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Physical and Psychological Maternal Morbidity After Stillbirth: Findings from a Tertiary Care Centre in Eastern India

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ABSTRACT

Background: World Health Organisation International ICD 10th revision defines stillborn as death of a fetus with a birthweight of ≥ 1000 grams or a gestational age of ≥ 28 weeks. After or during delivery of stillborn baby, maternal morbidity needs to be evaluated. The objective was to evaluate the various adverse clinical outcomes of mother who had stillbirths.

Methods: A prospective observational study was done at Department of Obstetrics and Gynaecology, Jalpaiguri Government Medical College, India from February 2024 to December 2024 among 95 mothers who underwent stillbirth delivery.

Results: The majority of study participants belonged to age group below 20 years followed by the age group of 21-25 years. Only 54 mothers had their pregnancies booked. Out of 95 study population the study demonstrated most common adverse physical outcome as infectious complications (47) followed by uterine (30), haemorrhagic (27) & renal complications (23). 39 mothers developed mild depression & 13 mothers developed moderate depression. Operative and conservative specific medical management were required for 7 & 48 mothers respectively. 40 mothers had no complications and required no specific management.

Conclusions: This present study showed significant rise of physical & psychological complications among study population (total 55 mothers out of 95) after stillbirth. Reporting of maternal morbidity after stillborn should be done from institutional to national level using the ICD code (9 or 10) for SMM (severe maternal morbidity) to assess the magnitude.

Keywords: Stillbirth, Maternal Morbidity, Puerperal Infection, Postpartum Hemorrhage, Edinburgh Postnatal Depression Scale, Severe Maternal Morbidity

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INTRODUCTION

Stillborn is defined as delivery of a fetus without any signs of life.[1] For international comparison purpose, World Health Organisation International Statistical Classification of Diseases and Related Health Problems (ICD 10th revision) define stillborn as death of a fetus with a birthweight of ≥ 1000 grams or a gestational age of ≥ 28 weeks or a body length of ≥ 35 centimetres.[2]

For a mother, delivering stillborn fetus is a devastating experience. It affects mothers' physical heath, emotional state, raises complicated family issues. High burden of stillbirth was reported in low-middle income countries & in countries with low development status. Global data shows stillborn is an alarming issue, 2 million stillbirths at 28 week or more of gestation was (rate of 13.9 stillbirths per 1000 total births) in 2019, highest in west and central Africa (22.8 stillbirths per 1000 total births).[3]

Considering this impact, government of India aims to reduce the number of stillbirths to 12 stillbirths per 1000 total births by 2030 through Every Newborn Action Plan (ENAP) was launched in September 2014.[4]

Stillbirth may occur due to multiple contributing factors like maternal cause, fetal cause, placental cause & due to unknown reasons. It may be antepartum or intrapartum in nature; fresh or macerated in nature. After or during delivery of stillborn baby, mothers may face several complications like Postpartum hemorrhage, retained placenta, sepsis, atonic uterus, renal complications, disseminated intravascular coagulation etc.[5] Between 1999- 201, in California, Wall-Wieler E et al found 578 cases of severe maternal morbidity per 10,000 deliveries for stillbirth compared to only 99 cases per 10,000 deliveries for live births which states the magnitude of severity.[6]

Jalpaiguri, the northern areas of West Bengal state, India include large prevalence of tea garden workers, a unique and distinguishing epidemiological characteristic. Study of the maternal morbidity after stillbirth particularly in these regions can make us understand how much impact it has regarding maternal health.

Objective for the present study was to evaluate the various adverse clinical outcomes of mother who had stillbirths in a peripheral tertiary care hospital in west Bengal, India so that we can understand the magnitude of physical & psychological health impact of mothers after stillbirth.

