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DEMOGRAPHIC FACTORS AND ACCURACY OF MOTHERS' PERCEPTION OF LOW BIRTH WEIGHT: A LONGITUDINAL STUDY IN TWO RURAL DISTRICTS IN SOUTHERN GHANA

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Low Birth Weight, determinants of LBW, nutritional deficiencies, child health issues, pre-term birth, Intrauterine growth restriction, Preterm birth.

ABSTRACT
LBW remains a significant public health concern globally, especially in low and middle income countries where 95% of all cases occur. In Ghana, and sub-Saharan Africa in general, the burden of LBW is substantially underestimated due to poor record keeping and the huge proportion of home births. The issue of birth weight in Ghana and factors influencing it has not received much needed attention. This study assessed the accuracy of low birth weight as perceived by mothers and factors influencing whether their perceptions were accurate. Analysis secondary data using Stata Version 13 was calculated for birth weight data extracted from the Dodowa Health and Demographic Surveillance System site database. The analysis also involved calculating the sensitivity and specificity of the birth weight. By maternal demographic characteristics, birthing of LBW babies was highest amongst teenagers

(25.9%)and mothers who initiated ANC in the third trimester (35.8%). Fifty-two percent of mothers with recorded LBW babies correctly identified actual LBW (sensitivity =0.52). Only 4.5% of all mothers perceived their NBW as having LBW. Diagnostic indicators varied slightly with maternal age and ANC attendance. Forty-six percent of teenage mothers (sensitivity=0.46) and 53% of mothers aged 20 years and above (sensitivity=0.53) accurately identified LBW. Among the women who initiated ANC in the first trimester, 52% accurately perceived LBW (sensitivity=0.52), while 47% of mothers who initiated ANC in the second trimester (sensitivity 0.47) did same. Accuracy of mothers' perceptions on LBW was highest, 52% each (sensitivity=0.52), for educated, primiparous and multiparous mothers'. The evidence points to the need for multi-sectoral interventions to mitigate the incidence of LBW in rural settings. The lack of sufficient and comparable evidence, however, renders fairly premature the definitive acceptance of mothers' perception as a valid substitute in cases where actual birth weight is not recorded at the time of delivery.

1.0 INTRODUCTION

Low Birth Weight (LBW) is defined as weight<2,500 g at birth [1, 2], albeit not in all cases [2]. It is complicated nutritional deficiency involving preterm birth or intrauterine growth retardation (IUGR) [2–6] – including a combination of both [2] – with the latter more prevalent in developing countries [3]. LBW poses dire complications during the first 1000 days of life; that is from conception to the second birth day which is also referred to as the 'Window of Opportunity' [7]. It is during this stage of development that the sometimes irreversible damages of LBW occur most, especially the neonatal period when it is implicated in most casesof child morbidity and mortality [2, 8].Reaching alarming global incidence proportions [2, 4, 8, 9], 15.5% of all births are LBW [2]. This translates to a more than double disproportionate burden of incidence for developing(16.5%) than developed countries(7%). Overall, 95% of cases occur in low- and middle-income nations [2].

LBW is a seminal determinant of the length, quality and output of the human life cycle [4, 7]. Birth

weight is the nexus of the health and birth outcomes of a population. It is also an essential predictor of a newborn's chances of survival, physical growth ability, long-term health and psychosocial development; and also indicative of a mother's health, present and past nutritional status. LBW, therefore, exacts a substantial toll on the health care system [8, 10, 11]. Aside the small physical stature, under developed organs and systems (immune, thermoregulation, blood brain barrier and respiratory) are the other devastating adverse effects of LBW on fetal development. Consequently, from the onset of life, LBW neonates face an immediate heightened susceptibility to infections, nutritional disorders, neurological diseases and impaired immune function [3, 4, 10–13]. As a result, LBW neonates are nine times more likely to die in the first month compared with normal weight neonates [2, 5, 14]. Also, care of LBW neonates is also not cheap as it comes at a very high cost to families and health systems at large[3, 5]. Poor health may continue into adulthood as an elevated risk of chronic non-communicable diseases [3, 4, 10–13] which can result in catastrophic health expenditures, poor human resource development and ultimately poor public health and economic outcomes for countries[3, 5].

