dehydration. Plasma osmolality and urea creatinine ratio is commonly used for the assessment of dehydration. We used calculated plasma osmolarity as the biomarker for detection of dehydration. Plasma osmolarity is interchangeable with plasma osmolality (Measured) in clinical ground and plasma osmolality is not available in clinical setting readily. On the other hand it is not feasible to perform plasma osmolality frequently since in acute condition dehydration may

need to assess for several times. Therefore, we have used calculated plasma osmolarity, which is more convenient and available. So far, there is no evidence regarding the effect of raised plasma osmolarity on the outcome of acute stroke in Bangladesh. Such data are desirable considering the potentially adverse but presumably modifiable nature of hyperosmolarity in acute stroke. In this study, raised plasma osmolarity in acute stroke and its association with short term outcome (Such as death and dependency within 28 days since acute stroke) is evaluated.

MATERIALS AND METHODS

This cross sectional comparative study was done in the department of medicine and the department of neurology, Sylhet M.A.G. Osmani Medical College Hospital, Sylhet from 1st January 2013 to 31st December 2014. Consecutive 50 hyperosmolar and 50 normalosmolar acute stroke patients were included in the study by quota sampling method who presented with acute stroke and confirmed by computed tomography (CT) or magnetic resonance imaging (MRI). Age <18 year and patient with significant comorbidity were excluded from the study. Socio-demographic characteristics age, sex, clinical state at the time of admission to hospital and co-morbidities (A history of hypertension, myocardial infarction, diabetes mellitus, atrial fibrillation, and previous cerebrovascular disease) were identified through medical history. After written consent blood samples were taken within 24 hours of stroke onset (Admission) and biochemical parameters like sodium, potassium, plasma glucose, urea were done. Calculated plasma osmolarity was estimated by using the equation (All in mmol/L): $2 \times (\text{Na}^+ + \text{K}^+) + \text{Plasma Glucose} + \text{Blood Urea}$. Patients were assessed at day 28th after stroke if alive and death cases were also recorded. All patients were managed according to acute stroke management protocol of the hospital. Outcome assessment included death and dependency at 28 days by the Barthel Index Score. In special situations 28 days functional outcome data for the Barthel Index score were collected over cell phone. Data were collected by a preformed questionnaire. Collected data were edited manually and analyzed with the help of computer program statistical package for social science (SPSS) 17. Data were expressed in mean, standard deviation and percentage. Test of significance were done where necessary. For all tests, a p value <0.05 was considered statistically significant. In the bivariate analysis, chi-squared tests were performed to identify the association between functional outcomes and selected categorical variables,

while a t-test was used to measure this for continuous covariate age. In the multivariate setup, logistic regression was fitted to model the functional outcome as a function of several covariates. Statistical significance of the parameters involved in the logistic regression model was carried out by Wald test.

RESULTS

In our study, age of acute stroke patients was ranging from 40 years to 95 years, with the mean age of 62.57 ± 9.92 years (Mean \pm standard deviation). The majority of the sample were males (79%) and most of the patients were in the age of 50 to 79 years (Table-I). Their mean plasma osmolarity in the hyperosmolar group and normalosmolar group was $303.43 (\pm 6.60)$

mmol/L and $289.76 (\pm 5.76)$ mmol/L respectively. Total 16 patients died before completion of day 7 and 18 patients died after day 7 within the period of follow up. Forty two patients in the hyperosmolar group and 37 patients in the normal osmolar group had severe stroke NIHSS (15). Hyperglycaemia present on admission in 29 patients in the hyperosmolar group and 16 patients in the normal osmolar group (Table-II).

We observed total 34 deaths during our study period. Among them 21 death occurred in high plasma osmolarity group and 13 death in the normal osmolarity group. The effect of osmolarity was not statistically significant (p value 0.09), the calculated crude odds ratio (OR) was found to be 2.06 and adjusted OR was obtained as 0.923 (95% CI 0.338 to 2.523, p value 0.87). Since p-value was large, there was not enough

Table-I: Distribution of patients by age and sex (n=100).

Study Subjects	Number	Range in Years	Age in Years Mean \pm SD
Total	100	40-95	62.57 \pm 9.92
Male	79	40-95	62.27 \pm 10.44
Female	21	45-75	63.66 \pm 7.73

Table-II: Distribution of demographic and baseline characteristics among the hyperosmolar and normal osmolar patients (n=100).

Characteristics	Hyperosmolarity (mean \pm SD mmol/L) (303.43 \pm 6.60 mmol/L)		Normal Osmolarity (mean \pm SD mmol/L) (289.76 \pm 5.76 mmol/L)	
	Dead	Alive	Dead	Alive
Gender				
Male	17	24	11	27
Female	4	5	2	10
Stroke severity				
Severe	21	21	10	27
Moderate	0	8	3	10
Hyperglycaemia				
Present	18	11	7	9
Absent	3	18	6	28
Hypertension				
Present	15	21	9	15
Absent	6	8	4	22
Smoking				
Present	15	18	8	22
Absent	6	11	5	15
Stroke type				
Ischaemic	9	18	5	25
Haemorrhagic	12	11	8	12
Death				
Within 7 days	12	-	4	-
After 7days during study period	9	-	9	-

evidence to conclude that, osmolarity level affected stroke outcome death. Among the 66 survivor 21 were towards dependent and 8 patients were towards independent after 28 days in hyper osmolar group. Logistic regression analysis showed hyperosmolarity was not associated with poor functional outcome than that of normal osmolarity group with adjusted OR 0.250 (95% CI 0.054 to 1.164, p value 0.077). The effect of age on functional outcome was highly significant (p value 0.001) but death was not significantly associated with age. Person with higher age is more likely to become dependent after stroke. We found severe stroke (Score ≥ 15) in 31 patient and moderate stroke (Score 6-14) in 3 patient out of 34 death, statistical analysis showed stroke severity strongly associated with case fatality in acute stroke adjusted OR-4.153 (95% CI 0.0963 to 17.924, p value 0.05). On the other hand out of 66 survived patients from acute stroke 37 were towards dependent and 12 patients were towards independent in severe stroke group and 7 patients and 10 patients were towards dependent and towards independent respectively in moderate stroke group. Statistical analysis revealed, severe stroke associated with poor functional outcome in acute stroke adjusted OR 4.326 (95% CI 0.991 to 18.895, p value 0.05). Sixty patients out of 100 acute

stroke patients presented with systemic hypertension in the study. Out of 34 deaths, 24 were hypertensive and 10 acute stroke patients were non hypertensive on admission. Logistic regression analysis failed to demonstrate significant association between death and hypertension adjusted OR 1.409 (95% CI 0.480 to 4.133, p value 0.53). Also there was no significant difference in functional outcome between hypertensive and non hypertensive acute stroke patients adjusted OR 1.701 (95% CI 0.405 to 7.140, p value 0.46). Hyperglycaemia was found in 25 patients out of 34 deaths which is significantly associated with death OR 5.944 (95% CI 2.174 to 16.240, p value .001). Among the survivors with hyperglycaemia, 13 patients had functional activity score towards dependent and 8 patients towards independent. Statistical analysis revealed hyperglycaemia not significantly influence the functional outcome adjusted OR 0.458 (95% CI 0.122 to 1.867, p value 0.276). Which indicate hyperglycaemia of acute stroke patients strongly influences death but not functional outcome. Our statistical analysis revealed that there is not enough evidence that smoking affects acute stroke outcome; the adjusted OR 0.898 (95% CI 0.306 to 2.633) and 1.620 (95% CI 0.317 to 8.271) (Table-III, Table-IV, Table-V and Table-VI).

