

Original Research Article

Accessing the Prevalence of Stillbirth Rate and Associated Factors among Women Who Delivered in a Rural Hospital: A Retrospective Cross-Sectional Analysis

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Received: 21/10/2015

Revised: 19/11/2015

Accepted: 14/12/2015

ABSTRACT

Purpose: We determined the stillbirth rate and associated factors among women who delivered in a rural hospital in the Holy Family Hospital in Nkawkaw in the Eastern region of Ghana.

Method: A cross-sectional case review of deliveries between January 2013 to December 2014 was undertaken. Data was extracted from the stillbirth audit report form and mother's demographic characteristics, obstetric complications and fetal outcome were reviewed.

Results: The stillbirths' rate for the period was 23.9 per 1000 deliveries. Over seventy percent (70.7%) of the women were between 20-34 years old. The following were significantly associated with stillbirths: Maternal age of 35 years and above 1.64, 95% CI (1.48-1.80), delivery through vacuum/Breech 1.70, 95% CI (1.41-1.98), deliveries without the use of partograph 1.59, 95% CI (1.51-1.67), birth weight below 2.5kg 1.65, 95% CI (1.49-1.81), women of no antenatal record 1.27, 95% CI (0.98-1.56), women with HB below 11g 1.52, 95% CI (1.31-1.72) and referral women 1.50, 95% CI (1.32-1.68). The study found no association between gender and stillbirth.

Conclusions: The study reveals a high rate of stillbirth being higher than the national rate. With most of the stillbirth being macerated, improved ante partum care through quality antenatal and medical care may help in early detection or recognition of maternal diseases, thus leading to favorably pregnancy outcome.

Keywords: Stillbirth, Pregnancy, Rural hospital, Ghana.

INTRODUCTION

Globally, more than 2.6 million stillbirths occur each year with 7,000 occurring each day where more than 1 million occur within the intra-partum (labour) period. [1] The vast majorities (98%) of stillbirths occur in low- and middle-income countries, and over fifty percent (55%) of these happen in rural sub-Saharan Africa. [2] Complications during pregnancy and child birth are known to be closely associated with high

stillbirth and perinatal mortality rate. [3] Two-thirds of stillbirths occur in South-east Africa with 55% occurring in rural families. [1]

Also, while the occurrence of stillbirths has reduced drastically in the high income countries, with a rate of approximately 2-5 babies out of every 1,000 babies, compared to about 20-50 babies out of every 1,000 babies in low income countries in Africa are stillborn. [4] Most of these deaths can be avoided as the

necessary medical interventions exist and are well known. [1]

Ghana, the focus of this study exemplifies the experience of many low and middle income countries where every day, 47 babies are stillborn and 232 babies are born with low birth-weight of which many of whom will die in infancy or suffer lifelong consequences. [5] The current rate of stillbirths in Ghana is 24 per 1000 live births. [6] Stillbirth rates are particularly high in sub-Saharan Africa, where up to 14% of deliveries could result in stillbirths. [7] These rates are relatively higher in West Africa including Ghana. [7] Studies have indicated that two-thirds of stillbirths occur in rural areas, where skilled birth attendants particularly midwives and physicians are not always available for essential care during childbirth and for obstetric emergencies, including caesarean sections, epitomizes the experience of many rural settings.

With increasing interest in the study of stillbirths in recent times, many studies have been done in Ghana but not in the Eastern Region and Holy Family Hospital in particular. To plan for maternal and child health services in developing countries, data on the frequency and distribution of adverse births outcomes are important. [8] The question then is what is the prevalence of stillbirth rate and associated factors among women who delivered in Holy Family Hospital? This study therefore focuses on the incidence of fetal mortality and the identification of risks factors associated with this phenomenon using data from the Holy Family Hospital. Finding risk factors will help make a pointed effort to deal with the risk factors, to help lower the incidence of stillbirths in this setting.

MATERIALS AND METHODS

Study Setting and Design: This study was carried out at the maternity unit of the Holy Family Hospital, Nkawkaw in the Eastern region of Ghana. Holy Family

Hospital is a Municipal Mission Referral Centre, and receives referrals from peripheral health facilities and even other secondary health facilities around in situations of complications. Majority of the women are booked.

