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Factors Contributing to Increased Stillbirths at Senga District Hospital, Zambia

Gillian Lebetina C. Mvula[1*], Caroline Zulu[1], Phadaless Phiri Sinkamba[2]

[1]Department of Public Health, School of Nursing Sciences, University of Zambia, Lusaka, Zambia
[2]Department of Mental Health and Psychiatric Nursing, School of Nursing Sciences, University of Zambia, Lusaka, Zambia
Email: *gmchongo@yahoo.com

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Abstract

Introduction: Worldwide approximately 2.6 million stillbirths occur yearly. The rate of stillbirths in sub-Saharan Africa is approximately 10 times more than that of developed countries yet only 17% of all available information is from these regions with about 98% the burden of stillbirths. The aim of the study was to investigate factors contributing to the high rates of stillbirths in Senga-Hills District in Zambia. **Methods:** A mixed-method design, combining a retrospective quantitative study with qualitative study was conducted at Senga District Hospital in Senga Hills District, Northern Province in Zambia. Simple random sampling technique was used to select 300 case files of women of childbearing age who gave birth 12 months prior to the study and purposive sampling was used to select 20 postnatal mothers for the follow-up qualitative study, the method used helped gain initial data from the records and time was managed well. Data were collected using a structured data abstraction tool on maternal-linked postnatal data. Data analysis was done using SPSS version 27.0 for the quantitative survey and thematic analysis for the qualitative study. Both descriptive and inferential analyses were performed and statistical significance was taken at $\alpha \leq 0.05$. **Results:** The results show that 72 (24%) respondents were in the age bracket 25 - 29 years. Of the 300 respondents included in the study, 100 (33.3%) of them had delivered a still baby. The results showed that low ANC attendance ([AOR: 52.76; 95% CI: 1.12 - 2479.42; $p = 0.044$], anemia [AOR: 8.27; 95% CI: 2.53 - 26.98; $p < 0.001$], malaria [AOR: 74.44; 95% CI: 1.98 - 2805.31; $p = 0.02$], pre-eclampsia [AOR: 377.87; 95% CI: 36.07 - 3958.86; $p < 0.001$], and placenta previa [AOR: 44.54; 95% CI: 3.88 - 511.41; $p = 0.002$] were significantly associated with stillbirth. Participants in the in-depth interviews were of the views that: "their mother-in-law insisted on a TBA for my first delivery. When complications arose, it was too late to reach the hospital." And other views were that: "they avoided certain foods because my grandmother said they would harm the baby. I didn't know it was affecting

my health." These views indicated that avoidance of certain foods, reliance on traditional birth attendants, use of herbal remedies, and reluctance to discuss pregnancy complications were common practices that potentially contributed to adverse pregnancy outcomes, including stillbirths. **Conclusion:** Results of this study indicated that stillbirths were as common in Senga district (152 stillbirths in three years) as reported in other developing countries as they had been in the past. Thus, health professionals need to re-emphasize the importance of ANC examination, so that problems are identified promptly and the woman referred effectively; and to enhance on refresher courses for the midwives in the primary levels of health care so that they are updated on the modern obstetrics care. Further, integrating safe cultural practices with modern healthcare and providing culturally sensitive care can help improve maternal health outcomes.

Keywords

Low- and Middle-Income Countries, Stillbirths, Fresh Stillbirths, Macerated Stillbirths, High Income Countries, Low Income Countries

1. Introduction

Stillbirth rates remain high, especially in low and middle-income countries, where they are 25 per 1000 and ten-fold higher than in high-income countries [1]. The Global situation is similar to Senga District Hospital which recorded high numbers of stillbirths about 152 stillbirths in a period of three years, that is from 2017 to 2019. The United Nations' Every Newborn Action Plan has set a goal of 12 stillbirths per 1000 births by 2030 for all countries. Stillbirths are associated with immense socioeconomic consequences, including impaired physical and mental wellbeing of bereaved parents and financial costs to families and the health-care system. In 2014, the need to reduce stillbirths in low-income and middle-income countries (LMICs) was acknowledged in the World Health Assembly (WHA). The WHA endorsed Every New-born Action Plan, which targeted reducing the number of stillbirths per 1000 births from 18·4 in 2015 to 12 by 2030 [2]. Zambia is one of the low in-come countries, where Senga Hill District is a part.

Senga Hill District from the year 2017 to the year 2019 has recorded a total of 152 stillbirths. These numbers are alarming and could be an underestimation especially that Senga Hill is a rural area where most deliveries happen in homes. Therefore, there is the need to conduct a study on the factors contributing to increased stillbirths. In 2015, there were 2·6 million third-trimester stillbirths, of which 41% occurred in African LMICs and 36% occurred in south Asian LMICs. However, despite this burden being almost equal to the number of neonatal deaths (2.7 million) that occurred in 2015, biological investigations of the causes of stillbirths in LMICs are scarce [2].

A stillbirth is the birth of a foetus that died in utero (macerated foetus) or had

a heartbeat in labour but showed no signs of life after birth (fresh stillbirth) [1]. The latest (10th) revision of the International Classification of Disease defines a stillbirth or a foetal death as the death of a foetus weighing at least 500 g or that has reached 22 weeks of completed gestation. The statistics of a stillbirth are expressed per 1000 live births. The stillbirth rate is included in the Perinatal Mortality Rate (PNMR), but considered separately. It was estimated at 32/1000 live births in developing countries versus 5 per 1000 live births in developed countries in 2009. A subcategory of late foetal death is also specified, and it includes foetuses reaching at least 28 weeks of gestation or 1000 g. To record stillbirths, the Zambian Government uses the WHO subcategory of "late foetal death" and only allows health workers to record stillbirths after 28 weeks of gestation and a foetus that weighs 1000 g or more. The WHO recommends using late foetal death for international comparisons. Nevertheless, stillbirth is practically unrecognised as a public health issue and few data are reported. The prevalence of stillbirths according to World Health Organization is estimated to be 18.4 per 1000 births, or around 2.6 million stillbirths each year. The World Health Organization's (WHO's) Every Newborn, An Action Plan to End Preventable Deaths aims to reduce the stillbirth rate to 12 or fewer per 1000 births by 2030 in every country, and for countries already meeting this target to reduce equity gaps. Identifying interventions to achieve such a target would be facilitated by cross-country and inter-country comparisons of the causes of stillbirth.

Studies have shown that some of the causes of stillbirths may include pregnancy complications, such as pre-eclampsia, birth complications, problems with the placenta or umbilical cord, birth defects, infections such as malaria and syphilis, and poor health in the mother. Risk factors include a mother's age over 35 years, smoking, drug use, use of assisted reproductive technology, and first pregnancy [3].

The problem of still births has not been captured both in the Millennium Development Goals (MDG's) and Sustainable Development Goals, indicating that, stillbirths remain a neglected issue, invisible in policies and programmes, underfinanced and yet in urgent need of attention as it is a global health problem. The WHO application of the International Classification of Diseases for perinatal mortality (ICD-PM) aims to improve data on stillbirth to enable prevention of stillbirths.