Table-III: Association with different confounding variable with fatal outcome of acute stroke patients at day 28 (n=100).

Characteristics	Survival Status		OR	Adjusted OR (95% CI)
	Alive Number (%)	Dead Number (%)		
Age				1.025 (0.975 to 1.076)
Gender				
Male	51 (64.6)	28 (35.4)	1.37	—
Female	15 (71.4)	6 (28.6)		
Smoking status				
Smoker	47 (67.1)	23 (32.9)	0.85	0.898 (0.306 to 2.633)
Non-smoker	19 (63.3)	11 (36.7)		
Hypertension				
Present	36 (60)	24 (40)	2	1.409 (0.480 to 4.133)
Absent	30 (75)	10 (25)		
Hyperglycaemia* Δ				
Present	21 (45.7)	25 (54.3)	5.95	5.944 (2.174 to 16.24)
Absent	45 (83.3)	9 (16.7)		
Stroke severity* Δ				
Severe	49 (61.2)	31 (38.8)	3.59	4.153 (0.963 to 17.924)
Moderate	17 (85)	3 (15)		
Osmolarity				
Hyper	29 (58)	21 (42)	2.06	0.923 (0.338 to 2.523)
Normal	37 (74)	13 (26)		

* Obtained from chi-square test of association p value <0.05

Δ Obtained from logistic regression p value <0.05

Table-IV: The effects of multiple explanatory variables on functional outcome of acute stroke patients at day 28 (n=66).

Characteristics	Functional Outcome		OR	Adjusted OR (95% CI)
	Independent Number (%)	Dependent Number (%)		
Age				1.190 (1.066 to 1.328)
Gender			–	
Male	17 (33.3)	234 (66.7)	1	–
Female	5 (33.3)	10 (66.7)		
Smoking status				
Smoker	17 (36.2)	30 (63.8)	0.630	1.620 (0.317 to 8.271)
Non-smoker	5(26.3)	14(73.7)		
Hypertension				
Present	9(25)	27(75)	2.294	1.701 (0.405 to 7.140)
Absent	13(43.3)	17(56.7)		
Hyperglycaemia				
Present	9(42.9)	12(57.1)	0.541	0.458 (0.112 to 1.867)
Absent	13(28.9)	32(71.1)		
Stroke severity*				
Severe	12(24.5)	37(75.5)	4.404	4.326 (0.991 to 18.895)
Moderate	10(58.8)	7(41.2)		
Osmolarity				
Hyper	7(24.1)	22(75.9)	0.466	0.250 (0.054 to 1.164)
Normal	15(40.5)	22(59.5)		

* $p \leq 0.05$ Obtained from logistic regression

n = Patient number

Table-V: Association between age and survival status in the acute stroke patients at day 28 (n=100).

Characteristics	Survival Status		t-statistic value	p value*
	Dead Mean±SD	Alive Mean±SD		
Age	64.44±8.88	61.61±10.35	1.36	0.18

* t-test for equality of two means was performed to obtain p value

p value<0.05 was taken as level of significance

Table-VI: Association of age with the functional outcome of the acute stroke patients (n=66).

Characteristics	Functional Outcome		t-statistic value	p value*
	Dependent (n=44) Mean±SD	Independent (n=22) Mean±SD		
Age	65.02±9.16	54.77±9.29	4.265	0.001

t-test for equality of two means was performed to obtain p value

p value <0.05 was taken as level of significance

DISCUSSION

Stroke is one of the most common causes of death and disability. Clinicians are often asked to predict outcome after stroke by the patient, family, other healthcare workers, and insurance providers. A wide variety of factors influence stroke outcome and dehydration is a common phenomenon after stroke, particularly in the elderly. With this background we evaluate the association between the presence of hyperosmolality and outcome of acute stroke patients. In our study, age of the acute stroke patients was ranging from 40 years to 95 years, with the mean age of 62.57 ± 9.92 years (Mean \pm standard deviation). The majority of the samples were males (79%) and most of the patients were in the age of 50 to 79 years. This result was supported by the study of Uddin MJ et al. where the mean age of ischemic stroke was 63.58 ± 10.22 years and majority (80%) of the patients belonged to the age group 50 to 79 years and frequency of male and female was 72% and 28% respectively¹⁸.

We observed total 34 deaths during our study period. Among them 21 death occurred in high plasma osmolality group and 13 death in the normal osmolality group. The effect of osmolality on fatal outcome is not statistically significant, crude OR 2.06 (p value 0.09). This insignificant effect may be due to presence of confounding factors, such as stroke severity or hyperglycaemia. But osmolality shows some evidence to be associated with survival status; this association is statistically significant at 10% level of significance. But in the logistic regression model, high plasma osmolality failed to show any association with survival status of the acute stroke patients with adjusted OR 0.923 (95% CI 0.338 to 2.523, p value 0.87).

Bhalla et al. in his study worked with both calculated plasma osmolality and measured osmolality, In their study, it was found that calculated osmolality is not significantly associated with stroke mortality at 3 months, but measured high osmolality was significantly associated with fatal acute stroke outcome at 3 months. In another study O'Neill et al. found no significant differences in plasma osmolality between survivors and dead stroke patients, which support our study⁷. But our result was not supported by the study of Bhalla et al. and two other study Nag et al. and Rowat et al. They found that high plasma osmolality and dehydration associated with poor short term fatal outcome among the acute stroke patients^{7,8,14}. It was difficult to say whether admission plasma osmolality levels were a true indicator of hydration status on admission. As we used at least 4 variables (Sodium, potassium, urea, and glucose) to estimate plasma osmolality, each with its own measurement error might

contribute to the overall measurement error of the calculated plasma osmolality.

Among the 66 survivor 21 were towards dependent and 8 patients were towards independent after 28 days in hyper osmolar group. Logistic regression analysis showed hyperosmolality was not associated with poor functional outcome than that of normal osmolality group. Bhalla et al. in his study found that admission plasma osmolality was significantly higher in patients who were dependent after their stroke and Rowat et al. found that dehydrated on admission with acute stroke were less likely to be independent in daily activities at 6 months than those who were not dehydrated which not supported by our study^{7,14} short study period might be a cause of such outcome. Power of our study was less with small non randomized sample size and also direct measurement of plasma osmolality and urine osmolality were not done.

CONCLUSIONS

In this study we observed that raised plasma osmolality has no influence on mortality and functional outcome of acute stroke. The study did not reject the null hypothesis, that raised plasma osmolality had no significant effect on stroke outcome. But admission hyperglycaemia and stroke severity were significantly associated with poor outcome at 28 days in acute stroke patients. So randomized controlled study involving multicentre, large scale and long follow up period should be conducted in future for the prediction of short term as well as long term outcome of acute stroke.

