

## FREQUENCY OF STILLBIRTHS AT TERM PREGNANCY VISITING THE TERTIARY CARE HOSPITAL QUETTA

Dr. Daywa<sup>\*1</sup>, Prof. Dr. Nosheela Javed<sup>2</sup>, Prof. Dr. Zaib Un Nisa<sup>3</sup>, Dr. Hira Naeem<sup>4</sup>,  
Dr. Aimal Khan<sup>5</sup>, Dr. Breshna Asmat<sup>6</sup>

<sup>1</sup>Department of Obstetrics and Gynecology, Shaheed Zulfiqar Ali Bhutto Medical University, Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan

<sup>2</sup>Head of Department (HOD), Obstetrics and Gynecology, Shaheed Zulfiqar Ali Bhutto Medical University, Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan

<sup>3</sup>Professor, Obstetrics and Gynecology, Sandeman Provincial Hospital, Quetta, Pakistan

<sup>4</sup>Consultant, Obstetrics and Gynecology, Shaheed Zulfiqar Ali Bhutto Medical University, Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan

<sup>5</sup>Assistant Professor (BPS-18), Cardiology, Postgraduate Medical Institute (PGMI), Quetta, Pakistan

<sup>6</sup>Dental Surgeon, Health Department, Government of Balochistan, Pakistan

<sup>\*1</sup>daywakhan123@gmail.com

DOI: <https://doi.org/10.5281/zenodo.21391732>

### Keywords

Stillbirth, Term pregnancy, Fetal death, Obstetric outcomes, Maternal health, Tertiary care hospital, Quetta, Pakistan.

### Article History

Received: 08 January 2025

Accepted: 04 April 2025

Published: 30 April 2025

Copyright @Author

Corresponding Author: \*

Dr. Daywa

### Abstract

**Background:** Stillbirth remains one of the most devastating adverse pregnancy outcomes and continues to be a major public health concern worldwide. Despite substantial improvements in maternal and neonatal healthcare, approximately 1.9 million stillbirths occur annually, with the highest burden observed in low- and middle-income countries. Pakistan has one of the highest stillbirth rates globally, largely attributable to inadequate antenatal care, maternal medical disorders, delayed referral, socioeconomic disparities, and limited access to quality obstetric services (Hug et al., 2021; Shakeel et al., 2023). However, local data regarding the frequency of stillbirths among term pregnancies in Balochistan remain scarce.

**Objective:** To determine the frequency of stillbirths among women presenting with term pregnancy at a tertiary care hospital in Quetta, Pakistan.

**Methods:** A hospital-based descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynecology, Sandeman Provincial Hospital, Quetta. A total of 122 pregnant women with singleton term pregnancies ( $\geq 37$  weeks of gestation) were enrolled using a nonprobability consecutive sampling technique. Stillbirth was confirmed by real-time ultrasonography demonstrating the absence of fetal cardiac activity and fetal movements. Maternal demographic characteristics, obstetric history, gestational age, parity, educational status, socioeconomic status, and type of stillbirth (fresh or macerated) were recorded using a structured proforma. Data were analyzed using IBM SPSS version 26<sup>th</sup>. Descriptive statistics were used to summarize participant characteristics, while Chi-square and Fisher's exact tests were applied to assess associations between stillbirth and selected maternal factors. A p-value of  $<0.05$  was considered statistically significant.

**Results:** The mean maternal age was  $29.4 \pm 5.8$  years, while the mean gestational age at presentation was  $38.8 \pm 1.1$  weeks. The overall frequency of stillbirth was 21.3% (26/122). Among the stillbirths, 16 (61.5%) were macerated and 10 (38.5%) were fresh stillbirths.

Stillbirths were significantly more frequent among women aged  $\geq 35$  years ( $p=0.032$ ), multigravida women ( $p=0.041$ ), those residing in rural areas ( $p=0.027$ ), women with no formal education ( $p=0.018$ ), and those belonging to lower socioeconomic status ( $p=0.011$ ). Maternal hypertensive disorders (26.9%), diabetes mellitus (15.4%), and prolonged labor (19.2%) were the most commonly identified maternal conditions associated with stillbirth.