A retrospective cohort study was undertaken with the main objective of estimating the rates and determinants of stillbirth in an urban African obstetric population in Lusaka, Zambia. The study reviewed vital outcomes of new-borns whose mothers received antenatal care, delivery care, or both antenatal and delivery care in the Lusaka, Zambia, public sector between February 2006 and March 2009. A total of 2109 foetuses were stillborn (crude rate, 21 per 1000 live births, 95% confidence interval 20.1 per 1000 to 21.9 per 1000). This included 1049 (49.7%) stillbirths classified as "recent" (presumed to have occurred within 12 hours of delivery) and 1060 (50.3%) classified as "macerated" (presumed to have occurred more than 12 hours before delivery). In adjusted analysis, increasing ma-

ternal age, baseline body mass index greater than 26, history of stillbirth, placental abruption, maternal untreated syphilis, caesarean delivery, operative vaginal delivery, assisted breech delivery, and extremes of neonatal birth weight were all significantly associated with stillbirth. Stillbirth is a major contributor to poor perinatal outcomes in Lusaka. Stillbirth should be adopted as a routine health indicator by the World Health Organization.

The study was conducted in Senga Hills district, which had been recording high numbers of stillbirths as extracted from the health information Management System data base, in 2017 the district recorded 31 fresh stillbirths and 21 macerated stillbirths, in 2018 the recorded 36 macerated and 44 fresh stillbirths, in 2019 the recorded 13 fresh stillbirths and 7 macerated stillbirths.

2. Materials and Study Method

2.1. Study Design and Setting

This research utilized a mixed-method approach, integrating both retrospective quantitative and qualitative studies. This mixed method was used to allow the research get a richer understanding of factors that could have led to this alarming numbers of stillbirths, especially that other facilities in the province had not been recording such numbers.

The retrospective component entailed examining pre-existing medical records to determine factors linked to stillbirths. The qualitative segment involved comprehensive interviews with postpartum mothers to investigate cultural practices and beliefs concerning pregnancy, labor, delivery, and fetal demise. The study was conducted at Senga Hills district Hospital. It has a bed capacity of 100. Senga district Hospital is chosen on the basis that it is the biggest Hospital in Senga District and many antenatal mothers are referred from the Rural Health centers to the same Hospital.

2.2. Study Population, Sampling Technique, and Sample Size

The study population included all women of childbearing age, who reside within Senga District Hospital catchment area. The target population included all case files of women of childbearing age who gave birth at Senga District Hospital. The target population for the qualitative study included postnatal women.

Simple random sampling was used to sample out 300 respondents from the hospital delivery registers from 20th June, 2023 to 30th May, 2024. The sample of 300 and 20 was drawn as this had a potential to have a wider target population and results will be appreciated by more people and health workers. The data collected will raise awareness to the community and health providers.

The files were put together and using a table of random numbers, the nth file in the interval of every third case was drawn randomly selecting, thereby removing researcher biases in sample selection. For the qualitative study, purposive sampling was used to select participants who provided in-depth information on cultural practices and beliefs related to stillbirths.

Based on a 5% margin of error (e2), at a 95% confidence interval on the normal distribution curve (z2), and 30% variability (p). The overall sample size is estimated as follows:

Therefore, the number of participants will be 323. For the qualitative study, a sample of 20 participants was selected based on data saturation.

2.3. Data Collection and Procedure

Data was extracted from admission and delivery registers from the postnatal ward at Senga District Hospital. The extracted files were assessed for eligibility and those files that had complete patient data were selected for review (**Appendix A**). After obtaining prior permissions from the ethical review board, the national health research authority and hospital management, patients' files were pulled from the registry and all files that met the criteria were put aside for review.

To explore cultural practices and beliefs related to pregnancy, labour, delivery, and foetal death, an interview guide was used. Face to face interviews were conducted with women at their convenience. Purposively selected women were made comfortable and asked questions in sequence until the questions were exhausted. The researcher devoted a few minutes towards introducing the research and its purpose to the respondents. Then, the researcher conducted a face-to-face interview with the women receiving maternal care at the facility. The researcher introduced themselves, the topic, and the purpose of the study. After that written/thumb consent was obtained to proceed with the study. The goal of in-depth interviews was not to get answers or to examine hypotheses, but to understand the women's experiences of maternity. In order to maintain alignment with research questions researcher politely interrupted whenever the discussion drifted in other direction.

Data collection continued until saturation occurred; that is when further interviews did not elicit new information. The researcher asked the participant to go through the transcribed interview to verify that it was a true reflection of their thoughts. The transcribed interviews were translated into English before being analysed. After the interviews were converted to text, the texts were analysed for any inaccuracies by comparing the audio recording and the writing. After transcription, a flash was used to store data for confidentiality of the participants. Each interview took up a maximum of 45 minutes to conclude. Deductive and inductive coding was used and this helped with analysis of the data that was collected.

The researcher also ensured that the research instrument was checked for validity by subject matter experts. The content validity was ensured by taking suggestions from experts, advisers and lectures who looked at its relevancy, clarity and consistence to the study.

Reliability was upheld by using the same instrument to collect data from the respondents and clarifications done so that they did not misunderstand the questions. To achieve this, Reliability of the instrument was measured by conducting a pilot study. The results from the pilot study were used as base line data to test

reliability. It was also complemented by the pilot study where questions were reviewed after the pilot and changes made for reliability.

2.4. Data Analysis

This study adopted a quantitative research approach, as such data collected were coded and entered into SPSS software version 27.0 for analysis. Descriptive statistics were presented using tables in form of frequencies and percentages. Comparison of proportions were performed by Pearson chi-square (χ^2) for categorical variables to determine associations between demographic variables and the outcome of interest. Multiple logistic regression analysis was used in determining associated factors of fresh stillbirths at 95% Confidence Interval (CI). In all cases a p-value of 0.05 was considered to be significant.

Thematic analysis was used for qualitative data. This type of analysis identifies, arrange, and propose understandings of patterns of meaning from the data. This approach sought to develop common meanings based on peoples' experiences regarding a particular topic. The interpretation involved six-phase process. Firstly, the audio-recorded interviews were listened to while reading the transcripts many times to understand the participants' words in order to find the inherent meanings. The purpose of this initial process was to become familiar with the content of the data and to recognise various aspects appropriate to the research question. The second step was coding the data. Coding described the initial levels of meaning in the data and established connections between the participants' perceptions. The next step was to identify the emerging themes. A theme is a consequence of coding which is crucial for linking to the research question and to show meaningful patterned responses from the data.

The identified themes were revised based on the coded data and referred back to the entirety of the data, which was a necessary process to check quality. It was important to ensure that the themes were related to the data to enhance relevance and trustworthiness. Specifying and naming themes was the next part of the process in order to interpret and describe the meaning of the data. Finally, the findings from all phases of the data analysis were written up and reported on. The study used triangulation to validate the results, by showing how dependable findings were observed by confirming from several independent sources. The sources used included quantitative file review and postnatal mothers as a form of triangulation, and also compare their different perspectives on a particular question.

2.5. Ethical Consideration

The approval to conduct the study was obtained from UNZABREC. Permission to use the data from the delivery registers was obtained from the Medical Superintendent Senga District Hospital. The study used secondary data hence posed no risk or harm to the respondents. The data did not contain any of the respondent's names nor traces of the respondents. This study, therefore held respondents' information with the highest confidentiality.

