



COMPARISON BETWEEN STANDARD TREATMENT GUIDELINES OF PREECLAMPSIA PROPOSED BY WHO AND CURRENT PRACTICE IN TERTIARY CARE CENTERS

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ABSTRACT

World Health Organization introduced standard treatment guidelines for a killer disease of pregnant women worldwide, Preeclampsia, are compared with current practices in the tertiary care centers. Magnesium sulphate and delivery is the treatment of choice for pre-eclampsia. Implementation of STGs in the tertiary care centers of Islamabad that is Federal Government Services Hospital, Pakistan Institute of Medical Sciences and Shifa international Hospital are assessed. Furthermore the prescribing practice of Islamabad (three hospitals) sector is compared with such of the Abbottabad (Ayub Medical Complex), for pre-eclampsiac women. Knowledge of physicians in gynecology department at Islamabad and Abbottabad are assessed. In the tertiary care centers of Islamabad 45% patients are receiving magnesium sulphate as recommended by WHO 5% cases are

delivery which is also standard way of treatment during preeclampsia. In Abbottabad sector 93% patients are receiving magnesium sulphate and 4% are delivery cases. The variation from WHO guidelines is least in Ayub Medical complex Abbottabad. This small researchon 200 patients also depicts the individual tertiary care center reports for STGs in pre-eclampsiac women. The knowledge of physician changes where a question occurs that their course of study do not contain précised WHO recognized book. There are some mind blowing facts inside this report. As a result I proudly say that our health sector is not very far

away from standards proposed by World Health Organization for a better healthy environment.

KEYWORDS: WHO Stgs, Pre Eclampsia, Eclampsia, Prenatal Care, Magnesium Sulphate, Delivery Risks.

INTRODUCTION

Pre-eclampsia

Common Killer of Pregnant Women Worldwide

(Also known as **toxemia** and **Pregnancy-Induced High Blood Pressure**) consists of high blood pressure, protein in the urine and edema (swelling). It can rapidly become severe pre-eclampsia, with very high blood pressure, visual disturbances, failing kidneys and elevated liver enzymes. In rare cases, pre-eclampsia develops into eclampsia, where potentially fatal convulsions occur. It also can become HELLP Syndrome (hemolysis (H), which is the breaking down of red blood cells, elevated liver enzymes (EL), and low platelet count (LP), which is potentially fatal to both the woman and her baby or babies

In this project keen efforts are made to assess the implementation of standard treatment guidelines proposed by WHO for pre-eclampsia women having no other ailment. Based on the latest scientific evidence, the World Health Organization (WHO) has recommended magnesium sulfate as the most effective, safe, and low-cost anticonvulsant medication to treat eclampsia and pre-eclampsia.

STATEMENT OF PROBLEM

If I list the statement of problems this would be very clear from the literature mentioned in the report that there is less or no research work on Standard Treatment Guidelines of pre-eclampsia in Asia and most importantly in Pakistan. We can find studies regarding diagnosis and even about treatment of pre-eclampsia but to assess the criterion of STGs prescription is the first project in Pakistan till now. This is very necessary keep ourselves in the line of standards introduces to avoid the mortality rate. Second problem might be of data collection as there are most pre-eclampsia cases those remain undiagnosed due to illiteracy. As for s this project is concerned this was to conduct in tertiary care centers of two developed cities of Pakistan so I am hopeful that there are; least chances of undiagnosed patients.

LITERATURE REVIEW

Preeclampsia is a very serious condition that affects seven to 10% of all pregnancies in the United States. This percentage is proposed by an author K. Bridget Brosnihan, a professor at Wake Forest University School of Medicine's Hypertension and Vascular Research Center. He further said in a news release. "It can be devastating to both mother and baby, and currently there is no cure except to deliver the fetus" (Namen *et al.*, 2001).

A 1998 review concluded that it is effective in preventing convulsions in women who have severe pre-eclampsia and in stopping convulsions in eclamptic women. The review consisted of 19 randomized, controlled trials, five retrospective studies and eight observational reports published in English between 1966 and February 1998. The review also concluded that more research is needed on whether magnesium sulfate is effective for women with mild pre-eclampsia and gestational high blood pressure (Witlin & Sabai, 1998; Heyborne, 2007).

Magnesium sulphate is the drug of choice in pre-eclampsia. In the United States, it has been used to treat severe pre-eclampsia for 60 years and is FDA-approved for this purpose (Rengan, *et al.*, 2012).

The staff from MAYO Clinic says that the only cure for pre-eclampsia is delivery. You are at increased risk of seizures, placental abruption, stroke and possibly severe bleeding until your blood pressure decreases. Of course, if it's too early in your pregnancy, delivery may not be the best thing for your baby. If you've had pre-eclampsia in one or more previous pregnancies, some experts recommend more frequent prenatal visits than normally recommended for pregnancy. Your doctor may ask you to come in every two weeks between the 20th and 32nd week of your gestation, and weekly after that until delivery. They further says that magnesium sulphate should be given for treating seizures, if you have severe pre-eclampsia or HELLP syndrome, corticosteroid medications can temporarily improve liver and platelet functioning to help prolong your pregnancy and antihypertensive medicines are given to lower blood pressure. Corticosteroids can also help your baby's lungs become more mature in as little as 48 hours — an important step in helping a premature baby prepares for life outside the womb (Harms *et al.*, 2013).

