UNIVERSITY OF CAPE COAST

COLLEGE OF HEALTH AND ALLIED SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

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MATERNAL AND PERINATAL OUTCOMES AMONG PREGNANT WOMEN WITH HYPERTENSIVE DISORDERS IN THE VOLTA REGION

BY

EMMANUEL KOMLADZAH

THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF CAPE COAST,

CAPE COAST IN PARTIAL FULFILMENT OF THE REQUIREMENT

FOR THE AWARD OF MASTER OF NURSING DEGREE

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~~THIS~~ THESIS ~~IS~~ SUBMITTED TO SCHOOL OF NURSING AND MIDWIFERY OF THE COLLEGE OF HEALTH AND ALLIED SCIENCES, DEPARTMENT OF ADULT HEALTH, ~~THE~~ UNIVERSITY OF CAPE COAST, ~~CAPE COAST~~ IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF MASTER OF NURSING DEGREE

~~MAY~~~~JUNE~~S ER~~,~~ 2021

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the outcome of my original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: ………………... Date…………………….

Candidate's Name: …………………………………………………..

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast

Supervisor's Signature: ………………... Date…………………….

Supervisor's Name: …………………………………………………

ABSTRACT

Hypertension, the commonest medical condition in pregnancy is a major cause of maternal and perinatal morbidity and mortality. It accounts for about 10% of pregnancy-related complications. Although complications of hypertensive disorders in pregnancy (HDP) could be reduced by 70% with effective management, resources for their effective management in most district hospitals in the Volta Region are lacking. This study aimed to assess maternal and perinatal outcomes among pregnant women with hypertensive disorders in the Volta Region of Ghana. This analytical cross-sectional study design using a simple random sampling technique to choose hospitals and a purposive sampling technique to choose patient collected data on the socio-demographic and maternal characteristics, maternal and perinatal outcomes using a pretested data extraction form from antenatal, delivery, and postnatal record books of 130 women with HDP. Crude and adjusted relative risk (RR) using multivariable binomial regression at $P< 0.05$ is considered significant when adverse maternal and perinatal outcomes were compared. A majority (63.1%) of the respondents were Christians who belong to a low-risk obstetric age group of 20- 35 years (66.2%), are medium to high-income earners (65.4%) and have had at least 9 years of formal education (90%). The study observed a high prevalence of obstetric complications such as meconium-stained amniotic fluid (24.62%), premature rupture of membrane (23.85%), haemorrhage (69.2%), and placenta abruption (13.08%). Adverse perinatal outcomes: APGAR score less than 7 at minute 1 (66.92%) and 5(13.08%), low birth weight (33.08%), intensive care unit admission requirement (25.38%), congenital abnormalities (10%), and stillbirth (8.46%) were observed. Maternal ethnicity, premature rupture of membrane, haemorrhage, placenta abruption and mode of delivery are risk factors for APGAR score less than 7 at minute 1 whereas haemorrhage, being single, meconium-stained amniotic fluid, and placenta abruption are risk factors for APGAR score less than 7 at minute 5. Low income is a risk factor for congenital abnormalities. Maternal educational level is a risk factor for placenta abruption. Maternal age >35 years is a risk factor for premature rupture of membrane. Premature rupture of membrane, placenta abruption and spontaneous vaginal delivery are risk factors for small for gestational age. Premature rupture of membrane is a risk factor for neonatal intensive care unit admission and meconium-stained amniotic fluid is a risk factor for still birth. The need for improved maternal and perinatal care services for women with HDP cannot be overemphasized for better obstetric outcomes.

KEY WORDS

APGAR score

Eclampsia

Gestational Hypertension

meconium-stained amniotic fluid

placenta abruption

Premature rupture of membrane

ACKNOWLEDGMENTS

I am grateful to God for the strength and good health He gave me to complete this thesis successfully. I also extend my greatest appreciation to my supervisor Dr. Mate Siakwa and His entire family for their mentorship and support throughout the entire program. My gratitude also extends to the Dzah family for their invaluable assistance in the completion of this study. Lastly, my sincere appreciation goes to the selected hospitals in the Volta Region and their management for their immerse contribution during the data collection process.

