

Still Birth and Associated Factors among Women Delivered in Public Hospitals, Southwest Ethiopia

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ABSTRACT

Background: Stillbirth has decreased substantially worldwide in the past 40 years. Yet there is still a large gap between the developing and developed countries. Data on prevalence and main risk factors for stillbirth were limited in developing countries including Ethiopia.

Objective: To assess the magnitude and associated factors of stillbirth among women delivered at public hospitals in Southwest Ethiopia.

Materials and methods: A cross-sectional study was conducted on 1980 delivering women's from randomly selected hospitals from February 01 to March 30, 2018. All women who gave birth at public hospitals of Bench-Maji, Kaffa and Sheka Zones during study period were included. Data was collected by pretested questionnaire by face to face interview and entered to Epidata version 3.0 and exported to SPSS version 20 for analysis. Logistic regression analysis was carried out to identify independently associate factors at CI of 95% and significance level of P-value<0.05.

Results: The magnitude stillbirth, in this study was 99 per 1000 livebirths, 95% CI: 85-114 per 1000 livebirths. Rural residence [AOR=2.76 (CI:1.57-4.85)], maternal undernutrition [AOR=2.99 (CI 1.90-4.72)], had no iron/folate intake during pregnancy [AOR=8.26 (CI:4.82-14.16)], having delivery complication [AOR=3.77 (CI 2.31-6.16)], induced labor [AOR=2.25 (CI 1.26-4.00)] and underweight [AOR=7.60 (CI 3.73-15.48)] were factors significantly associated with stillbirth.

Conclusion: In the study area magnitude of still birth still found as public health concern. Residence, nutritional status, iron folate intake during pregnancy, delivery complication, induced labor and low birth weight were factors significantly associated with stillbirth. This could call for improvement of nutritional status of the mothers; supplementation of iron folate during pregnancy; prevention, early diagnosis and management of obstetric complications.

Keywords: Stillbirth; Factors; Southwest Ethiopia

INTRODUCTION

World Health Organization (WHO) define Still birth as a baby born dead at 28weeks of gestation or more, with a birth weight of ≥ 1000 g, or a baby length of ≥ 35 cm. An estimated of 2.62 million stillbirth in the world by the year 2015. In sub-Saharan Africa, an estimated 1,060,000 babies die as stillbirths. Ethiopia is fifth of top ten countries of the world with highest stillbirth numbers with stillbirth of 97,000 [1,2].

Worldwide stillbirth rate has declined by 6.3, from 24.7 stillbirths per 1000 births in 2000 to 18.4 stillbirths per 1000 births in 2015. But in the African region, there was only an annual decline of less than 1.4%. The stillbirth rate for developed countries is estimated between 3.4 and 3.5 per 1000 births, whereas for the developing world, the estimate ranges from 20 to 32 per 1000 births. Two thirds of all stillbirths occur in just two regions; South-East Asia and Africa. It is estimated

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Received date: February 15, 2021; **Accepted date:** March 1, 2021; **Published date:** March 8, 2021

Citation: Lolaso T, Weldekidan F, Abera T, Mekonnen T, Chewaka L (2021) Still Birth and Associated Factors among Women Delivered in Public Hospitals, Southwest Ethiopia. *Gynecol Obstet.* 11:555.

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that babies who die before the onset of labor, or ante partum stillbirths, account for two-thirds of all stillbirths in countries where the mortality rate is greater than 22 per 1,000 births(4) [2-4].

Stillbirth can trigger anxiety as parents attempt to cope with the crisis. Grief can be devastating to the parents; the stillborn infant represents the loss of their future, “the world that should be.” Although individual reactions are determined by cultural and religious beliefs, the birth crisis typically causes fear and worry as the family adapts. Sociocultural expectations of grief for varying gestational ages may not be congruent with the parents’ experience. Some women have unexpected and profound grief after a first stillbirth. The effect of stillbirth have put a burden of funeral cost, loss of work and result in unemployment for parents [5,6].

