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Frequency, Characteristics, and Outcomes of Multiple Pregnancies Delivered at Rabia Balkhi Hospital, Kabul, Afghanistan: A Retrospective Descriptive Study

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Abstract

Background: Multiple pregnancy requires coordinated maternity and newborn care. This study estimated the frequency of these deliveries at Rabia Balkhi Hospital in Kabul, Afghanistan, and described maternal characteristics, delivery patterns, birth weights, and fetal and in-hospital neonatal outcomes.

Methods: This retrospective descriptive study included all 205 multiple-pregnancy deliveries identified among 14,075 hospital deliveries from March 21 to September 22, 2025. Analyses used descriptive statistics and Wilson 95% confidence intervals (CIs). All 417 recorded birth weights were analyzed, including those of fetuses that died before birth. For each type of death, results include the number of affected pregnancies and the total number of deaths. The neonatal count was limited to deaths documented in the hospital's neonatal ward before 28 completed days of life. Outcomes after discharge or transfer were unavailable.

Results: Multiple pregnancy accounted for 14.6 per 1,000 hospital deliveries (95% CI, 12.7-16.7), or 1.46% (205/14,075). There were 198 twin and seven triplet pregnancies. The mean maternal age was 27.59 years (standard deviation, 5.50). Median gestational age at delivery was 36 weeks (interquartile range, 34-37). Delivery occurred before 37 completed weeks in 128 pregnancies (62.4%). Of 417 recorded birth weights, 300 (71.9%) were below 2,500 g. Cesarean delivery accounted for 153 deliveries (74.6%), with breech presentation the most frequent primary indication (58/153, 37.9%). The records listed a principal maternal complication or coexisting condition in 68 pregnancies (33.2%). There were 42 fetal deaths across 25 pregnancies (12.2%) and 48 in-hospital neonatal deaths across 37 pregnancies (18.0%).

Conclusions: The timing of delivery and the frequency of recorded weights below 2,500 g can help the hospital prepare for early births and small newborns. The records identify cesarean decisions and deaths for individual review. Linking maternal and infant records and following infants after discharge would give a fuller account of neonatal outcomes.

Categories: Obstetrics/Gynecology
Keywords: afghanistan, cesarean delivery, low birth weight, multiple pregnancy, neonatal outcomes, preterm delivery, triplet pregnancy, twin pregnancy

Introduction

The frequency of twin deliveries varies widely across regions. In a global analysis, the estimated frequency rose from 9.1 per 1,000 deliveries in 1980-1985 to 12.0 per 1,000 in 2010-2015 [1]. For an individual hospital, the delivery register shows how often its teams encounter twin and triplet pregnancies. The maternal and newborn records show what happened during those admissions.

In the World Health Organization (WHO) Multicountry Survey, severe maternal outcomes were more frequent in twin pregnancies than in singleton pregnancies [2]. An analysis of U.S. birth records found that multiple gestation was associated with birth before 37 weeks [3]. A review of hospital records can describe maternal conditions and early delivery within the same group of pregnancies.

The International Society of Ultrasound in Obstetrics and Gynecology recommends determining chorionicity, which describes whether twins share a placenta, and monitoring fetal growth [4]. The National Institute for Health and Care Excellence (NICE) provides guidance specific to the care of twin and triplet pregnancies [5]. Gestational age and weight at delivery also matter for newborn care. In Brazilian birth records, preterm birth and low birth weight were both common among live-born twins [6].

We reviewed deliveries at Rabia Balkhi Hospital to estimate the proportion involving multiple pregnancy. The review described maternal characteristics and conditions, recorded chorionicity, timing and mode of delivery, and primary cesarean indications. It also covered recorded birth weights, fetal deaths, and deaths documented in the neonatal ward.

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Materials And Methods

Study design and setting

This retrospective descriptive study covered deliveries at Rabia Balkhi Hospital, a Ministry of Public Health obstetric hospital in Kabul, Afghanistan, from March 21 to September 22, 2025. The register listed 14,075 deliveries, with each maternal delivery counted once. The chart review included all 205 deliveries identified as twin or triplet pregnancies. Singleton deliveries contributed to the total used to calculate hospital frequency. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) and Reporting of Studies Conducted Using Observational Routinely Collected Health Data (RECORD) statements guided reporting [7,8].