Study Population: Data from the hospital records on all women who gave birth at or after 28 completed weeks of gestation. Fetal death or Stillbirth was defined as death of the fetus after 28 weeks of gestation. Total number of deliveries during the study period from January, 2013 to December, 2014 was 8,123. It was a cross-sectional study of women who had delivered stillborn foetus during the study period. The women were identified from the labour room admission and delivery registers. The registers contain important information about maternal health and complications during pregnancy and the intrapartum period.

Variables: The variables collected included: demographic variables: maternal age, parity, gravity, parity. Obstetric variables: admission status of the mother (booked or referred), antenatal care attendance for present pregnancy, mode of delivery, presence of severe obstetric complication which included one or more of the following: prelabour rupture of membranes preterm, hypertensive pregnancy disorders (pre-eclampsia and eclampsia), severe anaemia (haemoglobin level <9 g/dL), Multiple pregnancy, Sickling, HIV positive, Diabetes, Previous caesarian section, Teenage, Primip, Malaria in Pregnancy. Fetal variables included gender and weight. The study was approved by hospital ethics committee.

Statistical analysis: Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 16.0. In all, 194 stillbirths were included in the analysis. Frequency analysis and cross tabulations were used to determine the frequency and percentage of stillbirths. Overall, stillbirth was calculated as a

proportion of all births. Fresh and macerated stillbirths were calculated as a proportion of stillbirths. Further analysis was done for the various indicators under each variable as proportion of the number of total stillbirths recorded for such as an

indicator. Univariate association between covariates and stillbirths were assessed with under the General Linear Model. All P-values were two-sided and a value of 0.05 was considered statistically significant.

RESULTS

Demographic/reproductive and obstetric factors associated with stillbirth.

Characteristics	Total Births		All Stillbirths		Fresh Still birth		Macerate Stillbirth		Odds ratio (95% Confident Interval (CI))
	n	%	n	%	n	%	n	%	
	8123		194	2.4	72	0.9	122	1.5	
Maternal age (yrs)									
<20	1240	15.3	36	2.9	10	0.8	26	2.1	1
20-34	5745	70.7	122	2.1	49	0.9	73	1.3	1
35 and above	1138	14	36	3.2	13	1.1	23	2	1.64(1.48-1.80)
Parity									
0	2284	28.1	36	1.6	13	0.6	23	1	1
1 to 2	3520	43.3	83	2.4	25	0.7	58	1.6	1
3 to 4	1733	21.3	46	2.7	20	1.2	26	1.5	1.44(1.24-1.64)
≥5	586	7.2	29	4.9	14	2.4	15	2.6	1.50(1.19-1.81)
Mode of Delivery									
SVD	6734	82.9	136	2.0	35	0.5	101	1.5	1
Caesarian Section	1346	16.6	48	3.6	34	2.4	14	1	1
Vacum/Breech	43	0.52	10	23.3	3	3.4	7	8	1.70(1.41-1.98)
Used of Patograph									
Yes	2157	41.8	18	0.8	8	0.4	10	0.5	1
No	2995	58.2	176	5.9	64	2.1	112	3.7	1.59(1.51-1.67)
Birth Weight									
< 2.5kg	1238	15.2	67	5.4	24	1.9	43	3.5	1.65(1.49-1.81)
≥2.5	6885	84.8	127	1.8	47	0.7	80	1.2	1
Sex									
Male	4218	51.9	91	2.2	37	0.9	54	1.3	1
Female	3905	48.1	103	2.6	35	0.9	68	1.7	1
Antenatal Attendance									
Yes	7453	91.7	175	2.3	69	0.9	106	1.4	1
No	670	8.3	19	2.8	3	0.4	16	2.4	1.27(0.98-1.56)
HB Checked									
Yes	1029	12.7	40	3.9	22	2.1	18	1.7	1
No	7094	87.3	154	2.2	50	0.7	104	1.5	1
HB Range									
<11g	224	21.7	27	12.1	14	6.3	13	5.8	1.52(1.31-1.72)
12-16g	805	78.3	13	1.6	8	1	5	0.6	1
Admission Status									
Referred	319	3.9	47	14.8	24	7.6	23	7.3	1.50(1.32-1.68)
Booked	7804	96.1	147	1.9	48	0.6	99	1.3	1