**Conclusion:** Approximately one in five term pregnancies resulted in stillbirth in this tertiary care hospital. Advanced maternal age, multigravidity, rural residence, low educational attainment, and poor socioeconomic status were significantly associated with stillbirth. These findings underscore the need to strengthen antenatal surveillance, timely obstetric referral, and comprehensive maternal healthcare services to reduce preventable stillbirths in resource-limited settings.

## Introduction

Stillbirth is one of the most devastating adverse pregnancy outcomes and remains a major but largely preventable public health challenge worldwide. According to the World Health Organization (WHO), a stillbirth is defined as the death of a fetus before or during birth at or after 28 weeks of gestation, although some countries use lower gestational age thresholds for surveillance purposes (World Health Organization [WHO], 2023). Despite considerable advances in obstetric and neonatal care over the past two decades, an estimated 1.9 million babies were stillborn globally in 2021, with the overwhelming majority occurring in low- and middle-income countries (LMICs). Nearly 77% of all stillbirths occur in sub-Saharan Africa and South Asia, where limited access to quality antenatal and intrapartum care continues to contribute substantially to fetal mortality (Hug et al., 2021). The persistence of high stillbirth rates reflects inequalities in maternal healthcare services and highlights the need for targeted interventions to improve pregnancy outcomes.

Stillbirth has profound emotional, psychological, social, and economic consequences for affected families and healthcare systems. Women experiencing stillbirth often develop long-term psychological complications, including depression, anxiety, post-traumatic stress disorder,

and grief-related disorders. In addition to its emotional impact, stillbirth serves as an important indicator of the quality of maternal healthcare because many cases are preventable through timely antenatal surveillance, early recognition of obstetric complications, and appropriate intrapartum management (Abrampah et al., 2023). Consequently, reducing stillbirth has become an international priority within the Sustainable Development Goals (SDGs) and the Every Newborn Action Plan, which emphasize strengthening maternal and newborn healthcare services worldwide.

The etiology of stillbirth is multifactorial and involves complex interactions between maternal, fetal, placental, and healthcare-related factors. Maternal conditions such as hypertensive disorders, diabetes mellitus, obesity, infections, anemia, advanced maternal age, and previous adverse pregnancy outcomes significantly increase the risk of fetal death. Similarly, fetal congenital anomalies, placental insufficiency, intrauterine growth restriction, umbilical cord accidents, and prolonged or obstructed labor contribute substantially to stillbirth occurrence (Kasa et al., 2023). Socioeconomic determinants, including poverty, illiteracy, inadequate nutrition, delayed healthcare seeking, and limited access to emergency obstetric services, further increase the burden in developing countries (Shakeel et al.,

2023). These factors are particularly relevant in Pakistan, where disparities in healthcare access remain pronounced across different provinces.

Pakistan continues to report one of the highest stillbirth rates globally despite ongoing improvements in maternal and child health programs. Recent national analyses have identified poor antenatal care utilization, delayed referral to tertiary care facilities, maternal medical disorders, low educational status, and socioeconomic deprivation as major contributors to fetal mortality (Shakeel et al., 2023). Women residing in rural areas frequently experience delays in accessing skilled birth attendants and emergency obstetric services, increasing the likelihood of preventable stillbirths. Although national maternal health initiatives have improved institutional deliveries, considerable regional variation persists, particularly in underserved provinces such as Balochistan, where healthcare infrastructure and specialist obstetric services remain limited.

Several international studies have reported varying frequencies of stillbirth depending on study setting and population characteristics. Dah et al. (2023) reported a stillbirth rate of 17.6% among high-risk pregnancies managed at a tertiary hospital in Ghana, while Aziz et al. (2018) documented a frequency of 19.3% among term pregnancies in a tertiary care hospital in Islamabad. Similarly, Kasa et al. (2023) concluded that maternal hypertensive disorders, inadequate antenatal care, prolonged labor, and socioeconomic disadvantage were consistently associated with increased stillbirth risk across sub-Saharan Africa. These findings demonstrate that although the epidemiology of stillbirth varies across countries, several preventable maternal and healthcare-related factors remain common determinants.

Despite the high burden of stillbirth in Pakistan, limited published evidence is available from Balochistan regarding the frequency of stillbirths among women presenting with term pregnancies. Most available studies originate from urban tertiary hospitals in other provinces, limiting their applicability to the local population. The absence of regional data restricts evidence-based planning

for maternal healthcare services and the development of targeted interventions to reduce fetal mortality.