DEDICATION

I dedicate this thesis to my supervisor, Dr. Mate Siakwa, His family and the Dzah family for their unwavering support and sacrifices during my two-year studies.

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CHAPTER ONE

INTRODUCTION

Background to the Study

Hypertension is one of the commonest medical conditions in pregnancy and a major cause of maternal and perinatal morbidity and mortality (Shen et al., 2017). It accounts for about 10% of pregnancy-related complications (Zhang, Meikle &Trumble, 2003; Scantlebury et. al., 2018). At least one woman dies every 7 minutes from complications of hypertension disorders of pregnancy (Gudeta & Regassa, 2019). Increasing numbers of pregnancies will be complicated by chronic hypertension as the trend continues for women to delay conception, together with the global epidemic of obesity. The consequences of complicated pregnancy outcomes are not only costly in the short term but the long-term health consequences for the offspring of the woman and subsequent financial burden should be acknowledged (Bramham et al., 2014).

Pre-eclampsia is a leading cause of maternal and neonatal mortality and morbidity, affecting 2-5 percent of all births (Mustafa, Ahmed, Gupta & Vento, 2012). Pre-eclampsia and eclampsia are believed to be responsible for 14% of all maternal deaths (Shen et al., 2017). Pre-eclampsia has been linked to an increased risk of cardiovascular disease in both women and their children later in life. Though gestational hypertension affects 5-10% of pregnancies, the complications are usually minor (Garovic & Hayman, 2007).

Multiple studies have linked gestational hypertension and pre-eclampsia to a high BMI, nulliparity, a history of pre-eclampsia, type 1 and 2 diabetes, twin pregnancy, maternal age of less than 20 or more than 40 years, and renal failure (Shiozaki, Matsuda, Satoh & Siato, 2013; Magee et al, 2014; Garg, Toy, Tripodis, Silverstein & Freeman, 2015; Wright, Syngelaki, Akolekar, Poon & Nicolaides, 2015; Shen et al., 2017; Wang et al, 2017). Hypertensive conditions increase the risk of caesarean section, placental abruption, small for gestational age, preterm delivery, and an APGAR score below 7 at minutes one and five when it comes to birth outcomes (Shen et al., 2017). In developing countries, adverse hypertensive birth outcomes are more common and severe than in developed countries (Ohno et al., 2013; Braham et al., 2014). This was due to a shortage of obstetric and paediatric services (Adu-Bonsaffoh, Oppong, Binlinla & Obed, 2013; Lee et al., 2013; Adu-Bonsaffoh, Ntumy. Obed & Seffiah, 2017).

According to records, pregnant women seeking obstetric care in Ghanaian tertiary hospitals have a high prevalence of hypertensive disorders and have poor birth outcomes (Lee et al., 2013; Adu-Bonsaffoh, et al., 2017). There is, however, a paucity of literature on such studies in the district hospitals. Resources such as obstetricians, paediatricians, and neonatal intensive care units are not readily available in these facilities (MOH, 2017). Hypertensive disorders and adverse birth outcomes would require special attention given the increasing delay in pregnancy among women of reproductive age, as well as the obesity epidemic among Ghanaian women. The study aims at assessing maternal and perinatal outcomes among pregnant women with hypertensive disorders in the Volta Region. This will provide baseline data to guide policy for any interventions.

Problem Statement

Hypertension and its impact on maternal and perinatal morbidity and mortality have been well documented (Kattah et al., 2018). The complications of hypertensive disorders are major challenges to nurses, midwives, obstetricians and paediatricians (Zhang, Meikle & Trumbble, 2003).