Data collection and variables

The first author prepared a standardized, coded data collection form before reviewing the records. She screened the registers for twin and triplet deliveries and used the recorded identifiers to locate the corresponding charts with help from staff in the hospital's medical records department.

She completed the form using maternal charts, delivery-room registers, and available neonatal ward records, then checked each entry against its source. Each pregnancy received a coded study identifier.

The data included maternal age, gravidity, parity, gestational age at delivery, plurality, chorionicity, mode of delivery, birth weights, and counts of fetal and neonatal deaths. Measurements and clinical labels were taken as documented. The chorionicity summary included twin and triplet pregnancies. Information on amnionicity was unavailable in the dataset.

The form captured one principal maternal condition per pregnancy and one primary indication per cesarean delivery. "None recorded" indicates that the field contained no documented principal maternal condition. A single entry could miss concurrent conditions or additional indications. For each pregnancy affected by neonatal death, the form captured one diagnosis category. Establishing the cause of an individual death would require review of that infant's clinical record.

Missing and inapplicable data

The analysis retained all 205 pregnancies and used available observations for each variable, without imputation. Fertility-treatment status was considered unknown when the records did not establish whether treatment had been used. The third weight field applied only to the seven triplet pregnancies.

Outcome definitions and denominators

To calculate hospital frequency, we divided the number of multiple-pregnancy deliveries by all 14,075 deliveries and reported the result per 1,000 deliveries and as a percentage. WHO defines preterm birth as live birth before 37 completed weeks [9]. The analysis used the same threshold and counted pregnancies based on their recorded gestational age, including pregnancies with fetal deaths.

The WHO low birth weight indicator uses a threshold of less than 2,500 g among live births [10]. The analysis applied the same threshold to all 417 recorded weights because the dataset could not link each weight to vital status at birth. These records included weights of fetuses that died before birth. For the continuous summary, each pregnancy contributed the average of its recorded weights.

Intrauterine fetal deaths were counted as documented. The dataset lacked gestational age at fetal death and its timing in relation to labor. The neonatal death count included documented deaths of live-born infants in the hospital's neonatal ward before 28 completed days of life [11]. The charts identified which infants died, and the study form captured the number of neonatal deaths for each pregnancy. Outcomes after discharge or transfer were unknown.

For each type of death, results include the number and percentage of the 205 pregnancies affected, along with the total number of deaths. Percentages for primary cesarean indications use the 153 cesarean deliveries. The diagnosis percentages use the 37 pregnancies with at least one documented in-hospital neonatal death.

Statistical analysis and data checks

We analyzed the data using IBM SPSS Statistics for Windows, Version 32 (Released 2026; IBM Corp., Armonk, New York, United States). Counts and percentages describe categorical variables. Maternal age and mean birth weight per pregnancy are presented as means and standard deviations. The summaries for gravidity, parity, and gestational age give the median and the 25th and 75th percentiles. All five summaries include the range.

Two-sided 95% confidence intervals (CIs) were based on the Wilson score method [12]. The hospital frequency interval was calculated in Python (Python Software Foundation, Fredericksburg, VA, USA) using the full hospital denominator. SPSS provided separate intervals for the proportions of pregnancies with a recorded maternal condition, delivery before 37 weeks, at least one fetal death, and at least one in-hospital

neonatal death. Counts and percentages summarize weights across the three recorded weight fields. Infant-level intervals were omitted because weights from the same pregnancy may be correlated.

We recalculated the descriptive results in Python and compared them with the SPSS output. Checks of the coded dataset covered duplicate identifiers and missing or inapplicable entries. Death counts were checked against the yes/no indicators and the number of fetuses. Other checks addressed whether the indication and diagnosis fields applied to each case and whether the early delivery and low weight indicators agreed with the recorded gestational ages and weights.

