

# Causes and Circumstances Surrounding Mortalities in an Obstetrics and Gynecology Department; A Three Years Study From a Tertiary Care Hospital

Bushra Ashraf<sup>1</sup>, Naushin Farooq<sup>2</sup>, Sabeen Aslam<sup>3</sup>, Sadia Zia<sup>4</sup>, Sumbal Andleeb Choudhry<sup>5</sup>, Hira Iram<sup>6</sup>

<sup>1,5,6</sup> Medical Officer, <sup>2</sup>Consultant & Head Department of Obstetrics and Gynecology, <sup>3,4</sup> Associate Consultant (Federal Government Polyclinic (FGPC), Islamabad)

**Correspondence:** Dr. Bushra Ashraf,  
Federal Government Polyclinic (FGPC), Islamabad,  
Email bushraashraf205@gmail.com  
ORCID Id: 0000-0003-1714-0491

## Abstract

**Objective:** This study aimed to determine the frequency and clinical causes of deaths within the Department of Obstetrics and Gynecology at a tertiary care hospital.

**Methodology:** This descriptive case series study was conducted at the Department of Obstetrics and Gynecology, Federal Government Polyclinic (FGPC), Islamabad, from April 2020 to March 2023. All mortalities that occurred among admitted patients of Obstetrics and Gynecology were prospectively included, while excluding those mortalities occurring elsewhere in the hospital. A well-designed proforma was used as the instrument for collection and recording of data. The data were analysed through SPSS version 21 and various descriptive statistics were employed to calculate frequencies, percentages, means and standard deviation.

**Results:** During the study period, there were a total of 9,287 admissions. Among these, 7,275 admissions were due to obstetric reasons, while 2,012 admissions were related to gynecological conditions. During this time period, 23 deaths were recorded. Out of these, 19 were secondary to obstetric causes whereas 4 resulted from various gynecological pathologies. The major causes of deaths included hemorrhagic and hypertensive events (n=7; 30.43%), septic events (n=5; 21.73%), amniotic fluid embolism (n=4, 17.39%), and gynecological malignancies (n=4; 17.39%).

**Conclusion:** Fatal septic complications were mostly observed among cases of Dai-induced abortions. These complications, along with hemorrhagic and hypertensive events can be largely prevented by improving obstetric care at the primary healthcare level.

**Keywords:** Sepsis in obstetric patients, Maternal mortality, Induced abortion, Dai-induced abortion, Amniotic fluid embolism, Gynecological malignancies.

Cite this article as: Ashraf B, Farooq N, Aslam S, Zia S, Choudhry SA, Iram H. Causes and Circumstances Surrounding Mortalities in an Obstetrics and Gynecology Department; A Three Years Study From a Tertiary Care Hospital at Islamabad. J Soc Obstet Gynaecol Pak. 2023; 13(4):368-372.

## Introduction

Women's health is crucial for the well-being of families and society as a whole. Moreover, it has a far-reaching impact on the collective progress and prosperity of a country. While developed nations highlight women's health, many women in developing countries continue to face numerous challenges.<sup>1, 2</sup> They often have limited access to education, employment, and proper healthcare, leading to preventable mortalities in obstetrics and gynecology units. These mortalities occur due to unfortunate medical events related to

pregnancy or gynecological pathologies. Some of these events are preventable, while others are inevitably fatal.<sup>3, 4</sup>

In the developed countries, data regarding causes and circumstances surrounding the deaths of women with obstetric and gynecological conditions are routinely analysed and documented. Such data are used to improve clinical practices and institutional policies.<sup>3, 5</sup>

There is relative dearth of published data on maternal

Authorship Contribution: <sup>1</sup>Designed the study performed <sup>2</sup>collection and <sup>3</sup>analysis of data, <sup>4-6</sup>wrote the manuscript all critically assessed and approved the manuscript.

Funding Source: none  
Conflict of Interest: none

Received: May 30, 2023  
Accepted: Oct 20, 2023

and gynecological mortalities from the developing countries. For effecting positive changes in an institution, it is crucial to understand and document the frequency and clinical causes of mortalities that occur over there. The cause specific mortality data are very useful for clinicians and hospital managers. Such data not only reflect the quality of currently available care at the facility but also the healthcare status of the population which is served by the facility This in turn helps in making informed decisions and consistently ensuring quality improvement.<sup>6,7</sup>

The objective of our current study was to determine the frequency of mortalities and to document the causes and circumstances that surround the deaths of women admitted to our Obstetrics and Gynecology department. We aimed to generate valuable data that could be used in future for focusing on preventable aspects of these deaths.

