

A Retrospective, comparative analysis of the trends of near miss mortality and maternal mortality in a rural tertiary care centre

Rumi Bhattacharjee¹, Vishal Sheth², Ritesh Joshi³

Department of Obstetrics And Gynaecology, Pramukhswami Medical College, Bhaikaka University, Karamsad, Anand, Gujarat.

Background of study

- Severe acute maternal morbidity is emerging as an important indicator for evaluating maternal health world wide.
- The MMR in India is 99/100000 Live births as on 2020.
- According to WHO definition, 2009, maternal near miss is a woman who nearly died but survived a complication during pregnancy child birth or within 42 days after terminating pregnancy.
- Since near miss women have traversed the same course of terminal events as maternal deaths and are themselves available for interrogation, it is a better method of reliable and statistically relevant quantitative analysis.

Aim & Objective

- To determine the prevalence and trend of - maternal near miss mortality cases, maternal near miss ratio, mortality index, maternal mortality rate and near miss to maternal death ratio.
- To compare near miss morbidities with maternal deaths with respect to demographics, disease profile, obstetric and perinatal outcome.

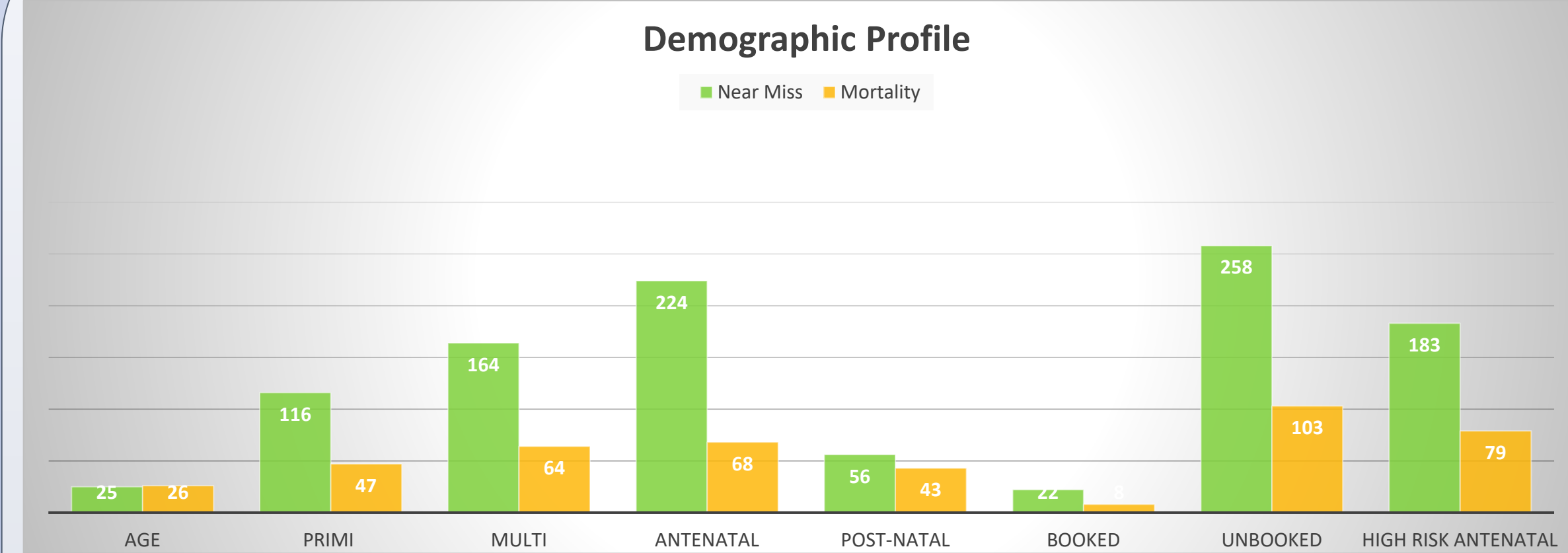
Design & Methods

- **Study location:** Shree Krishna Hospital
- **Study Design:** Retrospective observational analytic study
- **Study period:** January 2014 to December 2021.
- **Data source:** Medical records of both labor room registers and ICU files
- Hospital ethical committee approval taken.
- Observational descriptive statistics, Chi square / Fisher test were applied with help of SPSS 28.0.2.