3. Results

3.1. Socio-Demographic Characteristics of Respondents

The median age of the respondents was 27.5 (IQR: 12) years ranging from 15 to 45 years with 72 (24%) respondents aged 25 - 29 years; 227 (75.7%) mothers were married; 136 (45.3%) of them came from high density areas; 170 (56.6%) mothers had primary level education; and 177 (59%) respondents were unemployed. Only 80 (26.7%) and 73 (24.3%) respondents consumed alcohol and had history of smoking respectively (Table 1).

Table 1. Sociodemographic characteristics of study participants.

Variables	Total (n = 300)	Percent
Age (years)		
15 - 19 years	38	12.7
20 - 24 years	68	22.7
25 - 29 years	72	24
30 - 34 years	58	19.3
≥35 years	64	21.3
Marital status		
Married	227	75.7
Single	73	24.3
Residence		
Low density	53	17.7
Medium density	111	37
High density	136	45.3
Education Level		
Uneducated	65	21.7
Primary	170	56.6
Secondary	56	18.7
Tertiary	9	3
Occupation		
Unemployed	177	59
Self-employed	89	29.7
Employed	34	11.3
Alcohol consumption	80	26.7
Smoking history	73	24.3

3.2. Maternal and Foetal Characteristics

Table 2 shows that 213 (71%) respondents were multipara; and 184 (61.3%)

Table 2. Maternal obstetric and foetal characteristics of study participants.

Variables	Total (n = 300)	Percent
Parity		
Primipara	87	29
Multipara	213	71
Number of Antenatal visits		
1 to 3	116	38.7
4 to 7	174	58
8 and above	10	3.3
Medical conditions		
HIV infection	57	19
Anaemia	38	12.7
Malaria	6	2
Gestational diabetes mellitus	11	3.7
Urinary tract infection	35	11.7
Pregnancy-related Disorders		
PIH	7	2.3
Pre-eclampsia	55	18.3
Eclampsia	6	2
Abruptio	17	5.7
Placenta Previa	10	3.3
PROM	17	5.7
Sex of baby		
Male	119	39.7
Female	181	60.3
Gestation age (weeks)		
<37	107	35.7
37 to 40	169	56.3
>40	24	8
Birth weight (Kg)		
<2.5 Kg	115	38.3
2.5 - 4 Kg	170	56.7
>4 Kg	15	5

respondents had attended ANC four and more times. Among respondents with medical conditions, 19% were HIV positive, 12.7% had anaemia while 11.7% had UTIs and the remaining 5.7% had Malaria and Diabetes mellitus respectively. The

results also showed that most common hypertensive disorder was pre-eclampsia (18.3%) while PIH (2.3%) and eclampsia (2%) was found in 13 respondents. Obstetric complications were found in 14.7% of the respondents with placenta abruptio (5.7%) and PROM (5.7%) being the most frequent complications encountered while placenta previa was reported in only 3.3% of the women. Concerning foetal characteristics, 181 (60.3%) babies of respondents were female; 170 (56.7%) babies of respondents had a birthweight of 2.5 to 4 kg; and 181 (56.3%) of the deliveries among respondents occurred at term gestation (37 - 40 weeks).

3.3. Prevalence of Stillbirths

The results as shown in Figure 1 below shows that there were 200 (66.7%) live births recorded with the prevalence of stillbirths standing at 33.3% (333 per 1000 births).

3.4. Factors Associated with Stillbirths

Socio-Demographic Factors Associated with Stillbirths

Table 3 shows a summary of socio-demographic associated with pregnancy outcome in bivariate analysis.

Table 3 shows that all socio-demographic variables were found to have insignificant interaction with pregnancy outcome at 95% level of significance ($p > 0.05$). However, it was interesting to note that the incidence of stillbirths increased with increasing age with the exception of women aged 15 to 19 years who reported a reduction in the incidence of stillbirths (15.8%) ($p = 0.093$).

3.5. Maternal and Foetal Factors Associated with Stillbirths

Table 4 shows that a chi-square test of independence calculated to compare the number of ANC visits with pregnancy outcome did not show a statistically significant

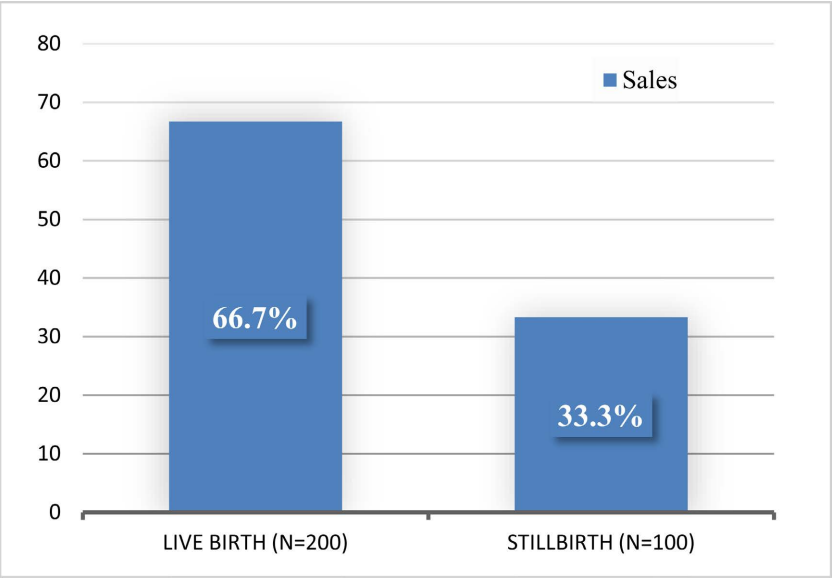

Figure 1. Distribution of study population by pregnancy outcome (n = 300).

Table 3. Sociodemographic characteristics of study participants versus pregnancy outcomes.

Variables	Pregnancy Outcome		p-value
	Live birth n (%)	Stillbirth n (%)	
Age (years)			0.093
15 - 19 years	32 (84.2)	6 (15.8)	
20 - 24 years	47 (69.1)	21 (30.9)	3
25 - 29 years	43 (59.7)	29 (40.3)	
30 - 34 years	39 (67.2)	19 (32.8)	
≥35 years	39 (60.9)	25 (39.1)	
Marital status			0.128
Married	146 (64.3)	81 (35.7)	
Single	54 (74)	19 (26)	
Residence			0.448
Low density	32 (60.4)	21 (39.6)	
Medium density	78 (70.3)	33 (29.7)	
High density	90 (66.2)	46 (33.8)	
Education Level			0.254
Uneducated	46 (70.8)	19 (29.2)	
Primary	117 (68.8)	53 (31.2)	
Secondary	31 (55.4)	25 (44.6)	
Tertiary	6 (66.7)	3 (33.3)	
Occupation			0.324
Unemployed	112 (63.3)	65 (36.7)	
Self employed	64 (71.9)	25 (28.1)	
Employed	24 (70.6)	10 (29.4)	
Alcohol consumption	49 (61.3)	31 (38.7)	0.268
Smoking history	44 (60.3)	29 (39.7)	0.183

interaction ($p < 0.001$). Women who had less than 3 ANC visits (51.7%) were more likely to have stillbirths than women who had more than 4 ANC visits (32.4%). Also, a significant interaction was found in women with anaemia ($p < 0.001$) and malaria ($p = 0.009$). Women with anaemia (76.3%) and those with malaria (83.3%) were more likely to have stillbirths than women without anaemia and malaria, respectively.