MATERIALS AND METHODS

A prospective observational study was done at Department of Obstetrics and Gynaecology, Jalpaiguri Government Medical College, Jalpaiguri, West Bengal, India After getting approval from the Ethical Committee of North Bengal Medical College, Siliguri, Darjeeling, West Bengal, India on 29th February 2024, Memo no. ICE/NBMC/M-12/201/2024. As Jalpaiguri Government Medical College is a new medical college & ethic committee of this institution was not registered to National Medical Council, ethical committee approval was obtained from the nearby medical college (North Bengal Medical College) for study purpose. This present study was conducted from February 2024 to December 2024.

Inclusion and exclusion criteria: (figure1) Mothers who underwent stillbirth delivery beyond 28 weeks of gestation or fetal birth weight more than 1000 gram, either in the present institution or admitted here within 24 hours of stillbirth delivery outside this hospital were included in the study.

Cases of maternal death during the antenatal period in which the baby was delivered by postmortem caesarean section were excluded from the study. Mothers who did not remain hospitalized for at least 7 days following delivery were also excluded. Additionally, cases with incomplete records or those for whom relevant clinical and study-related data could not be retrieved were not included in the analysis.

Sample size calculation: The sample size of mother delivering still birth baby was calculated in accordance with study done by Wall-Wieler E et al in 2019 where prevalence severe maternal morbidity after stillbirth 578 per 10,000 deliveries, 5.78 percent.[6]

Sample size N = $Z^2pq/\ d^2$

Where, Z is value of Z statistic at 95% confidence level which is 1.96; p is prevalence as 1.39%; q is (1-p) which is 0.9861; and d is precision which is 5%

The calculated sample size is 83.68 ≈ 84. After calculating sample size, to maximize the outcome, authors have taken data of 95 mothers who delivered stillbirth baby at this institution or admitted within 24 hours after delivery outside.

With 600 bed capacity, annual delivery rate approximately 11 thousand per year and stillbirth rate approximately 1%, there were 9,987 deliveries during the 11 months study period in this institution and total stillbirth during this period was 107 in number. 4 mothers were referred in to this institution after stillbirth delivery outside. Out of these 111 mothers, 16 mothers could not be traced properly (left hospital immediately after delivery or relevant data could not be collected), so the final number of study subject was 95. (flowchart 1)

As this was an observational study for academic purpose at a tertiary care medical college & hospital, formal registration in public database was not sought. However, the study protocol was reviewed and approved by the institutional ethical committee. This study was not a clinical trial.

Study procedure: After informed written consent, thorough history & chief complaints were obtained from all mothers, they were systematically examined, optimally investigated and interventions were done as per requirements. All mothers were kept admitted for at least 7 days or more (as per necessity). Diagnosis along with

investigations & treatments were provided with multidisciplinary approach. All the findings were recorded on a predesigned proforma to assess the adverse physical & psychological maternal outcomes due to stillbirths.

For those mothers who delivered outside and admitted in the present institution, the missing demographic data and other relevant information were collected from the MCP card, referral notes, information from ASHA workers and near relatives.

This study applied strict inclusion & exclusion criteria to minimize selection bias. To avoid non-response bias, mothers were repeatedly and gently approached during hospital stay and data were collected successfully. Despite maximum efforts, the remaining limitations were discussed in 'strength and limitation' section.

Puerperal sepsis, wound infection, urinary tract infection and breast abscess were taken as complication defined by World Health Organisation.[7] Atonic uterus was considered as inability of uterine muscle to contract in spite of standard uterotonics, retained placenta was considered when mother failed to deliver placenta within 60 minutes of delivery of fetus.[8] Subinvolution of uterus (failure of uterus to return to normal size after delivery) & uterine rupture was diagnosed clinically along with investigations.[9] Deep vein thrombosis was marked when Homan's sign elicited.[10] Pain, redness and swelling over areas of superficial veins were taken as superficial thrombophlebitis. [11] Oliguria (urine output less than 60 ml/hour), haematuria (when RBC traced in urine) and proteinuria (urine dipstick 1+) were diagnosed as standard definition. Glomerulonephritis was diagnosed as loss of kidney function within days characterised by clinical signs of fluid retention, decreased GFR, proteinuria, haematuria.[12] Postpartum hypertension was defined as BP >140/90 mm of Hg. Decreased cardiac output and coronary artery disease was diagnosed by echocardiography. [13] Endocrine and metabolic disorders were identified by blood test & arterial blood gas analysis considering standard values. Postpartum haemorrhage (PPH) was defined when blood loss equal or more than 1000 ml with hypovolemia within 24 hours of birth. [14] Obstetric shock classification was used to determine shock stage. [15] DIC (disseminated intravascular coagulation) was diagnosed clinically and by laboratory results of prothrombin time, INR, fibrinogen and D-dimer value.[16]