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Original Article

Awareness about Newborn Care among the Mothers in Neonatal Ward of a Tertiary Care Hospital

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ABSTRACT

Newborn care is essential to reduce neonatal mortality and morbidity. As mothers are primary caregiver of the neonates, knowledge of mothers regarding neonatal care is very important. Bangladesh successfully reduced child mortality rate but further reduction of child mortality depends on the reduction of neonatal mortality. The aim of this study was to assess awareness of newborn care among the mothers. This cross sectional study was conducted in neonatal ward of Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet from July 2018 to December 2018. Mothers of 150 admitted neonates were purposively selected as sample and interviewed with a pretested semi-structured questionnaire. Three fifths (58%) of the mothers belonged to the age group between 19 to 25 years where mean age was 25.2 years. About half (49.3%) of them did not complete secondary education. Regarding knowledge, only 16% of the mothers knew the baby should not be bathed in first 3 days. Half of the mothers (52.7%) identified 'not feeding well' and a quarter (26%) of the mothers identified 'no cry or continuous cry' as danger signs among the newborns. Half of the mothers (48%) correctly mentioned breastfeeding should be started within one hour of birth. Most of the mothers (83.3%) had knowledge regarding immunization. Among the seventeen knowledge related questions, half of the mothers answered up to 8 questions correctly and termed as having poor knowledge. Two third of the mothers (66.7%) mentioned family member as source of knowledge and only one tenth (8.7%) of the mothers mentioned 'health workers' as source. Only one fifth (18%) mentioned media as a source of information. Half of the mothers did not have good knowledge regarding neonatal care which is very important to avert neonatal mortality and morbidity. So, health education to the expecting mothers is required to improve knowledge and awareness regarding neonatal care. Methods and media should be devised appropriately for effective health education.

Keywords: Awareness, Newborn care, Mothers.

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INTRODUCTION

Neonatal period refers from birth to 28 days of life. In the first 28 days of life, child is at high risk of dying and is a crucial period of life¹. Newborn care is essential to

reduce neonatal problem and death as well as to improve the child's chances of survivability². Newborns are completely dependent on their mothers' care. An effective way to cater the needs of the baby includes thorough and immediate drying, cord clamping and cutting after the first minutes after birth, skin to skin contact of newborn with the mother, early initiation of breast feeding, exclusive breast feeding, increasing hand washing of care givers, counseling families on when to take a newborn to health facility and

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immunization².

Globally, the majority of child death occurs at the younger age. In the first five years of life 5.4 million deaths occurred in 2017 and about half (47%) of the under 5 death in 2017 occurred in the first month of life. In 2017, neonatal mortality rate was estimated at 18 deaths per 1000 live births globally³. The current under 5 children, infant and neonatal mortality rates in our country being 46, 38, 28 per thousand live births respectively which remain still very high in comparison to developed world and major challenge in health sector is unacceptably high neonatal deaths⁴. Though Bangladesh already achieved the Millennium Development Goal-4 (MDG-4) successfully, now Bangladesh needs to achieve Sustainable Development Goal-3 (SDG-3). SDG-3 calls for an end of preventable death of new born and children under 5 years of age and specifies that all countries should aim to reduce neonatal mortality to at least as low as 12 death per 1000 live births & under five mortality to at least as low as 25 deaths per 1000 live birth by 2030⁵.

The world health organization promotes essential newborn care guidelines which are evidence based measures that can be used to meet SDG-3. They encompass breastfeeding, cord care, eye care, thermo-regulation, recognition of danger sign, immunization and care of the low birth weight infant⁶. Lack of knowledge and strong cultural beliefs influence neonatal survival during the infant is at home with the primary caregiver. Newborn care practices by parents after birth are important determinant of neonatal mortality. The aim of this study was to assess awareness about newborn care among mothers of neonates.

MATERIALS AND METHODS

This observational cross sectional study was conducted in neonatal ward of Jalalabad Ragib-Rabeya Medical College Hospital (JRRMCH) over a period of six months from July 2018 to December 2018. Admitted neonates in neonatal ward were selected as study population and a total of 150 neonates were selected as sample purposively. Mothers of selected neonates were interviewed at the neonatal ward using semi-structured questionnaires that captured data on socio-demographic characteristics, knowledge towards essential new born care, knowledge regarding feeding practices, knowledge regarding immunization, knowledge regarding danger signs for newborn. Informed consent was taken from the mothers before interviewing. For breast feeding we asked initiation of breast feeding and

exclusive breast feeding. Regarding thermal protection, we asked keeping baby warm by covering the head of the baby and kangaroo mother care and postponing bath for 72 hrs. About umbilical cord care, we asked that the cord stump should be kept dry. For general cleanliness, we asked for hand washing practice before breast feeding and after diaper use. We also asked for schedule and knowledge about immunization for infants. Data entry and analysis were carried out using SPSS version 21. Informed consent was taken from the respondents before being enrolled in the study.

RESULTS

The result showed that, the mean age of the mother of the neonates were 25.2 years. Among them, 58% belonged to the age group of 19 to 25 years and 49.3% did not complete secondary education. Most of the respondents (97.3%) were housewife and living in a joint family (85.3%) where 63.3% of them came from the families with monthly income of 10000 to 250000 Bangladeshi taka (BDT) (Table-I). Regarding thermal protection, 69.3% of the mothers told providing warm was required for the baby. Only 16% of the mothers knew that, the baby should not be bathed in first 3 days and 28% of the mothers knew that, umbilical cord should be kept dry, where 88.7% of them knew that, breast feeding was important for the babies. Among the mothers, 42.7% admitted hand washing was required before breast feeding and or after changing diaper and 54.7% told keeping the babies away from sick children were important. Only 4% mothers admitted that, measuring weight of babies was a part of care of the babies. Knowledge of the mothers regarding danger signs in newborn babies demonstrated half of the mothers (52.7%) identified not feeding well and similar percentage identified diarrhea or blood in the stool as danger signs in newborns. Most of the mothers (91.3%) identified hypothermia and or fever as danger sign while a quarter (26%) of the mothers identified no cry or continuous cry and convulsion as danger sign among the newborns. Regarding feeding practices about half of the mothers (48%) correctly mentioned breastfeeding should be started as early as possible and preferably within one hour of birth. When asked about duration of exclusive breastfeeding, most (85.3%) of the mothers rightly mentioned 6 months. Regarding preferred food for complimentary feeding more than three quarters (77.3%) mentioned khichury and about one tenth mentioned cereals. Most of the respondents (83.3%) had positive knowledge regarding immunization and 2% respondents perceived

Table-I: Socio demographic characteristics of study population (n=150).

Variables	Frequency	Percentage
Age (In Years)		
Below 19	2	1.3
19-25	87	58
26-30	45	28
31-35	16	12.7
Education		
No education	5	3.3
Below SSC	74	49.3
SSC	37	24.7
Above SSC	34	22.7
Occupation		
Housewife	146	97.3
Service holder	4	2.7
Family Type		
Nuclear	22	14.7
Joint	128	85.3
Socio economic condition		
Low income (<10000 BDT)	36	24
Middle income (10000-25000 BDT)	95	63.3
High income (>25000 BDT)	19	12.7

Table-II: Knowledge regarding care of the newborn (n=150).