The causes of LBW are rooted in biological and social factors that can be broadly categorized into proximate and distal determinants. For the proximate determinants, a direct casual pathway leading to LBW, mainly as a result of pregnancy complications and infections, can be established. The opposite is true for distal determinants, which as catalysts for the proximate determinants and may be health or non-health related. Health systems are therefore challenged in designing and implementing effective interventions on LBW [3, 15–23]. In developing countries, the drivers of LBW include; poor maternal nutrition; poor access to quality health care services; and socio contextual factors that are demographic, economic and environment related. These factors interact with LBW in a two-way relationship resulting in a persisting cycle of ill health and growth failure. This growth failure may in the long run take an intergenerational dimension [3, 7, 10, 14, 24– 32].

A lack of monitoring can contribute to this cycle. LBW in sub-Saharan African (SSA) is substantially

underestimated as more than half of all newborns are not weighed at birth as most births occur at home or birth weight is not captured due to poor recordkeeping at the health facilities [2, 24]. This presents a significant impediment to monitoring and explains the lack of appropriately designed effective interventions and under-investment in programs on LBW in sub-Saharan Africa [33, 34].

By the end of 2015, Ghana did not achieve any of the Millennium Development Goals targets on child and maternal health [35]. Indicators on child health have not improved over the last two decades to the levels envisioned with some stagnating. This is the case with LBW [9]. For example, prevalence of LBW was recorded at 16.0% from early 1990s through 2004 [36]. As of 2014, this rate is 10%, representing only a marginal decline [37]. There are notable geographic variations in incidence by regions (from 14% in the Eastern Region to 6% in the Volta Region), demographic factors (12% each with teenage mothers and first births) and economicfactors (with the highest incidence, 11%, for children of women in the lowest wealth quintile) [37]. The high incidence of LBW in Ghana has been attributed to the high birth rate among teenagers. Childbearing among teenagers 19 to 20 years is 14% [36, 38] - and a high fertility rate among adolescents, 60/1000 live births [37].

Akin to most developing countries, the issue of birth weight in Ghana and factors influencing it has not received much needed attention [5, 39]. Contextual factors have been reported as important determinants of LBW in Ghana, necessitating studies, such as this, to adduce evidence for the design and implementation of local interventions on neonatal and maternal health [4].Monitoring of weight at birth has been improving, but remains unsatisfactory. In 2006, only two in five newborns were weighed at birth. By 2011, this rose to 54% [36, 38] and subsequently to 60% as of 2014 [37]. Following, it becomes crucial in devising alternatives for monitoring birth weight outside of the health facilities. In light of this, mothers' perception of birth weight could not have been overemphasised. This study therefore also sought to validate the accuracy of mothers' perception of birth weight as alternative source of data. Though the Ghana Demographic and Health Survey (GDHS) uses mother's perception to identify low or normal birth weight (NBW), there has not been any study to determine whether

this is an accurate proxy indicator. This study fills that gap.

2.0 MATERIALS AND METHODS

2.1 Study setting

Data for this analysis was extracted from the Dodowa Health and Demographic Surveillance System (DHDSS) database. The DHDSS is located in the southeastern part of Ghana, in the Greater Accra Region, and operates within the boundaries of the Shai-Osudoku and Ningo-Prampram districts. The DHDSS site lies between latitude 5° 45′south and 6° 05′ north and longitude 0° 05′ east and 0° 20′ west with a land area of 1528.9 km 2 in 380 communities [40].

