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MATERNAL DEATHS IN OBSTETRICS (TERTIARY CARE HOSPITAL)

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Abstract

OBJECTIVE: *This study was to determine which women who delivered birth in 2024 had maternal deaths.*

STUDY DESIGN AND SETTING: *Retroactive descriptive study was carried out at Shaikh Zayad Women's Hospital's gynecological department in Larkana, which operated for a full year, from January 2024 to December 2024.*

METHODS: *Fifty-five women, aged 22–49, who were in labor or pregnant, passed away. Prim gravida, multigravida, preterm (24–36 weeks), and term (37–42 weeks in the third trimester). Each item of data was examined using SPSS version 19, a statistical analysis tool. An independent t-test was applied to compare continuous data on facility deaths and brought-dead pregnant women, while a chi-square test was applied to analyze categorical variables.*

RESULT: *In 2024, there were 2387 deliveries overall, 1348 abdominal deliveries by cesarean section, and 1039 spontaneous vaginal births. There were also 2836 admissions to the obstetrics ward emergency department or outpatient department for pregnant women. In 2024, there were 55 maternal fatalities, 41 institutional deaths, and 14 stillbirths. There were twelve cases of hypertensive disorders during pregnancy (APE-2, IPE-5, PPE-5)–obstetric embolism (Pe pulmonary embolism-2, septic embolism)–and twenty-two deaths from hypovolemic shock, thirteen with PPH, and nine with APH.*

CONCLUSION: *In 2024, 2,387 deliveries, 1,348 cesarean sections, and 1,039 spontaneous vaginal births occurred, with 2,836 pregnant women admitted and 55 maternal mortality rates, leading to hypertensive disorders*

INTRODUCTION:

The World Health Organization's (WHO) definition of maternal mortality is death that occurs during pregnancy or within 42 days following pregnancy termination. Unintentional or incidental reasons are not linked to the cause of death, which is independent of the length and location of the pregnancy and can be caused by any ailment associated with or made worse by the pregnancy or its treatment. Pre-eclampsia and eclampsia, hemorrhage, infection or sepsis, pulmonary or other embolisms, cardiomyopathies, delivery difficulties, and botched abortion are the main causes of maternal death.[1] some parts of the world have high rates of maternal fatalities, which emphasizes the wealth gap and reflects disparities in access to high-quality healthcare. In 2020, the MMR in high-income nations was 13 per 100,000 live births, but in low-income countries it was 430 per 100,000 live births .[2]

Complications during and after pregnancy and childbirth are the leading cause of death for

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women. The majority of these issues arise during pregnancy and can be avoided or treated. Pregnancy can exacerbate preexisting issues, particularly if they are not addressed as part of the woman's care. Nearly 75% of the maternal deaths are caused by the following major problems. [2,3] Severe bleeding, primarily following childbirth, Infections (often following delivery), Pregnancy-related high blood pressure (pre-eclampsia and eclampsia), delivery-related problems, Unsafe abortion.

Approximately 87% (253,000) of the anticipated global maternal fatalities in 2020 occurred in Sub-Saharan Africa and Southern Asia. Approximately 16% (47 000) of maternal deaths occurred in Southern Asia, whereas 70% (202 000) occurred in Sub-Saharan Africa alone.

Between 2000 and 2020, the two regions with the largest overall reductions in maternal mortality ratios (MMRs) were Eastern Europe (from an MMR of 38 to 11) and Southern Asia (from an MMR of 408 to 134): 70% and 67%, respectively .[3,4]

A nation's rate of maternal death can be used to evaluate the medical system including the status of women. In Pakistan, the National Health Survey reported a maternal mortality ratio of 500/100,000 live births in 1998, while UNICEF reported 340/100,000 LB in 1997. [5] The Pakistan Demographic Health Survey 2006-2007 found that the rural maternal death rate was 371/100,000 LB.[6] Maternal death investigations were the primary method used for many years to assess the services provided to mothers. More recently, it has been discovered that reviewing cases that fall into the severe acute maternal illness spectrum and are referred to as "near-misses"—those who almost died—is a helpful method for examining maternal mortality. In contrast to developed nations, Pakistan has little experience using near-miss assessments as a technique to track the caliber of maternity care in underdeveloped nations. [7]