From previous studies, preterm birth, increasing maternal age, history of stillbirth, reported hypertension, extremes of neonatal birth weight, cesarean delivery, operative vaginal delivery, and assisted breech delivery were all significantly associated with stillbirth. Stillbirth is still major public health problems in Ethiopia. In general, epidemiological data on the magnitude and risk factors of stillbirth are important for planning maternal and child health care services in developing countries [7-9].

Though there are various studies conducted in low-income countries including Ethiopia. But, there is no report about stillbirth and associated factors in the study area. Hence, this study assessed magnitude and associated factors of stillbirth among women delivered at public hospitals of Southwest Ethiopia [10-13].

METHODS AND MATERIALS

Study design and setting

Institutional based cross-sectional study was conducted in public hospitals found in Bench Maji, Sheka and Bonga zones namely, Mizan Tepi University teaching hospital, Tepi general hospital, Chena primary hospital and Gebretsadik Shawo general hospital from February 01- March 30/2017. The three zones Keffa, Bench-Maji and Sheka are located 460 km, 583 km, and 633 km far from Addis Ababa respectively. The zones has one referral hospital, two general hospitals three primary hospitals and 93 health centres in general. All of them were providing delivery services. The zones has 1853 obstetric care providers in general.

Sample size and sampling procedure

The sample size was calculated by using a single population proportion sample size calculation formula considering the following parameters. d =margin of error of 2% with 95% significance level, p =proportion expected prevalence of adverse birth outcome are 25% and considering none response rate of 10% it gives as 1980. For the second objective we use different factors to calculate sample size; having low birth weight gives sample size of 855. The final sample size was 1980.

Simple random sampling was used to select public hospitals. The total sample size was allocated proportionally to the four

selected public hospitals namely, Mizan Tepi University teaching hospital, Tepi general hospital, Chena primary hospital and Gebretsadik Shawo general hospital. Since the study was based on delivery case flow the source of population of each hospital was estimated from past six months (July 2017 to December 2017) delivery report. The sample size allocation for each hospital was based on the total number of deliveries in the past six months prior to the study period. All women who gave birth in the selected hospitals during data collection period were interviewed.

Inclusion and exclusion criteria

All laboring mothers who gave birth in the selected public hospitals were included and those mothers with multiple pregnancy were excluded.

Data collection method

Both primary data collection and record review were implemented. The data was collected using pre-tested structured questionnaire by face to face interview, follow-up from admission to discharge, MUAC (Mid Upper Arm Circumference) measurement using Shakir strip tape and record review for hemoglobin test result. The questionnaire was developed based on instruments that were applied in different related studies [3,11-12,14-15]. Questionnaires developed in English and translate to Amharic by expert and translated back to English to see consistency of the question. The questions were grouped and arranged according to the particular objectives that they can address. The data was collected by trained first degree midwives.

Data quality control

The instruments was pretested by trained data collectors in Mizan and Sheko health centers among 99 delivering mothers before actual data collection and few modifications were made.

Data management and analysis

Epidata software version 3.1 and Statistical Package for Social Sciences (SPSS) software version 21.0 was used for data entry and analysis. After organizing and cleaning the data, frequencies & percentages was calculated to all variables that are related to the objectives of the study. Variables with P -value of less than 0.25 in bivariate analysis was entered into the multivariable logistic regression analysis to control confounds so that the separate effects of the various factors associated with stillbirth can be assessed. Finally variables with p -value less than 0.05 in multivariable logistic regression analysis considered as independently significant association with stillbirth. Odds ratio was used to determine the strength of association with stillbirth.

Ethical considerations

The letter of ethical clearance was obtained from Mizan-Tepi University, College of Health Science, Institutional Health Research Ethics Review Committee (IHRERC). Further permission was obtained from Medical Director of the selected health facilities. Confidentiality was maintained by making the

data collectors aware not to record any identification information. After explaining the objectives of the study in detail, informed verbal consent was taken from all study participants. The privacy was maintained by using private room and examination screening during interview and follow-up.