EPDS (Edinburgh postnatal depression scale) a standard 10 item questionnaire screening tool (in Hindi language and translated Bengali language) and was used to assess symptoms of depression in postpartum mothers during the 7 days of hospital stay. [17,18] The 10 questions ask about mood, anxiety, guilt, suicidal thought over past 7 days. Each question is scored 0-3, Maximum score is 30. Depression was considered if the score 10 or more. This questionnaire on day 3 postpartum period.

EPDS scoring was used in this study as follows-

Score 0-9- Low likelihood but still monitor mood
Score 10-12- Mild depressive, consider follow up
Score 13-14- Moderate, further evaluation recommended
Score >15- Major, seek professional help

Statistical analysis: The collected data were tabulated in Microsoft excel and analysed maintaining confidentiality. Frequency, percentage, mean for the groups including age, facility booking status, gravida status, socioeconomic condition status, gestational age, mode of delivery, type of stillbirth (macerated/ fresh), timing of stillbirth (antepartum / intrapartum) was calculated using Microsoft excel formulas.

Values like p-value, chi square value and odds ratio (OR) with 95% CI were calculated for analysis of important subgroups like comparison of complication rates in booked vs. un-booked mothers, in primigravida vs. multigravida; comparison of EPDS scores by age group (< 20 years vs. ≥20 years); comparison of physical complication rates by socioeconomic class (lower-lower middle vs. upper-middle) using both Microsoft Excel formula and SPSS V.24 Software.

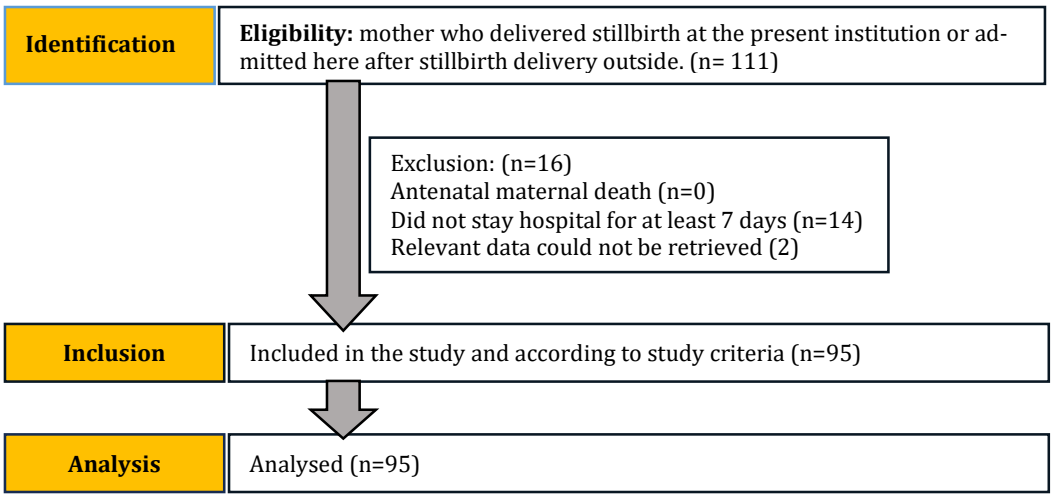

Figure 1: Flowchart- participant selection after fulfilling eligibility criteria (inclusion and exclusion criteria)