Also, a chi-square test of independence calculated to compare maternal pre-eclampsia and eclampsia with pregnancy outcome showed a statistically significant

Table 4. Medical, Obstetric and Foetal factors versus pregnancy outcomes.

Variables	Pregnancy Outcome		p-value
	Live birth n (%)	Stillbirth n (%)	
Parity			0.418
Primipara	61 (70.1)	26 (29.9)	
Multipara	139 (65.3)	74 (34.7)	
Number of Antenatal visits			<0.001
1 to 3	56 (48.3)	60 (51.7)	
4 to 7	135 (77.6)	39 (22.4)	
8 and above	9 (90)	1 (10)	
Medical conditions			
HIV infection	37 (64.9)	20 (35.1)	0.755
Anaemia	9 (23.7)	29 (76.3)	<0.001
Malaria	1 (16.7)	5 (83.3)	0.009
Gestational diabetes mellitus	7 (63.6)	4 (36.4)	0.828
Urinary tract infection	24 (68.6)	11 (31.4)	0.799
Pregnancy-related Disorders			
PIH	3 (42.9)	4 (57.1)	0.176
Pre-eclampsia	1 (1.8)	54 (98.2)	<0.001
Eclampsia	0	6 (100)	<0.001
Abruptio	0	17 (100)	<0.001
Placenta Previa	1 (10)	9 (90)	<0.001
PROM	15 (88.2)	2 (11.8)	0.052
Sex of baby			0.867
Male	80 (67.2)	39 (32.8)	
Female	120 (66.3)	61 (33.7)	
Gestation age (weeks)			<0.001
<37	58 (54.2)	49 (45.8)	
37 to 40	129 (76.3)	40 (23.7)	
>40	13 (54.2)	11 (45.8)	
Birth weight (Kg)			<0.001
<2.5 Kg	53 (46.1)	62 (53.9)	
2.5 - 4 Kg	138 (81.2)	32 (18.8)	
>4 Kg	9 (60)	6 (40)	

HIV = Human immunodeficiency virus; PIH = Pregnancy-induced hypertension; PROM = Premature rupture of membranes.

interaction ($p < 0.001$). nearly all women with pre-eclampsia (98.2%) and eclampsia (100%) were more likely to have stillbirths than women without pre-eclampsia and eclampsia. Further, a significant interaction was found in women with obstetric complications and stillbirth ($p < 0.001$). Women who developed placenta abruptio (100%) and placenta previa (90%) were more likely to have stillbirths than women who did not develop obstetric complications.

Further still, a chi-square test of independence calculated to compare the gestational age with pregnancy outcome showed a statistically significant interaction ($p < 0.001$). Women who delivered before term gestation (<37 weeks) (45.8%) were more likely to have stillbirths than women who delivered at term (23.7%). Also, a significant interaction was found between birth weight and pregnancy outcome ($p < 0.001$). Women who delivered babies with birth weights less than 2.5kg (53.9%) and more than 4 kg (40%) were more likely to have stillbirths than women who delivered babies with normal birth weight (18.8%).

3.6. Multivariate Analysis of Independent Predictors of Stillbirths

On entering the significant factors identified from the simple logistic regression into a multivariate logistic regression model, adjusting for maternal age, the following factors were found to be independently associated with stillbirth among the study respondents: Less than 3 ANC visits ($p = 0.044$), anaemia ($p < 0.001$), malaria ($p = 0.02$), pre-eclampsia ($p < 0.001$), and placenta previa ($p < 0.001$).

Table 5 shows that women who attended ANC for less than 3 times were 53 times more likely to have a stillbirth delivery compared to those who attended ANC for 8 or more times [AOR: 52.76; 95% CI: 1.12 - 2479.42]. Also, women who had anaemia during pregnancy were 8 times more likely to have stillbirth delivery compared to women who had no anaemia [AOR: 8.27; 95% CI: 2.53 - 26.98], while women who developed malaria were 74 times more likely to have stillbirth delivery than their counterparts without malaria [AOR: 74.44; 95% CI: 1.98 - 2805.31]. Further, pre-eclampsia [AOR: 377.87; 95% CI: 36.07 - 3958.86] and placenta previa [AOR: 44.54; 95% CI: 3.88 - 511.41] increases the risk of stillbirths by 378 and 45 times, respectively.

Table 5. Multivariate logistic regression for factors associated with stillbirth.

Variables	p value	AOR	95% CI of AOR	
			Lower	Upper
Age (years)				
15 - 19 years	Ref			
20 - 24 years	0.681	0.725	0.157	3.351
25 - 29 years	0.497	1.631	0.397	6.695
30 - 34 years	0.666	0.704	0.143	3.460
≥ 35 years	0.460	1.732	0.404	7.426

Continued

Number of Antenatal visits				
1 to 3	0.044	52.759	1.123	2479.417
4 to 7	0.129	18.944	0.423	848.459
8 and above	Ref			
Medical conditions				
Anaemia	<0.001	8.267	2.533	26.979
Malaria	0.020	74.437	1.975	2805.306
Hypertensive Disorders				
Pre-eclampsia	<0.001	377.871	36.068	3958.861
Eclampsia	0.999	1		
Obstetric factors				
Abruptio	0.998	1		
Placenta Previa	0.002	44.535	3.878	511.409
Gestation age (weeks)				
<37	0.752	0.754	0.131	4.346
37 to 42	0.904	1.118	0.183	6.844
≥42	Ref			
Birth weight (Kg)				
<2.5 Kg	0.362	2.843	0.3	26.912
2.5 - 4 Kg	0.784	1.352	0.157	11.623
>4 Kg	Ref			

AOR = Adjusted odds ratio, 95% CI = 95% Confidence interval.

3.7. Presentation of Qualitative Results

This study explored the impact of cultural practices and beliefs on stillbirth rates at Senga District Hospital in Zambia. Qualitative data was gathered from 20 postnatal women, focusing on the interplay between cultural norms and the incidence of stillbirths. The findings reveal a complex relationship, highlighting the need for culturally sensitive interventions to address this significant public health challenge. The following table summarizes their sociodemographic profiles:

Table 6 shows that of the 20 postnatal women who took part in the in-depth interviews, the majority were over the age 25 years. Most of the participants (12/20) were married, and nine participants were educated up to secondary school level.

3.7.1. Theme 1: Cultural Practices Related to Pregnancy and Childbirth

Cultural practices often dictate the behaviours, rituals, and care routines that influence maternal and foetal health. This theme revealed several practices that

Table 6. Sociodemographic profile of participants in the qualitative study.

Participant	Age	Marital Status	Education Level	Number of Children
P01	25	Married	Secondary	2
P02	30	Single	Primary	3
P03	22	Married	None	1
P04	28	Married	Secondary	2
P05	35	Widowed	Tertiary	4
P06	27	Single	Secondary	2
P07	24	Married	Primary	1
P08	29	Married	Secondary	3
P09	31	Divorced	Tertiary	2
P10	26	Married	Secondary	2
P11	33	Married	Primary	3
P12	21	Single	None	1
P13	34	Married	Secondary	4
P14	23	Single	Primary	1
P15	32	Married	Tertiary	3
P16	28	Married	Secondary	2
P17	27	Single	Primary	1
P18	30	Married	Secondary	2
P19	25	Divorced	Primary	1
P20	29	Married	Secondary	2

may inadvertently increase the risk of stillbirth. Many participants described limited access to early ANC due to cultural expectations surrounding pregnancy announcements or travel limitations. One participant (P17) explained, *"We only go to the hospital when we are already in labour. It's customary to wait until we feel the baby moving strongly before seeking medical attention."* This delay in seeking care can be critical, especially in cases of complications.