Shai-Osudoku is largely rural district (76.7%) and has a population of 51,913 people with 51.3% being females. On average, a woman in this district gives birth to 3.0 children. Among women 15-49 years, annual general fertility rate is 92.1 births per 1,000 women and higher than the regional average of 75.7. Thirty-nine percent of the district's household population is children. Literacy, 70.7%, is low among the district's population 11 years and older compared to the national population (76.6%). Of the economically active population aged 15 years and above (69.2% of the district's total population),46.4% are into agriculture [41].

Ningo-Prampram district have 70,923 residents, 52.7% of whom are females. Thirty-eight percent of the district's population is <15 years. Among women 15-49 years, the general fertility rate is 82.3 births per 1,000 women contributing to a total fertility rate of 2.8 per woman. Households are mainly composed of children, 37.9%. Seventy-one percent of the population is literate. The 66.8% population 15 years and older who are economically active are mainly into skilled agriculture, 28.5% [42].

2.2 Study population

The DHDSS visits every household in the demographic surveillance area twice in a year to collect data on demographic, migration, and health indicators. Women aged 15-45 years were the target population for this analysis. The sample included women who were resident in the DHDSS and had given birth to a live baby from 1st January 2013 to 31st December 2014. Mothers who were not residents of

the DHDSS area and children born outside the study period were excluded from the final analysis.

2.3 Measurement and statistical analysis

DHDSS data is collected using a structured questionnaire with open and close ended questions which is. electronically programmed onto a Personal Digital Assistant (PDA) and administered. Among the variables used, mothers are asked about their perception of their qualifying child's size at birth (i.e. very small, smaller than average, average, larger than average, very large). In addition, weight was collected via the mother's recall of the child's weight at birth or the birth weight as recorded on a health card if the child was weighed at birth.

Birth weight data was extracted from the DHDSS database along with data on mother's age, education, employment status, history of antenatal care (ANC) visits and parity. Analyses were conducted in Stata version 13 and the results are presented in Tables as frequencies and cross tabulations. The outcome variables are incidence of LBW and perceived birth weight Sensitivity and specificity were also calculated. The sensitivity is the proportion of actual LBW in the sample who are accurately identified as LBW by the mothers. The specificity was the proportion of actual normal birth weight(NBW) of the newborn who are so identified by the mothers as such [31, 32].

3.0 RESULTS

3.1 Socio-demographic characteristics

The sample consisted of 1,924 mothers of which 734 did not have their infants weighed at birth (38.1%). The final sample for analysis therefore was 1,190 pairs of mothers and infants. Thirteen percent of mothers were aged less than 20 years at the time of birth Mothers who had attained some form of formal education were 78.6%. Most mothers, 61.6%, were employed; those unemployed were 24.1% and mothers who were still students consisted of 14.3% of the sample. The majority of mothers, 58.7%, had started ANC visits in the first trimester; 34.5% and 6.8% started ANC in the second and third trimesters respectively. Sixty-eight percent of the mothers were multiparous. As recorded in

the child health record cards, 83.4% of all the infants were NBW and the remaining 16.6%were LBW as shown in Table 1.

Table 1: Incidence and demographic factors of LBW

Incidence			
	Recorded Birth Weight		***Total***
Perceived Birth Weight	LBW (%)	NBW (%)	
LBW	103(52)	45(4.5)	148(12.4)
NBW	95(47.98)	947(95.5)	1042(87.6)
Total	198(16.6)	992(83.4)	1,190(100)

Mothers Demographic Characteristics

Variable	***N(%)***	***Recorded LBW (%)***	***Recorded NBW (%)***
Age			
<20 years	135 (11.3%)	35 (25.9)	100 (74.1)
≥20 years	1055 (88.7%)	163(15.5%)	892(84.5)
Education			
Uneducated	255(21.4%)	39(15.3%)	216(84.7%)
Educated	935(78.6%)	159(17%)	776(83%)
Employment status			
Unemployed	287(24.1%)	49(17.1%)	238(82.9%)
Employed	733(61.6%)	112(15.3%)	621(84.7%)
Student	170(14.3%)	37(21.8%)	133(78.2%)
ANC Initiation			
1st trimester	698(58.7%)	112(16%)	586(83.9%)
2nd trimester	411(34.5%)	57(13.9%)	354(86.1%)
3rd trimester	81(6.8%)	29(35.8%)	52(64.2%)
Parity			
Primiparous	387(32.5%)	83(21.4%)	304(78.6%)
Multiparous	803(67.5%)	115(14.3%)	688(85.7%)