RESULTS

During the study period, after applying inclusion & exclusion criteria, with proper written consent, 95 mothers were evaluated and analysed for postpartum heath complications after stillbirth delivery for at least 7 days. The majority (40) of study participants belonged to age group below 20 years (42.1%), followed by the age group of 21-25 years, 23 in number (24.2%). 22 mothers (23.2%) belonged to age group of 26-30 years, while the least number of women (10 mothers) were in the age group of >30 years (10.5%). The mean age of the study population was 23.20 ± 4.53 years. Most of the women (84 out of 95) belonged to lower & lower middle socioeconomic class, while the least proportion (11 out of 95) belonged to upper-middle socioeconomic class 5 of the modified Kuppuswamy and Udai Pareekh's scale.[19]

Only 54 mothers (56.8%) had their pregnancies booked at nearby health centre, others were not booked, Multigravida mothers were found in majority (68.4 %) and 31.6% were primigravida. (table 1). The result demonstrated that majority (58.9%) of mothers had stillbirth delivery between 28-34 weeks of gestation with mean gestational age of 33.90 ± 3.76 weeks. Out of 95 mothers only 1 mother needed caesarean section delivery due to transverse lie. Majority of the stillbirths were macerated (95.7%) and antepartum (93.6%) in nature. (table 1)

Subgroup analysis of this study demonstrated that adverse maternal outcome was significantly associated with non-booking of pregnancy with p value <0.05. no significant association found with gravid status & socioeconomic status. (table 2)

Table 1: distribution of mothers according to various clinical, sociodemographic and obstetrical variables

Variables	Cases (%)
Booking status	
Booked	54 (56.8)
Not booked	41 (43.2)
Gravidity	
Primigravida	30 (31.6)
Multigravida	65 (68.4)
Socio-economic class	
Lower & lower middle	84 (88.42)
upper-middle	11 (11.5)
Gestational age	
Gestational age between 28-34 weeks	56 (58.9)
Gestational age between 35-40 weeks	39 (41.0)
Type of delivery	
Vaginal delivery	94 (98.9)
Caesarean section	01 (1.05)
Type of still birth	
Macerated stillbirth	91 (95.7)
Fresh stillbirth	4 (4.2)
Timing of stillbirth	
Antepartum stillbirth	89 (93.6)
Intrapartum stillbirth	6 (6.3)

Table 2: Association of maternal adverse effect with health care facility booking status, gravid status, socioeconomic condition status

Booking, gravid and socioeconomic status of mother	Cases	Mothers who developed adverse outcome	Mothers who did not developed adverse outcome
Booked	54	16 (29.6%)	38 (70.37)
Not booked	41	26 (63.4%)	15 (36.58%)
Primigravida	30	17 (56.6%)	13 (43.33%)
Multigravida	65	38 (58.4%)	27 (41.54%)
Lower & lower middle socioeconomic class	84	51 (60.71%%)	33 (39.28%)
upper-middle socioeconomic class	11	5 (45.45%)	6 (54.54%)

Association of booking status and adverse outcome was statistically highly significant: p value=0.00102; chi square value= 10.785; odds ratio= 4.1166, 95% CI (1.7365, 9.7591). Association of gravid status and adverse outcome was Not statistically significant: p value=0.8691; chi square value= 0.0271; odds ratio= 1.0762, 95% CI (0.4488, 2.5806). Association of socioeconomic status and adverse outcome was Not statistically significant: p value=0.3333; chi square value= 0.9359; odds ratio= 0.5392, 95% CI (0.1521, 1.9105).