## Methodology

This descriptive case series study was conducted at the Department of Obstetrics and Gynecology, Federal Government Polyclinic (FGPC), Islamabad, over a period of three years, spanning from April 2020 to March 2023. We employed a non-probability consecutive sampling technique for participant selection. The study aimed to document all mortalities occurring among the admitted patients of the Obstetrics and Gynecology department, with the exclusion of mortalities that occurred elsewhere in the hospital. The study was conducted in compliance with the ethical protocols outlined in the Helsinki Declaration of 2013, ensuring the anonymity of participants and obtaining informed consent from the patients' attendants.

The study included women who were admitted to the hospital for obstetric care or treatment of gynecological pathologies and experienced mortality during their hospital stay. All patients underwent comprehensive assessments, including a thorough medical history, complete physical examination, and relevant ancillary investigations. Subsequently, all patients were admitted to the hospital, and they received obstetric care and gynecological treatments tailored to their individual medical conditions.

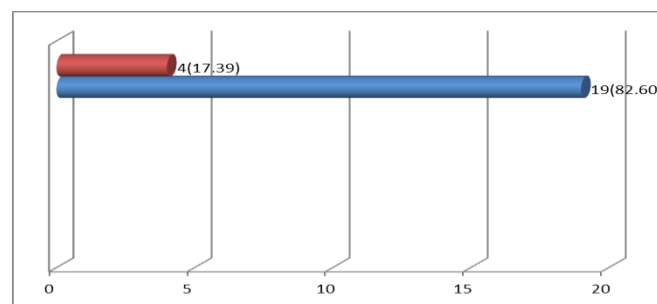
Data were meticulously recorded on a well-designed data collection proforma and subjected to statistical analysis to fulfill the study's objectives. The data collected encompassed the demographic and clinical features of the patients. The variables of interest

included age of the patient, length of hospital stay, educational status, city of residence and clinical causes of deaths. The primary outcome measure was to determine the frequency of various obstetric and gynecological mortalities. The secondary outcome measure was to determine the clinical causes of these mortalities.

We used SPSS version 21 for data analysis, employing various descriptive statistics to calculate frequencies, percentages, means, and standard deviations. Numerical data, such as the age of the patients, were presented as Mean  $\pm$  Standard Deviation, while categorical data, such as the causes of deaths, were expressed as frequencies and percentages.

## Results

There were 9287 admissions during the study period. Among them, there were 7275 admissions for obstetric indications whereas 2,012 admissions were for gynecological causes. There were 23 deaths during the study period. Among them, 19 deaths resulted from obstetric causes whereas four deaths occurred because of various gynecological pathologies. (as shown in Figure 1) The patients ranged in age between 19-70 years with a mean age of  $33.65 \pm 10.63$  years. Their hospital stay ranged between 1-28 days with a mean of  $7.86 \pm 7.76$  days.

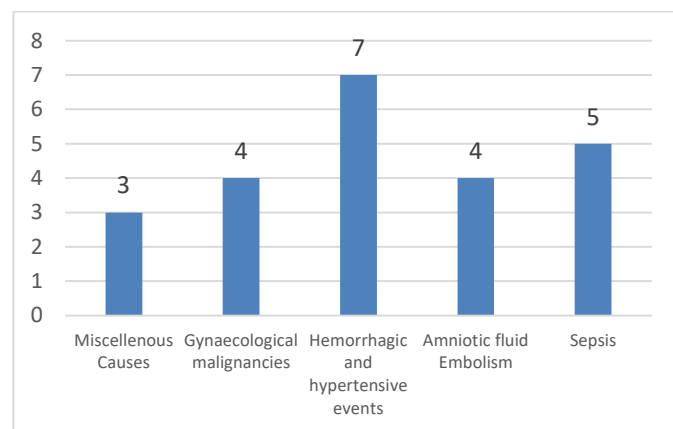


**Figure 1: Showing the relative contribution of the obstetric and gynecological causes among the mortalities. The red bar shows the gynecological causes whereas the blue bar shows the obstetric causes of deaths. (n=23)**

With respect to educational status, majority (n=20; 56.95%) of them were illiterate whereas 3(13.04%) of them were graduates. The majority of them (n=18; 78.26%) belonged to the twin cities of Islamabad and Rawalpindi. The share of Azad Jammu Kashmir, Gilgit-Baltistan, Taxilla, Abbottabad and Mansehra was one patient (4.34%) each.