Several studies have documented both maternal and perinatal complications of hypertension in pregnancy (Lindheimer. Taler & Cunningham, 2009; Carolan, 2013; Seifoleslami, 2017). Notable maternal complications of hypertension in pregnancy include; preeclampsia, eclampsia, abruptio placentae, thrombocytopenia, pulmonary oedema, liver dysfunction, disseminated intravascular coagulation and renal insufficiency (Zhang et al., 2003; Nwoko, Plecas & Garovic, 2012). Preterm delivery, still birth, asphyxia and respiratory distress are among but not limited to perinatal complications documented. These conditions were documented as major causes of neonatal mortality in Ghana (Siakwa et al., 2014). These complications are severe among women less than twenty years and above thirty-five years of age (Wong, Groen, Faas & Van Pampus, 2013). Some studies have shown that these complications could be reduced by as much as 70% in well-resourced settings where obstetricians and paediatricians are readily available (Hofmeyr et al., 2009; Lee et al., 2009; Wall et al., 2009).

Hypertension is on the increase in the general population in Ghana (Sanuade, Boatemaa & Kushitor, 2018). There is an increase in teenage pregnancy with a corresponding increase in delayed childbirth: above age 35 (Wu et al., 2019). The delay in childbirth may be attributed to a long stay in education (Paul, Asian, Goh, & Torabi, 2019) which pushes a lot of women into the high-risk obstetric group.

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antenatal clients have been on the increase and has been documented as 7.8%, 8.2%, 8.8%, 8.95% and 9.3% for the years 2013, 2014, 2015 2016 and 2017 respectively (GHS, 2018). Most health facilities lack obstetricians and paediatricians. Neonatal intensive care units are also absent in most of the facilities. The capacity of these facilities to adequately manage hypertensive disorders and their associated complications is lacking. This state of affairs compromises the quality of care offered to clients with hypertensive disorders and their neonates.

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The Volta Regional prevalence rates of hypertensive disorders among antenatal clients have been on the increase and has been documented as 7.8%, 8.2%, 8.8%, 8.95% and 9.3% for the years 2013, 2014, 2015 2016 and 2017 respectively (GHS, 2018). Most health facilities lack obstetricians and paediatricians. Neonatal intensive care units are also absent in most of the facilities. The capacity of these facilities to adequately manage hypertensive disorders and their associated complications is lacking. This state of affairs compromises the quality of care offered to clients with hypertensive disorders and their neonates.

The study aims to assess maternal and perinatal outcomes among pregnant women with hypertensive disorders in the Volta Region. Recommendations from the study will provide baseline data for policy direction

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in the management of hypertensive disorders in these hospitals in particular and district hospitals country-wide.

Research Questions

1. What socio-demographic characteristics of women with hypertensive disorders will affect birth outcomes?
2. What are the maternal outcomes among women with hypertensive disorders?
3. What are the perinatal outcomes among women with hypertensive disorders?
4. What are the socio-demographic risk factors of adverse maternal and perinatal outcomes among women with hypertensive disorders?
5. What are the obstetric complications risk factors for adverse perinatal outcomes?

General Objective

This study aims to assess maternal and perinatal outcomes among pregnant women with hypertensive disorders in the Volta Region.

Specific Objectives

1. To assess the socio-demographic characteristics of women with hypertensive disorders
2. To assess the maternal outcomes among women with hypertensive disorders
3. To assess the perinatal outcomes among women with hypertensive disorders

4. To assess the socio-demographic risk factors for adverse maternal and perinatal outcomes among women with hypertensive disorders
5. To determine obstetric complications risk factors for adverse perinatal outcomes.

Significance of the Study

Documented evidence indicates that the impact of hypertensive disorders could be reduced by as much as 70% with appropriate interventions. Unfortunately, these recommended interventions are difficult to implement in countries with very limited resources where specialist obstetric and paediatric care are inadequate or lacking which the study settings are no exception. Baseline data would be required for policy formulation and implementation. It is hoped that the study would provide valuable data to form the basis for such interventions.

Delimitation

The study was delimited to only women with hypertensive disorders in pregnancy in six district hospitals in the Volta Region.

Limitation

HDP is managed at a higher-level facility hence data collected at these hospitals may not be a true reflection of the study area. Diagnosis of women who reported to the facilities after 20 weeks gestation could be confusing since chronic hypertension and pregnancy-induced hypertension can only be correctly diagnosed when the woman reports to the facility before 20 weeks gestation.

