Original Article

Frequency of Risk Factors of Severe Obstetric Morbidity

Erum Nawaz, Gulfishan Haq, Farah Deeba, Namia Nazir, Anush Rais and Sanam Chachar

ABSTRACT

Objective: To study the frequency and factors responsible for Severe Obstetric Morbidity (SOM) presenting at Civil Hospital, Karachi.

Study Design: Descriptive Cross-Sectional Study.

Place and Duration of Study: This study was conducted at the Department of Obstetrics & Gynecology (Unit III)-Civil Hospital, Karachi from September 16, 2021to March 15, 2022.

Materials and Methods: All patients who fulfilled the inclusion criteria and visited to Civil Hospital, Karachi were included in the study. Informed consent was taken after explaining the procedure, risks, and benefits of the study. All risk factors of SOM (severe pre-eclampsia, eclampsia, HELLP syndrome, severe hemorrhage, and severe sepsis) were assessed by a questionnaire filled by patients used to record basic bio data, sociodemographic details, disease particulars and inferences obtained from clinical evaluation and ultra-sonography findings. Study data was entered in pre-designed proforma.

Results: Mean ± SD of age was 27.76±5.091 years. Severe obstetric morbidity was found in 153 (70.5%) patients among them pre-eclampsia was noted in 81 (37.3%) patients, eclampsia in 102 (47.0%), HELLP syndrome in 64 (29.5%), severe hemorrhage 30 (13.8%) while severe sepsis was noted in 85 (39.2%) patients.

Conclusion: It is to be concluded that study demonstrate high proportion of severe obstetric morbidity and eclampsia was noted as most common responsible of SOM followed by severe sepsis and pre-eclampsia. Further large-scale work is recommended for validation of current findings.

Key Words: Severe maternal morbidity, hemorrhage, intensive Care, obstetric

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INTRODUCTION

Severe obstetric morbidity (SOM) is now being recognized as a separate entity. It includes near miss patients. It refers to patients with an acute organ system dysfunction, which, if not treated appropriately, could result in death. SOM is a condition during gestation, labor and post-delivery in which survival of patient is by chance or care given[1-3].

The death to severe morbidity ratio may reflect the standard of maternal care[4]. International studies have reported severe obstetric morbidity to maternal death ratios ranging from 5:1, 30:1[5] up to 118:1[6]. They are a better source of information than mortality statistics as women themselves may be the source of such information[7].

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Previous studies defined serious maternal condition due to common diseases in pregnancies like bleeding or hypertension in pregnancy[8], while some use treatment given to disease to define maternal condition or some use involvement multiple organ system to defined severe maternal condition[9,10]. Statistics obtained will help in selecting women that requires special care.

The prevalence of serious medical condition in developed countries like the Netherlands have been documented upto 7.1/1000 deliveries[1]. A meta-analysis showed that prevalence of SOM in United States was 1% as compared to 3.01%-9.05% in some developing countries[11]. In a population-based cohort survey in six West African countries, it was found to be 6.7/100 livebirths[5]. Prevalence was reported as 17% in public sector hospitals and 4.2% in private facilities in a study from Indonesia[12].

As a developing country, Pakistan has to face the challenges of poverty, illiteracy and low assets. Pakistan has signed millennium declaration and will execute reduction in maternal mortality ratio upto140. Study on SOM cases guide regarding needs of intensive care, diagnosing deficiencies and will also show favourable outcome of intensive obstetric care. A study by Mazhar SB conducted at 16 healthcare sites across Pakistan, reports factors (associated with SOM) such as postpartum hemorrhage (48.5%), hypertensive disorders (25.8%), and ruptured uterus (6.8%), in

addition to others, to be common among women with poor obstetric outcome[13]. Another by Bibi S, claims that among patients encountering SOM, 73% of women belong to rural areas, and 96% are un-booked while history of surgical intervention is present in 87% of cases. Hypertensive disorders of pregnancy (50%) and sepsis (17%) are the two main obstetrical conditions responsible for maternal illness. Respiratory failure (57%) and haemodynamic instability (40%) are the major indications for ICU transfer[14]. However, limited recent evidence is available for the particular locality (southern Sindh) and hence the local incidence and predictors are not clearly known. This study hopes enhance knowledge about the incidence.

