

TMSS Medical College Journal (TMCJ)

Volume 15, No. 02, July 2020

Contents

Editorial

- Impact of COVID-19 Pandemic on Surgical Services 5
Md. Abdul Mazid

Original Article

- Correlations of Urinary N-acetyl-beta-D-glucosaminidase with proteinuria, SLEDAI-2K (renal), Anti ds DNA antibody titre and serum C3 9
Dr. A. S. M. Julfekar Helal, Dr. Md. Hafizur Rahman
- Menstrual Hygiene Management Practices of Adolescent Girls: A Study on the Selected Schools of Bogura District, Bangladesh 15
Dr. Md. Matiur Rahman, Md. Rahidul Islam, Mst. Nilufar Yesmen
- Early Delivery following Diagnosis and Maternal Outcome in Severe Pre-eclampsia 24
Dr. Mst. Atia Sultana, Dr. Ferdousi Sultana, Dr. M A Gofur Mondol
- Impact on Mother and Foetus due to Excessive Weight gain in Pregnancy 32
Dr. Fatema Kamrun Naher, Dr. M.H.M Mahfuzul Alam, Dr. Eskander Hossain, Dr. Muktar Hossain, Dr. Runa Parvin, Dr. Doela Kulsum Anam
- Comparison between the Side Effects of Spinal and General Anesthesia during Caesarean Section 36
Dr. Md. Eskender Hossain, Dr. Md. Atiar Rahman, Dr. Mostafa Kabir

Case Report

- Xeroderma Pigmentosum with multiple squamous cell carcinomas: A case report with literature review 41
Dr. Shaharul Alom Mondol, Dr. DM Arifur Rahman, Dr. Prabhat Kunwar Chhetri



An Official Publication of TMSS Medical College



TMSS Medical College Journal (TMCJ)

July 2020

An Official Publication
of
TMSS Medical College, Bogura, Bangladesh

TMSS Medical College Journal (TMCJ)

Vol. 15, No. 2, July 2020

An Official Publication of TMSS Medical College, Bogura, Bangladesh

Editorial Board

Chairman : Prof. Dr. Md. Shahjahan Ali Sarker

Editor in Chief : Prof. Dr. Md. Azfarul Habib

Assistant Editor : Dr. Md. Abdul Mazid

Advisory Editor : Prof. Dr. Moudud Hossain Alamgir

Managing Editor : Dr. Md. Matiur Rahman

Members

Dr. ASM Barkatullah

Prof. Dr. Anup Rahman Choudhury

Prof. Dr. AKM Masudur Rahman

Prof. Dr. AKM Ahsan Habib

Dr. Md. Amirul Islam

Advisory Board

Prof. Dr. Hosne-Ara Begum

Prof. Dr. M Afzal Hossain

Prof. Dr. AKM Ahsan Habib

Prof. Dr. Md. Jawadul Haque

Prof. Dr. Sayed Mainul Hasan

Prof. Dr. Hafiza Arzuman

Shahzadi Begum

The TMSS Medical College Journal is published two times a year (January and July). It accepts original articles, review articles and case reports. While every effort is always made by the Editorial Board and the members of the Journal Committee to avoid inaccurate or misleading information appearing in the TMSS Medical College Journal, information within the individual article are the responsibility of its author(s). The TMSS Medical College Journal, its Editorial Board and Journal Committee accept no liability whatsoever for the consequences of any such inaccurate and misleading information, opinion or statement.

Printed by

TMSS Printing Press

Bogura, Bangladesh

e-mail: tmssprintingpress@gmail.com

Address of Correspondence

Executive Editor, TMSS Medical College Journal, TMSS Medical College

Rangpur Road, Thengamara, Bogura, Bangladesh.

Phone: 051-61830, Fax : 051-61830

e-mail: editortmcjournal@gmail.com, Web: www.tmssmedicalcollege.com

Original Article**Early Delivery following Diagnosis and Maternal Outcome in Severe Pre-eclampsia**Sultana MA,^{1*} Sultana F,² Mondol MAG³

1. Dr. Mst. Atia Sultana, Associate Professor, Department of Obstetrics and Gynecology, Shah Mokhdum Medical College Hospital, Rajshahi, Bangladesh.
2. Dr. Ferdausi Sultana, Professor, Department of Obstetrics and Gynecology, Rangpur Medical College Hospital, Rangpur, Bangladesh.
3. Dr. M A Gofur Mondol, Professor, Department of Transfusion Medicine, TMSS Medical College & Rafatullah Community Hospital, Bogura, Bangladesh.