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CHAPTER TWO

REVIEW OF LITERATURE

Introduction

This chapter presents a review of literature related to Hypertensive disorders in pregnancy and their birth outcomes. The articles used in reviewing this literature were published in the last 20 years. The literature review was presented in three categories: an overview of HDP, theoretical framework, and empirical perspectives based on the specific objectives of the study.

A comprehensive literature search was done using the databases from Google Scholar, CINAHL, Hinari, Pubmed/Medline, Embase, and Web of Science. Every database's search strategy was customized. Each database was searched separately for HDP, birth outcomes, chronic hypertension, and gestational hypertension before being combined. From the year 2000 to the present, databases were scanned. Both cohort studies, both retrospective and prospective, were included. We found studies of less than 20 women with hypertension to be non-representative, so we excluded them.

Hypertensive Disorders in Pregnancy (HDP)

Hypertensive disorders are among the major causes of maternal and foetal morbidity and mortality. The period between pregnancy and birth could be smooth without any difficulties, however, there are times where pregnancy is associated with certain disorders leading to detrimental birth outcomes. Notable among some of these disorders are those related to hypertension; occurring, either before, during, or soon after pregnancy.

According to the evidence in the literature, HDP leads to maternal and perinatal morbidity and mortality (Umesawa & Kobashi, 2017). HDP can be described as any form of hypertension occurring in pregnancy. These disorders could exist in isolation or as a group of syndromes that have their roots in both genetic and acquired factors; occurring in about 3 to 8% of pregnancies worldwide (Xiong et al., 2018).

Gestational Hypertension

Gestational hypertension disorders are one of the leading causes of maternal and perinatal morbidity and mortality around the world. Every seven minutes, at least one woman dies from gestational hypertension (Gudeta & Regassa, 2019). When systolic blood pressure is greater than 140mmHg and diastolic blood pressure is greater than 90mmHg, it is known as gestational hypertension (GH). Gestational hypertension (GH) is categorized into three categories: mild (systolic blood pressure 140-149 and diastolic blood pressure 90-99 mmHg), moderate (systolic blood pressure 150-159 and diastolic blood pressure 100-109 mmHg), and extreme (systolic blood pressure 150-159 and diastolic blood pressure 100-109 mmHg) (systolic blood pressure greater than or equal to 160 and diastolic blood pressure greater than or equal to 110 mmHg) (Kintiraki, Papakatsika, Kotronis, Goulis, & Kotsis, 2015). Evidence from literature revealed several classifications that have been suggested in describing the various HDP. However, the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy in the year 2000 has gained popularity due to its broad applicability. Their classification is consistent with the International Society for the Study of Hypertension in Pregnancy (ISSHP)'s global consensus classification, which identified four forms of hypertension in pregnancy. Chronic hypertension is characterized as blood pressure that is greater than or equal to 140 mmHg systolic or greater than

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or equal to 90 mmHg diastolic before pregnancy or before the 20th week of pregnancy. It also involves newly diagnosed hypertension during pregnancy that does not go away after the baby is born. Gestational hypertension is characterized as latent hypertension of pregnancy if preeclampsia is not present at the time of delivery and blood pressure returns to normal within 12 weeks after delivery. Preeclampsia-eclampsia, the third party, was described as blood pressure greater than or equal to 140/90 mmHg and proteinuria greater than or equal to 300 mg in 24 hours urine. This may involve the occurrence of eclampsia, or seizures, in women with preeclampsia. Preeclampsia with chronic hypertension, identified as proteinuria greater than or equal to 300 mg in 24 hours urine in women with a blood pressure of 140/90 mmHg before pregnancy or diagnosed before the 20th week of pregnancy in the absence of proteinuria, was the fourth category (Brown et al., 2018).