Another prevalent practice highlighted the importance of traditional birth attendants (TBAs). While some participants expressed confidence in TBAs for certain aspects of care, others voiced concerns about the lack of medical expertise and potential for delayed referral to the hospital in emergencies. As one participant (P05) shared, *"My mother-in-law insisted on a TBA for my first delivery. When complications arose, it was too late to reach the hospital."* This underscores the need for better integration of TBAs into the formal healthcare system and community education on the benefits of skilled birth attendance.

Further, the cultural practices reported by participants highlight the influence of traditional beliefs on maternal health behaviours. For instance, one participant

(P02) explained that, *"In our community, it is common for pregnant women to avoid certain foods believed to cause harm to the baby. I was told not to eat eggs or fish, which I later learned are important for a healthy pregnancy."* Also, one participant (P15) shared that, *"There is a belief that discussing pregnancy complications can bring bad luck. As a result, many women do not share their health concerns with healthcare providers."* Thus, avoidance of certain foods, reliance on traditional birth attendants, use of herbal remedies, and reluctance to discuss pregnancy complications were common practices that potentially contributed to adverse pregnancy outcomes, including stillbirths. These practices often resulted in delayed or inadequate medical care, increasing the risk of stillbirth.

3.7.2. Theme 2: Traditional Beliefs and Their Influence on Maternal Health

The study also uncovered a strong influence of traditional beliefs on maternal health practices. Several participants mentioned beliefs about witchcraft or supernatural causes of stillbirths, which can lead to delayed or inadequate healthcare seeking. One participant (P03) stated, *"Some people believe it's bad luck if you go to the hospital too early. We thought the stillbirth was a curse."* Another participant (P04) explained that *"There is a belief that stillbirths are caused by evil spirits or curses. Many women seek the help of traditional healers to protect themselves and their babies from these forces."* Further, one participant (P08) shared that, *"In our culture, it is believed that revealing the pregnancy too early can attract jealousy and harm. This makes women hesitant to seek early antenatal care."* And one participant (P19) stated that, *"There is a strong belief in the power of traditional rituals and ceremonies to ensure a safe delivery. Many women prioritize these rituals over medical advice."* This highlights the need for community engagement and health education to address misconceptions and promote trust in the healthcare system.

Furthermore, a significant number of participants described adherence to traditional dietary restrictions during pregnancy, some of which lacked nutritional value. One participant (P18) said, *"I avoided certain foods because my grandmother said they would harm the baby. I didn't know it was affecting my health."* This restricted diet can negatively affect the mother's and the foetus's health, potentially contributing to stillbirths.

The study reveals a strong interplay between cultural practices, traditional beliefs, and the high stillbirth rate at Senga District Hospital. Delayed seeking of skilled ANC and delivery care, due to cultural norms and beliefs, significantly impacts the outcome of pregnancies. The reliance on TBAs, while rooted in tradition, can also be a risk factor if proper referral systems are lacking. The influence of traditional beliefs about supernatural causes of stillbirths undermines trust in the healthcare system and leads to delayed or inadequate care. Furthermore, the restrictive dietary practices highlight the need for nutritional education that respects cultural preferences while emphasizing the nutritional needs of pregnant women.

4. Discussion

The findings of this study deliberate in relation to existing literature; and is presented in accordance with the aims and objectives of the study.

The median age of participants was 27.5 years, with an interquartile range (IQR) of 12 years, encompassing ages from 15 to 45 years. The age group of 25 - 29 years exhibited the greatest representation at 24%. Age is a crucial determinant in stillbirth occurrences, as both very young and older maternal ages are correlated with elevated risks. Research indicates that pregnancies among teenagers and those of advanced maternal age (over 35 years) are associated with higher stillbirth rates, attributable to complications such as preeclampsia, gestational diabetes, and placental dysfunctions [4]. The outcomes of this study may signify a broader demographic pattern wherein the majority of childbearing women reside within this age range, thereby influencing the median age.

A considerable majority of the participants (75.7%) were married. Marital status can impact stillbirth rates through various socio-economic and psychological dimensions. Married women frequently enjoy enhanced social support and access to healthcare services, which may lower stillbirth risks. However, in certain situations, marital status might not significantly affect stillbirth rates when adjusting for other variables like socio-economic conditions and healthcare access [5]. The elevated percentage of married participants at Senga District Hospital may suggest a stable social structure; nevertheless, it also emphasizes the necessity of addressing other underlying risk factors.

Close to half of the participants (45.3%) resided in high-density regions. Living in densely populated areas is often linked to restricted access to quality healthcare, inadequate living conditions, and increased exposure to environmental pollutants, all of which can raise stillbirth rates [6]. Research has indicated that women living in urban slums or high-density locales experience heightened risks of negative pregnancy outcomes due to these conditions [7]. The results highlight the need for enhanced healthcare infrastructure and improved living conditions in high-density areas to mitigate stillbirth occurrences.

A majority of the mothers (56.6%) had attained primary level education. Education is pivotal in maternal and child health, with elevated educational levels generally associated with superior health outcomes [5]. Women with higher educational attainment are more inclined to access and utilize healthcare services, comprehend health information, and engage in healthier behaviours [8]. The lower educational achievement among respondents at Senga District Hospital may contribute to increased stillbirth rates due to insufficient health literacy and limited access to healthcare services. Initiatives aimed at enhancing educational opportunities for women could positively influence the reduction of stillbirth rates. More than half of the respondents (59%) were unemployed. Unemployment correlates with lower socio-economic status, which can negatively impact maternal and child health. Unemployed women may experience limited access to healthcare services, poor nutrition, and elevated stress levels, all of which can heighten the risk of still-

birth. The significant unemployment rate among respondents at Senga District Hospital underscores the necessity for socio-economic interventions to improve maternal health outcomes.

4.1. Prevalence of Stillbirths

The incidence of stillbirths at Senga District Hospital is recorded at 33.3% (333 per 1000 births) is significantly higher than the global average. This concerning figure calls for an in-depth analysis of the factors that contribute to this issue. Research conducted in Livingstone District, Zambia, identified maternal age, educational attainment, and accessibility to healthcare services as prominent elements influencing stillbirth occurrences [5]. In addition, a study carried out in Johannesburg indicated that placental complications represent a significant factor leading to stillbirths [9]. The elevated rate observed at Senga District Hospital may be linked to a combination of these influences, as well as socio-economic and environmental circumstances.

4.2. Socio-Demographic Factors

The results of the current study revealed that age did not exhibit a significant interaction with stillbirth ($p = 0.093$). This finding is in contrast to extensive research that has classified maternal age as an important contributor to stillbirth occurrences. For example, studies have indicated that both very young and older maternal ages correlate with an increased risk of stillbirths, attributable to complications such as preeclampsia and gestational diabetes [7]. Nonetheless, various studies conducted in Australia, Nepal, and Tanzania have reported that older mothers face a heightened risk of giving birth to stillborn infants. Conversely, a significant correlation with younger women was established in research conducted in Ghana, which associated a higher risk of stillbirth with women under 24 years of age. Both younger and older mothers are more prone to experiencing stillbirths due to multiple factors, including the physiological development of younger individuals and decreased immunity or poor delivery cooperation among older mothers [10] [11]. The results may reflect a population characterized by a relatively uniform age distribution, thereby mitigating the influence of age as a variable.