MATERIALS AND METHODS

Descriptive Cross-Sectional Study. Patients visiting Department of Obstetrics & Gynecology (Unit III)-Civil Hospital, Karachi. A total of 217 cases will be studied. Taking Bibi S et al [14], as parent article for prevalence of factor (sepsis) as 17%.All consenting pregnant (singleton full-term pregnancy) women (aged 20 to 40 years), admitted at the study setting (booked or emergency admission) for obstetric care shall be included in the sample after written informed consent. Patients with hemorrhage requiring resuscitation or acute blood transfusion, Patients requiring intensive care admission (prior to obstetric surgery) ,Patients requiring pre-term pregnancy termination, Patients with jaundice due to hepatitis A, Non-consenting patient were excluded.

All risk factors of SOM (gestational age, type of delivery, birth weight, hemorrhage, severe eclampsia, and pre- eclampsia, HELLP syndrome, and severe sepsis) were also be noted. Study was conducted after approval by institutional research ethics committee. Informed consent was taken from all respondents. Confidentiality of all the information given by respondents will be ensured with anonymity of the respondent. Data analyzed using Microsoft Excel 2016 and SPSS v. 21. Frequency or percentages calculated for qualitative variables (type of delivery, presence, and absence of factors). Mean + SD was calculated for quantitative variables (e.g., gestational age, maternal age, maternal and birth weight). Normality of the data was assessed via Shapiro wilk test. Regression analysis was done to assess individual effect of each factor and Chi square test was applied to check association between factors and SOM outcome. Keep P-value ≤ 0.05 as significant

RESULTS

In this study 217 patients were included to assess the frequency and factors responsible for severe obstetric morbidity (SOM) and the results were analyzed as:

The distribution of continuous variables was tested by applying Shapiro-Wilk test, maternal age (P=0.0001), gestational age (P=0.0001), maternal weight (P=0.0001), birth weight (P=0.009) and parity (P=0.0001).

The maternal age of the patients ranged from 20 to 40 years with a median of 26 with interquartile range 8 and C.I (27.08----28.44).

The gestational age of the patients ranged from 29 to 41 weeks with a median of 35 with interquartile range 5 and C.I (34.63----35.40).

The maternal weight of the patients ranged from 55 to 101 kg with a median of 70 with interquartile range 15 and C.I (71.76----74.61).

The birth weight of the patients ranged from 1.50 to 4.20 kg with a median of 2.90 with interquartile range 0.80 and C.I (2.76----2.90)

The parity of the patients ranged from 0 to 6 with a median of 1.0 with interquartile range 3 and C.I (1.51----1.96).

Socioeconomic status showed that 11 (5.1%) patients belong to lower class, 147 (67.7%) from middle class while upper class was noted in 59 (27.2%) patients.

In distribution of type of delivery, 55 (25.3%) had normal vaginal delivery, cesarean delivery was noted in 153 (70.5%) while assisted vaginal delivery was noted in 9 (4.1%) as shown in table 1.

Severe obstetric morbidity was found to be in 153 (70.5%) patients as shown in figure 1.

Table No.1: Frequency of Type of Delivery (n=217)

Type of Delivery	Frequency	Percentage
Normal Vaginal Delivery	55	25.3%
Cesarean Delivery	153	70.5%
Assisted Vaginal Deliver	9	4.1%

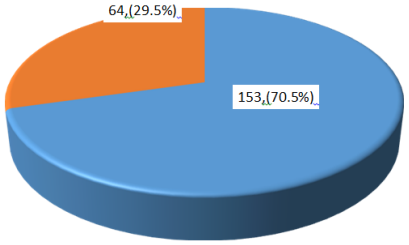

Figure No.1: Frequency of Severe Obstetric Morbidity n=217

Severe pre-eclampsia was found to be in 81 (37.3%) patients. Eclampsia was found to be in 102 (47.0%) patients. HELLP syndrome was noted in 64 (29.5%) patients.

Severe hemorrhage was found to be in 30 (13.8%) patients.

Severe sepsis was found to be in 85 (39.2%) patients.

Association between severe obstetric morbidity (SOM) and factors responsible for (SOM) was found to be significant i.e., P-value (0.0001), with R square (0.578) and adjusted R square (0.568) shown in table 2.