Results

- Number of patients with threatened conditions : 391
- Near miss cases : 280
- Maternal mortality cases : 111
- Maternal mortality rate : 1215 per 100000 live births
- Maternal mortality index : 28%
- The maternal death to near miss ratio : 2.5:1

Figure 1:



Near miss patients in 3rd trimester were higher (70%) than in mortality cases(41%). A large bulk were post-partum(p=0.009).

Table 1. Spectrum Of Primary Causes For Near Miss And Maternal Death :

Diagnosis	Near miss (280)		Mortality (111)		Total	Prevalence ratio	Mortality index	P value
Hemorrhage :	83	29.6%	41	36.9%	124	0.66	33	0.23
Ectopic	1	0.3%	2	1.8%	3	0.33	66	
Abortion	3	1.07%	2	1.8%	5	0.6	40	
Perforation of uterus	0	0	1	0.9%	1	0	100	
Abruption	21	7.5%	9	8.1%	30	0.7	30	
Placenta previa	23	8.2%	4	3.6%	27	0.85	14	
PPH (atonic/traumatic)	35	12.5%	23	20%	58	0.60	39	
Hypertensive disorders	103	36%	22	19.8%	125	0.82	17	0.007 CI (0.04-0.02)
Uterine rupture	25	8.9%	2	1.8%	27	0.93	7.4	
Inversion of uterus	3	1.07%	1	0.9%	4	0.75	25	0.01
Sepsis / Seasonal Infection	28	10%	24	21.6%	52	0.54	46	0.8 0.004
Dystocia	10	3.5%	6	5.4%	16	0.63	37	0.4
Indirect Cause:	34	12.1%	19	17%	53	0.64	35	0.9
Cardiac	17	6.07%	8	7.2%	25	0.68	32	
Hepatic	8	2.8%	5	4.5%	13	0.62	38	
Respiratory	5	1.7%	3	2.7%	8	0.63	37	
Renal	2	0.7%	2	1.8%	4	0.5	50	
CNS	2	0.7%	1	0.9%	3	0.67	33	

- The most common cause leading to near miss was **hypertensive disorders** and that for mortality was **hemorrhage**.