RESULTS

Socio-demographic characteristics of the participants

A total of 1980 participants participate in the study which brings response rate of 100%. Mean and standard deviation of the participants was 24.73(\pm 4.82) years. Slightly less than half 905(45.7%) were rural residents/dwellers, and one fourth 505(25.5%) of the study participants were unable to read and write. Almost all 1911(96.5%) were married and more than three fourth 1562(78.9%) were housewife in their occupation (Table 1).

Variables	Category	Frequency	Percent (%)
Age	15-19	178	9
	20-24	854	43.1
	25-29	585	29.5
	30-34	230	11.6
	35+	133	6.7
Residence	Rural	905	45.7
	Urban	1075	54.3
Educational status	Unable to read and write	505	25.5
	Able to read write(without formal education)	413	20.9
	Primary education	643	32.5
	Secondary education	263	13.3
	College and above	156	7.9
Marital status	Married	1911	96.5
	Single	40	2
	Divorced	7	0.4
	Widowed	10	0.5
	Separate	12	0.6

Religion	Orthodox	897	45.3
	Muslim	404	20.4
	Protestant	679	34.3
Occupation	Housewife	1562	78.9
	Merchant	177	8.9
	Gov't employee	126	6.4
	Non-gov't employee	22	1.1
	Daily labor	93	4.7

Table 1: Socio-demographic characteristics of respondents in public hospitals of Benchi-Maji, Kaffa and Sheka zones, 2018.

Obstetric characteristics of the participants

Regarding the intention of the pregnancies almost all 1888(95.4%) of the pregnancies were intended. Majority 1826(92.2%) of the participants have ANC follow-up and also the majority 1664(84%) take iron folate during current pregnancy. Regarding complication 266(13.4%) and 385(19.4%) develop complication during pregnancy and delivery respectively. About one fifth 378(19.1%) of the participants were anemic. 546(27.6%) of the participants were undernourished and 148(7.5%) of the newborns has low birth weight (Table 2).

Variables	Category	Frequency	Percent (%)
Pregnancy status	Intended	1888	95.4
	Unintended	92	4.6
ANC follow-up	Yes	1826	92.2
	No	154	7.8
Iron folate intake	Yes	1664	84
	No	316	16
Complication during current pregnancy	Yes	266	13.4
	No	1714	86.6
Hypertensive disorders of pregnancy	Yes	90	33.8
	No	176	66.2
APH	Yes	54	20.3
	No	212	79.7
Gestational age	<37weeks	182	9.2
	\geq 37	1798	90.8

Complication during current labor	Yes	385	19.4
	No	1595	80.6
Status of current labor	Spontaneous	1737	87.7
	Induced	243	12.3
Alive birth	Yes	1801	91
	No	179	9
Birth weight	<2500gm	148	7.5
	≥ 2500gm	1832	92.5
Anemia (using Hgb)	Yes	378	19.1
	No	1602	80.9
Nutritional status (using MUAC)	Under nutrition	546	27.6
	Normal	1434	72.4

Table 2: Obstetric and nutritional characteristics of respondents in public hospitals of Benchi-Maji, Kaffa and Sheka zones, 2018.

Magnitude of stillbirth

The magnitude of stillbirth in this study was 99 per 1000 livebirths, (95% CI 85-114 per 1000 livebirths).

Factors associated with stillbirth

Twenty four variables were included in bivariate analysis and thirteen of them were included in the final model. Rural residence, undernutrition, had no iron/folate intake during pregnancy, having delivery complication, induced labor and underweight were factors significantly associated with stillbirth.