A research was conducted in 2008 in which again magnesium sulphate was considered as first important drug in pre-eclampsia to be considered. The goal of this research is to develop

a system of care that avoids overdose and facilitates the use of magnesium sulfate for the treatment of pre-eclampsia (Gangooly *et al.*, 2014).

Another organized health center proposed that Delivery of the baby is the only way to cure pre-eclampsia. If pre-eclampsia develops when it is too early to deliver your baby, you may be put on bed rest. Depending on your specific situation and severity of the preeclampsia, bed rest may be ordered at home or in the hospital (Keller *et al.*, 2008).

In the handbook of sign and symptoms third edition 2006 magnesium sulphate is advised as a medicine in pre-eclampsia (Mecham, 2006).

Another study was conducted by Dr. Nadia from King Edward Medical University and she focused on mid-wife care. She says to prescribe specialist-led care or to exclude general practitioner (GP) or midwife led care. It is recognized that all women benefit from a continuity of care and need midwifery care as part of their individual antenatal care plan, whatever their obstetric risk (Joseph *et al.*, 2003).

In 2007 Engender Health and the University of Oxford conducted the research in which they explained that use of magnesium sulphate in pre-eclampsia and eclampsia is beneficial and what hurdles discourages that use!

This historic gathering of global public health experts identified the primary barriers to the use of magnesium sulfate: lack of national guidelines, shortage of educated and trained health care professionals, and scarce supplies of magnesium sulfate. They also admitted the WHO words that Epsom salt is safest and effective in above mentioned ailments (Hussein *et al.*, 2011).

In MAGPIE study 2000 it is said clearly that in some cases, women with preeclampsia or eclampsia can be stabilized temporarily with magnesium sulfate intravenously to forestall seizures while steroid injections are administered to promote fetal lung maturation. Magnesium sulfate as a possible treatment was considered at least as far back as 1955, but only in recent years did its use in the UK replace the use of diazepam or phenytoin. Study showed that magnesium sulphate is best when induced delivery needs to take place before 37 weeks gestation, it is accepted that there are additional risks to the baby from premature birth that will require additional monitoring and care.

Aspirin supplementation is still being evaluated as to dosage, timing, and population and may provide a slight preventative benefit in some women; however, significant research has been done on aspirin and the results thus far are unimpressive (Figueiredo *et al.*, 2009).

Recent research by the Medical Research Council (MRC) has shown that giving magnesium sulphate injections to pregnant women with pre-eclampsia halves their risk of developing eclampsia. New research suggests that the antioxidants contained in vitamin C, vitamin E, selenium, and lycopene can reduce the chance of pregnant women developing pre-eclampsia. Research into treatments of pre-eclampsia is ongoing (Fisk *et al.*, 2009).

The treatment available for PE is to stabilize the patient and terminate the pregnancy (Muffley *et al.*, 2002).

SIGNIFICANCE OF STUDY

This project would be a great addition in the previous studies made on STGs of pre-eclampsia internationally as this is first study of its type in Pakistan. Studies are there for prevalence, pathophysiology, treatment, diagnosis and way of dose administration of pre-eclampsia but to compare prescriptions prescribed by doctors with the standard treatment guidelines was a study felt to be conducted. In this way the level of qualification and practice method of physician is also assumed. Similarly a pharmacist is also involved in the study as I am also comparing the dose of STG given by World Health Organization. So directly or indirectly physician, pharmacist and patient is involved.

Furthermore the study will be an excellent help for all four tertiary centers to modify and monitor their prescriptions. This will involve the better work of physician and pharmacist and a better health care system of pre-eclampsic women.

BACKGROUND

Preeclampsia is a disorder that occurs only during pregnancy and the postpartum period and affects both the mother and the unborn baby. Affecting at least 5-8% of all pregnancies, it is a rapidly progressive condition characterized by high blood pressure and the presence of protein in the urine. Swelling, sudden weight gain, headaches and changes in vision are important symptoms; however, some women with rapidly advancing disease report few symptoms.

Globally, preeclampsia and other hypertensive disorders of pregnancy are a leading cause of maternal and infant illness and death. By conservative estimates, these disorders are responsible for 76,000 maternal and 500,000 infant deaths each year (Wambach *et al.*, 2014).

ECLAMPSIA

Eclampsia, an acute and life-threatening complication of pregnancy, is characterized by the appearance of tonic-clonic seizures, usually in a patient who had developed preeclampsia. (Preeclampsia and eclampsia are collectively called Hypertensive disorder of pregnancy and toxemia of pregnancy).