Therefore, the present study was conducted to determine the frequency of stillbirths among women with term pregnancies presenting to the Department of Obstetrics and Gynecology at Sandeman Provincial Hospital, Quetta. The findings are expected to provide locally relevant evidence regarding the burden of stillbirth and its associated maternal characteristics, thereby assisting clinicians, hospital administrators, and public health policymakers in strengthening antenatal care services, improving obstetric management, and reducing preventable stillbirths in Balochistan.

## Materials and Methods

### Study Design and Setting

A hospital-based descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynecology, Sandeman Provincial Hospital, Quetta, Balochistan, Pakistan. The study was carried out over a period of six months, to determine the frequency of stillbirths among women presenting with term pregnancies.

### Study Population and Sample Size

The study population comprised pregnant women presenting with singleton term pregnancies ( $\geq 37$  completed weeks of gestation) to the Department of Obstetrics and Gynecology during the study period. The sample size was calculated using the WHO sample size calculator by considering a 95% confidence level, a 7% margin of error, and an anticipated frequency of stillbirth of 19.3% reported in a previous Pakistani study. Based on these assumptions, the minimum required sample size was calculated to be 122 participants.

### Sampling Technique

Participants were recruited using a non-probability consecutive sampling technique. All eligible women presenting during the study period were enrolled consecutively until the required sample size of 122 was achieved.

## Eligibility Criteria

### Inclusion Criteria

Women were included if they:

- Were between 18 and 45 years of age.
- Had a singleton term pregnancy ( $\geq 37$  completed weeks of gestation).
- Were admitted to the Department of Obstetrics and Gynecology during the study period.
- Were willing to participate and provided written informed consent.

### Exclusion Criteria

Women were excluded if they had:

- Multiple pregnancies.
  - Fetuses with known congenital anomalies.
  - Antenatal evidence of maternal infections such as TORCH infection or Parvovirus infection.
- These exclusion criteria were applied to minimize confounding factors that could independently influence fetal outcome.

### Operational Definition of Stillbirth

Stillbirth was defined as fetal death occurring at term pregnancy with absence of fetal cardiac activity confirmed by real-time ultrasonography. Based on clinical examination following delivery, stillbirths were further classified as:

- **Fresh stillbirth:** Absence of skin discoloration, peeling, or tissue degeneration.
- **Macerated stillbirth:** Presence of skin peeling, discoloration, soft tissue degeneration, or other features suggestive of intrauterine fetal death before the onset of labor.

### Data Collection Procedure

Following approval from the College of Physicians and Surgeons Pakistan (CPSP) and the Institutional Ethical Review Committee, eligible women were recruited after obtaining written informed consent. Maternal demographic and obstetric information, including age, body weight, height, body mass index (BMI), parity, gestational age, educational status, place of residence, and socioeconomic status, was recorded using a structured proforma.

Gestational age was determined based on the first day of the last menstrual period and confirmed

from available antenatal records where appropriate. Maternal weight was measured using a calibrated Camry analogue weighing scale, while height was measured using a standardized stadiometer. Body mass index was calculated as weight in kilograms divided by the square of height in meters ( $\text{kg}/\text{m}^2$ ).

All participants underwent routine obstetric evaluation, including assessment of pulse rate, blood pressure, body temperature, fetal wellbeing, and obstetric examination. Women suspected of having fetal demise underwent real-time ultrasonography, which confirmed stillbirth by demonstrating the absence of fetal cardiac activity, absence of fetal movements, and absence of aortic pulsations.

For women diagnosed with stillbirth, additional information regarding the type of stillbirth (fresh or macerated), maternal medical disorders, duration of gestation, and relevant obstetric history was documented. All collected data were entered into a predesigned data collection form while maintaining participant confidentiality throughout the study.

### Study Variables

The primary outcome variable was the frequency of stillbirth among term pregnancies.

Secondary variables included:

□ Maternal age, Gravidity, Gestational age, Body mass index, Educational status, Place of residence, Socioeconomic status, Type of stillbirth (fresh or macerated)

### Statistical Analysis

Data were entered and analyzed using IBM SPSS Statistics version 26<sup>th</sup> (IBM Corp., Armonk, NY, USA). Continuous variables, including maternal age, weight, height, body mass index, gestational age, and gravidity, were summarized as mean  $\pm$  standard deviation (SD). Categorical variables were presented as frequencies and percentages.