HDP accounts for 10 to 15% of all maternal deaths in developing and some developed countries, according to Zibaeenezhad, Ghodsi, Arab, and Gholzom (2010). The prevalence of HDP has been reported to be high in Africa, and it has been related to the age of pregnant mothers. The prevalence of HDP was found to be extremely high in two Ethiopian studies. The high prevalence was found to be more widespread among older pregnant women in one study. (above 35 years old) (Berhe, Kassa, Fekadu, & Muche, 2018). Another research found that 7.9% of women accessing delivery facilities had pregnancy-induced hypertension and that having a family history of gestational hypertension, chronic kidney disease, and gestational age were all predictors of pregnancy-induced hypertension (Gudeta & Regassa, 2019). Similarly, a Ghanaian study found a high prevalence of 21.4 percent HDP at the country's largest tertiary hospital, with a high age-specific prevalence among pregnant mothers aged 35 or older (Adu-Bonsaffoh, Ntumy, Obed, & Seffah, 2017).

Gestational hypertension is not a mild condition by itself, since at least a quarter of cases will lead to preeclampsia (Brown et al., 2008). While the risk is greatest for those who present with gestational hypertension at 34 weeks, there is no particular test or series of tests that can predict which women with gestational hypertension will experience preeclampsia at the time they are diagnosed with gestational hypertension. (Davis et al., 2007). If a woman with gestational hypertension experiences preeclampsia or extreme hypertension (160/110 mm Hg), she should be treated in a hospital. For women with gestational hypertension but no signs or symptoms of preeclampsia, the best time to deliver is still unknown. According to a major retrospective report, the optimal period is 38 to 39 weeks (Cruz, Gao & Hibbard, 2012) however, future randomized trials will be needed to clarify this.

Preeclampsia

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Preeclampsia, after eclampsia, has been reported as the second leading cause of maternal and neonatal mortality and morbidity, especially in developing countries. According to Jeyabalan (2013), Preeclampsia is a form of pregnancy-related illness that affects 2 to 8% of all pregnancies. Preeclampsia is responsible for approximately 15.9% of all maternal deaths in the United States, and it complicates 6% to 10% of all pregnancies (Backes et al., 2011), implying a higher occurrence rate in developing countries.

The literature revealed causes of preeclampsia remain one of the greatest medical mysteries, without any distinguished findings on the main causes. However, this syndrome is thought to have two stages, one in which abnormal placentation triggers a maternal inflammatory response, and the other in which abnormal placentation triggers a maternal inflammatory response. (Fisher, 2015).

According to Jeyabalan (2013), the first stage is characterized by decreased placental perfusion (due to irregular placentation), impaired trophoblast invasion, and inadequate remodeling of the uterine spiral arteries.

According to Jeyabalan, the second level of maternal systemic manifestations occurs when inflammatory, metabolic, and thrombotic responses combine to modify vascular function, potentially leading to multi-organ injury. The high rates of perinatal morbidity and mortality seen in preeclampsia-affected pregnancies, according to Backes et al., 2011, may be attributable to the need for premature deliveries and uteroplacental insufficiency, both of which compromise blood flow to the foetus.

Mild, moderate, or severe preeclampsia is diagnosed as antepartum based on a set of specific criteria that arise after 20 weeks of pregnancy. According to Gudeta and Regassa, preeclampsia is diagnosed late in pregnancy when there is an increase in blood pressure along with proteinuria and/or oedema (2019). A systolic blood pressure of 160mmHg or diastolic blood pressure of 110mmHg, as well as proteinuria of 5 grams or more per 24 hours, are both symptoms of severe preeclampsia. Preeclampsia is considered acute when there is multi-organ involvement, such as thrombocytopenia (platelet count less than 100,000/uL), pulmonary oedema, or oliguria (less than 500mL per day). Mild preeclampsia is characterized as having a systolic blood pressure of less than 160mmHg and a diastolic blood pressure of less than 120mmHg, as well as proteinuria of more than 300mg but less than 5 g per 24 hours (Eiland, Nzerue, & Faulkner, 2012).

Because of current obstetrical practice in the treatment of preeclampsia, delivery is often advised to reduce maternal and neonatal morbidity and mortality. According to Bell (2010), delivering the foetus and placenta is one of the most successful definitive remedies for preeclampsia. This cure, on the other hand, does not hinder obstetricians' aim of delivering healthy babies who are functionally mature and capable of adapting to life outside the womb without the need for intensive care. Women who develop preeclampsia at 37 weeks of pregnancy, regardless of severity, have been urged to deliver in recent years. This is because, at this gestational age, the risk of managing the maternal and foetal risks inevitably outweigh the perceived benefits to the foetus (Backes et al., 2011; Eiland et al., 2012; Fisher, 2015).