Eclampsia excludes seizures and coma that happen during pregnancy but are due to preexisting or organic brain disorders (Program, 2000).

ANTENATAL CARE

The regular antenatal visits are designed to increase in frequency in later pregnancy. This increase is in order to assess the likely ability of the baby to be delivered vaginally and to assess the growth and development of the baby; but of equal importance, the blood pressure and urine are screened for preeclampsia.

If the blood pressure is increased at any time before the delivery, then women may be requested to have more frequent blood pressure readings. They might be asked to visit a day stay unit where the blood pressures are taken for a few hours (rather than a one off reading) and the baby is assessed.

If increased blood pressure alone develops, some units may start tablets to lower the blood pressure (or at least prevent further rises in blood pressure). If other features of preeclampsia occur, such as headaches or liver pain, then admission to hospital is likely to be required in a multidisciplinary Centre such as a major teaching hospital. It is likely that blood pressure specialists will be involved early in the decision about the use of tablets and the possible timing of the delivery.

OBJECTIVES

- I plan to conduct a comparative study among the tertiary health care centers of Islamabad sector to have a brief review of criterion of implementation of standard treatment guidelines of preeclampsia in women.

- I am also determined to have renounced comparison between three tertiary health care centers, in Islamabad and with one such center in Abbottabad; Ayub Medical Hospital.

MAIN OBJECTIVES OF THE STUDY

1. To make a comparison of standard treatment of pre-eclampsia with the current practice in the tertiary health centers of Islamabad.
2. To compare current practice of treatment of preeclampsia in Islamabad & one tertiary care center in Abbottabad
3. Percentage of qualified staff in hospitals.
4. Knowledge of medical person in pre-eclampsia.

RATIONALE

- Helping, develop and/or reinforce world's international protocols mandatory for preeclampsia.
- Ensuring awareness among the people will increase even during the survey session when i will meet such patients in the tertiary health centers.
- I will be able to find deviation from standard treatment; if any.
- This project firstly depicts the difference of treatment in basic health unit of capital city to one of the basic health unit in Abbottabad city.
- A clear idea from the death rate will give the importance of research work required in this ailment. Also it may alert the ministry to put an eye towards such tertiary facilities.
- Definitely a step towards prevention.

FEATURES

- Simple and easy to understand project about the world's killing disease in women.
- Depicts a clear cut way to step forward for the filling of gaps.
- Interview and questionnaire creates awareness among the local people.

METHODOLOGY

TYPE OF STUDY

- Cross-sectional comparative study.

STUDY SETTING

- Tertiary care centers of Islamabad, and Abbottabad Pakistan.

DATA RESPONDENT

- Pregnant women and physician.

SAMPLE SIZE

- 100 prescriptions.
- 100 questionnaire filled by physician.

SAMPLE STRATEGY

- Convenience sampling technique.

DATA ANALYSIS TOOL

- SPSS VERSION 17.0

VARIABLES

- Knowledge of doctors about standard treatment
- Gestational age of the patient
- Age of the patient
- Magnesium sulphate present as standard
- Nifedipine in the prescription
- Aldomet in the prescription
- Normal saline through IV in prescription
- Dexomethasone present in prescription
- Frusemide present in prescription
- ISDN present in prescription
- Methyl dopa present in prescription
- Aspirin present in prescription
- Captopril present in prescription
- Iron sulphate present in prescription
- Multivitamin present in prescription

INDICATORS

1. %age of prescriptions containing MgSO₄ only.
2. %age of prescriptions containing calcium gluconate only
3. %age of prescriptions containing calcium gluconate + magnesium sulphate.
4. %age of prescriptions containing Dihydralazine only

5. %age of prescriptions containing calcium gluconate + magnesium sulphate + Dihydralazine.
6. %age of prescriptions containing some new drugs.
7. %age of delivery or abortion cases.

RESULTS

FREQUENCIES FOR ISLAMABAD DATA (THROUGH SPSS 17)

Table 1: Frequencies for Islamabad Data

	<i>Age of patient at ISB</i>	<i>Gestational age of patient at ISB</i>	<i>Magnesium sulphate prescribed or delivery advised at ISB</i>	<i>Methyl dopa prescribed at ISB</i>	<i>Nifedipine prescribed at ISB</i>	<i>Fruzemide prescribed at ISB</i>
Missing	0	0	0	0	0	0
Valid	100	100	100	100	100	100
	<i>ISDN prescribed at ISB</i>	<i>Captopril prescribed at ISB</i>	<i>Amino infusion prescribed at ISB</i>	<i>Steroids prescribed at ISB</i>	<i>Aspirin prescribed at ISB</i>	<i>Iron sulphate prescribed at ISB to pre-eclampsia</i>
Missing	0	0	0	0	0	0
Valid	100	100	100	100	100	100
	<i>Vitamin B12 or folic acid or normal saline prescribed at ISB to pre-eclampsia</i>	<i>What is STG for pre-eclampsia by WHO in ISB</i>				
Missing	0	0				
Valid	100	100				

A sample of 100 was taken from Islamabad for each variable including the prescription sample for standard drug advice check. Physician knowledge assessment includes questionnaires as tools.