***Corresponding Author**

Dr. Mst. Atia Sultana, Associate Professor and Head of Obstetrics and Gynecology, Shah Mokhdum Medical College Hospital, Rajshahi.
Mobile No. 01712214412, e-mail: dr.atia77@gmail.com.

Abstract

Background: Pre-eclampsia accounts for the majority of referrals in a tertiary care center as it stands one of the major causes of maternal morbidity and mortality. Maternal outcomes are directly related to the severity of pre-eclampsia. Pre-eclampsia with severe features has remained a serious challenge in obstetric practice. **Objective:** To observe the maternal outcome in patients having severe pre-eclampsia following early delivery. **Materials and methods:** In this observational study total 100 pregnant women with severe pre-eclampsia were divided into two groups: Group A- (Deliveries were done < 48 hours after admission and Group B- deliveries were done >48 hours after admission. Antenatal corticosteroid were given in both groups between gestational age >28 weeks and <37 weeks. Data were recorded in a pre-designed questionnaire and analyzed by computer based software SPSS windows version 25 and results were presented in tabulated form. **Results:** Out of hundred severe pre-eclamptic women, 66 were in group-A and 34 were in group-B. Most of the study subjects were in 20-30 years age group and the mean age were 27.03±4.72 years in group-A and 24.65±4.66 years in group-B, most of them came from low socio-economic family, achieved primary education, unemployed and belonged to rural area in both groups with non-significant difference ($p>0.05$). Majority of them were primigravida, 65.15% in group-A and 70.59% in group-B and mean gestational age were 36.00±2.456 weeks and 33.44±2.699 weeks respectively ($p<0.001$). Most of the study subjects were on regular antenatal care, 63.64% in group-A and 47.06% in group-B. 52.94% in group-B and 36.36% group-A had none or irregular antenatal care. Antenatal corticosteroid was used significantly more in group-B (88.24%) than group-A (30.30%) ($p<0.001$). Caesarean section was the common mode of delivery in both groups with statistically non-significant difference. The maternal complications were more in group-B than group-A including Eclampsia ($p=0.001$), Abruptio placentae ($p=0.004$), Pulmonary edema ($P=0.011$), Acute kidney injury ($p=0.026$), HELLP syndrome ($p=0.047$), DIC ($p=0.047$), Maternal mortality ($p=0.014$) and ICU admission ($p<0.001$). **Conclusion:** Proper antenatal care for all pregnant women and screening for pre-eclampsia should be ensured which will help in prevention as well as early diagnosis and treatment of pre-eclampsia.

Key words: Severe pre-eclampsia, Early delivery, Maternal outcome.

Introduction

Hypertensive disorders are among the most common medical disorders during pregnancy which include pre-eclampsia, eclampsia, pregnancy induced hypertension and transient hypertension of pregnancy and continue to be the major cause of maternal morbidity and mortality especially in developing countries.¹ About 10-15% of maternal deaths are directly associated with pre-eclampsia and eclampsia.² According to BMMS-16, in Bangladesh about 24% of maternal deaths are caused by pre-eclampsia and

eclampsia.³ Pre-eclampsia complicates 10% of all pregnancies⁴. Severe pre-eclampsia is characterized by blood pressure ≥ 160 mmHg systolic and ≥ 110 mmHg diastolic on two occasions at least 6 hours apart while the patient is on bed rest, proteinuria of ≥ 5 gm in 24-hours urine specimen, oliguria <500 ml urine in 24-hours and other associated signs and symptoms such as cerebral or visual disturbance, pulmonary edema or cyanosis, epigastric or right upper quadrant abdominal pain, impaired liver function,