Though many study subjects demonstrated multiple complications and they are not mutually exclusive, infectious complications (49.5% of cases (95% CI: 39.6%-59.4%; 47/95)) was found to be the most common individual adverse physical outcome followed by uterine (31.57% of cases (95% CI: 22.23%-40.92%; 30/95)), haemorrhagic (28.42% of cases (95% CI: 19.35%-37.49%; 27/95)) & Renal complications (24.21% of cases (95% CI: 15.59%-32.82%; 23/95)) (table 3). While endocrine & metabolic disorders were the least common. Out of these complications puerperal sepsis (27.4%), atonic uterus (26.3%) & Postpartum haemorrhage not leading to shock (17.9%) were significant in number (table 3).

Regarding adverse psychological outcomes within 7 days of hospital stay duration, A significant proportion (45.3%) fell into the “low likelihood but still monitor mood” category (table 4). 52 mothers developed mild to moderate depression (EPDS score 10 or more). None of the mothers categorized as major depression. No statistical significance was found between maternal age group (below/above 20 years) and adverse psychological outcome. (table 5)

Table 3: Distribution of study population according to adverse physical outcomes. Same mother may have multiple complications

Adverse physical health outcomes	Cases (%) with 95% confidence interval
Infectious complications	47 (49.4) (39.6-59.4)
Puerperal sepsis	26 (27.4)
Infected episiotomy wound	13 (13.7)
Breast abscess	2 (2.1)
Fever due to systemic infection	4 (4.2)
Urinary tract infection	2 (2.1)
Uterine complications	30 (31.6) (22.2-40.9)
Atonic uterus	25 (26.3)
Retained placenta	2 (2.1)
Subinvolution of uterus	2 (2.1)
Uterine rupture	1 (1.1)
Thromboembolic events	13 (13.7) (6.8-20.6)
Deep vein thrombosis (Homan's sign positive) of limb	11(11.6)
Superficial Thrombophlebitis	2 (2.1)
Renal complications	23 (24.2) (15.6-32.8)
Oliguria	8 (8.4)
Haematuria	4 (4.2)
Glomerulonephritis	3 (3.2)
Proteinuria	8 (8.4)
Cardiac complications	12 (12.6) (5.9-19.3)
Postpartum hypertension (normo tensive on admission/ before delivery)	8 (8.4)
Decreased cardiac output	3 (3.1)
Coronary artery disease	1 (1.1)
Endocrine and Metabolic Disorders	11 (11.6) (5.1-18.0)
Postpartum hyperglycaemia	4 (4.2)
Hypernatremia	2 (2.1)
Hypokalaemia	4 (4.2)
Metabolic acidosis	1 (1.1)
Haemorrhagic complications	27 (28.4) (19.3-37.5)
Postpartum haemorrhage (PPH) leading to shock	6 (6.3)
Postpartum haemorrhage (PPH) not leading to shock	17 (17.9)
Hemoperitoneum	1 (1.1)
Disseminated intravascular coagulation (DIC)	1 (1.1)
Vulval hematoma	2 (2.1)

The case of Hemoperitoneum secondary to uterine rupture falls under both uterine complications and Haemorrhagic complications, it was counted independently.
#'Categories are not mutually exclusive; individual patients may be represented in more than one complication category. Denominator for all percentages is total enrolled (n=95).

Table 4: distribution of study population according to adverse psychological outcomes

Adverse psychological outcomes-EPDS scoring	Cases (%)
Low likelihood but still monitor mood	43 (45.3)
Mild depressive, consider follow up	39 (41.1)
Moderate, further evaluation recommended	13 (13.7)
Major, seek professional help	0 (0)

Most of the study population (50.5%) could be manged by conservative specific medical management as required (fluid, antibiotics, blood & blood product transfusion, specific medical managements like anticoagulant, anti-convulsant, anti-depressant & other medications). Operative management were required for 7 mothers only (table 6). Total 40 mothers (42.1%) had no complications requiring specific medical or surgical management. No maternal death happened among those mothers.

DISCUSSION

This present study attempted to find out adverse physical & psychological impact on maternal health after stillbirth at the study institute and many mothers were found to develop multiple physical & psychological complications, most common being infectious complications. Non-booking status to health care facility was found to be significantly associated with development of maternal morbidity.