Table No. 2: Association Between Severe Obstetric Morbidity and factors (n=217)

Factors		Severe Obstetric Morbidity		P-Value
		Yes	No	
Severe Pre-Eclampsia	Yes	81 (37.3%)	0 (0.0%)	0.0001
	No	72 (33.2%)	64 (29.5%)	
Eclampsia	Yes	102 (47.0%)	0 (0.0%)	0.0001
	No	51 (23.5%)	64 (29.5%)	
HELLP Syndrome	Yes	64 (59.5%)	0 (0.0%)	0.0001
	No	89 (41.0%)	64 (29.5%)	
Severe Hemorrhage	Yes	30 (13.8%)	0 (0.0%)	0.0001
	No	123 (56.7%)	64 (29.5%)	
Severe Sepsis	Yes	85 (39.2%)	0 (0.0%)	0.0001
	No	68 (31.3%)	64 (29.5%)	
Applied Chi-Square test				
Regression Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.760	0.578	0.568	0.300

Coefficient	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.380	0.063		-6.011	0.0001
Severe Pre-Eclampsia	0.251	0.046	0.266	5.493	0.0001
Eclampsia	0.349	0.046	0.382	7.523	0.0001
HELLP Syndrome	0.175	0.048	0.175	3.644	0.0001
Severe Hemorrhage	0.088	0.062	0.066	1.424	0.156
Severe Sepsis	0.220	0.047	0.235	4.673	0.0001

DISCUSSION

Obstetric morbidity has been important topic of audits and clinical governance[15]. Unlike maternal mortality in developed countries, it has been reduced in recent years and, therefore, the analysis of acute maternal morbidity, it has been added to confidential investigations into the causes of maternal deaths. The main disadvantage at this time is the lack of universal definitions of severe acute maternal morbidity. Maternal death inquiries is also now including some in their audit[16].

Maternal bleeding in first place, high blood pressure states in pregnancies in second number and infection on third place, is the order of morbidity in most countries. The initial few minutes in hospital are important for survival of patients .the milineum goals in mexico was still far from the goals achieved[15-17].

The common complications we have are severe postpartum hemorrhage 37%, and severe preeclampsia 36% and thirdly sepsis; this work is only the tip of the Iceberg of an institution that works every day, and our results can be used for later work and continue to improve obstetric and newborn care; with high level of care required[16,17].

High blood pressure during pregnancy need to be managed by joined care by physician and obstetrician. early intervension during pregnancy and after delivery should be adopted strategy. The MMs given is this report were mostly due to stroke, hypertension disorders of pregnancy[18]. Changes in the blood pressure, pulse rate and oxygen saturation should not be ignored[19].

Prioritization, early intervention and proper patient handover will improve outcome[18,19]. In our study, mean age was 27.76±5.091 years. Bibi S, et al noted age to be 29.7±5.9 years[14]. Qureshi R, et al noted the median age of patients was 34 years[20].

Present study showed distribution of type of delivery as 55 (25.3%) patients had normal vaginal delivery, cesarean delivery was noted in 153 (70.5%) while 9 (4.1%) had done with assisted vaginal delivery patients. A study by Mazhar SB, et al noted vaginal delivery in 45 (34.1%) patients, Cesarean section in 65 (49.2%) while other mode of delivery (ectopic, abortion, unknown, not delivered) in 22 (16.7%) patients with severe maternal morbidity[13].

In current study, severe obstetric morbidity was found in 153 (70.5%) patients. Mazhar SB, et al had found among 13,175 women with 132 severe maternal outcome patients & [94 (0.7%) near miss and 38 (0.3%) died][13].

In this study, factors responsible for severe obstetric morbidity are severe pre-eclampsia was found in 81 (37.3%) patients, eclampsia in 102 (47.0%), HELLP syndrome in 64 (29.5%), severe hemorrhage 30 (13.8%) while severe sepsis was noted in 85 (39.2%). Worldwide, the leading causes of severe morbidity are hemorrhage and pregnancy related hypertensions or eclampsia/pre-eclampsia (PE)[21]. A study showed that the leading cause of maternal morbidity as severe pre-eclampsia, hemorrhage, pregnancy induced hypertension (PIH), sepsis and eclampsia 27.04%, 14.47%, 11.32%, 10.69% and 10.06% respectively[22]. Studies from India showed maternal morbidity leading to transfer to ICU were pre-eclampsia (35%), hemorrhage (35%) and sepsis (13%) and other medical conditions (11%)[23,24].

CONCLUSION

High proportion of severe obstetric morbidity and eclampsia was noted as most common responsible of SOM followed by severe sepsis and pre-eclampsia. Further large-scale work is recommended for validation of current findings