Table I depicts the causes and circumstances

surrounding deaths in the department during the study period. Hemorrhagic and hypertensive events (n=7; 30.43%), Septic events (n=5; 21.73%), amniotic fluid embolism (n=4, 17.39%), and gynecological malignancies (n=4; 17.39%) were the major causes of deaths. Figure 2 shows the causes of deaths among the patients.



**Figure 2. Showing pictorial depiction of the various causes of deaths among the patients. (n=23)**

**Table I: Causes and circumstances surrounding deaths in the department of Obstetrics and gynecology. (n=23)**

Causes and Associated conditions	N	%
<b>A) Obstetrics cases</b>		
Sepsis:		
Secondary to Dai induced abortion	4	17.39%
Secondary to acute Hepatitis-E and acute fatty liver of pregnancy	1	4.34%
<b>Amniotic fluid embolism</b>		
PROM	3	%
Others causes	1	4.34%
Hemorrhagic and Hypertensive events:		
Severe Postpartum Hemorrhage (PPH):	3	13.04%
Severe pre-eclampsia:	2	8.69
Eclampsia:	2	8.69
<b>Organ/ System Dysfunction</b>		
Cardiac failure/ severe MR	1	4.34%
Chronic liver disease	1	4.34%
Cerebrovascular accident	1	4.34%
<b>Outcome of Pregnancy</b>		
Live births	11	57.89%
Abortions	4	21.05%
Still births	4	21.05%
<b>B) Gynecological Cases</b>		
Ovarian carcinoma	2	8.69%
Endometrial cancer	1	4.34%
Advanced Meig's syndrome	1	4.34%

## Discussion

The World Health Organization (WHO) has been advocating for enhancing efforts to reduce the alarmingly high maternal mortality rate particularly in the poor income countries like ours (Pakistan). The high rate of maternal mortality not only indicates the poor health status of the women and inadequate quality of health care services for them, but also the poor social and economic conditions of these societies. In poor countries, the postpartum hemorrhage continues to be one of the leading causes of maternal mortality. Efforts should be focused on adopting more robust strategies for prevention as well as active management of postpartum hemorrhage at the primary healthcare level.<sup>2</sup>

The gynecological malignancies constitute another formidable foe for both women as well as the gynecologist around the world. These malignancies may affect any part of the female reproductive system. These parts include the ovaries, uterus (particularly the endometrium), vagina cervix, and vulva. Overall, these cancers are the second commonest among women following breast cancers. Woo YL in their systematic review suggested that centralization of care with multidisciplinary team could improve the survival and outcome of these unfortunate women with cancers. Such multidisciplinary team should include gynecologist, radiation oncologist, chemotherapist, psychologist and specialist nurses.<sup>3</sup>

In our study, septic events constituted a significant proportion of deaths that occurred among the obstetric patients. Globally, sepsis is responsible for approximately 11% of maternal deaths. Southern Asia has the highest reported incidence of sepsis-related maternal deaths, at 13.7%. In most cases, sepsis originates directly from genital tract infections. Various predisposing factors have been described in the literature, including operative interventions like cesarean sections, amniocentesis, and cervical cerclage, preterm prelabour rupture of membranes (PPROM), prolonged rupture of the membranes, retained products of conception (RPOCs), a history of vaginal discharge, and any associated comorbidities.<sup>8-10</sup>

Sepsis and its subsequent consequences are largely preventable. It is crucial to consistently implement universal aseptic precautions during invasive procedures. Furthermore, prophylactic antibiotic coverage should be provided to patients undergoing

cesarean sections, those with preterm or prolonged rupture of membranes, those experiencing third or fourth-degree perineal tears, and women who are undergoing abortion procedures.<sup>11</sup>

Dai induced abortions accounted for most cases of sepsis in our study. According to a WHO estimate, approximately 73 million abortions occur annually worldwide. 61% of all unwanted pregnancies and 29% of all pregnancies culminate in abortions.<sup>12</sup> Induced abortions continue to be a major public health issue globally; however, these have more disastrous consequences in the poor populations of the low income countries like ours. They constitute a major health concern for women of reproductive age who do not want unwanted pregnancies for legal as well as illegal reasons. Promotion of safe contraceptive practices as well as provision of safe abortion services would help to culminate the menace of Dai induced abortions in our country.<sup>13-15</sup>