Variables	Frequency	Percentage
General care		
Thermal protection (Providing warm)	104	69.3
First bath (No bath for first 3 days)	24	16
Cord care (Cord to be kept dry)	42	28
Breast feeding	133	88.7
Cleanliness (Hand washing after diaper change)	64	42.7
Keet away from sick child	82	54.7
Check weight of child	6	4
Danger signs		
Not feeding well	79	52.7
Hypothermia or fever	137	91.3
No cry or continuous cry	39	26
Diarrhea or blood in stool	79	52.7
Convulsion	39	26
Bluish coloration	34	22.7
Feeding practices		
Initiation of breastfeeding (Within 1 hour)	72	48
Exclusive breastfeeding (For 6 months)	128	85.3
Complementary feeding (Khichury)	116	77.3
Immunization		
Essential	125	83.3
Perceived harmful	3	2
Knew nothing about immunization	22	13.3

(More than one variable were considered in one respondent)

Seventeen knowledge related questions were asked among the mothers. Poor knowledge was considered when up to 8 answers were correct. Nine or more correct answers considered as having good knowledge. Less than half (46%) of the mothers had poor knowledge regarding neonatal care whereas more than half (54%) of the mothers had good knowledge (Figure-1). Regarding source of information about newborn care, two third of the mothers (66.7%) mentioned family member as source, whereas a quarter (24.7%) mentioned as past experience as source of information. Only one tenth (8.7%) of the mothers mentioned health workers as source. Regarding media, only one fifth (18%) mentioned media as a source of information (Table-III). Regarding the association of the sociodemographic variables with knowledge scores of the mothers, knowledge score did not differ among the younger and older mothers. Neonatal care knowledge also did not differed among different economic status of the families. Only significant difference of knowledge score was revealed among differences in education (Table-IV). On the topic of the association between knowledge scores and source of knowledge of the mothers, knowledge scores of the mothers differed significantly only among the media exposure (Table-V).

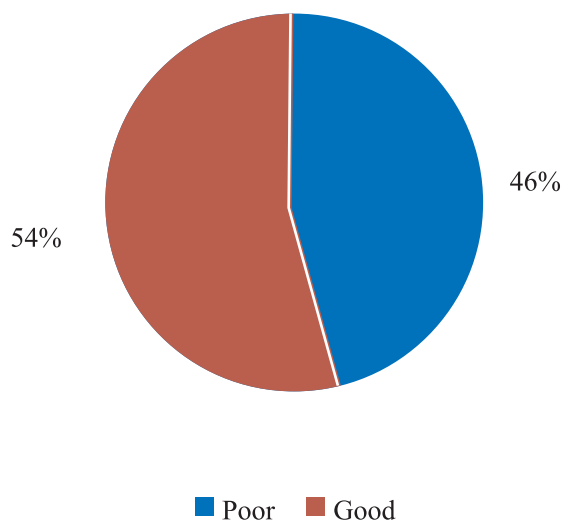


Figure-1: The knowledge score of the mothers (n=150).

Table-III: Sources of information (n=150).

Characteristics	Frequency	Percentage
Past experience	37	24.7
Health worker	13	8.7
Media	27	18
Peer/neighbor	18	12
Family member	100	66.7

(More than one variable were considered in one respondent)

Table-IV: Association between socio-demographic characteristics and knowledge score of the mothers (n=150).

Socio-demographic Characteristics	Variable Frequency (%)	Knowledge Score		Chi-square value	p value
		Poor Frequency (%)	Good Frequency (%)		
Age					
Upto 24 years	74 (49.3)	35 (50.7)	39 (48.1)	0.09	0.75
≥25 years	76 (50.7)	34 (49.3)	42 (51.9)		
Education					
Below SSC	79 (52.7)	45 (65.2)	34 (42)	8.07	0.004
SSC and above	71 (47.3)	24 (34.8)	47 (58)		
Socioeconomic condition					
Low	36 (24)	20 (29)	16 (19.8)	2.09	0.35
Middle	95 (63.3)	42 (60.9)	53 (65.4)		
Higher	19 (12.7)	7 (10.1)	12 (14.8)		

Table-V: Association between source of knowledge and knowledge score of the mothers (n=150).

Source of Knowledge	Variable Frequency (%)	Knowledge Score		Chi-square value	p value
		Poor Frequency (%)	Good Frequency (%)		
Family members	100 (67.1)	49 (71)	51 (63.8)	0.89	0.35
Past experience	37 (24.7)	16 (23.2)	21 (25.9)	0.15	0.70
Health worker	13 (8.7)	5 (7.2)	8 (10)	0.35	0.55
Peer/Neighbor	18 (12.1)	6 (8.7)	12 (15)	1.39	0.24
Media	27 (18.1)	7 (10.1)	20 (25)	5.51	0.02

DISCUSSION

This study was conducted among the post natal mothers in a tertiary care hospital to assess the knowledge of the mothers regarding neonatal care. In our study the mean age of the mothers was 25.2 years. Three fifth of the mothers were in the age group of 19 to 25 years. A study conducted in Dhaka Medical College Hospital by Majumder et al. reported 75% mothers were up to the age of 25 years⁷. Another study conducted in rural area of Narsingdi by Islam et al. reported 83.3% mothers were from similar age group⁸. The mean age of the mothers was 22 years, in the research conducted in Dhaka Shishu Hospital by Hoque et al.⁹ Majority of respondents in our study were in age group of 19 to 25 years which was also similar to other studies^{7,8,9}. Educational status of mothers in present study showed that, about 3.3% of the mothers had no formal education and majority of mothers (53%) were below SSC that was similar to other studies^{8,9,10,11}. Regarding knowledge about neonatal care in present study, more than two third of mothers (69.3%) had knowledge about thermal protection (Providing warm to the neonates). Only 16% of the mothers mentioned in our study that, the baby should not be bathed in first 3 days. This finding differed from other studies where they found that, 28.8% mothers in rural area in Narsingdi⁸, 40% were in Dhaka Shishu Hospital⁹ and 30% in Tamil Nadu, India¹¹. Regarding knowledge about timing of first bath of baby, only 16% mothers had proper knowledge. This findings was differed from other studies^{8,9,11}. The findings of current study suggested lack of knowledge of the mothers in this area. More than a quarter mothers (28%) in our study mentioned that, umbilical cord should be kept dry which was similarly reported in a study in Nepal¹⁰ that was 26%. Most of the mothers of present study knew that, breast feeding is important for the neonates. But less than fifty percents of mothers (42.7%) approached that, hand washing was required before breast feeding and or after changing diaper whereas a Nepalese study¹⁰ reported of 97% mothers which was more than our study.

In present study, more than half (54.7%) of the mothers told that, keeping the babies away from sick child is important to avoid disease and only 4% mothers knew that, measuring weight of baby is part of care of the baby. There were more than half of the mothers (52.7%) identified 'not feeding well' as a danger sign of newborn which was consistent with the findings of the study at Dhaka Shishu Hospital⁹ and Dhaka Medical College Hospital⁷. When we asked mothers regarding feeding practices, about half of the mothers

(48%) correctly mentioned that, breastfeeding should be started as early as possible and preferably within one hour of birth which was similarly reported (52%) in Dhaka Shishu Hospital⁹ and Tamil Nadu study¹¹. When we asked about the duration of exclusive breastfeeding, most (85.3%) of the mothers rightly mentioned that, duration was 6 months which is much higher than the study of Tamil Nadu (33%)¹¹. In our study, 77.3% of the mothers preferred khichury as a complimentary food. Regarding immunization, most of the mothers (83.3%) had knowledge about immunization but 2% mothers' perceived immunization as harmful for the babies.