This Study has depicted 42.1% mother belongs to teenage age group and 21-30 years was the predominant age group which mirrors the study done by Mandal A et al (2021).[20] This finding suggest that optimal age group for conception is not exempted from stillbirth clustering and subsequent complications. Only 56.8% mothers were booked & Most of the women (65 out of 95) belonged to lower socioeconomic class which aligns with the study done by Saha D et al (2019) where very small number of mothers had proper antenatal care.[21] The study population of present study came from district of Jalpaiguri, northern part of West Bengal, where there is abundance of tea garden workers and lack of awareness is prevalent among this population. This leads to early marriage & conception as well as no or less frequent antenatal visit which delays identifying risk, seeking help or referral & early intervention. Most of the study participants belong to multigravida (68.4%), similar to findings by Kanavi JV et al (2017).[22]

In the present study, postpartum infections (49.4%) (mainly puerperal sepsis), uterine complications (31.5%) (mainly atonic uterus) and haemorrhagic complications (28.4%) (mainly PPH) were the individual major contributors for maternal morbidity. Uterine complications (atonic uterus-25, retained placenta-2, uterine rupture-1) largely led to haemorrhagic complications. Only one mother developed uterine rupture leading to hemoperitoneum and she was treated by laparotomy. Similar major impact of haemorrhagic complications also mentioned by Gold KJ et al (2016) in their study at southeastern Michigan where they noticed 10% & 23% mothers developed postdelivery PPH & retained placenta respectively and 2 out of 543 mothers developed uterine rupture.[5]

The present study identified postpartum infection as the most common individual contributor to maternal morbidity (49.4%), which contrasts with the findings of Gold KJ et al.[5] (2016) conducted in southeastern Michigan and Varotsis D et al.[23] (2025), who analyzed data from three hospitals in the United States between 2017 and 2023, where they reported incidence of sepsis 1% & 2.3 % respectively. Wall-Wieler E et al[6] in their cross-sectional study at California in 2019 reported postpartum sepsis as 1% (137 out of 1503).

Table 5: Analysis regarding maternal age group and adverse psychological outcome

Age group of mothers	Cases	Mothers had EPDS score 10 or more	Mothers had EPDS score less than 10
Less than 20 years	40	25 (62.5%)	15 (37.5%)
More than 20 years	55	27 (49.09%)	28 (50.90%)

Association of maternal age group and adverse psychological outcome was Not statistically significant: p value=0.1948; chi square value= 1.6806; odds ratio= 0.5785, 95% CI (0.4235, 1.3271).

Table 6: distribution of study population according to managements & interventions done

Interventions	Cases (%)
Conservative specific medical management	48 (50.5)
Surgical interventions required	7 (7.36)
Evacuation of vulval hematoma under general anaesthesia	4 (4.2)
Laparotomy under general anaesthesia	1 (1.1)
Manual removal of placenta under general anaesthesia	2 (2.1)
No specific medical or surgical managements required	40 (42.1)

This major discrepancy between present study and other studies may be due to very large prevalence of anaemia & thalassemia in the study area (northern district of West Bengal state) which leads to lower immunity status.[24] Significant association between anaemia and puerperal infection & other complications were reported in the study done by Ambedkar D et al[25] between 2019-2021 in India which supports this present study findings. Other contributing factors were poor hygiene & sanitation state of the study population due to lower socioeconomic status, cases of already established chorioamnionitis (itself as a causative factor for stillbirth) included in the study, significant number of referred in cases where unsafe vaginal examinations done by unskilled birth attendants at home before reaching hospital and delay in reaching hospital care facility.

This study also reported other postpartum complications like Thromboembolic events (13.6%), renal complications (24.2%), cardiac complications (12.6%) and Endocrine and Metabolic Disorders (11.5%) as significant maternal morbidity after stillbirth which corresponds to studies done by Nyarko SH et al[26] in several states in USA between 2008-2020 and Lewkowitz AK et al[27] in Florida from 2005-2024 though incidence varies in several conditions.