You can prevent over 80% of pregnancy-related deaths. Any fatality that may have been avoided with appropriate modifications to the patient, family, provider, facility, system, and/or community is considered preventable. Sept. 25, 2024. The majority of maternal deaths worldwide, according to data from the World Health Organization (WHO), are caused by the following, bleeding that is severe (also known as hemorrhage) illness. Conditions involving blood pressure during pregnancy, such as eclampsia and preeclampsia.[8]

This study aims to analyze maternal deaths in a tertiary care hospital's obstetrics department, identifying direct and indirect causes, preventable factors, demographic profiles, and systemic gaps. It aims to determine the maternal mortality ratio, identify systemic gaps in clinical management, and provide evidence-based recommendations to improve maternal healthcare services, reduce preventable maternal mortality, and support public health strategies for maternal health improvement.

METHODOLOGY:

This retrospective descriptive study took place in the gynecological department of Shaikh Zayad Women's Hospital in Larkana over the course of a year, from January 2024 to December 2024. The study received ethical approval from the Institutional Review Board of Shaikh Zayed Hospital, Larkana, ensuring compliance with international guidelines. This study's ethical review was authorized with reference number ERC No. ~~~~~~~~.The study identified 55 maternal death cases using non-probability consecutive sampling, including all those recorded in hospital registers, death audit files, case sheets, and mortality reports, ensuring completeness and accessibility of data. The study involved deceased individuals, but prior consent was obtained through hospital admission protocols and patient registration forms. Confidentiality and dignity were respected, and data was anonymized. The study adhered to ethical principles in the Declaration of Helsinki and national guidelines. The research team was trained in ethical data handling practices, with the goal of improving maternal health outcomes in tertiary care settings. This retrospective study used a single population proportion formula to determine the sample size for a descriptive retrospective study on maternal deaths. The expected proportion was 30%, but

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due to limited data and retrospective nature, 55 cases were included. This sample reflects the complete population of maternal deaths during the study period, making it suitable for descriptive statistical analysis in a tertiary care setting.

INCLUSIVE & EXCLUSIVE CRITERIA: Fifty-five (55) pregnant women with labor or prenatal who were between the ages of 22 and 49 were admitted and died. Term (third trimester, 37–42 weeks), multigravida, preterm (20 weeks to 36 weeks + 6 days), and prim gravida. Informed consent was obtained from each pregnant participant in this study. We did not include any woman who passed away from ovarian cancer, RTA, cervical carcinoma or cervical polyp, or other illnesses. .

All information was gathered through patient interviews who met the study's eligibility requirements. Informed consent was obtained from each pregnant participant in this study. biographical details, a comprehensive medical history, a head-to-toe examination, and laboratory tests such urea creatinine, PT, APTT, hemoglobin level, bleeding time, clotting time, and u; ultrasonography and ECG with echo. All serious women are managed medically and surgically. The study did receive permission from an institutional review board. This study's analysis contains the following variations: obstetric labor, protracted labor, antepartum hemorrhage, postpartum hemorrhage, instrumental delivery, normal delivery or via cesarean section, and mother and fetal problems (APH). Intrauterine growth restriction (IUGR), fetal death (FSB, MSB, NND), and infant preterm birth.

The study used IBM SPSS Statistics to analyze data on maternal deaths. Descriptive statistics were used to summarize findings, with categorical variables like age group and hospital stay expressed as means and standard deviations. The analysis aimed to identify trends, identify contributing factors, and support evidence-based recommendations.

RESULT:

In 2024, there were 2387 deliveries overall, 1348 abdominal deliveries by cesarean section, and 1039 spontaneous vaginal births. There were also 2836 admissions to the obstetrics ward emergency department or outpatient department for pregnant women. In 2024, there were 55 maternal fatalities, 41 institutional deaths, and 14 brought-death incidents. Twenty-two people died from hypovolemic shock, thirteen from PPH, nine from APH, and twelve from hypertensive diseases during pregnancy (APE-2, IPE-5, and PPE-5). Pregnancy-related embolism (septic embolism -1, Pe pulmonary embolism -2). DIC was 03. Purpureal sepsis was 04. MMR= 55/2387X100, 000= 1.31 as shown in Table 1

