WOLKITE UNIVERSITY

COLLEGE OF HEALTH SCIENCES AND MEDICINE

DEPARTMENT OF PUBLIC HEALTH OFFICER

PREVALENCE AND ASSOCIATED FACTORS OF LOW BIRTH WEIGHT AMONG MOTHERS WHO GAVE BIRTH IN WOLKITE UNIVERSITY SPECIALIZED AND TEACHING HOSPITAL,SOUTH WEST ETHIOPIA.

A RESEARCH THESIS REPORT SUBMITTED TO WOLKITE UNIVERSITY COLLEGE OF MEDICINE AND HEALTH SCIENCE DEPARTMENT OF PUBLIC HEALTH IN PARTIAL FULFILLMENT FOR BACHELORS OF DEGREE ON PUBLIC HEALTH

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Acronyms

ANC: Antenatal Care

APH: Antepartum hemorrhage

AOR: Adjusted odds ratio

BW: Birth Weight

COR: Crude odds ratio

CI: Confidence Interval

DM: Diabetes Mellitus

EDHS: Ethiopian Demographic and Health Survey

HTN: Hypertension

IOM: Institute of Medicine

IUGR: Intrauterine Growth Retardation

LBW: Low Birth Weight

MUAC: Mid Upper Arm Circumference

NBW: Normal Birth Weight

PIH: Pregnancy Induced Hypertension

RPC: Research and Publication Committee

SD: Standard Deviation

SNNPR: Southern Nations and Nationalities and Peoples Region

UNICEF: United Nations Children education Fund

VLBW: Very Low Birth Weight

WHO: World Health Organization

SGA: Small-For-Gestational Age

WKUSTH: Wolkite university specialized and teaching hospital

Summary Executive

Background: Low birth weight is defined as birth weight less than 2,500 grams. More than 20 million infants are born each year weighing less than 2500 gm., accounting for 17% of all births in the developing world. Similarly, according to Ethiopian demographic and health survey (EDHS 2016), 11% weighed less than 2500 gm. Birth weight plays an important role in infant mortality and morbidity, development, and future health of the child.

Objectives: The main objective of the study was to determine the prevalence of low birth weight and identify associated factors in Wolkite University Specialized and teaching Hospital.

Methodology: The study was institutional based cross sectional study design among randomly selected 185 mothers who gave birth in in the teaching Hospital. It was conducted by taking accurate weight of new born and interviewing mother. The data analysis methods used was SPSS version 20, using uni-variate for frequencies, bi-variant analysis to see association between independent and dependent variables. Crude and adjusted odds ratio has reported along with p-value at 95% confidence interval. Ethical

support letter was obtained from Wolkite University and verbal informed consent will be obtained

Result : A total of 185 mothers were interviewed in this study with a response rate of 100%. The prevalence of low birth weight (LBW) is 17.8%.preterm births (OR; 38.9; 95% CI: 4.6,328.9)), medical illness during pregnancy (OR;17.12;95% CI: 5.702,51.395)), substance use of the mothers (OR;15.96; 95% CI: 3.06,83.2) and sex of the child (OR;9.1(3.69,22.38) with important factors associated with low birth weight among children.

Female in their sex are more than three (3) times likelihood of having low birth weight (OR: 9.1(3.96,22.38)) than male newborns. Even if it is not significant, mothers of younger age have more than four times chance of having LBW relative to the older mothers. From mothers with history of APH during the pregnancy, nearly 90% of them had LBW babies and from mothers who have history of malaria almost 80% of them had LBW babies.

Conclusion :there is relatively high prevalence of low birth weight in WKUSH as compared with studies done in different areas in different times .Hence, the health professionals, the health policy makers as well as the government should give attention for modifiable, preventable & or reducible risk factors like medical illness, substance use and anything that causes preterm deliveries.

CHAPTER ONE. INTRODUCTION

1.1 Background of the study

Low birth weight (LBW) is defined by the World Health Organization (WHO) as weight at birth of less than 2,500 grams. Birth weight is affected to a great extent by the mother ĝ own fetal growth and her diet from birth to pregnancy, and thus, her body composition at conception (1). Mothers in deprived socio- economic conditions frequently have low birth weight infants. In those settings, the infants low birth weight emerges primarily from the mother's poor nutrition and health over a long period of time. During pregnancy, the higher prevalence of specific and non-specific infections, or from pregnancy complications, underpinned by poverty aggravates the situation. Physically demanding work during pregnancy also contributes to poor fetal growth (1).