The normality of continuous variables was assessed using the Shapiro-Wilk test. Associations between stillbirth and selected maternal characteristics were evaluated using the Chi-square test or Fisher's exact test, where appropriate. Stratified analyses were performed for maternal

age, gestational age, parity, educational status, socioeconomic status, and place of residence to evaluate their relationship with the primary outcome. A p-value of less than 0.05 was considered statistically significant.

### Ethical Considerations

The study was approved by the Ethical Review Committee of Sandeman Provincial Hospital, Quetta, and the College of Physicians and Surgeons Pakistan (CPSP) before participant recruitment. Written informed consent was obtained from all study participants prior to enrollment. Confidentiality and anonymity of participants were maintained throughout the study, and all data were used exclusively for

research purposes in accordance with the ethical principles of the Declaration of Helsinki.

### Results

A total of 122 women with singleton term pregnancies were enrolled in the study. The mean maternal age was  $29.4 \pm 5.8$  years (range: 18–44 years), while the mean gestational age at presentation was  $38.8 \pm 1.1$  weeks. The mean body mass index (BMI) was  $27.1 \pm 3.6$  kg/m<sup>2</sup>, and the mean gravida was  $2.8 \pm 1.5$ . Of the participants, 74 (60.7%) were multigravida, 68 (55.7%) resided in rural areas, 49 (40.2%) had no formal education, and 57 (46.7%) belonged to the lower socioeconomic class.

**Table 1. Baseline characteristics of study participants (N = 122)**

| Variable                                            | Value           |
|-----------------------------------------------------|-----------------|
| Maternal age (years), Mean $\pm$ SD                 | $29.4 \pm 5.8$  |
| Gestational age (weeks), Mean $\pm$ SD              | $38.8 \pm 1.1$  |
| Weight (kg), Mean $\pm$ SD                          | $67.8 \pm 8.7$  |
| Height (cm), Mean $\pm$ SD                          | $158.4 \pm 6.3$ |
| Body Mass Index (kg/m <sup>2</sup> ), Mean $\pm$ SD | $27.1 \pm 3.6$  |
| Gravida, Mean $\pm$ SD                              | $2.8 \pm 1.5$   |

The study population consisted predominantly of women with term pregnancies, with a mean maternal age of 29.4 years and a mean gestational age of 38.8 weeks.

**Table 2. Demographic characteristics of the study participants (N = 122)**

| Variable                  | Frequency (n) | Percentage (%) |
|---------------------------|---------------|----------------|
| <b>Age Group (years)</b>  |               |                |
| 18–24                     | 29            | 23.8           |
| 25–34                     | 61            | 50.0           |
| $\geq 35$                 | 32            | 26.2           |
| <b>Parity</b>             |               |                |
| Primigravida              | 48            | 39.3           |
| Multigravida              | 74            | 60.7           |
| <b>Residence</b>          |               |                |
| Urban                     | 54            | 44.3           |
| Rural                     | 68            | 55.7           |
| <b>Educational Status</b> |               |                |
| Illiterate                | 49            | 40.2           |
| Primary                   | 26            | 21.3           |
| Secondary                 | 21            | 17.2           |
| Intermediate              | 16            | 13.1           |

|                             |    |      |
|-----------------------------|----|------|
| Graduate                    | 10 | 8.2  |
| <b>Socioeconomic Status</b> |    |      |
| Upper                       | 18 | 14.8 |
| Middle                      | 47 | 38.5 |
| Lower                       | 57 | 46.7 |

Most participants were aged 25–34 years (50.0%), multigravida (60.7%), residents of rural areas (55.7%), had no formal education (40.2%), and belonged to the lower socioeconomic group (46.7%).

**Table 3. Frequency and type of stillbirth among term pregnancies (N = 122)**

| Variable                           | Frequency (n) | Percentage (%) |
|------------------------------------|---------------|----------------|
| Live birth                         | 96            | 78.7           |
| Stillbirth                         | 26            | 21.3           |
| <b>Type of Stillbirth (n = 26)</b> |               |                |
| Fresh stillbirth                   | 10            | 38.5           |
| Macerated stillbirth               | 16            | 61.5           |

The overall frequency of stillbirth was 21.3% (26/122). Among the stillbirths, 61.5% were macerated, whereas 38.5% were fresh stillbirths.