Ethical considerations

The study proposal received scientific approval from the Scientific Committee of the General Directorate of Postgraduate Medical Education, Ministry of Public Health. Ethical approval was obtained from the Institutional Review Board of the Afghanistan National Public Health Institute, Ministry of Public Health (approval A-8-26-521; August 20, 2026). Rabia Balkhi Hospital granted permission to conduct the study. Individual informed consent was waived for retrospective review of existing records. Research access and data abstraction began only after approval. The analytic dataset used coded study identifiers and excluded direct patient identifiers. Results are reported in aggregate.

Results

Hospital frequency and maternal characteristics

Among 14,075 hospital deliveries, 205 involved multiple pregnancies. This was 14.6 per 1,000 deliveries (95% CI, 12.7-16.7), or 1.46% (95% CI, 1.27%-1.67%). There were 198 twin pregnancies (96.6%) and seven triplet pregnancies (3.4%), for a total of 417 fetuses. Twin pregnancies alone accounted for 14.1 per 1,000 hospital deliveries (198/14,075). Maternal age, gravidity, parity, gestational age, plurality, chorionicity, and mode of delivery were available for all 205 pregnancies.

Mean maternal age was 27.59 years (standard deviation, 5.50). Median gravidity was 3 (interquartile range, 2 to 4), median parity was 2 (1 to 3), and median gestational age at delivery was 36 weeks (34-37). Most pregnancies were dichorionic, and 153 deliveries (74.6%) were cesarean (Table *1*).

Characteristic	Summary	Range
Maternal age, years	27.59 ± 5.50	18-52
Gravidity	3 (2-4)	1-12
Parity	2 (1-3)	0-9
Gestational age at delivery, completed weeks	36 (34-37)	24-42
Mean fetal weight per pregnancy, g	2,032.52 ± 595.86	300-3,500
Twin pregnancy	198 (96.6%)	Not applicable
Triplet pregnancy	7 (3.4%)	Not applicable
Monochorionic pregnancy	46 (22.4%)	Not applicable
Dichorionic pregnancy	157 (76.6%)	Not applicable
Trichorionic pregnancy	2 (1.0%)	Not applicable
Vaginal delivery	52 (25.4%)	Not applicable
Cesarean delivery	153 (74.6%)	Not applicable

TABLE 1: Maternal and obstetric characteristics of 205 multiple pregnancies

Age and mean fetal weight per pregnancy are mean ± standard deviation. Gravidity, parity, and gestational age are median (25th-75th percentiles). Categorical values are n (%). Chorionicity includes twins and triplets. The weight summary uses one mean per pregnancy rather than a pooled mean across 417 fetuses.

Fertility treatment use was documented in 15 records (7.3%). Conception method could not be established from the remaining 190 records (92.7%).

Maternal conditions and pregnancy outcomes

A principal maternal complication or coexisting condition was recorded in 68 pregnancies (33.2%; 95% CI, 27.1%-39.9%). Anemia was the most frequent category, followed by gestational diabetes mellitus and

postpartum hemorrhage (Table 2). The remaining 137 records had no condition entered in this field.

Recorded category	n	%
None recorded	137	66.8
Anemia	18	8.8
Gestational diabetes mellitus	12	5.9
Postpartum hemorrhage	11	5.4
Gestational hypertension	10	4.9
Preeclampsia	9	4.4
Hyperthyroidism	5	2.4
Eclampsia	3	1.5

TABLE 2: Principal recorded maternal complication or coexisting condition

N=205 pregnancies. One principal category was recorded per pregnancy; additional concurrent diagnoses were not fully captured. Percentages may not sum to 100 because of rounding.

Delivery occurred before 37 completed weeks in 128 pregnancies (62.4%). There were 42 fetal deaths across 25 pregnancies (12.2%). Nine pregnancies had one fetal death, 15 had two, and one had three. In 37 pregnancies (18.0%), at least one live-born infant died in the neonatal ward. The ward recorded 48 such deaths, with one death in 26 pregnancies and two in 11 (Table 3).