In present study, about neonatal care, mothers received information from different sources. In which two third of the mothers (66.7%) mentioned that, source of information was family members. Only one tenth (8.7%) of the mothers mentioned that, source of information was health workers. While the Tamil Nadu study revealed, 44% of the mothers got information from the health workers¹¹. Regarding Media, only one fifth (18%) of mothers mentioned that, media was a source of information. When we analyzed source of information and quality of knowledge (Good or Poor), it was evident that good level of knowledge was associated with media exposure and higher education.

CONCLUSION

This study concludes that about half of the mothers did not have good knowledge regarding neonatal care which is very important to avert neonatal mortality and morbidity. Health education to the expecting mothers is required to improve knowledge and awareness regarding neonatal care. Methods and media should be devised appropriately for effective health education.

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Case Report

Bilateral Retinal Detachment in a Pre-eclamptic Patient

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ABSTRACT

Preeclampsia is a leading cause of maternal and foetal mortality worldwide. Retinal detachment is an unusual cause of visual loss in pregnancy. The retinal detachment in preeclampsia is usually bilateral and serous. The pathogenesis of retinal detachment in preeclampsia is related to choroidal ischemia secondary to an intense arteriolar vasospasm. The majority of patients generally have complete recovery of vision with clinical management and surgery is unnecessary. This was a case report of a 28 years old multigravida with preeclampsia who developed bilateral retinal detachment at term. She had progressive blurred vision, until she could see only shadows. With blood pressure control at postpartum, retinal detachment resolved spontaneously and vision was regained.

Keywords: Preeclampsia, Retinal detachment, Choroidal ischemia.

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INTRODUCTION

Preeclampsia is classified as a hypertensive disorder in pregnancy, which occurs in the absence of other causes of elevated blood pressure and in combination with generalized oedema, proteinuria or both¹. If symptoms and signs of preeclampsia are added with coma or convulsions, we speak of eclampsia. Preeclampsia is an obstetric disease of unknown cause that affects approximately 5% of pregnant women¹. Ocular complications may occur in 30-100% of preeclamptic patients¹. Rarely, serous retinal detachment (RD) can occur as a complication. Its pathogenesis is related to the choroidal ischemia secondary to an intense

arteriolar vasospasm. The prognosis is usually good with conservative management². We report this case of a preeclampsia-induced bilateral serous retinal detachment who recovered with medical management.

CASE REPORT

A 28 years old multigravida was hospitalized at term of pregnancy with the complaints of leg oedema, severe headache, nausea and vomiting with no history of arterial hypertension. On examination the blood pressure was found 200/110 mm of Hg and there was 3+ proteinuria. The laboratory examinations didn't show thrombocytopenia, liver enzymes elevation or haemolysis. The patient was diagnosed as preeclampsia. She went to cesarean section, with the delivery of an alive baby. The placenta was removed in its completeness. Four hours post partum, the patient reported dimness of vision in both eyes. She had progressive blurred vision, until she could see only

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shadows. Patient was examined first at the bedside with ophthalmoscopy, detailed assessment of visual acuity (VA) was not possible. Ophthalmological examination showed the occurrence of bilateral serous retinal detachment with no retinal haemorrhage in both eyes. Tearing wasn't found. Combined antihypertensive, diuretic therapy and steroid therapy was introduced (500 mg/day methylodopa and 60 mg/day furosemide and oral methylprednisolone at a dose of 1 mg/kg body weight/day). A follow up examination was performed day after cesarean section. On examination, her VA was hand movement (Right eye) and counting finger close to the face (Left eye). There was no afferent pupillary defect. Anterior segment and intraocular pressure was normal. On follow-up examination after 5 days, her VA improved to 6/24 on right eye and 6/36 on left eye. Dilated fundus examination revealed intact papillae and bilateral serous retinal detachment distributed mainly in peripapillary area and posterior pole in both eyes (Figure-1a and Figure-1b). Ultrasonography B-scan showed high reflective membrane-like structure suggestive of retinal detachment (Figure-2a and Figure-2b). OCT (Optical coherence tomography) performed 7 days after delivery, demonstrated subretinal and intraretinal fluid in the both eyes (Figure-3). One week post partum, her VA improved to 6/18 on right eye and 6/24 on left eye. Dilated fundus examination disclosed persistent retinal detachment in both eyes. Follow up examination 6 weeks later, hypertension was well control and total resolution of bilateral serous retinal detachments, showed in figure 4 (Figure-4a and Figure-4b). And her VA improved to 6/6 in right eye and 6/6 in left eye.

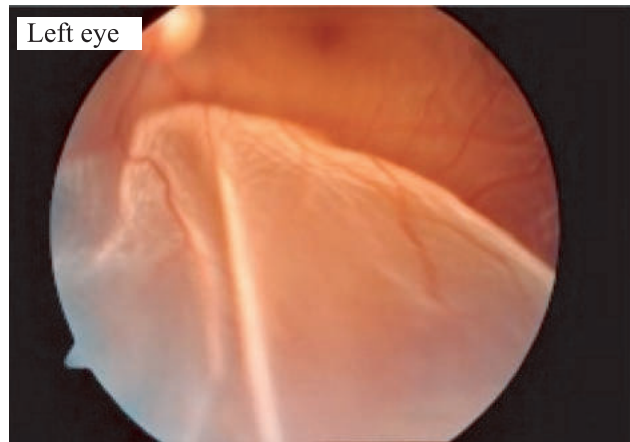


Figure-1b: Fundus examination showed intact papillae and bilateral serous retinal detachment in peripapillary area and posterior pole in left eye, only superior retina attached.

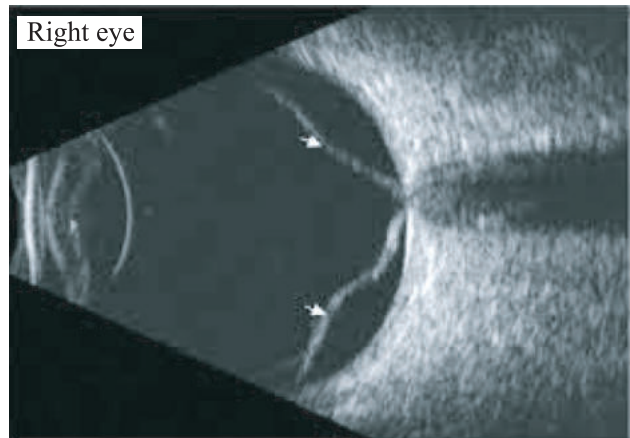


Figure-2a: Ultrasonography B-scan showed high reflective membrane of retinal detachment in right eye.

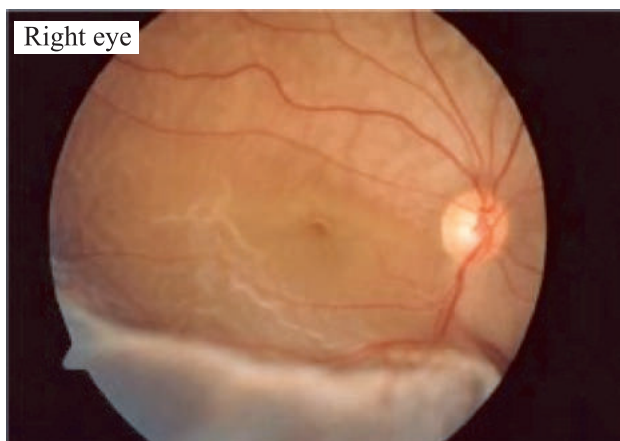


Figure-1a: Fundus examination showed intact papillae and bilateral serous retinal detachment in peripapillary area and posterior pole in right eye, only superior retina attached.