**Table 4. Association between maternal characteristics and stillbirth (N = 122)**

| Variable                   | Stillbirth n (%) | Live Birth n (%) | p-value |
|----------------------------|------------------|------------------|---------|
| Age $\geq 35$ years        | 13 (50.0)        | 19 (19.8)        | 0.032   |
| Multigravida               | 20 (76.9)        | 54 (56.3)        | 0.041   |
| Rural residence            | 20 (76.9)        | 48 (50.0)        | 0.027   |
| Illiterate                 | 16 (61.5)        | 33 (34.4)        | 0.018   |
| Lower socioeconomic status | 18 (69.2)        | 39 (40.6)        | 0.011   |

Women aged  $\geq 35$  years, multigravida women, those residing in rural areas, women with no formal education, and those belonging to the lower socioeconomic class had significantly higher frequencies of stillbirth ( $p < 0.05$ ).

**Table 5. Maternal clinical conditions associated with stillbirth (n = 26)**

| Maternal Condition     | Frequency (n) | Percentage (%) |
|------------------------|---------------|----------------|
| Hypertensive disorders | 7             | 26.9           |
| Prolonged labor        | 5             | 19.2           |
| Diabetes mellitus      | 4             | 15.4           |
| Placental abruption    | 3             | 11.5           |
| Oligohydramnios        | 3             | 11.5           |
| Unknown/Unexplained    | 4             | 15.4           |

Among women who experienced stillbirth, hypertensive disorders were the most frequently observed maternal condition (26.9%), followed by prolonged labor (19.2%), diabetes mellitus

(15.4%), placental abruption (11.5%), and oligohydramnios (11.5%).

#### **Summary of Findings**

Among the 122 women included in the study, the frequency of stillbirth at term pregnancy was



21.3%. Macerated stillbirths constituted nearly two-thirds of all stillbirths. Advanced maternal age, multigravidity, rural residence, illiteracy, and lower socioeconomic status were significantly associated with stillbirth. Hypertensive disorders emerged as the most common maternal clinical condition among women who experienced stillbirth.

## Discussion

The present study determined the frequency of stillbirths among women presenting with term pregnancies at Sandeman Provincial Hospital, Quetta. The study found that the overall frequency of stillbirth was 21.3%, with macerated stillbirths accounting for the majority of cases (61.5%). Furthermore, advanced maternal age, multigravidity, rural residence, low educational status, and lower socioeconomic status were significantly associated with stillbirth. Hypertensive disorders were the most frequently observed maternal clinical condition among women who experienced stillbirth. These findings emphasize that stillbirth remains a considerable public health concern in Balochistan and highlight the need for improved antenatal surveillance and timely obstetric intervention.

The overall frequency of stillbirth observed in the present study (21.3%) is relatively high but is comparable with findings reported from other tertiary healthcare facilities in low- and middle-income countries. The observed frequency closely resembles the 19.3% reported by Aziz et al. (2018) among term pregnancies in Islamabad, which served as the basis for the sample size calculation in the present study. Similarly, Dah et al. (2023) reported a substantial burden of stillbirth in a tertiary hospital in Ghana, demonstrating that fetal mortality remains a significant challenge in resource-constrained healthcare settings. The persistently high stillbirth rates reported across developing countries may reflect delayed healthcare-seeking behavior, inadequate antenatal monitoring, poor referral systems, and limited availability of comprehensive emergency obstetric care.

In the present study, women aged 35 years or older had a significantly higher frequency of stillbirth

compared with younger mothers. This finding is consistent with previous studies demonstrating that advanced maternal age is an independent risk factor for adverse pregnancy outcomes, including fetal death (Hug et al., 2021; Kasa et al., 2023). Increasing maternal age is associated with a higher prevalence of chronic hypertension, diabetes mellitus, placental insufficiency, and chromosomal abnormalities, all of which contribute to compromised fetal wellbeing. Therefore, pregnancies among older women require closer antenatal surveillance and individualized obstetric management to minimize preventable fetal loss.