Outcome	Pregnancies, n (%)	95% CI	Deaths, n
Any recorded maternal condition	68 (33.2)	27.1%-39.9%	Not applicable
Delivery before 37 completed weeks	128 (62.4)	55.6%-68.8%	Not applicable
At least one intrauterine fetal death	25 (12.2)	8.4%-17.4%	42
At least one in-hospital neonatal death	37 (18.0)	13.4%-23.9%	48

TABLE 3: Pregnancy-level outcomes and documented deaths

N=205 pregnancies. CI: confidence interval; intervals use the Wilson score method. Outcomes can overlap. Pregnancy percentages describe affected pregnancies, while the last column counts individual deaths. Neonatal deaths were limited to those recorded in the hospital's neonatal ward before 28 completed days of life.

Documented indications for cesarean delivery

Primary indications were available for all 153 cesarean deliveries. Breech presentation was the most common (58, 37.9%). Previous cesarean delivery (22, 14.4%) and transverse lie (17, 11.1%) were the next most frequent indications (Table 4).

Primary indication	n	% of 153
Breech presentation	58	37.9
Previous cesarean delivery	22	14.4
Transverse lie	17	11.1
Oligohydramnios	15	9.8
Fetal distress	15	9.8
Prelabor rupture of membranes	13	8.5
Fetal growth restriction	3	2
Preeclampsia with severe features	3	2
Post-term pregnancy	2	1.3
Umbilical cord prolapse	2	1.3
Placental abruption	2	1.3
Suspected fetal macrosomia	1	0.7

TABLE 4: Primary recorded indications for cesarean delivery

N=153 cesarean deliveries. One primary indication was recorded per pregnancy and retained as documented. The fetus with the presentation or condition was not identified, and additional contributing indications were unavailable.

Diagnoses recorded in pregnancies affected by neonatal death

Low birth weight was the diagnosis most often recorded for pregnancies affected by in-hospital neonatal death (20 of 37, 54.1%). Birth asphyxia was recorded for 14 pregnancies (37.8%) and neonatal sepsis for three (8.1%) (Table *5*).

Recorded diagnosis	Pregnancies, n	% of 37
Low birth weight	20	54.1
Birth asphyxia	14	37.8
Neonatal sepsis	3	8.1

TABLE 5: Diagnosis recorded in pregnancies affected by neonatal death

N=37 affected pregnancies. Each pregnancy contributed one recorded diagnosis category, including pregnancies in which two infants died. The denominator is the number of affected pregnancies.

Recorded birth weights

Among 417 recorded birth weights, 300 (71.9%) were below 2,500 g. The first two weight fields were complete for all 205 pregnancies, and the third was complete for all seven triplet pregnancies. Table *6* shows the number of weights below 2,500 g in each field.

Record field	Weights, N	Below 2,500 g, n	%
First recorded infant	205	146	71.2
Second recorded infant	205	148	72.2
Third recorded infant	7	6	85.7
All recorded infants	417	300	71.9

TABLE 6: Recorded fetal weights below 2,500 g

N=417 recorded fetal weights, including fetal deaths; this is not a live-born-only low-birth-weight estimate. Third-infant entries were structurally inapplicable to 198 twin pregnancies. The overall percentage is calculated from 300/417.

Discussion

Frequency and the local care burden

At Rabia Balkhi Hospital, about one in 69 deliveries involved a twin or triplet pregnancy. Delivery before 37 weeks was common in this group. Planning for multiple births at the hospital therefore includes preparing to care for newborns delivered early.

The hospital frequency of 14.6 per 1,000 deliveries was close to the 14.5 per 1,000 maternities reported in England and Wales in 2025, where 8,392 of 579,155 maternities involved multiple births [13]. A maternity in those statistics is a pregnancy that ends in at least one live birth or stillbirth. For twins alone, a British Columbia population study published in 2024 reported 15.8 twin deliveries per 1,000 deliveries in 2008-2020 [14]. The corresponding figure at Rabia Balkhi Hospital was 14.1 per 1,000. Both comparisons cover wider populations than the deliveries at a single hospital.

The Iranian study used vital statistics to track a national trend. From 2014 to 2023, the rate of live-born infants from multiple births per 1,000 live births rose by an average of 2.38% per year [15]. A longer series of hospital delivery records could show whether the local pregnancy-based frequency is changing. Table *7* gives the population and unit for the other comparisons.