thrombocytopenia and fetal growth restriction.⁵ Though the exact etiology of pre-eclampsia is not known, some of the potential etiologies include abnormal placentation, immunological intolerance between feto-placental and maternal tissue, dietary deficiencies and genetic predisposition. Although the exact etiology remains elusive, two basic abnormalities are consistently seen in pre-eclampsia, abnormal trophoblastic invasion of uterine blood vessels and endothelial cell dysfunction,⁶ which may explain why significant improvement occurs in the maternal clinical conditions after delivery of the placenta. Young and nulliparous women are particularly vulnerable for developing pre-eclampsia, whereas older women are at greater risk for chronic hypertension with superimposed pre-eclampsia. The incidence of pre-eclampsia in multiparas is also variable but is less than that for nulliparous.⁷ Pre-eclampsia is a multisystem disorder so its management is a great challenge for obstetricians because there are no effective interventions to manage or prevent it, and in spite of good antenatal care it is difficult to balance between the risks for women to continue pregnancy and the hazards for baby's early birth.⁸ The management of severe pre-eclampsia entails the use of antihypertensive drugs to control the blood pressure, anticonvulsants for seizure prophylaxis and delivering the fetus as soon as it is viable. Seizure prophylaxis employs the use of drugs such as diazepam, phenytoin and magnesium sulfate (MgSO_4).⁶ The maternal complications of severe pre-eclampsia include eclampsia, HELLP syndrome (Hemolysis, Elevated Liver Enzyme, Low Platelet count); DIC (Disseminated Intravascular Coagulation), acute kidney injury (most deleterious effect), cerebrovascular hemorrhage, cortical blindness, focal motor deficit and adult respiratory distress syndrome and also the future morbidities include chronic hypertension and chronic kidney disease.⁹ The clinical course of severe pre-eclampsia, results in progressive deterioration of both maternal and fetal conditions. Traditional management of severe pre-eclampsia has focused on maternal safety, with expedite delivery. Because of these pregnancies are associated with high rates of maternal morbidity and mortality, the risk benefit ratio should be weighed in such cases, the sooner the deliveries the better the

prognosis.¹⁰ The ultimate treatment for pre-eclampsia to prevent potential maternal complications is to deliver the patient. Still, delivery is not always in best interest of fetus.¹¹

Materials and Methods

This observational study was carried out in the Department of Obstetrics and Gynaecology of Rangpur Medical College Hospital, Rangpur. From January 2018 to December 2018.

The protocol of this study was approved by the Protocol review and Ethical committee of Rangpur Medical College, Rangpur. Total 100 cases of pregnant women with >28 wks of gestation, who fulfill the inclusion criteria were selected by purposive sampling during the study period. The Inclusion criteria was the pregnancy >28 wks of gestation with severe pre-eclampsia ($\text{BP} \geq 160/110$ mm of Hg) and the exclusion criteria were mild pre-eclampsia, placenta previa, chronic hypertension, chronic renal diseases, other systemic, metabolic and endocrine disorders in pregnancy. Data were collected by interview with the woman or attendant in a pre-designed questionnaire. Data were compiled and findings were presented in the form of table. Appropriate statistical analysis of the data was done using computer based SPSS (Statistical Package for Social Science) for windows version 25. chi-square test were done to compare the categorical data between two groups. P value <0.05 was considered to be statistically significant.

Results

This study was carried out with an aim to observe the neonatal complications that occurred in early delivery <48 hours after admission in group-A compared to delayed delivery >48 hours after admission in group-B. A total of admitted 100 cases having pregnancy with severe pre-eclampsia were taken as study subjects and grouped into group-A (n=66) and group-B (n=34), in the department of Obstetrics and Gynaecology in Rangpur Medical College Hospital, Rangpur, one of the tertiary level hospitals of Bangladesh.

Table No. I: Sociodemographic profile of study subjects (n=100).