LBW at birth is either the result of preterm birth (before 37 weeks of gestation) or of restricted fetal (intrauterine) growth (1). Many factors affect the duration of gestation and of fetal growth, and thus, the birth weight. They are related either to the infant, or to the mother. The physical environment also plays an important role in determining the infants birth weight and future health status. Low birth weight due to restricted fetal growth affect the person throughout life and is associated with poor growth in childhood and higher incidence of adult disease, such as type 2 diabetes, hypertension and cardiovascular disease. An addition risk for girls is having smaller babies when they become mothers(1). Maternal caloric intake during pregnancy and maternal nutrition stores are found to have affected intrauterine growth of fetus. Hence, gestational weight gain has often been taken as a summary indicator and proxy for availability of adequate sources for fetal energy requirements and was found to have an impact on birth weight. Micro nutrient deficiencies also have been found to be closely associated with LBW. Varies studies investigated on the effect of deficiencies of micronutrients like iron folic acid vitamin B12 zinc, copper, calcium, phosphorous, vitamin D. The studies generally found significant associations of varying magnitude. The effect of micronutrients are pronounced in poor countries due to inadequate food intake and poor dietary quality

The United Nations Children's Fund (UNICEF) report noted that the global LBW rate was 15.5% and more than 95% of these LBW infants lived in developing countries (1). More than 20 million infants are born each year weighing less than 2500 gm. Accounting for 17 percent of all births in the developing world (3).

Demographic risk factors include young maternal age, primi-parity and low education level and poor maternal nutritional status both before and during pregnancy are well-recognized determinants of birth outcomes. Empirical studies from developed and developing countries show that maternal anthropometric measurements are associated with birth outcome (4).

WHO shows that factors contributing to LBW in developing countries-include, in order of importance; inadequate weight gain during pregnancy, low pre pregnancy weight, short stature, malaria and female sex of the fetus (6). Other factors which are associated with LBW include hard physical work during pregnancy, and illness, especially infections, social factors such as lower status of women, malnutrition, lack of antenatal care (ANC) etc. Mothers who had multiple gestations had a higher risk of delivering LBW babies.

1.2 Statement of the problem

According to UNICEF statistics, the predominant cause of LBW in the developed countries is pre term birth, whereas in developing countries, it is frequently caused by IUGR (7) . More than 20 million infants worldwide, representing 15.5 percent of all births, are born with low birth weight, 95.6 percent of them in developing countries (1). The level of low birth weight in developing countries (16.5 percent) is more than double the level in developed regions (7 per cent). Half of all LBW babies is born in South-central Asia, where more than a quarter (27 percent) of all infants weighs less than 2,500 gm at birth. LBW level in sub-Saharan Africa is around 15 percent (1).

The WHO country cooperation strategy 2008 - 2011 showed that the prevalence of LBW in Ethiopia, estimated that 14%, it is one of the highest in the world (9 ,10).

This is based on epidemiological observations that infants weighing less than 2,500 g were approximately 20 times more likely to die than heavier babies. More commonly, in developing than developed countries, a birth weight below 2,500 g contributes to several poor health outcomes (10).

Low birth weight, thus defines a heterogeneous group of infants: some are born early, some are born growth restricted, and others are born both early and growth restricted (1). It is generally recognized that being born with low birth weight is a disadvantage for the baby. Short gestation (preterm birth) is the main cause of death, morbidity and disability The shorter the gestation, the smaller the baby and the higher the risk of death, morbidity and disability. It has been shown that the mortality range can vary 100-fold across the spectrum of birth weight and rises continuously with decreasing weight (3)

LBW increases the risk of neonatal deaths and further increases the likelihood of developing cerebral palsy and the risk of infection (sepsis) (11). As adults, these LBW infants may continue to be lower in weight and shorter in stature in comparison to population averages. LBW is also associated with the development of chronic diseases such as hypertension, cardiovascular diseases, type II diabetes, metabolic syndrome, ischemic heart disease, decreased lung capacity and chronic lung disease (9).

Deliveries in low- and middle- income countries are often complicated by adverse birth outcomes such as stillbirth, early neonatal mortality and morbidity. LBW remains to be a leading cause of neonatal death, and is a major contributor to infant and under-five mortality (8). Infants can have LBW either as a result of small-for-gestational age (SGA) or preterm delivery (12, 13). An infant is said to be small-for gestational-age when the gender-specific birth weight is below the 10th

Pre term (<37 weeks of gestation), percentile for the appropriate gestational age; such a condition could be constitutional or pathological, in the latter case, it is referred to as Intrauterine Growth Retardation (IUGR) (12, 13).

In Ethiopia, the prevalence of under-five mortality ranges from 53

Per 100 live births in Addis Ababa to 169 per 1000 live births in Benshangule Gumuze which is mainly attributed to low birth weight (14).

However, little attention is paid to birth weight improvement as a means of reducing child mortality. In most developing countries, it was approximated that every ten seconds an infant dies from a disease or infection that can be attributed to LBW (16). Those who had a history of very low birth weight (VLBW) are 2.6 times at risk of respiratory failure requiring mechanical ventilation (17, 8).

Although about one-half of all LBW- infants in industrialized countries are born, most LBW infants in developing countries are born at term and are affected by intrauterine growth restriction that may begin early during pregnancy (18, 8). As children LBW infants-are more likely to have disabilities, hospitalizations, brain damage, and poorer language development, be placed in special education classes, and display more intellectual impairments. Across the world neonatal mortality is 20 times more likely for LBW babies compared to heavier babies (>2500gm) and it increases sharply as birth weight (BW) decreases (19, 8)

LBW is considered as the single most important predictor of infant mortality, especially of deaths within the first months of life (21, 10). It is also a significant determinant of infant and childhood morbidity, particularly of neurodevelopment impairment such as mental retardation and learning disability. Half of all prenatal and one third of all infant deaths are directly or indirectly related to LBW. Mortality of LBW babies is 40 times more than the normal weight babies. Infants born with very low weight are more than 100 times more likely to die in the first year of life than are infants of normal birth weight (22, 10).