Mothers from rural residence were three times more likely to face stillbirth as compared to their counterpart [AOR 2.76, 95% CI (1.57-4.85)]. Mothers who did not take iron folate during pregnancy were eight times more likely to have stillbirth as compared to their counterpart [AOR 8.26, 95% CI (4.82-14.16)]. Mothers those whose MUAC<21 cm(undernourished) were three times more likely to have stillbirth as compared to those whose MUAC ≥ 21 cm(normally nourished) [AOR 2.99, 95% CI (1.94-7.2)]. Mothers who develop complication during delivery were four times more likely to have stillbirth as compared to their counterpart [AOR 3.77, 95% CI (2.31-6.16)]. Mothers whose labor induced were two times more likely to have stillbirth compared to spontaneous labor [AOR 2.25, 95% CI (1.26-4.)]. Mothers who have underweight neonate were seven times more likely to have stillbirth as compared to mothers who have neonates of normal weight [AOR 7.60, 95% CI (3.73-15.48)]

DISCUSSION

The magnitude of stillbirth was found to be 99 per 1000 livebirths (95% CI: 85-114 per 1000 livebirths). Moreover; rural residence, undernutrition, had no iron/folate intake during pregnancy, having delivery complication, induced labor and underweight were factors significantly associated with stillbirth.

This study revealed that the magnitude of still birth was 99 per 1000 livebirths at 95% CI (85-114 per 1000 livebirths) among births. The finding of this study is consistent with the study done in Hosana which was 8.6 % (11). In this study the magnitude of still birth is higher than the study done in Tanzania 2.7% (14), Gondar university hospital 7.1% (12) and Ghana 2.22(10). The discrepancy might be due study area difference, the care provider competency and the technology available in health facility and topography and infrastructure of the study have an impact for the difference. And also health seeking behavior of pregnant mother in the study area might be not similar with mothers in Tanzania and Gondar.

In this study residence is significantly associated with stillbirth. Mothers whose who are rural residents were more likely to have stillbirth. This finding is in agreement with study from Ethiopia. Similarly mothers who did not take iron folate during pregnancy were more likely to have stillbirth. This could due to the fact that iron folate improve the level of anemia because level of anemia is one of the determinants of stillbirth [16].

This study revealed that complication during delivery was significantly associated with stillbirth. Mothers who develop delivery complication were more likely to have stillbirth. This finding is consistent with studies conducted in Zambia, Southern Ethiopia and Gondar Ethiopia [17].

Maternal undernutrition is significantly associated with stillbirth. Undernourished mothers were more likely to have stillbirth. This may be due to the fact that maternal under nutrition can cause intrauterine growth retardation and result in low birth weight and finally can result in stillbirth. This finding is in agreement with studies from Tanzania, hosanna and Ethiopia.

This study also revealed that induced labor risk factor for stillbirth. Mothers whose labor induced were two times more likely to develop stillbirth as compared to their counterpart. This may be due to the fact that induction can result in tetanic contraction and finally result in fetal distress. Similarly low birth weight is significantly associated with stillbirth. Neonates with low birth weight were more likely to have stillbirth. This findings also consistent with studies conducted in Ghana, Zambia, Tanzania, Gondar and Hossaina.

CONCLUSION

The magnitude of Stillbirth in the study area was still found to be high. Residence, nutritional status, iron folate intake during pregnancy, delivery complication, induced labor and low birth weight were factors significantly associated with stillbirth. This could call for improvement of nutritional status of the mothers; supplementation of iron folate during pregnancy; prevention, early diagnosis and management of obstetric complications.

DATA SHARING STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

ACKNOWLEDGEMENT

We are thankful for Mizan Tepi University for funding the study. Our gratitude also goes to data collectors, supervisors and study participants.

AUTHOR'S CONTRIBUTIONS

TL- The principal investigator designed the study, collected, analyzed and interpreted the data, and also drafted the manuscript. FW, TA, TM and LC - Participated in conceptualization of the study, design, analyses and interpretation of results as well as drafting and review of the manuscript. All authors read and approved the final manuscript.

DISCLOSURE

The authors declare that they do not have any conflict of interest in any aspect of the article.

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