Table 2: Mothers perception on child's weight at birth and Diagnostic Indicators

Maternal Attributes	Mothers' Perception of birth	Recorded LBW (%)	Recorded NBW (%)	Total	Diagnostic Indicators

	weight				Sensitivity*	Specificity*
Age Group						
<20 years	Low	16 (45.7)	13 (13)	29 (21.5)	0.46	0.87
	Normal	19 (54.3)	87 (87)	106 (78.5)	0.46	0.87
≥ 20 years	Low	87 (53.4)	32 (3.6)	119 (11.3)	0.53	0.96
	Normal	76 (46.6)	860 (96.4)	936 (88.7)		
Education						
No education	Low	20 (51.3)	11 (5.1)	31 (12.2)	0.51	0.95
	Normal	19 (48.7)	205 (94.9)	224 (87.8)		
Some Education	Low	83 (52.2)	34 (4.4)	117 (12.5)	0.52	0.96
	Normal	76 (47.8)	742 (95.6)	818 (87.5)		
Occupation						
Unemployed	Low	31 (63.3)	11 (4.6)	42 (14.6)	0.63	0.95
	Normal	18 (36.7)	227 (95.4)	245 (85.4)		
Employed	Low	60 (53.6)	23 (3.7)	83 (11.3)	0.54	0.96
	Normal	52 (46.4)	598 (96.3)	650 (88.7)		
Student	Low	12 (32.4)	11 (8.3)	23 (13.5)	0.32	0.92
	Normal	25 (67.6)	122 (91.7)	147 (86.5)		
ANC						
1st Trimester	Low	59(52.7)	21(3.6)	80(11.5)	0.52	0.96
	Normal	53(47.3)	565(96.4)	618(88.5)		
2nd Trimester	Low	27(47.4)	21(5.9)	48(11.7)	0.47	0.94
	Normal	30(52.6)	333(94.1)	363(88.3)		
3rd Trimester	Low	17(58.6)	3(5.8)	20(24.7)	0.59	0.94
	Normal	12(41.4)	49(94.2)	61(75.3)		
Parity						
Primiparous	Low	43 (51.8)	24 (7.9)	67 (17.3)	0.51	0.92
	Normal	40 (48.2)	280 (87.50)	320 (82.7)		
Multiparous	Low	60 (52.2)	21 (3)	81 (10.1)	0.52	0.97
	Normal	55 (47.8)	667 (97)	722 (89.9)		

***Maternal age, LBW and perceived LBW*:** Over a quarter (25.9%) of the teenage mothers delivered LBW babies (Table 1), of whom 45.7% accurately perceived the weight of their babies as LBW. Sixteen percent of the mothers aged 20 years and above gave birth to LBW babies of whom 53% accurately perceived the weight of their babies as LBW. As shown in Table 2, though the accuracy of perception for NBW was higher than LBW, the older mothers were better at accurately perceiving birth weight as LBW than the teenage mothers.

***Maternal Education, LBW and perceived LBW*:** Fifteen percent (15%) of the uneducated mothers de-

livered LBW babies (Table 1) of whom 51.3% accurately perceived the weight of their babies as low. LBW deliveries among educated mothers were 17% of whom 52.2% accurately perceived weight of their babies as low. The accuracy of perception of both sets of mothers for NBW was higher than for LBW. On the whole, the effect of education on accuracy of perception of birth weight as low for actual LBW was marginal (Table 2).