Parameter	Severe pre-eclamptic mothers		X ²	P value
	Group -A (n=66)	Group -B (n=34)		
Age group			4.112	0.128 (NS)
<20 years	05 (7.58%)	06 (17.65%)		
20 -30 years	47(71.21%)	25 (73.53%)		
>30 years	14 (21.21%)	03 (8.82%)		
Mean ±SD	27.03±4.716	24.65±4.657		
Socioeconomic status			0.101	0.951 (NS)
Low	48 (72.72%)	24 (70.59%)		
Middle	15 (22.73%)	08 (23.53%)		
Upper	03 (4.45%)	02 (5.88%)		
Level of education			3.010	0.556 (NS)
Illiterate	08 (12.12%)	07 (20.89%)		
Primary	26 (39.39%)	11 (32.35%)		
SSC	10 (15.15%)	08 (23.53%)		
HSC	12 (18.18%)	04 (11.76%)		
Graduate	10(15.15%)	04 (11.76%)		
Residence			0.004	0.948 (NS)
Rural	47 (71.21%)	24 (70.59%)		
Urban	19 (28.79%)	10 (29.41%)		
Occupation			0.723	0.395 (NS)
Unemployed	60 (90.90%)	29 (85.30%)		
Employed	06 (9.09%)	05 (14.70%)		

X²: Chi-square test was done, NS: Non-significant.

Table No. I: Shows the socio demographic status of the study subjects, in both groups all the parameters were matched. Most of the subjects of group-A (71.21%) and group-B (73.53%) were in '20-30 years' age group. The mean age of group-A was 27.03 ± 4.72 years and of group-B was 24.65 ± 4.66 years. 72.72% subjects of group-A and 70.59% of group-B were from

low socioeconomic status, 39.39% of group-A and 32.35% of group-B achieved primary education, 71.21% of group-A and 70.59% of group-B belonged to rural area and most of the study populations were unemployed in both group-A (90.90%) and group-B (85.30%). These results were statistically non-significant.

Table No. II: Obstetrical profile of the study subjects (n=100).

Parameter	Severe pre -eclamptic mothers		X^2	P value
	Group -A (n=66)	Group -B (n=34)		
Gravida				
Primi	43 (65.15%)	24 (70.59%)	0.300	0.584 (NS)
Multi	23 (34.85%)	10 (29.41%)		
Gestational age				
28 - <30 weeks	01 (1.52%)	02 (5.88%)	21.428	P<0.001 (S)
30 - <32 weeks	03 (4.55%)	08 (23.53%)		
32 - <34 weeks	05 (7.58%)	09 (26.47%)		
34 - <36 weeks	23 (34.85%)	09 (26.47%)		
≥ 36 weeks	34 (51.52%)	06 (17.66%)		
Mean $\pm$ SD	36.00 ± 2.456	33.44 ± 2.699		
Antenatal booking status				
Regular	42 (63.64%)	16 (47.06%)	2.532	0.112 (NS)
Irregular/ Nil	24 (36.36%)	18 (52.94%)		

X^2 : Chi-square test was done, S: $p < 0.05$, NS: Non-significant.

Table No. II: Shows obstetrics profile of the study subjects, majority were primigravida in both groups 65.15% in group-A and 70.59% in group-B and statistically non-significant. On admission the mean gestational age was 36.00 ± 2.456 weeks in group-A and 33.44 ± 2.699 weeks in group-B with statistically

significant difference ($p < 0.001$). Most of the study subjects were on regular antenatal care, 63.64% in group-A and 47.06% in group B. 52.94% in group-B and 36.36% group A had none or irregular antenatal care which was not statistically significant.

Table No. III: Mode of delivery in the study subjects (n=100)

Parameter	Severe pre-eclamptic mothers		χ^2	P value
	Group-A (n=66)	Group-B (n=34)		
LSCS	37 (56.06%)	21 (61.76%)	0.300	0.584 (NS)
VD	29 (43.94%)	13 (38.24%)		

χ^2 : Chi-square test was done, NS: Non-significant.

Table No. III: Shows the mode of delivery in the study subjects, though there were more number of caesarean section done in group-A than group-B but the difference was not significant. LSCS was 56.06%

in group-A and 61.76% in group-B. It was statistically proved that the difference in mode of delivery between two groups was non-significant ($p=0.584$).