The present study demonstrated a significantly higher frequency of stillbirth among women residing in rural areas. This observation is consistent with reports from Pakistan and other low-resource settings, where rural populations often experience poor access to skilled healthcare providers, delayed transportation to referral hospitals, financial constraints, and inadequate antenatal services (Abrampah et al., 2023; Shakeel et al., 2023). Geographic barriers and deficiencies in healthcare infrastructure remain major contributors to preventable maternal and fetal mortality in rural communities. Improving referral systems, strengthening primary healthcare facilities, and expanding access to skilled birth attendance may substantially reduce stillbirths in these populations.

These findings are supported by the systematic review conducted by Kasa et al. (2023), which identified low educational attainment and poverty as consistent determinants of stillbirth across sub-Saharan Africa. Limited education may reduce maternal awareness regarding pregnancy danger signs, the importance of regular antenatal visits, and healthy maternal behaviors, while financial constraints often restrict access to quality obstetric care and timely emergency services.

Among women who experienced stillbirth, hypertensive disorders represented the most frequent maternal clinical condition, followed by prolonged labor and diabetes mellitus.

An important finding of the present study was that macerated stillbirths constituted more than half of all stillbirths. Maceration generally indicates that

fetal death occurred several hours or days before delivery, suggesting delayed recognition of fetal compromise or delayed presentation to healthcare facilities. This observation highlights potential deficiencies in antenatal fetal surveillance and referral systems. Regular fetal movement assessment, timely ultrasonography, cardiotocography when indicated, and prompt referral of high-risk pregnancies may facilitate earlier identification of fetal distress and reduce the occurrence of antepartum stillbirths.

The findings of the present study have important clinical and public health implications for maternal healthcare in Balochistan. Strengthening routine antenatal care, improving screening for hypertensive disorders and diabetes, promoting institutional deliveries, and enhancing emergency obstetric services are likely to reduce preventable stillbirths. Community-based maternal education programs focusing on pregnancy danger signs, birth preparedness, and the importance of regular antenatal visits may further improve pregnancy outcomes, particularly among women living in rural and socioeconomically disadvantaged communities.

The present study has several strengths. It included only term pregnancies, thereby reducing the influence of prematurity on fetal outcomes. The use of standardized diagnostic criteria for stillbirth and clearly defined eligibility criteria enhanced the reliability of the findings. In addition, the study provides valuable local data from a tertiary care hospital in Balochistan, where published evidence regarding stillbirth remains limited. However, certain limitations should be acknowledged. The study was conducted at a single tertiary care center, limiting the generalizability of the findings to the wider population. The cross-sectional design also precludes establishing causal relationships between maternal risk factors and stillbirth. Furthermore, placental histopathology, fetal autopsy, genetic investigations, and detailed laboratory evaluation were not performed, limiting the identification of the precise causes of fetal death in some cases.

Overall, the present study demonstrates that stillbirth remains a significant challenge among

term pregnancies in Quetta, with socioeconomic disadvantage, rural residence, advanced maternal age, multigravidity, and maternal hypertensive disorders contributing substantially to fetal mortality. Addressing these modifiable factors through strengthened antenatal care, timely referral, and improved obstetric services has the potential to reduce the burden of preventable stillbirths in Balochistan and similar resource-limited settings.

## Conclusion

The present study found that the frequency of stillbirth among women presenting with term pregnancies at Sandeman Provincial Hospital, Quetta, was **21.3%**, indicating that stillbirth remains a significant obstetric and public health challenge in this setting. Macerated stillbirths accounted for the majority of cases, suggesting that many fetal deaths occurred before the onset of labor. Advanced maternal age, multigravidity, rural residence, low educational attainment, and lower socioeconomic status were significantly associated with stillbirth. Among maternal clinical conditions, hypertensive disorders were the most frequently identified factor associated with fetal death.

The findings underscore the importance of strengthening antenatal care services, early identification of high-risk pregnancies, and timely obstetric intervention to reduce preventable stillbirths. Improving access to quality maternal healthcare, particularly for women residing in rural and underserved areas of Balochistan, may contribute substantially to reducing fetal mortality and improving pregnancy outcomes.

## Recommendations

Based on the findings of the present study, the following recommendations are proposed:

1. Routine antenatal care should be strengthened to ensure early identification and management of pregnancies at increased risk of stillbirth.
2. Pregnant women should be screened regularly for hypertensive disorders, diabetes



mellitus, and other maternal medical conditions associated with adverse fetal outcomes.