In our study, fatal amniotic fluid embolism (AFE) was encountered among four patients. The reported incidence of AFE varies between 1 in 15,200 to 1 in 53,800 deliveries. The exact mechanism that underlies the pathogenesis of AFE continues to be debated; however, disruptions in the feto-maternal interface are thought to be the beginning of the cascade of events involved in the development of AFE. The potential sites of disruptions of the physiological barriers between the fetus and the mother include areas such as the placental attachment sites, traumatized locales of the uterus and the endocervical veins. All these sites provide potential entry portals for the introduction of the amniotic fluid and its contents into the maternal circulation. Upon entry into the pulmonary circulation, they initiate an inflammatory cascade that culminates in the physical obstruction or vasospasm of the maternal pulmonary microvasculature. The resultant acute respiratory distress syndrome (ARDS) often proves fatal.<sup>16-18</sup>

In our study, severe postpartum hemorrhage (PPH) claimed three precious lives. In the published literature, the reported prevalence of severe PPH varies remarkably in different region of the globe. These rates range from as low as 0.3% to as high as 5.1%.<sup>19-21</sup> All women who died from severe PPH were initially managed in remote areas by untrained birth attendants or general practitioners. Once these patients are not manageable by them, they are referred to our hospital in critical condition with less hope of survival. We

receive such unfortunate patients from remote regions such as the Azad Jammu Kashmir and Gilgit-Baltistan.

In our series two mortalities occurred because of epithelial ovarian cancer (EOC). These are known to be the most sinister gynecological cancers. The high-grade serous carcinomas are the most notorious among them. These tumors have a 5-year survival rates of <50%. Late presentation of the disease, disseminated disease at the first clinical presentation, and lack of effective therapies all contribute to the worse prognosis of the EOCs.<sup>22-24</sup>

In our study, we identified a variety of socioeconomic factors that served as direct or indirect contributors to the miseries and unfortunate ultimate deaths of the women. For instance, poor social background, illiteracy of the women, family traditions to be treated by village Dais for obstetric issues, prohibition by family elders to receive treatment from doctors, delay in timely seeking obstetric care, and lack of awareness about seeking doctor's advice for various gynecological conditions. All women should have an easy access to healthcare, antenatal care, institutional delivery and postpartum care. Any delay in decision making or reaching appropriate healthcare facility must be avoided. Health education should be given at the community level to create awareness regarding the importance of women health. The education and literacy level of women should be enhanced. Public awareness should also be increased in this regard. The hospital facilities should be enhanced to better cope with the intensive care needs of the critically ill and septic obstetric patients. Also protocols should be developed to enable doctors and other healthcare professionals to prevent as well as actively manage the women with obstetric and gynecological pathologies.

## Conclusion

Fatal septic complications were mostly observed among cases of Dai-induced abortions. These complications, along with hemorrhagic and hypertensive events can be largely prevented by improving obstetric care at the primary healthcare level.

## References

1. Hussain-Alkhateeb L, D'Ambruso L, Tollman S, Kahn K, Van Der Merwe M, Twine R, et al. Enhancing the value of mortality data for health systems: adding Circumstances Of Mortality CATegories (COMCATs) to deaths investigated by verbal autopsy. *Glob Health Action*. 2019;12(1):1680068. doi: 10.1080/16549716.2019.1680068.