Figure-2b: Ultrasonography B-scan showed high reflective membrane of retinal detachment in left eye.

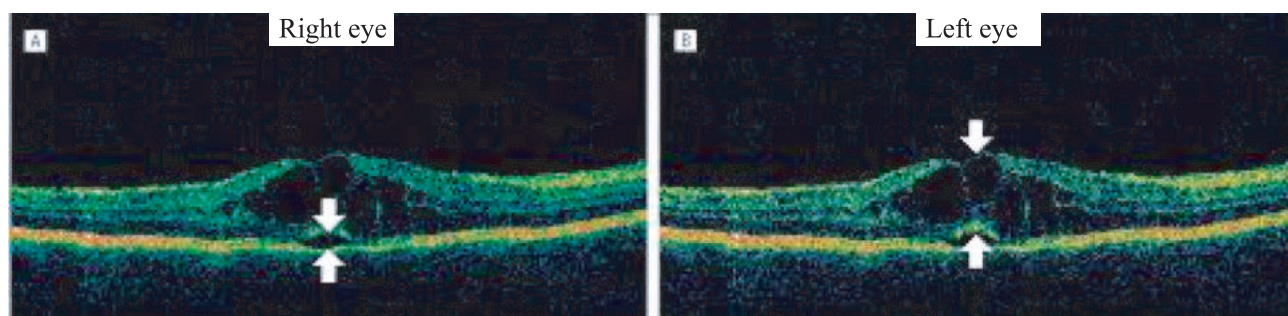


Figure-3a: OCT showed hyporeflective shadow in posterior pole of retina due to subretinal and intraretinal fluid collection in right and left eyes.



Figure-4a: Normal fundus of right eye after 6 weeks.

DISCUSSION

Preeclampsia is an obstetric disease of unknown cause that affects approximately 5% of pregnant women¹. The visual system may be affected in 30 to 100% of patients with preeclampsia¹. Preeclampsia usually occurs in the third trimester of pregnancy and is characterized by proteinuria, hypertension and generalized oedema. The commonest ocular finding is severe arteriolar spasm, evidenced by either segmental or generalized constriction of the retinal arterioles reported in 70% of cases of toxemia³. Retinal haemorrhages, oedema and cotton wool spots secondary to arteriolar damage may follow. Areas of non-perfusion or arterial or venous occlusive disease may also develop^{4,5}. Serous retinal detachment is rare complication of hypertensive disease in pregnancy.

There are few reports in the literature as a cause of vision loss in preeclampsia. It was first described by von Graefe in 1855. The retinal detachment involves separation of the neurosensory retina from the pigmented retinal epithelium and it is one of the emergency states in ophthalmology. Many researchers showed that, in the pathogenesis of retinal detachment, an important role is played by peripheral retinal degenerations, retinal ruptures, vitreoretinal tractions and detachment of vitreous cavity. Also, retinal detachment cases are associated with myopic refraction and researches proved the existence of positive correlation between the frequency of retinal ruptures and the bulbar axis length^{6,7}. The exact pathophysiology of serous neurosensory detachment in a case of preeclampsia is not known. The detachment is usually present in patients with severe preeclampsia (Blood pressure >160/110 mm of Hg) or eclampsia, and they are usually observed in the absence of significant retinal vascular abnormalities and retinal ruptures. It is highly probable that, changes in the fluid and ion-transport function of the retinal pigment epithelium (RPE) underlying the neurosensory retina play an important role in the generation of subretinal fluid and consequent serous detachment. Under physiologic circumstances, the RPE is capable of pumping a great amount of fluid and other metabolic products, out of the neuroepithelium. RPE function is greatly influenced by the choroidal circulation⁸. In the preeclamptic state, vasoconstriction and haemorrhological changes may decrease blood flow, leading to choroidal ischemia⁹. Choroidal dysfunction, primarily choriocapillaris ischemia, is the underlying mechanism which leads to compromised fluid transport by the RPE, accumulation of subretinal fluid and consequent serous neurosensory detachment⁸. The majority of patients who manifest serous detachment during pregnancy have, with clinical management,

complete recovery within weeks after delivery, not needing any surgical intervention. Some macular sequelae may persist, specially in the pigment epithelium^{10,11}. Most patients with retinal detachment in pregnancy-induced hypertension have had full spontaneous resolution within a few weeks after well control of hypertension, and they did not have any sequelae. Medical treatment with antihypertensive drugs and steroids may be helpful^{2,5,8}. Our case responded well by control of hypertension and medical treatment. Retinal detachment resolved gradually and vision regained after 6 weeks.

CONCLUSION

Preeclampsia may cause bilateral serous retinal detachment which has a good prognosis if the causative factor is managed immediately. Most patients with retinal detachment in preeclampsia have had full spontaneous resolution within a few weeks. It may cause permanent blindness if it is not detected and treated in time. Therefore, a good coordination must be present between an obstetrician and an ophthalmologist to diagnose and manage these kinds of cases and help to prevent blindness.

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Miscellaneous

Campus News

Postgraduate Training Recognized by BCPS

A high powered inspection team consisting of nine members from Bangladesh College of Physicians and Surgeons (BCPS) Dhaka, headed by Professor Md. Monimul Haque, visited Jalalabad Ragib-Rabeya Medical College and Hospital on 3rd March 2014. On the recommendations of the inspection team, the council of Bangladesh College of Physicians and Surgeons (BCPS) has extended the tenure of recognition of training imparted in the departments of **Medicine, Surgery, Paediatrics, Obstetrics & Gynaecology, Physical Medicine & Rehabilitation, Dermatology & Venerology** and **Cardiology** to the resident doctors provisionally for a period of five years. The council has granted recognition to the department of **Radiology & Imaging** for imparting training to the resident doctors provisionally for a period of five years with effect from 06-6-2013. The training will be accepted for appearing in the FCPS, MD, MS Part-II and diploma examinations in these specialties. The postgraduate training imparted in the departments of **Ophthalmology, Otolaryngology, Psychiatry, Pathology (Histopathology)** and **Orthopaedic Surgery** were recognized by Bangladesh College of Physicians and Surgeons (BCPS) earlier and to be continued.