Table 2: Age of patient at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	18	1	1.0	1.0	1.0
	20	5	5.0	5.0	6.0
	21	2	2.0	2.0	8.0
	22	1	1.0	1.0	9.0
	23	3	3.0	3.0	12.0
	24	4	4.0	4.0	16.0
	25	13	13.0	13.0	29.0
	26	7	7.0	7.0	36.0
	27	3	3.0	3.0	39.0
	28	9	9.0	9.0	48.0
	29	3	3.0	3.0	51.0
	30	11	11.0	11.0	62.0
	31	4	4.0	4.0	66.0
	32	11	11.0	11.0	77.0
	34	4	4.0	4.0	81.0
	35	7	7.0	7.0	88.0
	36	3	3.0	3.0	91.0
	38	1	1.0	1.0	92.0
	39	4	4.0	4.0	96.0
40	4	4.0	4.0	100.0	
	Total	100	100.0	100.0	

The age frequency chart from Islamabad shows that most pre-eclampsia pregnant women are from the age group of 25years -30years. The age group highly suffering is 25years of age with 13% cases found.

Table 3: Gestational age of patient at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	2	12	12.0	12.0	12.0
	3	88	88.0	88.0	100.0
	Total	100	100.0	100.0	

According to the Islamabad data the gestational age in which pre-eclampsia occurs 88% is 3rd trimester which is according to the standard studies. As pre-eclampsia occurs mostly in 32nd week of the pregnancy. (11)

Table 4: Magnesium sulphate prescribed or delivery advised at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	STG absent	55	55.0	55.0	55.0
	magnesium sulphate present	40	40.0	40.0	95.0
	Delivery	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

This data from Islamabad clearly depicts that the WHO recommended standard for pre-eclampsia is present in only 40% of prescriptions. In 55% prescriptions it is absent. On the other hand 5% are the delivery cases in pre-eclampsia which is more ideal as treatment as proposed by studies. (4)

Table 5: Methyl dopa prescribed at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	12	12.0	12.0	12.0
	Present	88	88.0	88.0	100.0
	Total	100	100.0	100.0	

The trend of prescribing methyl dopa is 88% which is more than MgSO₄. The clear deviation from standard can be observed from the table. Hence methyl dopa is one of the blood pressure lowering medicines given in pregnancy.

Table 6: Nifedipine prescribed at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	48	48.0	48.0	48.0
	Present	52	52.0	52.0	100.0
	Total	100	100.0	100.0	

Nifedipine is present in 52 % of prescriptions which is again more than MgSO₄.

Table 7: Frusemide prescribed at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	71	71.0	71.0	71.0
	Present	29	29.0	29.0	100.0
	Total	100	100.0	100.0	

71% of prescriptions do not contain furosemides. Which shows that trend of prescribing this medicine during pre-eclampsia in Islamabad is only 29%.

Table 8: ISDN prescribed at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	83	83.0	83.0	83.0
	Present	17	17.0	17.0	100.0
	Total	100	100.0	100.0	

At Islamabad only 17% of prescriptions for pre-eclampsia contain isosorbide dinitrate.

Table 9: Captopril prescribed at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	65	65.0	65.0	65.0
	Present	35	35.0	35.0	100.0
	Total	100	100.0	100.0	

At the same vicinity in tertiary care centers 35% prescriptions of pre-eclampsia patient contain captopril for lowering blood pressure. Captopril is a ACE inhibitor prescribed to lower the BP. Its prescribing practice at Islamabad is against the WHO standards. It is contraindicated during 2nd and third trimester of pregnancy (Kleinschnitz, Meuth, S., Kieseier & Wiendl, 2007).

Table 10: Amino infusion prescribed at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	87	87.0	87.0	87.0
	Present	13	13.0	13.0	100.0
	Total	100	100.0	100.0	

Only 13% patients are taking aminoevil infusion to fulfill the deficiency of protein due to proteinuria.

Table 11: Steroids prescribed at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	78	78.0	78.0	78.0
	Present	22	22.0	22.0	100.0
	Total	100	100.0	100.0	

22% of prescriptions at Islamabad contained dexamethasone as important medicine for maturation of baby's lungs.

Table 12: LOPRIN prescribed at ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	76	76.0	76.0	76.0
	Present	24	24.0	24.0	100.0
	Total	100	100.0	100.0	

24% of total prescriptions contain Loprin which is very good at some stages during pregnancy but according to age.

Table 13: Iron sulphate prescribed at ISB to pre-eclampsia

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	98	98.0	98.0	98.0
	Present	2	2.0	2.0	100.0
	Total	100	100.0	100.0	

Only 2% of prescriptions contain iron sulphate to fulfill the iron deficiency and ultimately haemoglobin deficiency.