Figure 2 : High risk factors

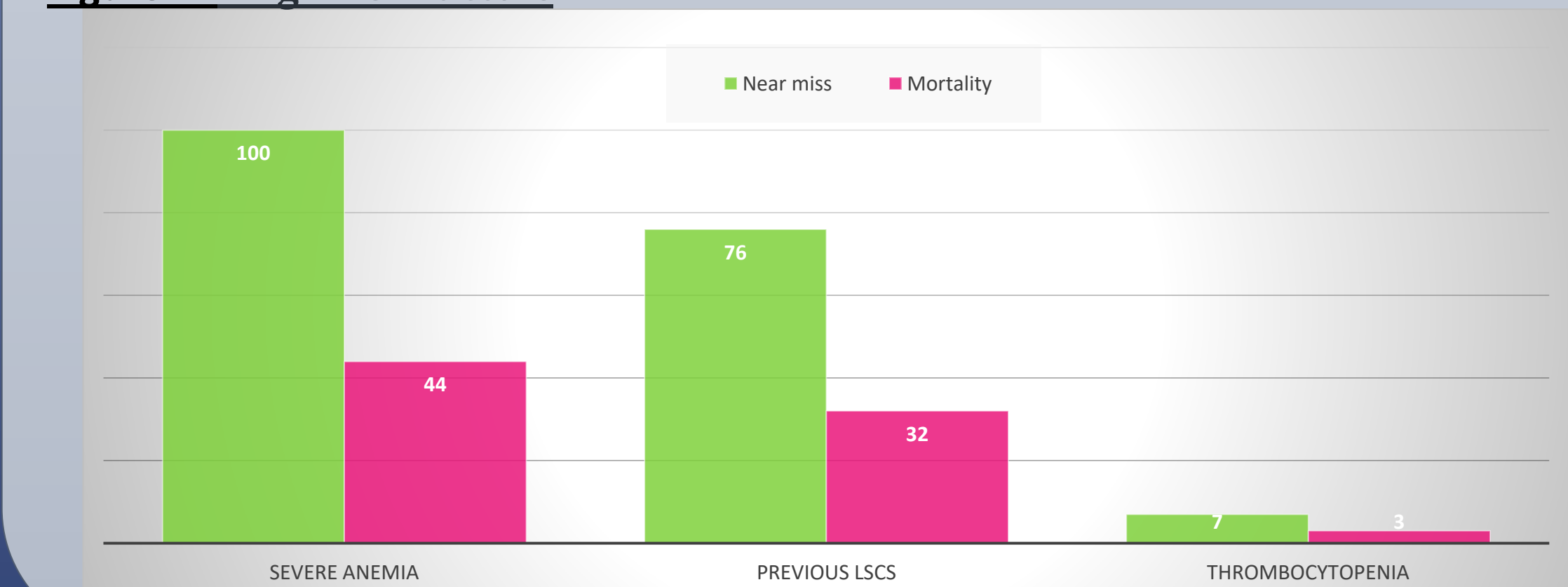
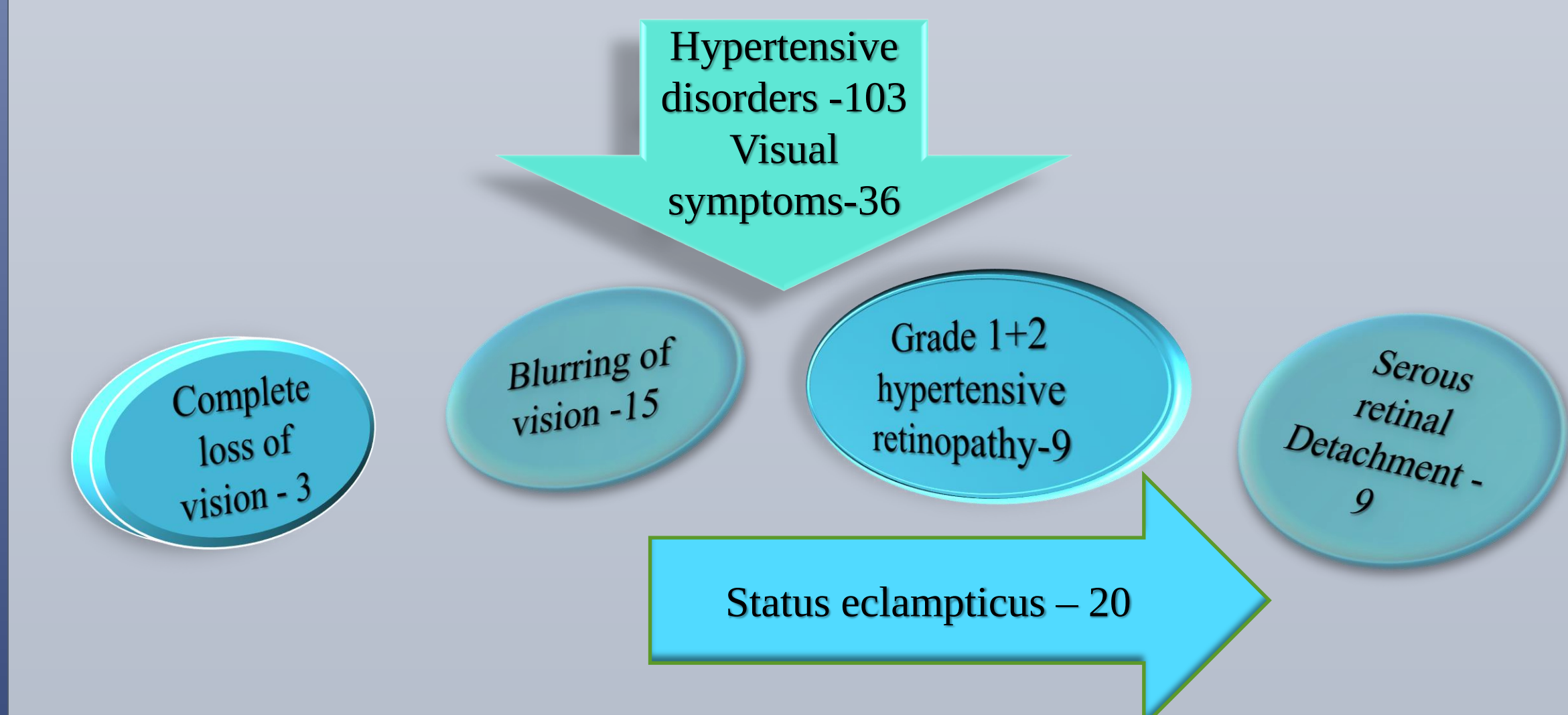