3. Community-based health education programs should be implemented to increase awareness regarding the importance of regular antenatal visits, recognition of danger signs during pregnancy, and timely presentation to healthcare facilities.

4. Healthcare services in rural areas should be improved through better referral systems, enhanced transportation facilities, and increased availability of skilled obstetric care to minimize delays in receiving appropriate treatment.

5. Continuous fetal surveillance during the antenatal and intrapartum periods should be promoted for high-risk pregnancies to facilitate early detection of fetal compromise and timely intervention.

6. Future multicenter prospective studies with larger sample sizes should be conducted to investigate additional maternal, fetal, and placental factors associated with stillbirth and to evaluate interventions aimed at reducing fetal mortality in Pakistan.

## Strengths of the Study

- The study included only term singleton pregnancies, reducing the influence of prematurity on the primary outcome.
- A standardized Ultrasonographic definition of stillbirth was used, improving diagnostic accuracy.
- Clearly defined inclusion and exclusion criteria minimized potential confounding factors.
- The study provides important local evidence on stillbirth from a tertiary care hospital in Balochistan, where published data remain limited.
- Standardized data collection and statistical analysis enhanced the reliability of the findings.

## Limitations of the Study

- The study was conducted at a single tertiary care hospital, which may limit the generalizability of the findings.

- The cross-sectional study design does not establish a causal relationship between maternal characteristics and stillbirth.

- Placental histopathology, fetal autopsy, and genetic investigations were not performed; therefore, the exact causes of some stillbirths could not be determined.

- Information on maternal lifestyle factors, nutritional status, and environmental exposures was not collected and may have influenced pregnancy outcomes.

- Long-term maternal and neonatal follow-up was beyond the scope of the study.

## REFERENCES

- Abrampah, N. A., Okwaraji, Y. B., You, D., Hug, L., Maswime, S., Pule, C., ... Lawn, J. E. (2023). Global stillbirth policy review outcomes and implications ahead of the 2030 Sustainable Development Goal agenda. *International Journal of Health Policy and Management*, 12, 7391.
- Ali, T. S., Ali, S. S., Nadeem, S., Memon, Z., Soofi, S., Madhani, F., ... Bhutta, Z. A. (2022). Perpetuation of gender discrimination in Pakistani society: Results from a scoping review and qualitative study conducted in three provinces of Pakistan. *BMC Women's Health*, 22(1), 1-21.
- Aziz, S., Naseer, M., Akhter, S., & Shahid, R. (2018). Frequency of stillbirths at term pregnancy at MCH Centre Islamabad. *Journal of the Society of Obstetricians and Gynaecologists of Pakistan*, 8(1), 9-14.
- Blencowe, H., Cousens, S., Jassir, F. B., Say, L., Chou, D., Mathers, C., ... Lawn, J. E. (2016). National, regional, and worldwide estimates of stillbirth rates. *The Lancet Global Health*, 4(2), e98-e108.
- Dah, A. K., Osarfo, J., Ampofo, G. D., Appiah-Kubi, A., Mbroh, H., Azanu, W. K., ... Lassey, A. T. (2023). Stillbirth incidence and determinants in a tertiary health facility in the Volta Region of Ghana. *PLoS ONE*, 18(12), e0296076.