Additionally, marital status was noted to have no significant interaction with stillbirth ($p = 0.128$). While some literature suggests that married women benefit from enhanced social support and improved access to healthcare, which may diminish the risk of stillbirth [7], other studies indicate that marital status alone might not substantially affect stillbirth rates when adjusting for other socio-economic variables [5]. Correspondingly, Eng *et al.* [10] reported that married women exhibited a reduced risk of stillbirth compared to their unmarried counterparts. This correlation may relate to the lifestyle of unmarried women and the presence (or lack) of a support system during their pregnancies. Boateng *et al.* [12] similarly discovered that married women had lower odds of perinatal mortality compared to unmarried women (single or cohabiting). In addition, findings from Russia in-

dicated that married women faced a lower risk of perinatal mortality than single women and those in cohabiting arrangements [13]. Furthermore, the concept of "marital protection" may contribute to the lower risk of stillbirths linked with married women, particularly within African and Zambian contexts. The husbands and families of married women typically offer social, financial, and psychological support during pregnancy and following delivery. These findings may suggest that marital status does not independently affect stillbirth rates within this population.

The study demonstrated no significant interaction between place of residence and stillbirth ($p = 0.448$). This contrasts with studies that have identified elevated stillbirth rates in high-density or urban areas due to issues such as restricted access to quality healthcare and exposure to environmental pollutants [7]. Furthermore, additional research has indicated no significant difference in stillbirth rates between urban and rural settings, implying that the accessibility and quality of healthcare might serve as more decisive determinants [8]. The findings observed at Senga District Hospital may indicate a relatively equal distribution of healthcare access across varying residential locales.

The analysis revealed an insignificant relationship between educational level and stillbirth ($p = 0.254$). This finding is in contrast to a number of studies that have highlighted maternal education as a crucial determinant of pregnancy outcomes, typically with higher education being linked to improved health results [5]. The data from Senga District Hospital may suggest a population characterized by relatively uniform educational levels, thereby diminishing the role of education as a significant variable. The investigation also indicated an insignificant relationship between employment status and stillbirth ($p = 0.324$). While a selection of studies posits that unemployment correlates with elevated stillbirth rates due to diminished socio-economic conditions and restricted access to healthcare [7], other research posits that employment status by itself may not substantially influence stillbirth rates when other variables are adjusted for [8]. The results from Senga District Hospital might imply that employment status does not have an independent effect on stillbirth rates within this community.

The research found no significant relationship between alcohol consumption ($p = 0.268$) and smoking history ($p = 0.183$) and stillbirth. This is in contradiction with multiple studies that have identified both alcohol intake and smoking during gestation as significant risk factors for stillbirth [5]. The correlation between smoking and stillbirth may be substantiated by evidence suggesting that smoking during pregnancy can result in foetal growth restriction, which is recognized in literature as a significant risk factor for stillbirth. The findings may reflect a population with relatively low instances of alcohol and tobacco use, thus minimizing the influence of these behaviours as variables.

Consequently, the results from the present study suggest that socio-demographic factors such as age, marital status, residence, educational level, employment status, alcohol consumption, and smoking history exhibit insignificant connections with stillbirth. This stands in oppositional contrast to numerous studies that have

identified these factors as significant contributors to stillbirth occurrences. The rationale behind these outcomes may include a relatively homogenous population concerning these variables, which may have attenuated their impact as risk factors.

4.3. Maternal Medical and Obstetric Factors

Prenatal care services have been emphasized as a crucial aspect of pregnancy. The findings of this investigation established a correlation between the absence of ANC and an elevated risk of stillbirth. Numerous studies corroborate that the lack of ANC contributes to a heightened risk of stillbirth, further supporting the results of the current research. A study conducted by Aggarwal *et al.* [14] in India indicated that the absence of ANC leads to inadequate care, which in turn results in delayed diagnoses of complications and consequently, late referrals. Engaging in ANC visits four or more times facilitates the identification of certain pregnancy complications and risk factors for PNM such as PIH, abnormal foetal positioning, and intrauterine growth restriction, which typically manifest later in gestation. Antenatal screening and the identification of risk factors, accompanied by prompt and effective interventions, mitigate the risk of PNM [15].

Women who experienced anaemia during pregnancy were found to have an eightfold increase in the likelihood of experiencing stillbirth compared to their non-anaemic counterparts [Adjusted Odds Ratio (AOR): 8.27; 95% Confidence Interval (CI): 2.53 - 26.98]. Anaemia is a well-established risk factor for unfavourable pregnancy outcomes, including stillbirth. Research has demonstrated that anaemia can lead to a diminished oxygen supply to the foetus, thereby increasing the risk of foetal hypoxia and mortality [16]. A systematic review and meta-analysis revealed that maternal anaemia significantly heightens the risk of stillbirth and other negative outcomes [17]. The elevated risk of stillbirth associated with anaemia in this study may be attributed to the severity of the condition and inadequate access to effective treatment and prenatal care.

Women who contracted malaria were found to be 74 times more likely to experience stillbirth compared to those without malaria [AOR: 74.44; 95% CI: 1.98 - 2805.31]. The prevalence of malaria during pregnancy poses a substantial public health challenge, especially in sub-Saharan Africa. Malaria can induce severe maternal anaemia, placental dysfunction, and foetal growth restriction, all of which contribute to an increased risk of stillbirth [18]. The exceptionally high risk of stillbirth associated with malaria at Senga District Hospital may be indicative of elevated malaria transmission rates and insufficient access to effective malaria prevention and treatment strategies.

Pre-eclampsia was identified as elevating the stillbirth risk by 378-fold [AOR: 377.87; 95% CI: 36.07 - 3958.86]. Pre-eclampsia is a critical pregnancy complication marked by elevated blood pressure and impairment of other organs, commonly the liver and kidneys. This condition can lead to diminished blood flow to the placenta, which may result in foetal growth restriction and stillbirth [19].

These results align with the study conducted by Lawn *et al.* [20], which demonstrated that mothers experiencing severe pre-eclampsia are at an increased risk of having fresh stillbirths if not adequately managed or treated early.

Hypertension remains a significant factor contributing to stillbirths in various nations. Nonetheless, certain studies indicate that the effect of pre-eclampsia on stillbirth may differ based on the severity of the condition and the success of medical management. The markedly high stillbirth risk associated with pre-eclampsia at Senga District Hospital could be indicative of severe pre-eclampsia cases coupled with insufficient access to prompt and effective medical intervention.

Placenta previa was shown to elevate the stillbirth risk by 45-fold [AOR: 44.54; 95% CI: 3.88 - 511.41]. Placenta previa is characterized by the placenta's positioning over the cervix, which can cause significant haemorrhaging during both pregnancy and delivery, thereby raising the risk of stillbirth [21]. Research has established that placenta previa correlates with increased incidences of preterm births, low birth weights, and stillbirths. However, some investigations suggest that the influence of placenta previa on stillbirth may fluctuate based on the severity of the condition and the quality of medical care provided [22]. The heightened stillbirth risk linked with placenta previa at Senga District Hospital may be a reflection of severe placenta previa cases along with inadequate access to effective medical management and emergency obstetric services.