The study consisted of 8, 123 births out of which there were 194 stillbirths. The stillbirths' rate for the two year period was 23.9 per 1000 deliveries. For the stillbirths, 72 (37.1%) were fresh stillbirths and 122 (62.9%) were macerated stillbirths. More than seventy percent (70.7%) of the women were between 20-34 years old. Over seven percent (7.2%) of the women were grand multipara and were found to be at increased risk for stillbirth 4.9% (1.50 CI 1.19-1.81). About ninety-

two percent (91.7%) of the women attended antenatal care at least once. Majority of the women (82.9%) had a spontaneous vaginal delivery, about seventeen percent (16.6%) delivered by caesarean section, while 0.54 % of the births were assisted Vacuum/ breech delivery. For the 12.7% of the women who had their HB checked, 21.7% had HB below 11g. For the 8, 123 deliveries recorded, the partograph was not used in just half (58.2%) of the deliveries. Four

percent (4%) of the women were referred from peripheral health centers. Details in table below.

The table below also shows the results of the univariate analysis. The following were significantly associated with stillbirths: Maternal age of 35 years and above 1.64, 95% CI (1.48-1.80), delivery through vacuum/Breech 1.70, 95% CI (1.41-1.98), deliveries without the use of partograph 1.59, 95% CI (1.51-1.67), birth weight below 2.5kg 1.65, 95% CI (1.49-1.81), women of no antenatal record 1.27, 95% CI (0.98-1.56), women of HB below 11g 1.52, 95% CI (1.31-1.72) and referral women 1.50, 95% CI (1.32-1.68). This study did not find any association between gender and stillbirths.

DISCUSSIONS

A retrospective hospital-based study of 8,123 births was analyzed in Holy Family Hospital. The stillbirth rate was 27 per 1000 total births. This is higher than the national rate of 24/1000 live births. [6,9] This is not different from the average stillbirth rate in developing countries of 26 per 1000 live births. [10] It is about five times higher than in developed countries of 5 per 1000. [10] It is estimated that one fourth to one third of all stillbirths take place during delivery. Stillbirths represent a devastating pregnancy outcome, and the need for increased efforts in prevention has been highlighted. [11]

This study found the following significantly associated with stillbirths: maternal age of 35 years and above, delivery through vacuum/Breech, deliveries without the use of partograph (58.2%), women of no antenatal record, and referral of women from the peripheral health facilities (4%). No doubt 3.9% of the reported rates of stillbirths registered in our study were attributed to the referral of complicated obstetric cases from peripheral health centers. The reason could also be that most of the obstetric cases referred often reach the hospital when it is

already late. Early referral to tertiary hospitals can decrease the stillbirths associated with late referral. With regards to referrals from the lowest institutions to highest institutions have the highest risk of mortality may suggest the need to pay more attention during the antenatal period and to improve the referral system and emergency care services. Solutions to these problems should also be addressed in context having had good picture of inadequate and lack of gynecologists or obstetricians in such a big facility. Training of healthcare providers in this facility is required to improve their understanding of the causes of stillbirth and factors associated with it. [12]

In addition, the high stillbirth rate may be in part due to the low degree of obstetric vigilance and improper labour management thus indicating sub-optimal intrapartum monitoring and care. The explanation for inadequate intrapartum monitoring could be attributed to not using or improper use of the partograph, in some deliveries in the study hospital. Continuous monitoring of labour and provision of rapid care to deal with problems are most crucial for preventing adverse obstetric outcomes related to childbirth. [13] The partograph has been indicated as one of the most important advances in modern obstetric care. WHO advocates its use as a necessary tool in the management of labour and recommends its universal use during labour. [14] Furthermore, the partograph has been widely accepted as one of the measures that assist in reducing maternal and neonatal mortality resulting from obstructed labour. [15] Improved quality of obstetric care during labor and delivery may help reduce the number of fresh stillbirths' deaths. [8]