Table 14: Vitamin B12 or folic acid or normal saline prescribed at ISB to pre-eclampsia

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	90	90.0	90.0	90.0
	Vitamin	6	6.0	6.0	96.0
	Normal saline	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

6% of prescriptions contain vitamin B12 in them to fulfill the folic acid deficiency. Similarly 4% prescriptions contain normal saline drips. However some research says that to a pre-eclampsia patient at ward a normal saline iv should be compulsory part of prescription.

Table 15: What is STG for pre-eclampsia by WHO in ISB

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	They Do not Know	6	6.0	6.0	6.0
	They Know	26	26.0	26.0	32.0
	gynecologist not found	68	68.0	68.0	100.0
	Total	100	100.0	100.0	

In the tertiary care centers of Islamabad the knowledge of the physician about standard treatment given by WHO was only 6%. 26% of the physicians said that they do not know what WHO recommends for pre-eclampsia. Some of them said that they follow RCOG (Royal College of Obstetrics and Gynecology) recommendations and their notebooks are in their syllabi.

Table 16: Frequency Data for Abbottabad (Through SPSS 17)

	<i>Age of patient at AMC</i>	<i>Gestational age of patient at AMC</i>	<i>Magnesium sulphate prescribed or delivery advised at AMC</i>	<i>Methyl dopa prescribed at AMC</i>	<i>Nifedipine prescribed at AMC</i>
Missing	0	0	0	0	0
Valid	100	100	100	100	100
	Frusemide prescribed at AMC	ISDN prescribed at AMC	Captopril prescribed at AMC	Amino infusion prescribed at AMC	Steroid prescribed at AMC
Missing	0	0	0	0	0
Valid	100	100	100	100	100
	Aspirin prescribed at AMC	Iron sulphate prescribed at AMC	Vitamin B12 or folic acid or normal saline prescribed at AMC to preeclampsia	What is STG for pre-eclampsia by WHO in AMC	
Missing	0	0	0	0	0
Valid	100	100	100	100	100

A sample of 100 was taken from Abbottabad for each variable including the prescription sample for standard drug advice check. Physician knowledge assessment includes questionnaires as tools.

Table 17: Age of patient at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	20	4	4.0	4.0	4.0
	21	2	2.0	2.0	6.0
	22	1	1.0	1.0	7.0
	23	1	1.0	1.0	8.0
	24	1	1.0	1.0	9.0
	25	9	9.0	9.0	18.0
	26	8	8.0	8.0	26.0
	27	6	6.0	6.0	32.0
	28	2	2.0	2.0	34.0
	29	6	6.0	6.0	40.0
	30	13	13.0	13.0	53.0
	31	3	3.0	3.0	56.0
	32	5	5.0	5.0	61.0
	33	3	3.0	3.0	64.0
	34	3	3.0	3.0	67.0
	35	7	7.0	7.0	74.0
	36	1	1.0	1.0	75.0
	37	3	3.0	3.0	78.0
	38	3	3.0	3.0	81.0
	39	8	8.0	8.0	89.0
40	5	5.0	5.0	94.0	
41	3	3.0	3.0	97.0	
42	3	3.0	3.0	100.0	
	Total	100	100.0	100.0	

The age frequency chart from Islamabad shows that most pre-eclampsia pregnant women are from the age group of 25years -30years. The age group highly suffering is 30years of age with 13% cases found.

Table 18: Gestational age of patient at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	1	7	7.0	7.0	7.0
	2	6	6.0	6.0	13.0
	3	87	87.0	87.0	100.0
	Total	100	100.0	100.0	

According to the Abbottabad data the gestational age in which pre-eclampsia occurs 87% is 3rd trimester which is according to the standard studies. As pre-eclampsia occurs mostly in 32nd week of the pregnancy. (11)

Table 19: Magnesium sulphate prescribed or delivery advised at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	STG absent	3	3.0	3.0	3.0
	magnesium sulphate present	93	93.0	93.0	96.0
	delivery	4	4.0	4.0	100.0
	Total	100	100.0	100.0	

This data from Abbottabad clearly depicts that the WHO recommended standard for pre-eclampsia is present in only 93% of prescriptions. In only 3% of prescriptions it is absent. On

the other hand 4% are the delivery cases in pre-eclampsia which is more ideal as treatment as proposed by studies. (4)

Table 20: Methyl dopa prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	2	2.0	2.0	2.0
	Present	98	98.0	98.0	100.0
	Total	100	100.0	100.0	

The trend of prescribing methyl dopa is 98% which is more than MgSO₄. But still there will be reasons behind for only 5% more prescribing trend of this medicine. Obviously criterion changes from patient to patient.

Table 21: Nifedipine prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	99	99.0	99.0	99.0
	Present	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

Nifedipine is present in only 1 % of prescriptions which shows negligible prescribing trend for this medicine at AMC.