Although preeclampsia is a maternal disorder, its effect extends to both the mother and the foetus, hence its management requires comprehensive care for both parties. The decision of delivery is best when the gestation is at term.

Eclampsia most often does not occur without an already existing history of preeclampsia except in some rare medical cases. Eclampsia occurs when a patient has already been diagnosed with preeclampsia or has slightly elevated blood pressure but no proteinuria (Shah & Gupta, 2019).

Socio-Demographic and Maternal Characteristics of Women with HDP

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Maternal ages of less than 20 years and more than 35 years have both been reported as risk factors for poor maternal and perinatal outcomes (Jacobson, Jacobson, Sokol, Chiodo & Corobana, 2004). Fatemeh and colleagues found that women under the age of 20 had a higher prevalence of

HDP. In the last decade, there has been a widespread move toward family planning and childbearing at an older age (Krieg, Henne & Westphal, 2008). The implications of old age, postponed childbearing, and perinatal outcome are all unclear. According to some researchers, pregnancy results are harmed (Simchen, Yinon, Moran, Schiff, & Sivan, 2006; Yogev et al., 2010). For similar populations, other researchers have published similar results (Fretts et al., 1996; Jacobson et al., 2004). Nonetheless, the majority of studies have looked at pregnancy outcomes in women over the age of 35, and there is a lack of evidence on pregnancy outcomes in women who had children in the 1950s and 1960s (Simchen et al., 2006; Yogev et al., 2010). In the over thirty-year age group, Hutcheon, Lisonkova, and Joseph (2011) found an increased risk of HDP with age. According to Liouse et al., there was no evidence to support a connection between maternal age and small for gestational age, big for gestational age, and macrosomia (2013). However, at advanced maternal age of more than forty years, an association with increased stillbirth, preterm delivery, and neonatal death has been recorded.

The risk of HDP is known to differ across different ethnic groups. People of African descent are considered to be more susceptible. There is however no data to support any variation across ethnic groups in Sub-Saharan Africa and for that matter Ghana.

Maternal Characteristics of Women with HDP

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Women with HDP are diagnosed with chronic hypertension, pregnancy-induced hypertension, preeclampsia/eclampsia, or preeclampsia superimposed on pregnancy-induced hypertension (Mustafa, Ahmed, Gupta & Vento, 2012; Brown et al., 2018). The percentage contribution of each of them to HDP has been widely reported and varies from setting to setting (Livingston et al., 2000; Mackay, Berg & Atrash, 2001; Wolde, Segni & Woldie, 2011; Olusanya & Solanke, 2012; Adu- Bonsafoh, Obed & Seffah, 2014; Sha & Gupta, 2019). The percentage contribution of preeclampsia to HDP has been reported to be on the decrease (Dassah, Kusi-Mensah, Morhe & Odoi 2019). Studies from a Ghanaian teaching hospital recorded a decrease in preeclampsia from 76.6% to 52.3% over six years (Crentsil, 2017; Dassah et al., 2019).

Various studies have reported on gestational age at booking. For most developing countries, the gestational age at booking was between 17 and 23 weeks (Olusenya, 2011; Adu-Bonsafoh et al., 2017; Ngwenya, 2017; Dassah et al., 2018). Mean gestational age at booking is very important for diagnosis as well as effective management (Mustafa et al., 2012; Brown et al., 2018). To distinguish chronic hypertension from gestational/pregnancy-induced hypertension, the gestational age at the time of booking must be less than 20 weeks. A previous study in Ghana reported a mean gestational age at booking as 14 weeks 3 days (Dassah et al., 2019).