The study's results indicated that foetal-related variables such as foetal gender, gestational age, and birth weight exhibit insignificant interactions with stillbirth occurrences. This finding contrasts with several studies that have identified these elements as significant determinants of stillbirths [23] [24]. Possible explanations for these results may involve a relatively homogeneous population regarding these variables, consequently diminishing their influence as risk factors.

4.4. Cultural Factors and Experiences of Women with Stillbirth

Furthermore, the current study demonstrated that cultural factors have a significant impact on pregnancy outcomes among the sampled individuals. Such practices encompass the avoidance of specific foods, dependence on traditional birth attendants, the use of herbal remedies, and hesitance to discuss complications related to pregnancy. These customs may contribute to negative pregnancy outcomes, including stillbirths. The results align with prior research; for example, an analysis conducted in India indicated that cultural practices, such as refraining from consuming certain nutritious foods during pregnancy, could result in malnutrition and detrimental pregnancy outcomes [25]. Likewise, in Zambia, pregnant women frequently avoid foods perceived as harmful, which can lead to nutritional deficiencies and an elevated risk of stillbirths [26]. Furthermore, investigations in Uganda and Kenya indicated that reliance on traditional birth attendants, who may lack formal medical training, can culminate in inadequate care during pregnancy and childbirth, thereby increasing the probability of stillbirths [27]. In addition, a study in Nigeria found that such remedies can occasionally be

harmful and cause complications during pregnancy. Cultural norms that discourage discourse around pregnancy complications may delay the pursuit of medical assistance. Research from India indicated that women often refrain from discussing complications due to the fear of stigma, leading to a delay in care and heightened risk of stillbirths [25].

The investigation revealed that traditional beliefs regarding supernatural causes of stillbirths undermine confidence in the healthcare system and result in delayed or inadequate care. These beliefs can profoundly affect maternal health and pregnancy outcomes.

This research highlights that the rising incidence of stillbirths at Senga District Hospital is complex, arising from a confluence of inadequate healthcare access and maternal health conditions. Addressing these challenges necessitates a coordinated initiative aimed at enhancing education and awareness, improving healthcare infrastructure, and amalgamating traditional practices with contemporary maternal health education. By focusing on these elements through comprehensive interventions, it is plausible to considerably decrease stillbirth rates in Senga District and analogous communities across Zambia.

5. Strengths and Limitations of the Study

A key strength of this study is its retrospective nature, allowing for comprehensive data collection over an extended period, which contributes to the robustness of the findings. The study also benefits from a cross-sectional design, enabling a snapshot of the multiple factors contributing to stillbirths in the setting.

The major limitation of the study is its retrospective design and the fact that all cases of stillbirths may not have been captured due to poor record keeping in the hospital and short data collection period. Another limitation with this study, just as with other hospital-based studies, was recall bias, although collection of medical information is easier in the hospital. The study excluded risk factors of stillbirth such as multiple pregnancy and fetal malformations because it considered the risk factors assessed in this study to be major, and relevant. Also, the only one facility was selected for the study as well as the snapshot view provided by this study over the study period could not also be said to be representative. Further, the use of hospital-based data is limited by deficiency in data collection and collation and as a retrospective study, some important obstetric outcomes and indications may not have been consistently documented and therefore could have not permitted further sub analysis. Generalization therefore from the sample is constrained. The study only looked at women who delivered at Senga District Hospital. This means women who delivered at home and at private healthcare facilities were not included in the study.

5.1. Implications for Practice

Health education is core to treatment of each and every pregnant woman. If stillbirths are to be reduced a high magnitude of primary health care level interven-

tions is needed to turn around the tide of stillbirths. Establishing an institutional policy on bereavement counseling will benefit the mothers to deal with their loss within an environment of support. Some countries, for example Ireland, have established bereavement professionals and chaplainship for support of the parents as well as the staff. The establishment of a bereavement champion in the tertiary hospital could support mothers in the event of losing their baby to prevent secondary complications of depression and suicidal ideation results.

5.2. Implications to Nursing Education

Establishment of a standard operating procedure for the management of mothers who have delivered stillbirths in the tertiary hospital, there would be effective counseling of mothers post stillbirth delivery, which will reduce the secondary health implications such as depression, parasuicide and other psychological health implications. These research findings will serve as a basis for quality improvement in regard to record keeping, the use of a partogram on mothers with intrauterine deaths and discharge summaries for follow up care.

5.3. Implication on Research

Further research can be done to investigate what are factors or barriers in the implementation of health education to pregnant mothers at primary health care settings, as results have shown the poor implementation of health education on the danger signs of pregnancy. Further research can be done on the experiences of mothers who delivered stillbirths in utilizing a foetal kick count chart.

6. Conclusion

The following factors were found to be the ones associated with stillbirth: Less than 3 ANC visits, anaemia, malaria, pre-eclampsia, and placenta previa. Stillbirth at Senga District Hospital was therefore found to be associated with multiple risk factors operating at different levels and current obstetric factors. The quality of care showed deficiencies with mothers in utilizing ANC and improving on it will reduce the increasing prevalence of stillbirths thus, lowering perinatal mortality. Greater attention needs to be given to the quality of obstetric care provided at Senga District Hospital and in Senga Hills District. Health care professionals should identify increased risk of stillbirth with every woman of childbearing age in order to address in a timely manner the preventable and modifiable risk factors of stillbirth. Access of these women to targeted counselling and prevention programs may assist in improving the wellbeing of these women. It is important to pay more attention to maternal influences before pregnancy to prevent the recurrence cycle of stillbirth. While cultural practices and traditional beliefs can contribute to adverse pregnancy outcomes, integrating these practices with modern healthcare and providing culturally sensitive care can help improve maternal health outcomes. Addressing these cultural and traditional barriers through community education and collaboration with traditional healers could help reduce stillbirth rates in the re-

gion. Strategies to raise public awareness of the risks of stillbirth on mothers and offspring's health are required.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Saleem, S., Tikmani, S.S., McClure, E.M., Moore, J.L., Azam, S.I., Dhaded, S.M., *et al.* (2018) Trends and Determinants of Stillbirth in Developing Countries: Results from the Global Network's Population-Based Birth Registry. *Reproductive Health*, **15**, 23-30. https://doi.org/10.1186/s12978-018-0526-3

[2] Madhi, S.A., Briner, C., Maswime, S., Mose, S., Mlandu, P., Chawana, R., *et al.* (2019) Causes of Stillbirths among Women from South Africa: A Prospective, Observational Study. *The Lancet Global Health*, **7**, e503-e512. https://doi.org/10.1016/s2214-109x(18)30541-2

[3] Pietrangelo, A. (2018) Understanding and Recovering from Stillbirth. https://www.healthline.com/health/pregnancy/stillbirth

[4] Ezadi, Z., Sadat Hofiani, S.M. and Christou, A. (2025) Using Routine Data to Examine Factors Associated with Stillbirth in Three Tertiary Maternity Facilities in Kabul, Afghanistan. *Reproductive Health*, **22**, Article No. 1. https://doi.org/10.1186/s12978-024-01916-9

[5] Zulu, R. (2021) Factors Associated with Fresh Stillbirths in Livingstone District, Zambia. Doctoral Dissertation, The University of Zambia.