Table 2. Critical Surgical Interventions :

Identities	Near miss N= 280	%	MMR N=111	%	Total	P.value
Obstetric Hysterectomy	46	16.43%	10	9.01%	56	0.07
Relaparotomy	7	2.5%	3	2.7%	10	0.3
Cervicovaginal exploration/Repair	22	7.86%	10	9.01%	32	0.7
Exploratory laparotomy /Repair of uterus/ Others	17	6.07%	4	3.60%	21	0.3

Table 3. comparison with other studies :

Sr. No.	Study	Near miss incidence Per 1000 live births	MMR Per 100000 live births	Leading cause for near miss	Leading cause for mortality	Mortality index	Maternal near miss : mortality ratio
1.	Amita Pandey et al	120	4684	HTN+ Haemorrhage	Haemorrhage +HTN	28%	2.6:1
2.	Bansal et. al. Chhattisgarh	11.9	580	Haemorrhage	Haemorrhage	32%	2.05:1
3.	Nigeria	26.8	1252	Haemorrhage	HTN	31%	2.1:1
4.	Our Study	30	1176	HTN	Haemorrhage	28%	2.5:1
5.	North India ,Saifai Etawah	16.6	891	HTN	Haemorrhage	0.34	1.9:1



A significant number of near miss patients with HDP developed visual symptoms.

Discussion

- Approximately 830 women die globally due to pregnancy related causes everyday especially in developing countries.
- As the samples size of near miss cases is more than maternal deaths, review of near miss cases has the potential to throw light on the quality of obstetric care provision in a more appropriate manner.
- The maternal near miss incidence ratio in our study was 30 per 1000 live births.
- 73% of near miss and 93% mortality cases required ICU admissions.
- More than 40% patients in both groups received massive blood transfusion.
- Perinatal outcome as comparable in both groups.

- The large number of postpartum patients in the mortality group signify poor quality of obstetric care received at PHC, CHC level, unattended home deliveries or delayed referral.

- More than 92% of patients experiencing severe outcomes were unbooked emergencies.

- Mortality index is a reflection of the quality of obstetric care received by a women. Higher the index poorer is the quality of care. The Mortality Index in our study was **28%**.

Limitations: Retrospective nature of the study, simple audit, single center.

Second half of study heavily influenced by covid-19 pandemic

Strength: High critical patient load.

Conclusion

It can safely be suggested that strengthening the tertiary care centers with staff, material and equipment across the country can reduce maternal mortality even in badly managed cases refereed from government or private setups.

References

- 1) Pradhan Mantri Matru Vandana Yojana. Available from URL: http://www.wcd.nic.in/sites/default/files/PMMVY%20Scheme%20Implemetation%20Guidelines%20_0.pdf. Accessed on 10-10-2018
- 2) Janani Suraksha Yojana (JSY). <https://www.nhp.gov.in/janani-suraksha-yojana-jsy-pg>
- 3) Bansal M,Lagoo J, Pujari K,Study of near miss in obstetrics and maternal mortality in Bastar, Chhattisgarh, India, Int J Reprod contracept obst gynaecol. 2016;5:620-623. [Google scholar]
- 4) Roopa PS, Verma S, Rai L, Kumar P, Pai MV, Shetty “Near miss” obstetric events and maternal deaths in a tertiary care hospital: an audit. J. <https://doi.org/10.1155/2013/393758>. J Pregnancy. 2013;2013:393758. [PMC free article] [PubMed] [Google Scholar]