***Employment, LBW and perceived LBW*:** Delivery of LBW babies was highest amongst student mothers (21.8%) as compared to unemployed (17.1%) and employed mothers(15.3%). Accuracy of perception of birth weight as LBW was highest among the unemployed mothers (63.3%) as compared to employed (53.6%) and student mothers (32.4%). Both unemployed and employed mothers had a higher accuracy of perception of birth weight as LBW and NBW than student mothers as detailed in Table 2.

***Initiation of ANC, LBW and perceived LBW*:** Mothers initiating ANC in the third trimester delivered a higher proportion of LBW babies(35.8%) than those initiating ANC in the second (13.9%) and first (16%) trimesters (Table 1).Accuracy of perception of birth weight as LBW was higher among mothers who initiated ANC in the third trimester (58.6%). Irrespective of the trimester of initiation of ANC, mothers' accuracy in perceiving weight as NBW was higher than their accuracy in perceiving weight as LBW. The effect, therefore, of ANC on the accuracy of perception of birth weight among our study sample was insignificant as shown in Table 2.

***Parity, LBW and Perceived LBW*:** Twenty-one percent of primiparous mothers delivered LBW babies (Table 1) of whom 51.8% accurately perceived the weight of their babies as LBW. Of the 14.3% of multiparous mothers who delivered LBW babies, 52.2% accurately perceived their weight as low. As detailed in Table 2, multiparous mothers had a higher accuracy of perceiving weight as LBW than NBW. Accurate perception of NBW was near universal among this group. In general, however, marginal differences were observed in the accuracy of perception of birth weight between primiparous and multiparous mothers (Table 2).

***Overall indicators on perceptions of LBW*:** The findings show 52% all mothers identified actual LBW (sensitivity =0.52) and 95.5% identified NBW (specificity=0.95). Forty-eight percentof mothers with low birth weight babies perceived them as normal birth weight; just4.5% perceived their normal weight babies as having LBW.

***Maternal profile and diagnostic indicators of LBW*:** No significant differences were observed in LBW perception in relation to maternal education and parity. Fifty-one percent of uneducatedmothers (sensitivity=0.51) and 52% of educated mothers (sensitivity=0.52) accurately identified LBW babies. Further, 52% each of primiparous and multiparous mothers accurately identified LBW babies (sensitivity=0.52).

Diagnostic indicators varied slightly with maternal age and ANC attendance. Forty-six percent of teenage mothers (sensitivity=0.46) and 53% of mothers aged 20 years and above(sensitivity=0.53)accurately identified LBW.Among the women who initiated ANC in the first trimester, 52% accurately perceived LBW (sensitivity=0.52), while 47% of mothers who initiated ANC in the second trimester (sensitivity 0.47) and 59% of the mothers who did the same in the third trimester (sensitivity=0.59) accurately perceived LBW.

4.0 DISCUSSIONS

4.1 *Factors of LBW*

The incidence of LBW among our study sample, 16.6%, though higher than the national average, is consistent with geographic disparities in trends [37]. However, it is unacceptably high. This may be attributable to the high proportion of teenagers giving birth which substantially increases the risk of their neonates being LBW [7, 24, 36–38] – as evidenced by the 25.9% of teenagers and 21% each of

student and primiparous mothers among this sample who gave birth to LBW babies. The infants born to these young mothers had an elevated risk of LBW at conception in that at that time, their mothers themselves were still growing physically and mentally. These infants were therefore predisposed to growth failure which concurs with earlier findings on LBW as a social, and an intergenerational issue in Ghana[9, 37, 43, 44]and also as an heredity issue in general[45].These neonates are vulnerable to recurring infections which in their poor physical state can take longer to resolve[14, 25, 27].A comprehensive strategy that incorporates both child and maternal health and nutrition interventions (in the form of infection control, food supplements and micronutrient supplementation) is required to break this chain[14, 24]. A responsive district public health system, where nutrition interventions are incorporated into ANC and post-natal care programmes, will provide services and support to ensure survival and optimum growth of the child and rehabilitation for both mother and child. Early child bearing may also be a cultural issue in this study setting – and consistent with national trends. This necessitates a holistic approach that integrates both medical and social interventions with the active participation and engagement of community level stakeholders [33, 46–49].