Maternal age effects were common in stillbirths and older mothers above 35 years were at greater risk for stillbirth (1.64, 95% CI (1.48-1.80)). This finding corroborates with other studies. [16-18] again the effects of maternal age were more

prominent for macerated against fresh stillbirths also consistent with studies. [8,12]

Delivery through breech/vacuum was associated with stillbirths. This agrees with the clinical observation that the infants turn to optimal birth presentation at about 34 weeks of gestation. [8] They emphasize that infants that are at risk because of their small size and level of maturity are likely to face the additional risk of breech presentation. It is observed that these maternal and obstetric risk factors associated with adverse vaginal birth outcomes require closer monitoring and timely interventions when necessary during delivery.

Parity and maternal age have been shown to increase the risk of adverse stillbirth outcomes. [19] Our study found parity to be significantly associated with stillbirth. From this study stillbirth increased with the number of parity advances, with those with higher parity recording the highest stillbirth. Both primiparous and multiparous women were found to be significantly at increased risk for stillbirth. This compares well with findings by Aliyu and colleagues. [19] It is suggested that care providers may consider these groups for targeted preconceptional counseling.

Majority of the women (91.7%) attended antenatal care at least once. However, the percentage of stillbirth was much higher among mothers who did not attend antenatal care compared with those who did. This is consistent with findings by Prual et al. [20] The incidence of stillbirth, especially macerated, is high in this study as compared to fresh stillbirths. Early prenatal care could help reduce perinatal death linking the woman to the health care system, increasing the probability that she would seek timely emergency care that would reduce the likelihood of death of her infant in utero. [8,21] It is reported that, stillbirth rate is an important indicator of access to and

quality of antenatal and delivery care. [22] Again, the need to intensify education on antenatal attendance since it is a critical linkage between the woman and maternity care services. Increasing the access to and availability of these services can be targeted. Antenatal care attendance provides an opportunity to screen for other potential risk factors for antepartum stillbirth, as well as to provide counseling to women, and thus, helps to ensure a successful pregnancy outcome. [22]

This study did not find any gender bias towards stillbirth. This is consistent with the Hosian and Khan. [23] Contrary, Mondal et al found risk of stillbirth greater for male than female fetuses. [24] A better understanding of the etiology of stillbirths is therefore crucial if further improvements are to be made.

Limitations: Several important limitations should be considered when interpreting the results of our study. It covers a period of twenty four months, but it gives an idea of the prevailing situation in the system. There was no available published data from the region and the hospital to compare with the present situation to know whether it had improved or not over the years. The study calls for intervention in the antenatal period, as management of diseases like hypertension in pregnancy, to reduce the stillbirth rate.

CONCLUSIONS

The study reveals a high rate of stillbirth being higher than the national rate. In order to achieve optimal perinatal outcome, all factors contributing to mortality and morbidity in a particular pregnancy must be identified and acted upon early. With most of the stillbirth being macerated improved ante partum care through quality antenatal and medical care may help in early detection or recognition of maternal diseases, thus leading to favorably pregnancy outcome. Early referrals can decrease the rate of stillbirth from mechanical causes like

obstructed labour and ruptured uterus. A better understanding of the etiology of stillbirths is therefore crucial if further improvements are to be made.

ACKNOWLEDGEMENT

We would like to express our sincere gratitude to management of Holy Family Hospital, Nkawkaw for their permission to carry out this research. Thanks also to the outfit of the maternity ward staffs most especially their supervisor, Madam Mary Dora A song Peprah who helped to release the necessary information. Special thanks to Dr. Belinda Acheampong for her clinical input to this research and all staffs at the statistics department of the hospital. In conclusion, we give thanks to God who is our life and salvation.

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How to cite this article: Asare M, Laar AS. Accessing the prevalence of stillbirth rate and associated factors among women who delivered in a rural hospital: A retrospective cross-sectional analysis. *Int J Health Sci Res.* 2016; 6(1):341-347.

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