Table .1 Maternal deaths with the number and causes month wise 2024 (55),41 deaths in the obstetrics ward and 14 brought dead.

month	Number of M-deaths	Cause of death	No: (%) 55
1. January	06	1. Antepartum eclampsia APE (CVA) (1) 2. Acute renal failure ARF (1) 3. Post-partum hemorrhage PPH (1) 4. Antepartum hemorrhage (2- abruption placenta) APH (2) 5. Rupture uterus RU (1)	10.90%
2.Feb	06	1. PPH (2) 2. APE (CVA) (1) 3. Pulmonary embolism PE (2) 4. R F (1)	10.90%
3. March	0	----------	-------
4.April	04	1. PPH (2)	7.27%

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		2. Purpureal sepsis (2)	
5.May	01	1. APE (CVA)	1081%
6.June	03	1. Sever pre-eclampsia (1) 2. Sudden cardiac arrest due to cardiomyopathy (1) 3. Liver failure due to CLD (HBV+HCV) (1)	5.45%
7.July	08	1. PPH (3) 2. APH (2) 3. APE (CVA) (2) 4. Sudden cardiac arrest due to cardiomyopathy (1)	14.54%
8.August	06	1. Cardiac arrest due to cardiomyopathy (2) 2. PPH (1) 3. APE (1) 4. Purpureal sepsis (1) 5. Liver failure due to CLD (HBV+HCV) (1)	10.90%
9.Sept	08	1. PPH (2) 2. APH (2) 3. PPE (post-partum eclampsia) (2) 4. Septic embolism (1) 5. Purpureal sepsis (1)	14.54%
10. Oct	04	1. PPH (2) 2. DIC (2) (APH 1, Uterine rupture 1)	7.27%
11. Nov	05	1. APH (3) (Abruption placenta 1, rupture uterus 2) 2. Intrapartum eclampsia (CVA) (2)	9.09%
12. Dece	04	1. PPH (2) 2. Sudden cardiac arrest due to cardiomyopathy (1) 3. Purpureal sepsis (1)	7.27%

Table 2: Maternal death women's socioeconomic areas and clinical profiles. More patients who were between the ages of 31 and 48 passed away. Compared to prim gravida and second gravida, the multigravida and grand malty perished at a higher rate. The gestational age range of 32–40 weeks was associated with a greater proportion of maternal fatalities. There is no longer any difference in maternal mortality based on the baby's weight—average or low at birth.

Table 2. Clinical profile of maternal deaths.

Characteristics of women (55)	N (%)
Age (years)	
16-20 y	9 (16.36%)
21-30 y	7 (12.72%)
31-40 y	18 (32.72%)
41-58 y	20 (36.36%)
Parity	
Primigravida	7 (12.27%)
2nd and 3rd gravida	12 (21.81%)
4th and 5th gravida	17 (30.90%)
6th and 7th gravida	11 (20.0%)

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8th to 14th gravida	8 (14.45%)
Gestational age (weeks)	
< 32 weeks.	11 (20.0%)
32-37 wks.	14 (25.45%)
37-40 wks.	21 (38.18%)
40-42 wks.	9 16.36%)
Birth weight (kg)	
<2	21 (38.18%)
2-2.9	13 (23.63%)
3-3.9	15 (27.27%)
≥4	6 (10.90%)

Obstetrical emergencies such as APH, PPH, pregnant fits, and cardiomyopathy required knowledge of whole blood arrangements and multi-dispenser techniques. Therefore, if the first medicinal or conservative treatment fails, PPH women should undergo surgery, such as intrauterine packing or the B-lynch technique, after SVD or a C/S cesarean section. APH with appropriate diagnosis and treatment. The likelihood of receiving a blood, platelet, or FFP transfusion increases with the amount of blood lost. as mentioned in Table 3.