[6] Makasa, M. (2023) Determinants of Stillbirth in the Five General Hospitals of Lusaka, Zambia: A Case-Control Study. Doctoral Dissertation, The University of Zambia.

[7] Miyoshi, Y., Matsubara, K., Takata, N. and Oka, Y. (2019) Baby Survival in Zambia: Stillbirth and Neonatal Death in a Local Hospital Setting. *BMC Pregnancy and Childbirth*, **19**, Article No. 90. https://doi.org/10.1186/s12884-019-2231-9

[8] Bedwell, C., Blaikie, K., Actis Danna, V., Sutton, C., Laisser, R., Tembo Kasengele, C., *et al.* (2021) Understanding the Complexities of Unexplained Stillbirth in Sub-Sharan Africa: A Mixed-Methods Study. *BJOG: An International Journal of Obstetrics & Gynaecology*, **128**, 1206-1214. https://doi.org/10.1111/1471-0528.16629

[9] Mtshali, N.Z. (2021) Placental Related Factors Contributing to Stillbirths at Charlotte

Maxeke Johannesburg Academic Hospital (CMJAH). Doctoral Dissertation, University of the Witwatersrand, Johannesburg.

[10] Eng, C., Karki, S. and Trivedi, A.N. (2016) Risk Factors of Stillbirths in Victoria (Australia): A Case-Control Study. *Journal of Obstetrics and Gynaecology*, **36**, 754-757. https://doi.org/10.3109/01443615.2016.1157146

[11] Badimsuguru, B.A., Nyarko, K.M., Afari, E.A., Sackey, S.O. and Kubio, C. (2016) Determinants of Stillbirths in Northern Ghana: A Case Control Study. *Pan African Medical Journal*, **25**, Article No. 18. https://doi.org/10.11604/pamj.supp.2016.25.1.6168

[12] Boateng, P., Appiah-Danso, A. and Kenu, E. (2018) Factors Associated with Perinatal Mortality among Referred Obstetric Emergencies in the Accra-Tema Metropolitan Areas, Ghana, 2017. *Pan African Medical Journal Conference Proceedings*, **1**, 3.

[13] Usynina, A.A., Grjibovski, A.M., Krettek, A., Odland, J.Ø., Kudryavtsev, A.V. and Anda, E.E. (2017) Risk Factors for Perinatal Mortality in Murmansk County, Russia: A Registry-Based Study. *Global Health Action*, **10**, Article ID: 1270536. https://doi.org/10.1080/16549716.2017.1270536

[14] Mohan, V., Aggarwal, R., Suneja, A. and Guleria, K. (2022) A Critical Assessment of Stillbirths at a Tertiary Care Hospital. *Indian Journal of Public Health*, **66**, 15-19. https://doi.org/10.4103/ijph.ijph_1364_20

[15] Behal, M. and Vinayak, R. (2015) Maternal Risk Factors for Perinatal Mortality. *Indian Journal of Obstetrics and Gynecology Research*, **2**, 92-96.

[16] Moya, E., Phiri, N., Choko, A.T., Mwangi, M.N. and Phiri, K.S. (2022) Effect of Postpartum Anaemia on Maternal Health-Related Quality of Life: A Systematic Review and Meta-Analysis. *BMC Public Health*, **22**, Article No. 364. https://doi.org/10.1186/s12889-022-12710-2

[17] Khan, M.M. (2001) Effect of Maternal Anaemia on Fetal Parameters. *Journal of Ayub Medical College Abbottabad*, **13**, 38-41.

[18] Moore, K.A., Fowkes, F.J.I., Wiladphaingern, J., Wai, N.S., Paw, M.K., Pimanpanarak, M., *et al.* (2017) Mediation of the Effect of Malaria in Pregnancy on Stillbirth and Neonatal Death in an Area of Low Transmission: Observational Data Analysis. *BMC Medicine*, **15**, Article No. 98. https://doi.org/10.1186/s12916-017-0863-z

[19] Jabeen, M., Yakoob, M.Y., Imdad, A. and Bhutta, Z.A. (2011) Impact of Interventions to Prevent and Manage Preeclampsia and Eclampsia on Stillbirths. *BMC Public Health*, **11**, S6. https://doi.org/10.1186/1471-2458-11-s3-s6

[20] Lawn, J.E., Blencowe, H., Waiswa, P., Amouzou, A., Mathers, C., Hogan, D., Flenady, V., Frøen, J.F., Qureshi, Z.U., Calderwood, C. and Shiekh, S. (2016) Stillbirths: Rates, Risk Factors, and Acceleration towards 2030. *The Lancet*, **387**, 587-603.

[21] Junejo, R.R., Memon, N., Bai, G., Shaikh, A.F., Dars, A.G. and Durrani, W. (2023) Impact of Placenta Previa on Neonatal and Maternal Health: An Analysis of Complications and Associated Risk Factors. *Journal of The Society of Obstetricians and Gynaecologists of Pakistan*, **13**, 222-227.

[22] Waller, J.A. and Saade, G. (2024) Stillbirth and the Placenta. *Seminars in Perinatology*, **48**, Article ID: 151871. https://doi.org/10.1016/j.semperi.2023.151871

[23] Muglu, J., Rather, H., Arroyo-Manzano, D., Bhattacharya, S., Balchin, I., Khalil, A., *et al.* (2019) Risks of Stillbirth and Neonatal Death with Advancing Gestation at Term: A Systematic Review and Meta-Analysis of Cohort Studies of 15 Million Pregnancies. *PLOS Medicine*, **16**, e1002838. https://doi.org/10.1371/journal.pmed.1002838

[24] Gissler, M., Durox, M., Smith, L., Blondel, B., Broeders, L., Hindori-Mohangoo, A.,

et al. (2022) Clarity and Consistency in Stillbirth Reporting in Europe: Why Is It So Hard to Get This Right? *European Journal of Public Health*, **32**, 200-206. https://doi.org/10.1093/eurpub/ckac001

[25] Majumder, M., Kumar, G.A., Ali, S.B., George, S., Dora, S.P., Akbar, M., *et al.* (2024) Socio-Cultural Practices and Experience of Mothers' Post Stillbirth and Newborn Death: A Population-Based Perspective from India. *BMC Pregnancy and Childbirth*, **24**, Article No. 778. https://doi.org/10.1186/s12884-024-06906-0

[26] Honkavuo, L. (2021) Women's Experiences of Cultural and Traditional Health Beliefs about Pregnancy and Childbirth in Zambia: An Ethnographic Study. *Health Care for Women International*, **42**, 374-389. https://doi.org/10.1080/07399332.2021.1898613

[27] Ayebare, E., Lavender, T., Mweteise, J., Nabisere, A., Nendela, A., Mukhwana, R., *et al.* (2021) The Impact of Cultural Beliefs and Practices on Parents' Experiences of Bereavement Following Stillbirth: A Qualitative Study in Uganda and Kenya. *BMC Pregnancy and Childbirth*, **21**, Article No. 443. https://doi.org/10.1186/s12884-021-03912-4