Table No. IV: Distribution of maternal outcome of the study subjects (n=100)

Parameter	Severe pre-eclamptic mothers		χ^2	P value
	Group-A (n=66)	Group-B (n=34)		
Eclampsia	03 (4.55%)	09 (26.47%)	10.215	0.001 (S)
Abruptio placentae	02 (3.03%)	07 (20.59%)	8.447	0.004 (S)
Pulmonary edema	03(4.55%)	07(20.59%)	6.417	0.011(S)
Acute kidney injury	01(1.52%)	04(11.76%)	4.963	0.026(S)
HELLP syndrome	00(00)	02(5.88%)	3.962	0.047(S)
DIC	00(00)	02(5.88%)	3.962	0.047(S)
ICU admission	03(4.55%)	12(35.29%)	16.640	0.001(S)
Maternal mortality	00(00)	03(8.82%)	6.004	0.014(S)

χ^2 : Chi-square test was done, S: $p<0.05$

Table No. IV: Shows the maternal outcome of the study subjects, where the complications were more in group-B than group-A, including Eclampsia ($p=0.001$), Abruptio placentae ($p=0.004$), Pulmonary edema ($P=0.011$), Acute kidney injury ($p=0.026$), HELLP syndrome ($p=0.047$), DIC ($p=0.047$), Maternal mortality ($p=0.014$) and ICU admission ($p<0.001$). The difference in complications between the two groups were statistically significant.

Discussion

Severe Pre-eclampsia remains a serious problem in obstetrics, still its management is challenging. Up to now the only causative treatment is termination of

pregnancy by “immediate delivery” and thereby removal of the placenta.¹² Attempts to reduce perinatal complications with expectant management may result in an increased incidence of maternal morbidity¹³. This study was carried out with an aim to observe the maternal complications that occurred in early delivery <48 hours after admission in group-A compared to delayed delivery >48 hours after admission in group-B. A total of admitted 100 cases having pregnancy with severe pre-eclampsia were taken as study subjects and grouped into group-A (n=66) and group-B (n=34), in the department of Obstetrics and Gynaecology in Rangpur Medical College Hospital, Rangpur, one of the tertiary level hospital of Bangladesh. In the present study it was observed that

the chance of preeclampsia was significantly higher in younger age group. Regarding demographic profile showed both the study populations were age matched, majority of the populations in both group were between the ages of 20-30 years, Similar result has also been obtained by various authors Ngowa JDK. et, al.¹⁴, Asfaw M¹⁵, Shaikh S. et, al.¹⁶. This is probably due to the early age of marriage and childbearing in this subcontinent particularly in India and Bangladesh. In this study it was observed that the prevalence of the pre-eclampsia is more in the low and middle socioeconomic status. It is established that pre-eclampsia is a disease of low socioeconomic status and less prevalence in upper economic group. As this a government hospital, where treatment cost is low, patients of less affluent society come here to get better treatment with low cost, so low income group is more in this hospital and the affluent society may more comfortable in private hospital or clinic. This finding co-relate with observation of a native studies that majority come from low socioeconomic family. Sultana A. et, al.¹⁷, Singhal SR. et, al.¹⁸ Regarding level of education of the study subjects' majority achieved primary education and next were secondarily educated in both groups and statistically non-significant, most of them came earlier and delivered < 48 hours after admission because of their awareness. A study of Ngowa JDK. et, al.¹⁴ in Cameroon showed half of the patients had secondary education level and Asfaw M¹⁵, showed more than half of the cases had primary and secondary level of education. In our country this scenario reflects that literacy rate is increasing, probably due to our government giving more attention to female education and the primary education is free of cost. In the present study most of the severe pre-eclamptic mothers came from rural area in both groups 71.21% in group-A and 70.59% in group-B, statistically non-significant, probably they were low income group so they live in the rural area. This result is consistent with the study by Singhal SR. et, al.¹⁸ Most of the study subjects in the present study were unemployed in both groups. This result is consistent with the result of other studies of Ngowa JDK. et, al.¹⁴, they showed 58% non-worker