Table 3. The pts with medical and surgical treatments and blood loss

Treatments	n=55 (%)
APH active management medically or surgically then died PPH active management medically or surgically then died	9 (16.36%) 13
Operation time (min)	72.4 ± 16.7
Intrauterine packing (3-7 min)	4 (7.27%)
B-lynch (4-6 min)	2 (3.63%)
Ceasearon section followed B-lynch if failed then Hysterectomy	2 (3.63%)
Intrauterine packing failed following hysterectomy	2 (3.63%)
Intraoperative blood loss (ml) APH, PPH	936± 245
Mild to moderate 500-1000 ml (6 out of 22)	6
Moderate to massive 1000 to 15000 ml (8 out of 22)	8
Massive to v massive 15000 to 25000 ml (8 out of 22)	8
24- h postoperative blood loss (ml)	187±40
Blood transfusion n (%)	552
Whole blood	4 units of 17 women 3 units of 12 women 2 units of 3
FFP (fresh frozen plasma)	4 in 18 women
Platelets (transfused in thrombocytopenic APH women)	4 in 8 women

Data show in table 4 that out of 55 maternal deaths, 40% were direct, with hemorrhage being the leading cause. Hypertension-related conditions caused 12 deaths (21.81%), while obstetric embolism, purpureal sepsis, and disseminated intravascular coagulation were the

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main causes. Indirect deaths accounted for 33% of the total fatalities, with cardiac arrest, peripartum cardiomyopathy, acute renal failure, hepatic failure, and blood transfusion reactions being the most common causes.

Table 4. Causes of death direct or indirect

Deaths	Causes of maternal deaths	N (%)
DIRECT DEATHS		
1. Hemorrhage 22	PPH-13, APH-9	22 (40.0%)
2. Hypertension 12	APE-2, IPE-5, PPE-5	12(21.81%)
3.Obstetric Embolism 3	Pulmonary Embolism 2, Septic Embolism 1	3 (5.45%)
4. Purpureal sepsis 4	High-grade fever, infections, burst abdomen	4 (7.27%)
5. DIC 3	dismantled coagulopathy	3 (5.45%)
INDIRECT DEATHS		
1. cardiac arrest	hypovolemic shock	4 (7.27%)
2. Peripartum cardiomyopathy	Cardiac arrest	2 (3.63%)
3. Renal failure	Acute renal failure due to hemorrhage	2 (3.63%)
4. Hepatic failure	Chronic liver disease due to HBV OR HCV	2 (3.63%)
5. Blood reaction	Blood transfusion reaction	2 (3.63%)
6. Unknown cause		1 (1.81%

39 women had maternal fatalities; 25 of these were delivered by cesarean section, and 14 of these were spontaneous; nonetheless, as table 5 illustrates, 16 of these women died before birth.

Table .6: Total deliveries either operation or delivery

Number	Mode of delivery	%
39	Total deliveries	39(70.90%
25	Operation delivery (ceasearon section)	25 (45.45%)
14	Spontaneous delivery	14 (25.45%
16	Undelivered	16 (29.09%)

DISCUSSIONS:

In certain regions of the world, maternal mortality rates are high, highlighting the wealth gap and reflecting differences in access to quality healthcare. The MMR in high-income countries was 13 per 100,000 live births in 2020, while in low-income countries it was 430 per 100,000 live births.

Promoting mother health requires identifying and removing barriers that limit access to excellent in quality parental health services at the community and health system sectors. Women in low-income countries are more at risk for maternal death throughout their lives. The lifetime risk of maternal death for a 15-year-old woman is the chance that she will eventually die from a maternal cause. One in 49 in nations with low incomes and one in 5300 in those with a high income.

Decreasing the global MMR to 70 by 2030 will require an annual rate of 11.6%, which has rarely been achieved at the national level. In 2020, the worldwide MMR was 223 per 100,000 live births. Nonetheless, the majority of maternal fatalities can be prevented by applying scientific and medical knowledge. As the Sustainable Development Goals (SDGs) enter their last decade, it is critical to increase coordinated efforts and renew national, geographic, international, and local obligations to reducing preventable maternal death. [9] Countries have united in promote of the SDG to minimize maternal mortality as rapidly as possible by 2030.The lofty