Initiation of ANC among the study sample in the first trimester (58.7%) is lower than the national average [37, 38]. Considering incidence of LBW was lower (16%) among babies of this group of mothers compared to those who started ANC in the third trimester (35.8%), it is indicative of the effectiveness of ANC in preventing LBW[14, 27, 48]which affirms earlier findings by Fosu, Munyakazi & Nsowah-Nuamah in Ghana. However, the high incidence of LBW in this sample might also be the consequence of poor access to quality ANC services in this sparsely populated geographical area [40]. This lack of access suggests unmet needs in ANC services resulting in the poor birth outcomes [10, 24, 27]. Investment in the scale up of existing maternal, neonatal and child health services, that includes both nutrition specific and sensitive interventions, and improvements in district health infrastructure and health care delivery network is paramount to addressing the shortfalls in supply[10, 24, 27, 33]. A shift from facility based programmes to community outreach (domiciliary ANC and delivery)

might augment services [10, 24, 27, 33, 49]. Health system actors may also include the tracking of LBW into district surveillance systems, by integrating it into the growth monitoring and child welfare clinics to track and monitor all babies born LBW to prevent adverse sequelae [7, 10, 24, 27].

4.2 *Perceptions on LBW*

Mothers' perceptions of baby weights have not been properly verified as a reliable estimate of birth weight using longitudinal population-based data. This study explored the accuracy of mothers' birth weight perceptions against actual birth weight recorded in health facilities to help provide an alternative means of evaluating this issue.

The accuracy of mothers' perception of child's weight at birth was fairly higher for NBW than for LBW. It is observed that some mothers' with LBW babies were unsure about the normalcy of the weight of their babies compared to mothers' with NBW who were mainly certain in their perceptions. The uncertainties in the perceptions of mothers' with LBW babies may be attributable to both a lack of knowledge on the cut-off points or reluctanceon the part of some mothers' to accept their babies were afflicted by this condition. Further observations points towards some mothers probably answered at chance levels. It is not clear if this would have been better elucidated by phrasing the question differently or asking in some relatively anonymized fashion. That notwithstanding, the generally high accuracy on perceptions of birth weight is indicative of high knowledge on child birth outcomes. It is unclear what could have accounted for this in the DHDSS areabut literature suggests high knowledge on child health usually is the effect of exposure such as ANC attendance and routine engagement between health workers and communities [50]. As hasbeen established of the relationship between LBW and mothers' age at conception, and nutritional status, the data suggests some of the mothers either previously might have deliveredLBW babies or come into contact with them in the family or

community. Following, these mothers' were therefore in a better position of adopting safer feeding and caring practices [7, 10, 24].

It is observed that 3.6% of older mothers (≥ 20) years as against 13% of teenage mothers (<20years) in the study who delivered normal birthweight babies perceived their babies weights as being LBW. As a woman ages, her chances of having had previous births or experience with other women's births are higher than that of her younger counterparts. Therefore older women would have references from which they can compare their child's weight, making them better at perceiving normal birth weight than their younger counterparts [7, 24, 26]. This brings into perspective the need for support groups and need-based extensive one-on-one interactions between health workers and younger women at ANC [50].Further, targeting the family unit with maternal, neonatal and child health interventions might contribute substantially to improving birth outcomes for young women in view of the dominant role of the family unit on health related decision making [7, 24] especially in the rural Ghanaian society.

Though education might affect a woman's chances of delivering a NBW baby, its effect on perceptions of birth weight is minimal among this sample. This is suggestive that experience supersedes general education in matters of health. From the forgoing, it is evident that being educated does not necessarily enhance a mother's ability to ascertain the normalcy or otherwise of the weight of a newborn. This could be because educated women tend to have fewer babies and therefore would have fewer points of reference[24].It is therefore imperative that health communication programmes and materials be designed to the most basic of details. Likewise, to facilitate easy understanding, language devoid of medical jargons be used when developing these materials [50].