Measure	Present study	Published comparison
Multiple-pregnancy frequency	14.6 per 1,000 hospital deliveries	England and Wales, 2025: 14.5 per 1,000 maternities[13]
Twin-only frequency	14.1 per 1,000 hospital deliveries	British Columbia, 2008-2020: 15.8 per 1,000 deliveries[14]
Delivery before 37 completed weeks	62.4% of pregnancies	United States, 2016-2021: 57.6% of twin and 94.2% of triplet live-birth records[3]. Brazil, 2015-2024: approximately 60% of live-born twins [6]
Recorded weight below 2,500 g	71.9% of 417 fetal weights	Brazil, 2015-2024: approximately 60% of live-born twins[6]
Cesarean delivery	74.6% of pregnancies	Brazil, 2015-2024: 87.5% of birth records[6]

TABLE 7: Selected findings alongside recent international evidence

Comparisons are descriptive and use the periods and units shown. England and Wales data are official statistics from the 2025 birth-registration tables. The other studies were published in 2024-2026. The present delivery-before-37-weeks measure includes pregnancies with fetal deaths, and the present weight denominator includes all 417 recorded fetal weights. The US and Brazilian infant outcomes use live-birth records.

Gestational age and birth weight

Median gestational age at delivery was 36 weeks, and delivery occurred before 37 completed weeks in 62.4% of the pregnancies. In U.S. birth records, 57.6% of live-born twins and 94.2% of live-born triplets were preterm [3]. In Brazil, approximately 60% of live-born twins were preterm [6]. The U.S. and Brazilian estimates use live births as the denominator. The hospital percentage counts pregnancies, including those with fetal deaths. Recording how labor began and the reason for early delivery would help distinguish spontaneous from medically indicated deliveries.

Approximately 60% of live-born twins in the Brazilian study weighed below 2,500 g [6]. The estimate from Rabia Balkhi Hospital uses all recorded weights, including those from triplet pregnancies and those of fetuses that died before birth. Linking each weight to vital status would let the hospital calculate how many live-born infants weighed below the threshold. Gestational age would help clinicians interpret each infant's size at birth. Together, these data could inform planning for the care of preterm and low-birth-weight infants described in WHO guidance [16].

Delivery decisions and maternal care

Of the 153 cesarean deliveries, 75 (49.0%) had breech presentation or transverse lie as the primary indication. A previous cesarean was the primary indication in another 22 cases (14.4%). Fetal presentation and obstetric history are therefore useful starting points for reviewing the hospital's cesarean proportion of 74.6%.

For uncomplicated diamniotic twins beyond 32 weeks, NICE considers planned vaginal birth an option when the first twin is head-first, there is no obstetric contraindication to labor, and the twins do not differ substantially in size [5]. Knowing which fetus was breech or transverse would help clinicians interpret the recorded indication in that context. A review of delivery decisions would also benefit from information about referrals, whether surgery was planned or urgent, local protocols, and the availability of clinicians experienced in vaginal twin birth. These details were unavailable in the study dataset.

Anemia was the most frequently recorded principal maternal condition (18 pregnancies, 8.8%). A 2025 study of twin pregnancies found that anemia late in pregnancy was associated with preterm birth, postpartum hemorrhage, and transfusion [17]. The study form recorded only one principal condition per pregnancy, so the analysis could not determine whether anemia and hemorrhage occurred together. Recording hemoglobin and concurrent diagnoses would allow a future study to examine these associations locally.

Fetal and in-hospital neonatal deaths

The records documented 42 fetal deaths across 25 pregnancies and 48 in-hospital neonatal deaths across 37 pregnancies. Some pregnancies had more than one loss. The 18.0% describes the share of the 205 pregnancies with at least one neonatal death documented in the ward. Estimating neonatal mortality through 28 days would require tracking each live-born infant's survival, including after discharge or transfer.