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Zwart JJ, Richters JM, Ory F, de Vries J, Bloemenkamp K, van Roosmalena J. Severe maternal morbidity during pregnancy, delivery and puerperium in the Netherlands: a nationwide population-based study of 371 000 pregnancies. Br J Obstet Gynecol 2008;115:842-50.
2. Mantel GD, Buchmann E, Helen Rees, Pattinson RC. Severe acute maternal morbidity: a pilot study of a definition for a near-miss. Br J Obstet Gynaecol 1998;105:985-90.
3. Filippi V, Brugha R, Browne E, Gohou V, Bacci A, de Brouwere V, et al. Obstetric audit in resource poor settings: lessons from a multi-country project auditing 'near miss'obstetrical emergencies. Health Policy Plan 2004;19:57-66.
4. Baskett TF. Epidemiology of obstetric critical care. Best Pract Res Clin Obstet Gynaecol 2008;22: 763-74.
5. Prual A, Bouvier-Colle MH, de Bermis L, Breart G. Severe maternal morbidity from diret obstetric causes in West Africa: incidence & case fatality rates Bull World Health Org 2000;78:593-602.
6. Waterstone M, Bewley S, Wolfe C. Incidence, and predictors of severe obstetric morbidity: casecontrol study. BMJ 2001;322:1089-93.
7. Mustafa R, Hashmi H. Near-Miss Obstetrical Events and Maternal Deaths. J Coll Physicians Surg 2009;19:781-85.
8. Baskett TF, O'Connell CM. Severe obstetric maternal morbidity: a 15-year population- based study. J Obstet Gynaecol 2005;25:7-9.
9. Reichenheim ME, Zylbersztajn F, Moraes CL, Lobato G. Severe acute obstetric morbidity (near-miss): a review of the relative use of its diagnostic indicators. Arch Gynecol Obstet 2009;280:337-43.
10. Say L, Pattinson RC, Gülmezoglu AM, WHO systematic review of maternal morbidity and mortality: the prevalence of severe acute maternal morbidity (near miss). Reprod Health 2004;1:3.
11. Wilson RE, Salihu HM. The paradox of obstetric "near misses": converting maternal mortality into morbidity. Int J Fertil Womens Med 2007;52: 121-7.
12. Adisasmita A, Deviany PE, Nandiaty F, Stanton C, Ronsmans C. Obstetric near miss and deaths in public and private hospitals in Indonesia. BMC Pregnancy Childbirth 2008;8:10.
13. Mazhar SB, Batool A, Emanuel A, Khan AT, Bhutta S. Severe maternal outcomes, and their predictors among Pakistani women in the WHO Multi-country Survey on Maternal and Newborn Health. Int J Gynaecol Obstet. 2015;129(1):30-3.
14. Bibi S, Memon A, Sheikh JM, Qureshi AH. Severe acute maternal morbidity and intensive care in a public sector university hospital of Pakistan. J Ayub Med Coll Abbottabad 2008;20(1):109-12.
15. Ronsmans C. Severe acute maternal morbidity in low-income countries. Best Pract Res Clin Obstet Gynaecol 2009;23(3):305-16.
16. van Roosmalen J, Zwart J. Severe acute maternal morbidity in high-income countries. Best Pract Res Clin Obstet Gynaecol 2009;23(3):297-304.
17. Osungbade KO, Ige OK. Public health perspectives of preeclampsia in developing countries: implication for health system strengthening. J Pregnancy 2011.
18. Freedman LP, Graham WJ, Brazier E, Smith JM, Ensor T, Fauveau V, et al. Practical lessons from global safe motherhood initiatives: time for a new focus on implementation. Lancet 2007;370(9595): 1383-91.
19. Robillard PY, Hulsey TC, Boukerrou M, Bonsante F, Dekker G, Iacobelli S. Linear association between maternal age and need of medical interventions at delivery in primiparae: a cohort of 21,235 singleton births. J Matern Fetal Neonatal Med 2018;31(15):2027-35.
20. Qureshi R, Irfan Ahmed S, Raza A, Khurshid A, Chishti U. Obstetric patients in intensive care unit: Perspective from a teaching hospital in Pakistan. JRSM open 2016;7(11):20.
21. Wilson RE, Salihu HM. The paradox of obstetrics "nearmisses": converting maternal mortality into morbidity. Int J Fertil Womens Med 2007;52(2-3): 121-7.
22. Upadhyaya I, Chaudhary P. Severe acute maternal morbidity and intensive care in paropakar maternity and women's hospital. NJOG 2013;8(2): 38-41.
23. Zhang WH, Alexander S, Bouvier-Colle MH, Macfarlane A. Incidence of severe pre- eclampsia, postpartum haemorrhage and sepsis as a surrogate marker for severe maternal morbidity in a European population-based study: the MOMS-B survey. Br J Obstet Gynaecol 2005;112:89-96.
24. Chhabra P, Guleria K, Saini NK, Anjur KT, Vaid NB. Pattern of severe maternal morbidity in a tertiary hospital of Delhi, India: a pilot study. Trop Doct 2008;38(4):201-4.