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target of "minimizing the global MMR to below than 70 per 100,000 births, with neither of the nations having an incidence of maternal death of over double the global average" is included in SDG 3. Maternal mortality in Pakistan decreased 13.97% from 2019 to 2020, with a rate of 154.00. The mother mortality rate in Pakistan increased by 0.56% from the following year to 179.00 in 2019. 2018 had a 0.56% rise in Pakistan's maternal death rate, from 2017 to 178.00. [10] At Shaikh Zyad Hospital Larkana, the MMR for our obstetric ward gyne unit 1 is 55/2387X100,000 = 1.31.Maternal death in our setup can be prevented if we address or act on all three of the delays of mortality. All obstetrical danger pregnancies in tertiary care facilities should be managed with a multidisciplinary approach, and we should improve education, resource awareness programs, and appropriate prenatal care proper blood banks. The global MMR was 223 per 100,000 live births in 2020; reducing the global MMR to 70 by 2030 will require an annual rate of 11.6%, which has rarely been achieved at the national level. Despite the fact that most maternal deaths can be prevented due to scientific and medical expertise, now is the time to step up coordinated attempts to mobilize and reenergize national, regional, worldwide, and local commitments to minimize avoidable deaths from pregnancy, as the SDGs are just ten years away.

Sustainable Development Goal 3, objective 3.1, calls for a comprehensive and workable solution to reduce the global MMR to less than 70 per 100,000 live births by 2030, ensuring that no nation has a ratio higher than the global average. For such an approach, we suggest three general strategies. [11, 12]

Based on a study on maternal mortality in obstetrics conducted at a tertiary care hospital in Larkana, the primary cause of maternal deaths is bleeding. It offers solutions for these problems, such as prompt diagnosis, careful observation, and referral networks. The significance of emergency obstetric care, skilled birth attendance, prenatal care services, and healthcare provider investment is also emphasized. Particularly in areas with limited resources, such as rural Pakistan, community education and outreach initiatives, as well as the incorporation of these strategies into public health policy, may dramatically reduce maternal mortality rates.

CONCLUSION:

According to a study on maternal mortality in obstetrics conducted at a tertiary care hospital in Larkana, the most common cause of death is hemorrhage, which is followed by obstetric embolism and hypertensive diseases. Maternal mortality may be decreased by managing high-risk pregnancies, improving prenatal care, and intervening promptly.

REFERENCES

McArthur JW, Rasmussen K, Yamey G. How many lives are at stake? Assessing 2030 sustainable development goal trajectories for maternal and child health. BMJ. 2018;360:k373. doi: 10.1136/bmj.k373

Hanif M, Khalid S, Rasul A, Mahmood K. Maternal mortality in rural areas of Pakistan: challenges and prospects. Rural Health. 2021;7. doi: 10.5772/intechopen.96934

Fragile States Index. Available from: https://fragilestatesindex.org/data/

Afghanistan Maternal Mortality Ratio, 1960–2021. Knoema. Available from: https://knoema.com/atlas/Afghanistan/Maternal-mortality-ratio

World Bank. Maternal Mortality Ratio. Available from: https://data.worldbank.org/indicator/SH.STA.MMRT?view=chart

Merkt PT, Kramer MR, Goodman D, et al. Urban-rural differences in pregnancy-related deaths, United States, 2011–2016. Am J Obstet Gynecol. 2021;225(2):183.e1–183.e16. doi: 10.1016/j.ajog.2021.02.031

Trost SL, Beauregard J, Petersen EE, et al. Identifying deaths during and after pregnancy: new approaches to a perennial challenge. Public Health Rep. 2023;138(4):567–572. doi: 10.1177/00333549231165489

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Barrera C, Kramer MR, Merkt PT, et al. County-level associations between pregnancy-related mortality ratios and contextual sociospatial indicators. Obstet Gynecol. 2022;139(5):855–865. doi: 10.1097/AOG.0000000000004774

Parker-Collins W, Njie F, Goodman D, et al. Pregnancy-related deaths by Hispanic origin, United States, 2009–2018. J Womens Health (Larchmt). 2023;32(12):1320–1327. doi: 10.1089/jwh.2023.0003

Yemen Maternal Mortality Ratio, 1960–2021. Knoema. Available from: https://knoema.com/atlas/Yemen/Maternal-mortality-ratio

Shaeen SK, Tharwani ZH, Bilal W, Islam Z, Essar MY. Maternal mortality in Pakistan: challenges, efforts, and recommendations. Ann Med Surg (Lond). 2022;81:104380. doi: 10.1016/j.amsu.2022.104380.

Hanif M, Khalid S, Rasul A, Mahmood K. Maternal mortality in rural areas of Pakistan: challenges and prospects. Rural Health. 2021;7. doi: 10.5772/intechopen.96934