The results also showed 3.5% of mothers who started ANC in the first trimester, 5.9% of those that started ANC in the second trimester and 5.7% of those who started ANC in the third trimester perceived normal weight babies as being LBW. We also found 3.1% of multiparous mothers as compared to 7.9% of primiparous women who had delivered NBW babies perceived them as being LBW. This is indicative that early attendees have had more opportunities to learn about correctly assessing

the weight of a newborn, as have women who had given birth previously. Targeting women with information through a variety of mediums and community platforms might promote early uptake of ANC and further contribute to addressing gaps in information and experience [27, 50].

5.0 Limitations

Although this study offers a large sample size, it also has important limitations. Other important variables that have been shown to affect birth weight, such as mother's weight gain during pregnancy, maternal history of disease, gestational age [3, 18, 24, 46], were not available in the data set used for this analysis. These gaps as well as the lack of birth weight data for a large proportion babies born outside of health facilities, limit the utility of the data. Further, we did not undertake and statistical tests to ascertain the veracity of mothers demographic characters as determinants of LBW. Any possible confounding relations would have therefore been missed. The DHDSS does not collect data on infant and young child feeding practices. This is a significant limitation to the study as it would have provided further insights to some of the findings of this analysis. As a result, the generalization of these findings beyond the study districts may be unlikely.

6.0 Conclusion

A multiplicity of maternal demographic characteristics was found as factors of LBW. LBW remains one of the persistent child health issues in Ghana. Clearly, it seems timely for the development of parallel policy guidelines for LBW - as currently is for some other child and maternal health issues – to complement existing the ones. Ongoing maternal and child health and nutrition interventions presents a strategic entry point for the delivery of LBW focused integrated multi-sectoral sustainable interventions with a public health approach [24, 27, 33, 46–49].

The analysis further highlights the potential of mothers' perception on birth weight as proxy indicator for gauging cases of non-recording of weight at the time of birth. The effect of perceptions on health can be likened to a double-edged sword. A mother's perception, therefore, of the birth weight of her child can lead to positive caring and health seeking practices and vice versa thereby optimizing the

chances of survival, growth and good health. This underscores the importance of studying maternal perception on birth weights to aid in the development of context appropriate policies and programs towards measurable improvements in child and maternal morbidity and mortality and overall the realization of the Sustainable Development Goal on health.

Presently, there is however a considerable dearth of evidence on maternal perceptions of birth weight. This lack of comparable evidence, as now, impedes the readily and widely acceptance of maternal perceptions of birth weight as an alternatively valid substitute source of data in cases where actual birth weight is not recorded at the time of birth. Reflecting from this position, this paper opens up this topic for further research and intervention trials.

List of Abbreviations

ANC Antenatal Care

DHDSS Dodowa Health and Demographic Surveillance System

DHRC Dodowa Health Research Centre

LBW Low Birth Weight

NBW Normal Birth Weight

Author Contribution

We wish to state that the authors have been personally and actively involved in the substantive work leading to the research report. All the authors actively took part in the research design and data analysis of the manuscript preparation. We are therefore responsible for the content of this manuscript.

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Availability of data and materials

The data supporting the findings in this paper is kept in an anonymous electronic archive at the Dodowa Health Research Centre (DHRC). Due to the ethical policies of the Centre and participant confidentially, we are unable to make the dataset publically available.

Ethical approval and consent to participate

Data collection procedures and quality assurance of DHDSS was approved by the Ethical Committee of Ghana Health Service, the Institutional Review Board of DHRC and the INDEPTH Network. All identifiable traces and information of DHDSS participants have been removed.

Competing interests

The authors declare none.

Consent for publication

Not applicable.

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