A prospective study in India and Pakistan found that 133 of 493 preterm live-born twins (27.0%) died before 28 days [18]. That study followed individual infants through the neonatal period. The review at Rabia Balkhi Hospital included multiple pregnancies at all recorded gestational ages and counted deaths during admission to the neonatal ward. Comparing survival would require comparable populations, denominators, and follow-up periods.

In a national Irish cohort of very-low-birth-weight infants using 2014-2022 data, twins had lower mortality than singletons in the unadjusted analysis. The difference was no longer evident after adjustment [19]. A future comparison at Rabia Balkhi Hospital would require each infant's gestational age, birth weight, vital status, and survival through a consistent follow-up period.

Low birth weight was the diagnosis recorded for 20 of the 37 pregnancies affected by in-hospital neonatal death. The form had one diagnosis field per pregnancy, even when more than one infant died. A review of the individual charts could examine the circumstances of birth and each infant's clinical course. WHO guidance on maternal and perinatal deaths provides a framework for reviewing contributing factors and acting on the findings [20].

Strengths, limitations, and implications

The review included all 205 multiple-pregnancy deliveries identified in the register. The full count of 14,075 hospital deliveries over the same period provided the denominator for estimating frequency. The first author checked the collected data against the source records. Recorded maternal conditions, cesarean indications, and birth weights added clinical detail to the register counts. Reporting affected pregnancies and individual deaths separately captured multiple losses within a pregnancy.

The study covered six months at one hospital. Differences in the patients seen and how care is documented limit how far the findings apply to other hospitals or the wider Afghan population. Incomplete records may have led to underreporting of maternal conditions or fetal and neonatal events. Recording one principal maternal condition per pregnancy may also have missed concurrent diagnoses. We could not independently verify register completeness, clinical diagnoses, pregnancy dating, or when chorionicity was assessed. Information on amnionicity, detailed antenatal care, and hemoglobin was unavailable. Fertility-treatment status was unknown for 190 pregnancies, and the seven triplet pregnancies give limited information on higher-order multiples.

Linking a neonatal death to an individual birth weight would require a further review of the charts. A complete 28-day mortality estimate would require outcomes after discharge or transfer, beyond the deaths documented during admission. The descriptive design and absence of a singleton comparison group limit the evaluation of independent risk factors.

The WHO Robson classification assigns multiple pregnancies, including those with a previous cesarean, to group 8 [21]. Of the 205 deliveries recorded as multiple pregnancies, 153 (74.6%) were cesarean. Confirming group 8 eligibility for pregnancies with fetal deaths would require knowing when those deaths occurred. That information was unavailable in the dataset. A hospital-wide Robson table would also require obstetric data for singleton deliveries.

A prospective study could link maternal and infant records and follow each live-born infant through 28 completed days, including after discharge or transfer. The register could record birth weight, vital status at birth, and discharge or transfer destination for each infant. Recording concurrent maternal conditions and the circumstances of delivery would provide more detail for studying outcomes. To evaluate potential risk factors, a future study could include singleton deliveries from the same period, adjust for confounding, and account for infants sharing a pregnancy.

Conclusions

Delivery before 37 weeks and recorded birth weights below 2,500 g were common in this cohort at Rabia Balkhi Hospital. The findings can guide preparation for early deliveries and care for small newborns. The documented cesarean indications and deaths identify cases for clinical review. A prospective study with linked maternal and infant records and follow-up of live-born infants through 28 days would give a fuller account of neonatal outcomes and allow evaluation of potential risk factors.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Farima Nijrabi, Masooda Ahmadzai

Acquisition, analysis, or interpretation of data: Farima Nijrabi, Masooda Ahmadzai

Drafting of the manuscript: Farima Nijrabi

Critical review of the manuscript for important intellectual content: Farima Nijrabi, Masooda Ahmadzai

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. Institutional Review Board of the Afghanistan National Public Health Institute, Ministry of Public Health issued approval A-8-26-521; August 20, 2026. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **AI use statement:** The authors used ChatGPT (OpenAI, San Francisco, CA, USA) as follows: language polishing in the article. The authors confirm that they have reviewed and verified all AI-assisted content and take full responsibility for the work. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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