Table 22: Frusemide prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	100	100.0	100.0	100.0

No prescriptions frusemide. Which shows that trend of prescribing this medicine during pre-eclampsia is nil. This is at standard because frusemide is a diuretic strongly contraindicated in pregnancy (Bilal, Mir, Mahmood and Amin, 2010). It causes hyperkalemia, renal impairment and hypovolemia which is not tolerable in pre-eclampsia.

Table 23: ISDN prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	3	3.0	3.0	3.0
	Present	97	97.0	97.0	100.0
	Total	100	100.0	100.0	

At Abbottabad 97% of prescriptions for pre-eclampsia contains isosorbide dinitrate. It is a vasodilator and blood pressure lowering drug but at the mean time it is pregnancy risk factor C drug. So it should be tried to prescribe less. Furthermore its prescription in pre-eclampsia at AMC shows that it is last choice to save mother life by lowering blood pressure and taking baby life as 2nd priority.

Table 24: Captopril prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	100	100.0	100.0	100.0

At the same vicinity in tertiary care centers no prescription of pre-eclampsia patient contains captopril for lowering blood pressure.

Table 25: Amino infusion prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	100	100.0	100.0	100.0

Amino infusions were not the part of the prescriptions at AMC.

Table 26: Steroid prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	100	100.0	100.0	100.0

Dexamethasone is not the part of the prescription at AMC.

Table 27: LOPRIN prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	100	100.0	100.0	100.0

Loprin is not the part of the prescription at AMC.

Table 28: Iron sulphate prescribed at AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	99	99.0	99.0	99.0
	Present	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

At AMC only 1% of prescriptions contain iron sulphate supplements.

Table 29: Vitamin B12 or folic acid or normal saline prescribed at AMC to pre-eclampsia

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Absent	100	100.0	100.0	100.0

No prescription showed presence of vitamin B12 or normal saline drip addition.

Table 30: What is STG for pre-eclampsia by WHO in AMC

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	They Do not Know	2	2.0	2.0	2.0
	They Know	4	4.0	4.0	6.0
	gynecologist not found	94	94.0	94.0	100.0
	Total	100	100.0	100.0	

Only 4% physicians know the WHO guidelines for pre-eclampsia.

CROSSTABULATION ANALYSIS

Table 1.1

<i>Case Processing Summary</i>						
	<i>Cases</i>					
	<i>Valid</i>		<i>Missing</i>		<i>Total</i>	
	<i>N</i>	<i>Percent</i>	<i>N</i>	<i>Percent</i>	<i>N</i>	<i>Percent</i>
Magnesium sulphate prescribed or delivery advised at ISB * Magnesium sulphate prescribed or delivery advised at AMC * Gestational age of patient at ISB	100	94.3%	6	5.7%	106	100.0%
Magnesium sulphate prescribed or delivery advised at ISB * Magnesium sulphate prescribed or delivery advised at AMC * Gestational age of patient at AMC	100	94.3%	6	5.7%	106	100.0%

A sample of 100 prescriptions was taken each from Islamabad and Abbottabad. Taking into account the standard treatment guidelines of WHO the presence of magnesium sulphate as first choice medicine was detected. A cross tabulation test was applied among the two city's tertiary care centers to judge which city is more following the standards proposed by WHO.

1. Magnesium sulphate prescribed or delivery advised at ISB * Magnesium sulphate prescribed or delivery advised at AMC * Gestational age of patient at ISB Cross tabulation.

count		Magnesium sulphate prescribed or delivery advised at AMC				Total
Gestational age of patient at ISB		STG absent	magnesium sulphate present	delivery		
2	Magnesium sulphate prescribed or delivery advised at ISB	STG absent	0	5		5
		Magnesium sulphate present	1	6		7
	Total		1	11		12
3	Magnesium sulphate prescribed or delivery advised at ISB	STG absent	1	46	3	50
		Magnesium sulphate present	0	33	0	33
		Delivery	1	3	1	5
	Total		2	82	4	88

If we keep the gestational age of patient constant at Islamabad sector and make a comparison between the standard prescriptions for pre-eclampsia patient, following facts come out.

2nd GA Period

1. In the second gestational stage Magnesium sulphate is present in 7 prescriptions at ISB and it is present in 11 prescriptions at ATD. Thus Abbottabad is more near to the standard.

Table 1.2

<i>2. Magnesium sulphate prescribed or delivery advised at ISB * Magnesium sulphate prescribed or delivery advised at AMC * Gestational age of patient at AMC Cross tabulation</i>						
Count						
Gestational age of patient at AMC		<i>Magnesium sulphate prescribed or delivery advised at AMC</i>			Total	
		STG absent	magnesium sulphate present	delivery		
1	Magnesium sulphate prescribed or delivery advised at ISB	STG absent	0	2	1	3
		Magnesium sulphate present	1	1	0	2
		Delivery	1	0	1	2
	Total		2	3	2	7
2	Magnesium sulphate prescribed or delivery advised at ISB	STG absent	1	2	1	4
		Magnesium sulphate present	0	1	0	1
		Delivery	0	1	0	1
	Total		1	4	1	6
3	Magnesium sulphate prescribed or delivery advised at ISB	STG absent		47	1	48
		Magnesium sulphate present		37	0	37
		Delivery		2	0	2
	Total			86	1	87

If we keep the gestational age of patient constant at Abbottabad sector and make a comparison between the standard prescriptions for pre-eclampsia patient, following facts come out.