Programmes

- **The Dengue corner** was established in the department of Medicine of Jalalabad Ragib-Rabeya Medical College Hospital according to the order of Ministry of Health and Family Welfare and Directorate General of Health Services (DGHS).
- **‘National Mourning Day’** was observed in 15th August 2019 in Jalalabad Ragib-Rabeya Medical College campus. The day was observed by half hosting of the national flag, hosting of black flag, wearing black arm band by all teachers, students and staff of the college and hospital and day long outdoor treatment with free of cost.
- **A discussion meeting** was held on the occasion of ‘National Mourning Day’ and 44th death anniversary of Father of Nation Bangabandhu Sheikh Mujibur Rahman in Ragib-Rabeya Medical College in 18th August 2019. On the same day, a blood donation programme was also organized by Sandhani unit of Jalalabad Ragib-Rabeya Medical College.
- **Prize giving ceremony** of a priti football tournament was held on 13th September 2019 in the college campus. Prof. Md. Abed Hossain, Principal, Jalalabad Ragib-Rabeya Medical College was present in the occasion as chief guest. Prof. A. K. M. Daud, Vice Principal and Chairman of sports committee presided over the programme where Director Hospital Prof. Md. Tarek Azad was present as special guest. The teachers and students attended the programme.
- **An orientation meeting** about tuberculosis among the graduate privet practitioners was held on 17th September 2019 in the medical college. Prof. Md. Tarek Azad, Director of Jalalabad Ragib-Rabeya Medical College Hospital and Dr. Md. Zakaria Mahmud, Senior Consultant of Chest Disease Hospital, Sylhet were present in the meeting as recourse personals.
- **The World Mental Health Day** was observed on 10th October 2019 in the college campus with a rally, leaflet distribution and a brief discussion meeting, organized by the department of Psychiatry of the college. Prof. Md. Abed Hossain, Principal, Jalalabad Ragib-Rabeya Medical College, Prof. A. K. M. Daud, Vice Principal and other teachers and doctors were present in the programme.
- **The 173rd World Aneasthesia Day** was celebrated on 16th October 2019 in the college campus with a seminar and discussion meeting, organized by the department of Aneasthesiology of the college. Prof. Md. Abed Hossain, Principal, Jalalabad Ragib-Rabeya Medical College was the chief guest where Prof. A. K. M. Daud, Vice Principal and Director Hospital Prof. Md. Tarek Azad were the special guests of the meeting. The

meeting was presided over Prof. Md. Abdur Rashid, Head of the department of Aneesthesiology.

- **The views exchange meeting** was held on 23rd October 2019 in the college among the all teachers and doctors of Jalalabad Ragib-Rabeya Medical College Hospital. Danobir Dr. Syed Ragib Ali, Founder Chairman of the Governing Body of the institute was present there as chief guest. The program was presided over Prof. Md. Abed Hossain, honorable Principal, Jalalabad Ragib-Rabeya Medical College. Prof. A. K. M. Daud, Vice Principal and Prof. Md. Tarek Azad, Director Hospital were present as special guests.
- **The World Psoriasis Day** was observed on 29th October 2019 in the college campus with a rally, cutting the cake, balloon flying and brief discussion meeting, organized by the department of Dermatology of the college. The meeting was presided over Prof. Md. Abed Hossain, Principal, Jalalabad Ragib-Rabeya Medical College. Prof. A. K. M. Daud, Vice Principal, Director Hospital Prof. Md. Tarek Azad, Prof Shamima Akhter, Head of the department of Dermatology and other teachers and doctors were present in the meeting.
- **An enjoyable cultural programme** was held on 1st November 2019 in the college campus arranged by Prof. A. K. M. Daud, Vice Principal of the college. Prof. Md. Abed Hossain, Principal, Jalalabad Ragib-Rabeya Medical College was present as chief guest and Prof. Md. Tarek Azad Director Hospital was present as special guest.
- **A farewell and reception program** of the retired teachers of Jalalabad Ragib-Rabeya Medical College was held on 6th November 2019 in the college campus. Prof. Md. Murshed Ahmed Chowdhury, honorable Vice Chancellor of Sylhet Medical University graced the occasion as chief guest. The programme was presided by the Principal of the college Prof. Md. Abed Hossain. Prof. A. K. M. Daud, Vice Principal of the college and Prof. Md. Tarek Azad, Director Hospital were present in the programme as special guests. The retired teachers were Prof. Dr. Sayed Lokman Ali, Associate Prof. Dr. Chowdhury Wahidur Rouf, Prof. Dr. Md. Altafur Rahman, Prof. Dr. Md. Rafiqul Haque, Prof. Dr. Zahir Uddin Mahmud, Associate Prof. Dr. Zia Uddin Ahmed, Prof. Dr. Gopi Kanta Roy, Associate Prof. Dr. Atique Mahmud, Prof. Dr. Ayesha Akhter, Prof. Dr. Prodyot Kumar Bhattacharyya, Prof. Dr. Shah Jamal Hossain and Prof. Dr. Abdus Sabur.
- **A high powered inspection team** consisting of five members from Shahajalal University of Science and Technology, headed by Prof. Dr. Md. Belal Uddin, Dean of School of Agriculture and Mineral Sciences visited Jalalabad Ragib-Rabeya Medical College on 18th November 2019. Prof. Dr. Moynul Haque, Dean of School of Medical Sciences, Prof. Zhir Uddin Ahmed, Prof. of Economics, Prof. Dr. Majharul Hasan Majumder, Prof. of Business Administration and Md. Tajim Uddin, College Inspector (On charge) were the other members of the team.
- **1st Governing body meeting** under Sylhet Medical University was held on 30th November 2019 in Jalalabad Ragib-Rabeya Medical College. Prof. Md. Murshed Ahmed Chowdhury, honorable Vice Chancellor of Sylhet Medical University chaired the meeting where Prof. Md. Abed Hossain, Principal, Jalalabad Ragib-Rabeya Medical College was present as Member Secretary. As the representative from Ministry of Health and Family Welfare Mrs. Badrun Nahar, Deputy Secretary, Medical Education 2, representative from Bangabandhu Sheikh Mujib Medical University Prof. Md. Zafar Khaled, representatives from Sylhet Medical University Prof Dr. Zakia Sultana, Prof of Anatomy, Sylhet M. A. G. Osmani Medical College (SOMC) and Associate Prof. of Pathology, SOMC Dr. A. K. M. Abdul Hye, representative from Directorate DGHS Dr. Md. Musa Khan, Assistant Director, Medical Education, as well as teachers' representatives Prof. A. K. M. Daud, Vice Principal of the college and Prof. Md. Tarek Azad, Director Hospital were present in the meeting. Founder nominee Mr. Sayed Abdul Hye and guardians' representatives were also present in the meeting.
- **Additional secretary (Administration)** of Ministry of Health and Family Welfare, Mr. Suprio Kumar Kundu visited Jalalabad Ragib-Rabeya Medical College campus on 8th December 2019.
- **The Victory Day** was observed on 16th December 2019 with hosting of the national flag in the campus, a rally up to the Central Shaheed Minar, Sylhet, free outdoor services, improved diet among admitted patients and illumination of the hospital and college buildings. A blood donation with free blood grouping programme was also organized by the Sandhani unit of JRRMC.
- **A priti cricket tournament** was held on 16th December 2019 on the occasion of the victory day. Prof. Md. Abed Hossain, Principal, Jalalabad Ragib-Rabeya Medical College was present in the occasion as chief guest. Prof. A. K. M. Daud, Vice Principal and Chairman of sports committee presided the programme and Director

Hospital Prof. Md. Tarek Azad was present as special guest.

- **12th death anniversary** of Begum Rabeya Khatun Chowdhury, co-founder of Jalalabad Ragib-Rabeya Medical College and Hospital was observed in the campus on 19th December 2019. Danobir Dr. Syed Ragib Ali, Founder Chairman of the Governing Body of the institute was present in the occasion as chief guest and Prof Md. Abed Hossain, principal, JRRMC presided over the condolence meeting. Prof. A. K. M. Daud, Vice Principal, JRRMC, Prof. Md. Tarek Azad, Director Hospital, Prof M. A. Hye, Chairman of Social Welfare Committee, Mr. Abdul Hye, Treasurer of Ragib-Rabeya Foundation were present as special guests. The dua was conducted by the religious mentor of this institution Mawlana Abul Boshor Md. Lutfur Rahman. All the teachers, students, staff of Jalalabad Ragib-Rabeya Medical College Hospital and Begum Rabeya Khatun Chowdhury Nursing College were present on the programme.