and Asfaw M¹⁵, showed 50.9% unemployed/house-wife. Nulliparity has been found to be associated with preeclampsia. In the present study it was observed that preeclampsia occurred more frequently in primigravida in both groups, statistically non-significant. This result is consistent with the other studies by Singh A. et, al.¹⁹, who showed 58.9% nulliparity, Pillai SS²⁰, showed 60.90% cases were primigravida, Singhal SR. et, al.¹⁸, found 73% women were primigravida. In the present study the gestational age of the most of the cases were more than 34 week. The incidence of pre-eclampsia increases as pregnancy advanced. This result co-relate with the other studies by Kishwara S. et, al.²¹ who found the mean gestational age of the mother was 38.26±1.26 weeks, In the present study most of the study subjects were on regular antenatal checkup 63.64% in group-A and they delivered early after admission due to early diagnosis. This result consistent with the studies by Asfaw M¹⁵, he showed 96.7% women were booked for antenatal checkup, Pillai SS.²⁰, showed 77.18% cases were booked, The result of the present study reflects the improvement of the health care facilities at all level of health care system in our country. Early diagnosis and early intervention of severe preeclampsia can be possible only by regular antenatal care. The present study showed the most of the severe pre-eclamptic women delivered by caesarean section in both groups, statistically non-significant. This result consistent with the studies by Pillai SS²⁰, who showed caesarean section rate 64.54% of cases, Asfaw M¹⁵, who reported 48.8%,. The most common indications were unfavorable cervix, previous two or more caesarean section and to avoid further complications, caesarean section was done early. The mode of delivery was determined by severity of maternal condition, bishop's score, gestational age and fetal condition. Pregnancies complicated by severe pre-eclampsia are associated with an increased risk for maternal morbidity and mortality. Complications leading to maternal morbidity include eclampsia, abruption placentae, pulmonary edema, acute kidney injury, HELLP syndrome and disseminated intravascular coagulation (DIC). In the present study all those complications

were more in group-B than group-A, statistically significant, probably due to delay, the more the delay the more the complications so delay is not acceptable. The sooner the delivery the better the prognosis in case of severe pre-eclampsia. Intensive care unit (ICU) admission and maternal deaths were also more in group-B than group-A, statistically significant. In the present study twelve patients were needed ICU admission from group-B, due to pulmonary edema, DIC, acute kidney injury, HELLP syndrome and eclampsia and three maternal deaths occurred in group-B due to DIC, pulmonary edema and eclampsia. The results were co-related with the other studies by Ngowa JDK. et, al.¹⁴, showed eclampsia 12.14%, abruption placentae 11.21%, Singh A. et, al.¹⁹, showed HELLP syndrome 37.5%, DIC and pulmonary edema each was 3.6%, maternal mortality 1.8%, Singhal SR. et, al.¹⁸, showed the maternal complications more in severe preeclampsia that were abruption placentae 20.41%, HELLP syndrome 2.04%. Acute kidney injury 4.08%, pulmonary edema 2.4% maternal death 8.16%,. On the other hand, the study by Rattinger U.¹², showed the need of ICU admission was more in the aggressive management group than expectant management group but which was non-significant, this result was inconsistent with the present study. The prognosis become worsen when the time interval between onsets of severe pre-eclampsia and delivery is more, so early delivery is desirable to avoid complications. From the present study it was observed that, the maternal complications were more in group-B that is delay >48 hours so early delivery is expedited for good prognosis.

Conclusion

Severe pre-eclampsia have significantly high maternal morbidity and mortality. Pre-eclampsia can be prevented to some extent by early diagnosis and timely intervention in its mild stage. This is possible by regular antenatal care, proper educating the women and empowering their status in the society. So it is concluded that proper antenatal care for all pregnant women and screening for pre-eclampsia should be ensured.

Suggestions: Low dose aspirin can be used in high risk women. Calcium supplement and other antioxidant like vit-E and vit-C and balanced diet rich in protein may also reduce the risk of preeclampsia.