2. Tajvar M, Hajizadeh A, Zalvand R. A systematic review of individual and ecological determinants of maternal mortality in the world based on the income level of countries. *BMC Public Health*. 2022;22(1):2354. doi: 10.1186/s12889-022-14686-5.
3. Woo YL, Kyrgiou M, Bryant A, Everett T, Dickinson HO. Centralisation of services for gynaecological cancer. *Cochrane Database Syst Rev*. 2012;2012(3):CD007945. doi: 10.1002/14651858.CD007945.
4. Gultekin M, Dundar S, Kucukyildiz I, Karaca MZ, Boztas G, Turan SH, et al. Survival of gynecological cancers in Turkey: where are we at? *J Gynecol Oncol*. 2017;28(6):e85. doi: 10.3802/jgo.2017.28.e85.
5. Maiden MJ, Finnis ME, Duke GJ, Huning E, Crozier T, Nguyen N, et al. Obstetric admissions to intensive care units in Australia and New Zealand: a registry-based cohort study. *BJOG*. 2020;127(12):1558-1567. doi: 10.1111/1471-0528.16285.
6. Bailey PE, Anduaem W, Brun M, Freedman L, Gbangbade S, Kante M, et al. Institutional maternal and perinatal deaths: a review of 40 low and middle income countries. *BMC Pregnancy and Childbirth* (2017) 17:295. DOI 10.1186/s12884-017-1479-1
7. Weiderpass E, Labrèche F. Malignant tumors of the female reproductive system. *Saf Health Work* 2012;3:166-80.
8. Say L, Chou D, Gemmill A, Tunçalp O, Moller AB, Daniels J, et al. Global causes of maternal death: A WHO systematic analysis. *Lancet Glob Health*. 2014;2(6):e323–e333. 10.1016/S2214-109X(14)70227-X
9. Ali A, Lamont RF. Recent advances in the diagnosis and management of sepsis in pregnancy. *F1000Res*. 2019;8:F1000 Faculty Rev-1546. doi: 10.12688/f1000research.18736.1.
10. Conroy K, Koenig AF, Yu YH, Courtney A, Lee HJ, Norwitz ER. Infectious morbidity after cesarean delivery: 10 strategies to reduce risk. *Rev Obstet Gynecol*. 2012;5(2):69-77. PMID: 22866185; PMCID: PMC3410505.
11. Ford JM, Scholefield H. Sepsis in obstetrics: cause, prevention, and treatment. *Curr Opin Anaesthesiol*. 2014;27(3):253-8. doi: 10.1097/ACO.000000000000082.
12. Bearak J, Popinchalk A, Ganatra B, Moller AB, Tunçalp O, Beavin C, et al. Unintended pregnancy and abortion by income region, and the legal status of abortion: estimates from a comprehensive model for 1990-2019. *Lancet Global Health*. 2020; 8(9):e1152-e1161. doi: 10.1016/S2214-109X(20)30315-6
13. Dastgiri S, Yoosefian M, Garjani M, Kalankesh LR. Induced Abortion: a Systematic Review and Meta-analysis. *Mater Sociomed*. 2017;29(1):58-67. doi: 10.5455/msm.2017.29.58-67.
14. Gebremedhin M, Semahegn A, Usmael T, Tesfaye G. Unsafe abortion and associated factors among reproductive aged women in Sub-Saharan Africa: a protocol for a systematic review and meta-analysis. *Syst Rev*. 2018;7(1):130. doi: 10.1186/s13643-018-0775-9.
15. Majlessi F, Forooshani AR, Shariat M. Prevalence of induced abortion and associated complications in women attending hospitals in Isfahan. *East Mediterr Health J*. 2008;14(1):103-9. PMID: 18557457.
16. Lao TT. Acute respiratory distress and amniotic fluid embolism in pregnancy. *Best Pract Res Clin Obstet Gynaecol*. 2022;85(Pt A):83-95. doi: 10.1016/j.bpobgyn.2022.06.004.
17. Mazza GR, Youssefzadeh AC, Klar M, Kunze M, Matsuzaki S, Mandelbaum RS, et al. Association of Pregnancy Characteristics and Maternal Mortality With Amniotic Fluid Embolism. *JAMA Netw Open*. 2022;5(11):e2242842. doi: 10.1001/jamanetworkopen.2022.42842.
18. Kanayama N., Tamura N. Amniotic fluid embolism: pathophysiology and new strategies for management. *J Obstet Gynaecol Res*. 2014;40:1507–1517.
19. Liu CN, Yu FB, Xu YZ, Li JS, Guan ZH, Sun MN, et al. Prevalence and risk factors of severe postpartum hemorrhage: a retrospective cohort study. *BMC Pregnancy Childbirth*. 2021;21(1):332. doi: 10.1186/s12884-021-03818-1.
20. Nyflot LT, Sandven I, Stray-Pedersen B, Pettersen S, Al-Zirqi I, Rosenberg M, et al. Risk factors for severe postpartum hemorrhage: a case-control study. *Bmc Pregnancy Childb*. 2017;17(1):17.
21. Calvert C, Thomas SL, Ronsmans C, Wagner KS, Adler AJ, Filippi V. Identifying regional variation in the prevalence of postpartum haemorrhage: a systematic review and meta-analysis. *PLoS One*. 2012;7(7):e41114. <https://doi.org/10.1371/journal.pone.0041114>
22. Obermair A, Beale P, Scott CL, Beshay V, Kichenadasse G, Simcock B, et al. Insights into ovarian cancer care: report from the ANZGOG Ovarian Cancer Webinar Series 2020. *J Gynecol Oncol*. 2021;32(6):e95. doi: 10.3802/jgo.2021.32.e95.
23. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2021;71:209–249.
24. Torre LA, Trabert B, DeSantis CE, Miller KD, Samimi G, Runowicz CD, et al. Ovarian cancer statistics, 2018. *CA Cancer J Clin*. 2018;68:284–296.