Seminars:

The following seminars were held in Jalalabad Ragib-Rabeya Medical College from July to December 2019:

1. A seminar on “**Dengue Syndrome**” was organized by the department of Medicine on 1st August 2019.
2. A seminar on “**Ectopic Pregnancy**” was organized by the department of Gynaecology and Obstetrics on 3rd October 2019.
3. A seminar on “**Overview of Psoriasis**” was organized by the department of Dermatology on 17th October 2019.
4. A seminar on “**Suicide Prevention**” was organized by the department of Psychiatry on 24th October 2019.
5. A seminar on “**Lower Back Pain is an Illness in Search of a Disease**” was organized by the department of Physical Medicine and Rehabilitation on 31st October 2019.
6. A seminar on “**Emergency Management of Severely Injured Patient**” was organized by the department of Surgery on 7th November 2019.



Instructions for Author(s)

Manuscripts on clinical, review, experimental and historical topics pertinent to medical sciences are accepted for the publication in this journal. The papers are accepted for the publication with an understanding that they are solely submitted for this journal. The statements, comments or opinions expressed in the papers are exclusively of author(s), not of editor(s) or publisher. The manuscripts are to be prepared as described in following instructions. 3 (three) hard copies are to be submitted. Letters about potentially acceptable manuscripts will be sent after review process is complete. No manuscripts will be returned if not accepted for publication. In addition an electronic/digital version of the manuscript composed in MS word 98/2000 should be submitted in a diskette.

Preparation of manuscripts

Manuscripts should be typewritten, double-spaced throughout (including references and tables) on one side of good quality A4 sized paper, with margins of at least 25 mm. Each component of the manuscript should begin on a new page in the sequence of title or cover page, abstract with key words, text, acknowledgement, references, tables and legends for illustrations.

Title page will contain

- Concise and informative title of the article
- Author(s) name, highest academic degree(s).
- Name of the department(s) and institution(s).
- Address for correspondence and reprint (please include e-mail address and fax if available).

Abstract and key words

An informative abstract not more than 250 words should briefly describe the objectives, materials and methods, results and conclusion. Number of key words should not more than ten and none that are in the title.

Text should contain Introduction, Materials and Methods, Results and Discussion in sequence.

Introduction

It should briefly disclose the purpose of study. It will help the readers with the problem finding. It should be clear in nature and purpose.

Materials and Methods

Clearly it should include materials, experimental procedures, methods etc. Mention the nomenclature, source of material, equipment with manufacturer's details in parentheses. Describe new methods in sufficient detail indicating their limitation. Established

methods should be cited with authentic references. Ethical standards should be followed in reporting experiments done in human subjects. Precisely identify the dosage and route of administration, when drugs or chemicals are used. Measurements and data should be stated in SI unit, or if SI unit does not exist, use an internationally accepted unit. Abbreviations and acronyms should be used for widely used terms and names, which occurs consistently and frequently in the manuscript.

Results

It should be presented in logical sequence in text, tables or illustrations. Duplications of data in the tables or illustrations should be avoided. Emphasize or summarize only important observations.

Discussion

Emphasize the new and important aspects of the study and conclusion derived from them. Detail data written in introduction and other portions of text should not be repeated. The implication of results and their limitations including suggestion for future research should be included in the discussion.

References

Number the references consecutively in order mentioned in the text. Full list of reference should include all authors. Avoid using abstracts as references. References to paper accepted but not yet published should be designated as 'in press' or 'forthcoming'. Authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication. Information from manuscripts submitted but not accepted should be cited as 'unpublished observations' with written permission from the source. Use the styles of example below, which are based on the formats used by US National Library of Medicine (NLM) in the Index Medicus. The title of journals should be abbreviated according to the style used in Index Medicus.

Article in journal

- List all six authors when six or less

Vega KJ, Pina I, Krevsky B. Heart transplantation in associated with an increased risk for pancreatobiliary disease. *Ann Intern Med* 1996; 124 (11): 980-3.

As an option, if a journal carries continuous pagination throughout a volume (as many journals do) the month and issue number may be omitted.

b) More than six authors

Parkin DM, Clayton D, Black RJ, Masuyer E, Friedl HP, Ivanov E, et al. Childhood leukaemia in Europe after chernobyl: 5 year follow-up. *Br J Cancer* 1996; 73:1006-12.

c) No author given

Cancer in South Africa (editorial). *S Afr Med J* 1948; 84:15

d) Organization as author

The cardiac society of Australia and New Zealand. Clinical exercise stress testing. Safely and performance guidelines. *Med J Aust* 1990; 146: 267-9.

Books and monographs

a) Personal author(s)

Laurence DR, Bennett PN, Brown MJ. *Clinical Pharmacology*. 8th ed. New York: Churchill Livingstone; 1997.

b) Editor(s), compiler(s) as author

Norman IJ, Redfern SJ, editors. *Mental health care for elderly people*. 5th ed. New York: Churchill Livingstone; 1999.

c) Organization as author and publisher

World Health Organization. *Ethical criteria for medical drug promotion*. Geneva: World Health Organization; 1988.

d) Chapter in a book

Phillips SJ, Whisnant JP. Hypertension and stroke. In: Laragh JH, Brenner BM, editors. *Hypertension: pathophysiology, diagnosis and management*. 2nd ed. New York: Raven Press; 1995. p 465-9.

e) Dissertation or thesis

Kaplan SJ. *Post hospital home health care: the elderly access and utilization (dissertation)*. St. Louis (MO): Washington Uni; 1995.

Other published material

a) Newspaper article

Lee G. Hospitalization tied to ozone pollution: study estimates 50,000 admissions annually. *The Washington post* 1996; June 21; sect. A: 3 (col. 5).

b) Dictionary and similar references

Student's medical dictionary. 26th ed. Baltimore: Williams and Wilkins; 1995. Apraxia; p.119-20.

Unpublished material

a. In press

Leshner AI. Molecular mechanisms of cocaine addiction. *N Eng J Med* (in press) 1997.

Electronic material

a) Journal articles in electronic format

Morse SS. Factors in the emergence of infectious diseases. *Emerg Infect Dis* [serial online] 1995 Jan-Mar [cited 1996 June 5]; 1(1): [24 screens]. Available from: URL: <http://www.cdc.gov/ncidod/EID/eid.htm>

b) Monograph in electronic format

CDI, clinical dermatology illustrated [monograph on CD-ROM]. Reeves JRT, Maibach H. CMEA Multimedia group, producers. 2nd ed. Version 2.0. San Diego: CAEA; 1995.

C) Computer files

Haemodynamics III: The ups and downs of haemodynamics [computer program]. Version 2.2. Orlando (FL): Computerized Educational Systems; 1993.

Table(s)

Each table should be typed on a separate sheet, brief title for each and should be numbered consecutively using Roman numbers and be cited in the consecutive order. Internal horizontal and vertical lines should not be used.

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Acknowledgement should appear at the end of the manuscripts before references.

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