Reference

1. Lindheimer MD. Roberts JM. Cunningham FG. Chesley's Hypertensive disorders in pregnancy. 3rded Amsterdam: Elsevier Inc; 2009.
2. Carty DM. Delles C. Dominiczak AF. Pre-eclampsia and future maternal health, J Hypertens. 2010; 28: 1349-55.
3. Bangladesh Maternal Mortality and Health Care Survey- 2016 I p-31. [https:// www.researchgate .net/publication/321300253](https://www.researchgate.net/publication/321300253).
4. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Catherine YS. Williams Obstetrics. 24th Ed. New York, NY: McGraw Hill Companies;2014. p2
5. David A. Miller. Hypertension in pregnancy. Current Diagnosis and Treatment. Obstetrics & Gynecology. In: Decherney AH. Nathan L. Goodwin TM. Laufer N. editor 10thed. New York McGraw-Hill Companies. Inc; 2007:pp 321,325
6. Renolds C. Mobie WC. Sibai MB. Hypertensive state of pregnancy. Current Obstetric and Gynecologic Diagnosis. In: De cherney AH. Nathan L. editor 10thed. New York. McGraw-Hill Companies Inc; 2007:318-327.
7. Roberts CL. Ford JB. Algert CS et al: Population-based trends in pregnancy hypertension and pre-eclampsia: an international comparative study. BJM Open. 2011; 1(1): e000101.
8. De souza Rugolo LM. Bentlin MR, Trindade CE. Pre-eclampsia: Effect on the fetus and newborn. Neoreviews 2011; 12: e198.
9. Chaltopadhyay S. Das A. Pahari S. Fetomaternal Outcome in severe Pre-eclamptic Women Undergoing Emergency Cesarean section under either general anesthesia or spinal anesthesia. J Pregnancy 2014; 2014:32509-8.
10. Odendaal HJ. Pattinson RC. Bam R. Grove D. Kotze TJ. Aggressive or expectant management for patients with severe pre-eclampsia between 28-34 weeks of gestation: A randomized control trail. ObstetGynecol 1990; 76:1070-5.

11. Multidisciplinary management of severe preeclampsia (PE) experts' guidelines 2008. Société française d'anesthésie et de réanimation. Collège national des gynécologues et obstétriciens français. Société française de médecine périnatale. Société française de néonatalogie. Ann Fr Anesth Reanim. 2009; 28:275-81.
12. Rattinger U. Maternal Outcome in cases of severe preeclampsia depending on time of delivery. Medical University Graz, February 2009.
13. Sabai BM, Barton JR. Expectant management of severe preeclampsia remote from term: patient selection, treatment, and delivery indications, Am J Obstet Gynecol. 2007;196(6):514
14. Ngowa JDK et, al. Maternal and Perinatal Complications of Severe Preeclampsia in Three Referral Hospitals in Yaoundé, Cameroon, Open Journal of Obstetrics and Gynecology. 2015; 5:723-730
15. Asfaw M. Severe Preeclampsia: Effect Of Timing Of Termination Of Pregnancy On Maternal And Perinatal Outcome.[Research] Addis Ababa University, College Of Health Science, School Of Medicine, Department Of Gynecology And Obstetrics; Ethiopia:2014 October.
16. Shaikh S. et al. Outcome of Pregnancy in Women with Severe Pre-Eclampsia. Mc.2012; 19(3):41-45.
17. Sultana A, Koli LNB, Sayeeda S. Clinical Study on Risk Factors and Fetomaternal Outcome of Severe Preeclampsia in Bangabandhu Sheikh Mujib Medical University. Chattagram Maa-O-Shishu Hospital Medical College Journal. 2018; 17(1);26-27.
18. Singhal SR, Deepika, Anshu, Nanda S. Maternal and Perinatal Outcome in Severe Pre-eclampsia and Eclampsia. South Asian Federation of Obstetrics and Gynaecology, Sep-Dec 2009;1 (3):25-28.
19. Singh A. et, al. Fetomaternal Outcome in Cases of Pre-eclampsia in a Tertiary Care Referral Hospital in Delhi, India: A Retrospective Analysis. International Journal of Science Study. 2016;4(2):100-103.
20. Pillai SS, Feto-maternal outcome in severe preeclampsia and eclampsia: a retrospective study in a tertiary care center. . Int J Reprod Contracept Obstet Gynecol. 2017;6(9):3937-3941
21. Kishwara S, Tanira S, Omar E, Wazed F, Ara S. Effect of Preeclampsia on Perinatal Outcome- A Study Done in the Specialized Urban Hospital Set Up in Bangladesh. Bangladesh Medical Journal, 2011;40(1):35

(TMSS Medical College Journal 2020;15(2):24-31)