1st GA Period

1. In the 1st GA of pre-eclampsia patient the Magnesium sulphate is present in 2 prescriptions at ISD and same medicine is present in 3 prescriptions at ATD.
2. In the 2nd GA of pre-eclampsia patient the Magnesium sulphate is absent in 3 prescriptions of ISD and same medicine is absent in 2 prescriptions of ATD.
3. Similarly there are two delivery cases each in ISD and ATD for pre-eclampsia patients.

2nd GA Period

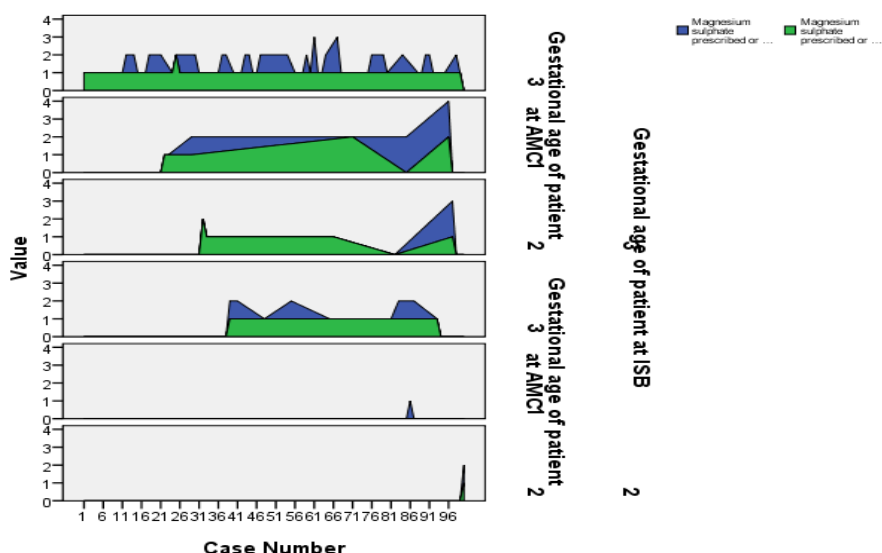
1. In the 2nd GA of pre-eclampsia patient at ISD there is 1 prescription containing Magnesium sulphate and 4 prescriptions contain Magnesium sulphate at ATD.

- In the 2nd GA of pre-eclampsia patient at ISD there are 4 prescriptions in which there is no Magnesium sulphate and 1 prescription at ATD in which magnesium sulphate is absent.
- There is one delivery prescribed each in ATD and ISD.

3rd GA Period

- In the 3rd GA of pre-eclampsia patient at ISD there are 37 prescriptions in which Magnesium sulphate is present and 86 prescriptions at ATD in which Magnesium sulphate is present.
- In the 3rd GA of pre-eclampsia patient at ISD there are 48 prescriptions in which Magnesium sulphate is absent and no prescription at ATD in which Magnesium sulphate is absent.
- There are two delivery cases at ISD and one such case at ATD.

Overall the Islamabad sector is prescribing according to the recommendations of WHO only 45% and Ayub medical complex Abbottabad is prescribing according to the standards introduced by WHO for pre-eclampsia patient with no other ailment is 96%. AMC Abbottabad is more near to general standards of World Health Organization.



GRAPH 1.2

This graph shows the Magnesium sulphate or delivery prescribing intensity at Islamabad versus same treatment prescribing intensity at Abbottabad AMC. The area under the curve

shows prescribing intensity of the Standard. The blue box shows such practice in Islamabad and the green box shows such practice at AMC Abbottabad.

It is clear from graph that most prescribing practice of Magnesium sulphate is in Abbottabad AMC and similarly most cases belong to the third trimester of pregnancy.

DISCUSSION

World Health Organization puts forward that Magnesium sulphate is the most necessary anti convulsant choice during pre-eclampsia to save the patient from entering into eclampsia stage. Similarly they further add that provided knee reflux is absent calcium gluconate is medicine of choice given every hour during pre-eclampsia. Further more dihydralazine is medicine of choice for lowering blood pressure.

Now in this project report I am determined to find out in two major Pakistan's city's tertiary care centers that how much they comply with these globally accepted standards. The patient ailment under consideration is pre-eclampsia during pregnancy with no other disease.