There is no study had yet been done before in Wolkite University Specialized and Teaching Hospital, to identify risk factors associated with LBW and determine the prevalence of LBW. Therefore, this study aims to identify risk factors and to determine prevalence of LBW in WKU STH 2021.

1.3 Significance of the Study

Due to lack of such studies in this area study will be conducted to determine the prevalence and identify socio-demographic and other maternal factors which may be the cause for LBW and contributing to infant mortality in this area.

Greater knowledge about the socioeconomic factors of LBW will lead to better evidence- based interventions in Ethiopia aimed at reducing neonatal mortality.

This study will provide information in the burden of low birth weight and its relationship to the different factors, and provides a working base for planning, improving, programs and interventions *for the hospital*.

This study will also provide valuable information to the health professionals, researchers, regional health bureau and other stakeholders. By using this study, the above professional plan their resource for interventions and for researchers used this research result as a baseline for future studies.

The result of this study will serve as a baseline for other wide studies as well as for planning health intervention to improve the wellbeing of children and women in Gubrye Wolkite town in particular.

Chapter Two. Literature Review

2.1 Magnitude of LBW

Various studies conducted in different countries showed a different burden. The study done in India shows that the majority (89%) of neonates had normal birth weight and eleven percent of them belonged to the LBW category. 46% males and 43% females had normal birth weight, whereas 5% males and 6% females had low birth weight(4). In Ethiopia, studies showed that the prevalence of LBW varies from 6-10 %. According to the 2005/06 annual activity report of the Addis Ababa City Administration, Health Bureau, the rate of LBW among all deliveries attended from health institutions reporting to the city health bureau is 11%. Consistently, another study from Jimma reported a prevalence of 11.8%. At a regional level, for East Africa prevalence of LBW (5). It was established that early delivery and retarded fetal growth to be the major reason to the cause of low birth weight. Thus, the discussion about the cause and epidemiology of LBW should focus around risk factors that shorten the gestation's age and those that influence this.

Survey conducted in Jimma hospital showed that out of a total of One thousand four hundred and forty-one live birth One hundred forty-seven (10.2%) mothers gave birth to LBW babies . Five (0.4%) mothers gave birth to twins (5). The study subjects with babies of LBW and NBW accounted to 25% and 75%, respectively (5).

A study done in Mekelle university showed that 135 (75%) mothers gave birth to LBW and 45 (25%) gave birth to VLBW babies-whereby the mean LBW was 1.8+0.46kg within a range of 0.7-2.4 kg (8).

According to EDHS 2016 information on birth weight, LBW was found only on 14% of births. Among these,13% have weighed less than 2.5 kg at birth. The survey also includes information on mother's subjective estimates of their infant ô weight in the past 5 years before the survey. This estimate was obtained because birth weight is unknown for most(86%) of new born in Ethiopia. According to mothers report, 16% of births are very small, 10% are smaller than average, and 73% are average or larger. As noted, a mothers subjective assessment of the size of the baby at birth, in the absence of birth weight, may be useful. Nearly three children of every ten born to mother ô residing in Afar (30

percent), Amhara (28 percent), Somali (26 percent), and Gambela (27 percent) were reported as very small at birth (23).

Another study in Gondar shows that the prevalence of low birth weight was found to be 17.4% (22.7% female and 13.5% male) (10).

2.2. Risk factors for low birth weight

2.2.1 Socio demographic factors

The determinates of LBW that fall under this category include socioeconomic status (education, Occupation, and/or income), maternal age, marital status and maternal psychological factors. There is abroad consensus that socioeconomic status, however measured, is a key determinant of LBW. The incidence of LBW children is likely to be higher in lower socio-economic strata as mothers with low levels of education, low income, and without permanent employment is more likely to be malnourished, have chronic diseases and seek and receive inadequate care. As a result, LBW tends be more incidence among mothers from lower socioeconomic strata. Among components of socioeconomic status, education is accorded a special role. On top of its role as an indicator of socioeconomic status, education is accorded is claimed to have an independent direct effect that is mediated thought its influence in health-relate behavior, including care-seeking.

The study from India showed that Subjects who had an income of less than 2.5 million in Rails per month gave birth to neonates with the mean birth weight of 2.9 kg, while pregnant women with> 3.5 million in Rails per month gave birth to neonates with the mean birth weight of 3.6-4kg.(5). Different levels of education in pregnant women showed no significant influence on the birth weight of babies (4).

A study done in Mekelle showed that Chi-square test gave no significant statistical association ($p > 0.05$) between maternal education and LBW. The Odd ratio was estimated as 0.81 with 95% confidence limits, which confirms there are significant associations (8).