The current study noted 52 mothers out of 95 (54.7%) suffered from mild to moderate depression as per EPDS scoring where Gravensteen IK et al[28 in their study in 2018 reported higher prevalence of anxiety (22.5%) and depression (19.7%) after stillbirth among mothers. Significant psychological impact among mothers after stillbirth also recorded in the study done by Marwah S et al[29] in 2016 at Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India. Lack of support from husband, parents, in-laws, and social stigma are common in the study area and these may be the contributors for significant high incidence of postpartum depression in this study. 50.5% of the study population were managed with medical conservative management, 7.36% were managed by surgical intervention & 42.1% had no complications. No maternal death was recorded.

STRENGTH AND LIMITATIONS

Strength of this present study was prospective design, multidisciplinary follow-up for at least 7 days, inclusion of psychological outcomes, dealing with unique population having large tea garden workers percentage and large prevalence of anaemia-thalassemia.

Despite sincere efforts, this study has several limitations. The study was conducted at a single tertiary care center with a relatively small sample size, which may limit the generalizability of the findings to other settings and populations. Women admitted within 24 hours after delivery outside the study hospital were included; therefore, maternal complications diagnosed or managed before referral may not have been fully captured. The Edinburgh Postnatal Depression Scale (EPDS) was administered only once during hospitalization within seven days of delivery, potentially missing cases of delayed-onset postpartum depression. The absence of a control group comprising mothers with live births precluded estimation of the attributable risk of adverse maternal outcomes associated with stillbirth. Furthermore, severe maternal morbidity was not classified using standard ICD-9 or ICD-10 criteria, limiting comparability with other studies. The causes of stillbirth were not systematically investigated, which may have confounded the interpretation of maternal complication rates, particularly for conditions such as chorioamnionitis that can act both as a cause of stillbirth and a contributor to maternal morbidity. Nevertheless, the study provides valuable insights into the burden of adverse maternal outcomes following stillbirth among women in the unique sociocultural and healthcare context of Jalpaiguri district in northern West Bengal, India.

CONCLUSION

In this present study, it has been noted that stillbirth is undoubtedly and significantly associated with adverse maternal physical & psychological outcomes. This study found 55 mothers out of 95 developed adverse physical and/or psychological outcome. Individual adverse out-

come rates for Infectious, uterine, thromboembolic, renal, cardiac, endocrine-metabolic, haemorrhagic & psychological were 49.4%, 31.57%, 13.68%, 24.21%, 12.63%,11.57%, 28.42% & 54.73% respectively (many individual mothers developed more than one complication).

Though maternal mortality & maternal near miss reporting has been emphasized in recent years, reporting of maternal morbidity specially after stillborn should also be done at institutional level as well as district, state & national level using the ICD code (9 or 10) for SMM (severe maternal morbidity) to assess the magnitude.[30] A surveillance system like Indian Obstetric Surveillance System-Assam (IndOSS-Assam) can be set up across the country regarding this issue incorporating the stillbirths.[31]

It is also Important to find out the causative factors like maternal hygiene, associated health issues, education level, socioeconomic conditions, delay or non-compliance to seek health care to reduce stillbirth and related maternal morbidity and to establish future policies.

Individual Author's Contribution: MH contributed to the study conception, data collection, and data analysis and interpretation. **SA** contributed to data collection, data analysis and interpretation, and manuscript preparation. **BP** contributed to the study design and data analysis and interpretation. **SB** contributed to the study conception and study design. All authors reviewed and approved the final version of the manuscript.

Availability of data: The data that support the findings of this study are available from the corresponding author on reasonable request.

Declaration of Non-use of generative AI Tools: This article was prepared without the use of generative AI tools for content creation, analysis, or data generation. All findings and interpretations are based solely on the authors' independent work and expertise.

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