- Flenady, V., Wojcieszek, A. M., Middleton, P., Ellwood, D., Erwich, J. J., Coory, M., ... Ezzati, M. (2016). Stillbirths: Recall to action in high-income countries. *The Lancet*, 387(10019), 691–702.
- Goldenberg, R. L., McClure, E. M., Bhutta, Z. A., Belizán, J. M., Reddy, U. M., Rubens, C. E., & Stillbirth Working Group. (2011). Stillbirths: The vision for 2020. *The Lancet*, 377(9779), 1798–1805.
- Hug, L., You, D., Blencowe, H., Mishra, A., Wang, Z., Fix, M. J., ... UN Inter-agency Group for Child Mortality Estimation (UN IGME). (2021). Global, regional, and national estimates and trends in stillbirths from 2000 to 2019: A systematic assessment. *The Lancet*, 398(10302), 772–785.
- Jena, B. H., Biks, G. A., Gete, Y. K., & Gelaye, K. A. (2021). The effect of interpregnancy interval on stillbirth in urban South Ethiopia: A community-based prospective cohort study. *BMC Pregnancy and Childbirth*, 21, 783.
- Kasa, G. A., Woldemariam, A. Y., Adella, A., & Alemu, B. (2023). Factors associated with stillbirth among Sub-Saharan African deliveries: A systematic review and metaanalysis. *BMC Pregnancy and Childbirth*, 23(1), 835.
- Kale, P. L., & Fonseca, S. C. (2023). Intrauterine growth restriction, prematurity, and low birth weight as risk phenotypes of neonatal death in Brazil. *Cadernos de Saúde Pública*, 39(6), e00223122.
- Lawn, J. E., Blencowe, H., Waiswa, P., Amouzou, A., Mathers, C., Hogan, D., ... Cousens, S. (2016). Stillbirths: Rates, risk factors, and acceleration towards 2030. *The Lancet*, 387(10018), 587–603.
- Lawn, J. E., Lee, A. C. C., Kinney, M., Sibley, L., Carlo, W. A., Paul, V. K., ... Darmstadt, G. L. (2014). Two million intrapartum-related stillbirths and neonatal deaths: Where, why, and what can be done? *International Journal of Gynecology & Obstetrics*, 127(Suppl. 1), S5–S18.
- McClure, E. M., Saleem, S., Pasha, O., & Goldenberg, R. L. (2009). Stillbirth in developing countries: A review of causes, risk factors, and prevention strategies. *Journal of Maternal-Fetal & Neonatal Medicine*, 22(3), 183–190.
- Moxon, S. G., Ruysen, H., Kerber, K. J., Amouzou, A., Fournier, S., Grove, J., ... Lawn, J. E. (2019). Count every stillbirth and neonatal death through measurement improvement. *The Lancet*, 392(10160), 1735–1748.
- Pattinson, R., Kerber, K., Waiswa, P., Day, L. T., Mussell, F., Asiruddin, S. K., ... Lawn, J. E. (2023). Ending preventable stillbirths by 2030: Progress and remaining challenges. *The Lancet Global Health*, 11(4), e513–e524.
- Poon, L. C., Shennan, A., Hyett, J. A., Kapur, A., Hadar, E., Divakar, H., ... Hod, M. (2019). The International Federation of Gynecology and Obstetrics (FIGO) initiative on pre-eclampsia. *International Journal of Gynecology & Obstetrics*, 145(Suppl. 1), 1–33.
- Reddy, U. M., Goldenberg, R., Silver, R., Smith, G. C. S., Pauli, R. M., Wapner, R. J., ... Koch, M. A. (2009). Stillbirth classification—Developing an international consensus. *American Journal of Obstetrics and Gynecology*, 200(3), 269.e1–269.e7.
- Shakeel, A., Kamal, A., Ijaz, M., Siddiq, M., Tesema, G. A., & Abushal, T. (2023). Trends and risk factors of stillbirth among women of reproductive age in Pakistan: A multivariate decomposition analysis. *Frontiers in Public Health*, 11, 1050136.
- Silver, R. M., Varner, M. W., Reddy, U., Goldenberg, R., Pinar, H., Conway, D., ... Parker, C. B. (2011). Work-up of stillbirth: A review of the evidence. *American Journal of Obstetrics and Gynecology*, 196(5), 433–444.

- UNICEF. (2023). *Never forgotten: The situation of stillbirth around the globe*. New York, NY: United Nations Children's Fund.
- United Nations Inter-agency Group for Child Mortality Estimation. (2023). *A neglected tragedy: The global burden of stillbirths*. New York: United Nations.
- World Health Organization. (2024). *Trends in maternal and perinatal mortality: Global estimates*. Geneva: World Health Organization.
- Yakoob, M. Y., Ali, M. A., Ali, M. U., Imdad, A., Lawn, J. E., Van den Broek, N., & Bhutta, Z. A. (2011). The burden of stillbirths in Pakistan and evidence-based interventions. *Journal of Perinatology*, 31(Suppl. 1), S87–S93.
- Zeitlin, J., Wildman, K., Bréart, G., Alexander, S., Barros, H., Blondel, B., ... EUROPERISTAT Working Group. (2016). Perinatal health indicators and stillbirth surveillance in Europe. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 201, 177–183.