In my study and research on Islamabad tertiary care centers I found that only 33% of patients are receiving Magnesium sulphate and no patient is getting calcium gluconate or dihydralazine in its prescription at Pakistan Institute of Medical Sciences. However in the same institution the trend of prescribing nifedipine and adalact is much more in the same institution. One major reason behind is at PIMS physicians say that we do not follow WHO recommendations as these are not in our syllabi and they follow RCOG rules for prescribing medicine to the patient with pre-eclampsia. Similarly at SHIFA International they are prescribing Magnesium sulphate to 43% of prescriptions plus 10% of delivery or abortion cases. So 53% compliance I calculated at this health center. At this hospital the very quick trend observed is of poly pharmacy for multivitamins. The doctor's knowledge is no mater there but still they are unaware of STGs proposed by WHO. In the third hospital of Islamabad that is federal services hospital, they are prescribing the standard 45.7% plus 5.7% delivery cases. There is a great habit of prescribing frusemide and methyl dopa for lowering blood pressure. There doctor's knowledge about WHO standards was valid and they were implementing it well but at the mean time they have never studied WHO guidelines for standard treatment protocols. Thus in the Islamabad sector there are total of 45% compliance with the WHO guidelines with 88% cases of pre-eclampsia in the third trimester.

Whereas in Abbottabad AMC they are prescribing 93% Magnesium sulphate and 4% delivery cases. Thus their compliance is 97% for prescribing standards with 87% of third trimester cases. There was no prescription containing calcium gluconate or dihydralazine. The physicians were unaware of the WHO guidelines. There were no charts of WHO guidelines in any city's center. 98% prescriptions contained methyl dopa for lowering blood pressure while 97% prescriptions contained isosorbide dinitrate.

Thus if we compare the two cities though all are ignorant of what exactly WHO recommends for pre-eclampsia but again according to their seniors advice and experience Abbottabad AMC is very much near to the standards. It is proudly said that the women at such settings would be definitely less prone to develop eclampsia after pre-eclampsia. It is sadly thought question that why in the developing capital city of Pakistan that is Islamabad we are 50% away from the standards. Obviously there are some good reasons behind and there some laps for such results which are needed to be vanished.

CONCLUSION

The ultimate conclusion that comes out is that we are far away from the WHO standards and the thing to ponder is our main capital city is more devoid of health's criterion. Though thousand of seminars are conducted daily still there is no punch on the right track. Consideration is not there where it is needed. Right now its not too late. We should quickly reform the deformed condition. Actually the laps are at the top site first. That is the government area where they are not struggling to make such WHO guidelines as regular part of the physician's life. Such books should be the part of gynae syllabi those are recommended by WHO. The other researches to read and to seek knowledge from seniors experience should be a second choice.

At FGSH there is a written dosage form chart on the walls which is a good sign but at the mean time **FRUSEMIDE** is given to pregnant women to lower their blood pressure which is severely contraindicated in pregnancy. The practice of prescribing isosorbide dinitrate, frusemide and captopril is against the standards and against mother and child health.

RECOMMENDATIONS

- At the top level of Government World Health Organization's accepted syllabi should be introduced.

- The practice routine of taking advice from a pharmacist at each health care setting about the STGs should be preferred as pharmacist is the person who is an expert of medicine.
- Seminar, work shops and counseling programs should be launched regularly.
- Monthly meetings and education courses for physicians and pharmacists should be conducted to inform them of latest practices and researches.
- Such activities should be done by the government through electronic media to create awareness among the women.
- Research work in the mean time should be promoted.
- Prescribing a mother with drugs like frusemide, captopril and ISDN shows that no matter baby's life is in danger; we are neglecting the health and life of a mother as well.

ANNEXATION

BY WORLD HEALTH ORGANIZATION

2007

Treatment Guidelines:- PRE-ECLAMPSIA/ECLAMPSIA SYNDROME

Management

Eclampsia

1. Magnesium sulphate, IV infusion, 4 g in 250 mL dextrose 5% (or sodium chloride solution 0.9%) at a rate not exceeding 3 mL per minute
2. Calcium gluconate 10%, IV, 10 mL given slowly at a rate not exceeding 5 mL per minute

This treatment is recommended for

Imminent eclampsia

Eclampsia

Severe pre-eclampsia, particularly in the presence of complications Check knee reflexes, and if absent, give calcium gluconate

3. Dihydralazine, IV, 0.625 mg every half hour until diastolic blood pressure <100 mmHg.
Diastolic blood pressure \geq 120 mg Hg (short term treatment for hypertension)

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ABBREVIATIONS

AMC	Ayub Medical Complex
ATD	Abbottabad (district)
FGSH	Federal Government Services Hospital
GA	Gestational age
HELLP	Hemolysis Elevated Liver enzyme Low Platelet count
ISDN	Isosorbide Dinitrate
PIMS	Pakistan Institute of Medical Sciences
RCOG	Royal College Of Obstetrics And Gynecology
SIH	Shifa International Hospital
STGs	Standard Treatment Guidelines
WHO	World Health Organization