The gestational age at the time of delivery is a significant predictor of neonatal morbidity and mortality (Olusanya et al., 2011; Mustafa et al., 2012; Brown et al., 2018). By definition, any delivery at gestation less than 37 weeks is considered preterm (Linder et al., 2015) and those before 34 weeks are considered severely preterm. Premature birth carries the risk of a bad perinatal outcome. Low birth weight, a low APGAR score, birth asphyxia, and increased admissions to neonatal intensive care units are only a few of them. Dassah and colleagues (2019) found that the average gestational age at delivery for women with HDP was 37 weeks 2 days at the Komfo-Anokye Teaching Hospital in Kumasi, Ghana.

Obesity has been linked to a higher risk of developing HDP (Villar et al., 2006). It was also discovered that a direct correlation exists between increasing BMI and negative health outcomes. Women with HDP were also found to have a 1.41Kg/mm2 higher mean increase in BMI (Villar et al., 2006). Insulin resistance has been identified as a risk factor in Alzheimer's disease development (Hendler et al., 2005; Ness & Sibai, 2006).

Excessive calorie consumption and insufficient physical activity are two factors that lead to weight gain. However, they are likely to be affected by a complex interplay between genetic factors, hormones such as insulin and leptin, and the central nervous system's regulation of energy intake, pleasure, and appetite (Lustig, 2006; Morton, Cummings, Baskin, Barsh, & Schwartz, 2006). Obesity and insulin resistance are closely linked, but the essence of the connection is murky (Popkin, 2001). Insulin resistance precedes obesity, and hyperinsulimia is thought to play a role in energy homeostasis regulation in the central nervous system, resulting in weight gain. Morton and his associates (Morton et al., 2005). Women with HDP gain weight more slowly than other women (Callaway et al., 2000).

Maternal outcomes among Women with HDP

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Maternal morbidity and mortality are major challenges despite international efforts to reduce them (Olusanya et al., 2012). Maternal mortality accounts for the highest public disparity between low and high-income countries with significant numbers attributable to HDP. According to a report by Adu-Bonsafoh et al. (2014) in Ghana, HDP was responsible for 30% of maternal deaths. Complications reported to be associated with HDP are preeclampsia, eclampsia, intracerebral haemorrhage, placental abruption, and renal dysfunctions (Asomoah et al., 2012; Lee et al., 2013; Ye et al., 2014).

Studies from Ghana indicated that between 11% and 15.8% of pregnancies among women with HDP could be complicated by preeclampsia (Lee et al., 2013; Adu-Bonsafoh et al., 2014; 2017). Buga et al., (1999) has reported similar findings from South Africa and Turkey respectively. Studies from well-resourced countries have, however, reported lower prevalence (Marín, Testa & Pañeda, 2001; Duley, Meher & Abalos, 2006).

Intracerebral haemorrhage is another major complication of pregnancy that has been widely reported (Olusanya et al., 2012; Adu-Bonsafoh 2014; 2017 and Sha & Gupta 2019). Adu-Bonsafoh et al., (2014; 2017) documented that it accounts for 15.8% and 12.7% of complications of HDP in a Ghanaian Tertiary Hospital. Other researchers reported similar findings from the sub-region (Buga et al., 1999; Olusanya et al., 2012).

The use of a Caesarean section has been linked to the development of HDP. Olusanya et al. (2012) found a high prevalence of 90 percent in Nigerian women with HDP. Other studies from the sub-region have reported slightly lower figures compared to that of Nigeria. Wolde et al. (2011) and Adu-Bonsafoh et al. (2014) reported 37% and 45% from Ethiopia and Ghana respectively. These results were derived from research conducted at tertiary institutions.

Hypertension caused by pregnancy is a significant cause of maternal morbidity and mortality. Preeclampsia-eclampsia is responsible for around one maternal death out of every 100,000 live births, with a case-fatality rate of 6.4

per 10,000 cases (Livingston et al. 2000; Mackay et al., 2001). Unsurprisingly, several variables affect the outcome of hypertension during pregnancy.

These include (but are not limited to) gestational age at onset, disease prevalence, and the involvement of comorbid conditions like diabetes, kidney disease, thrombophilia, or pre-existing hypertension (Heard et al., 2011). It is possible to differentiate between short-term and long-term complications associated with hypertension during pregnancy. Short-term complications are categorized into maternal and foetal complications, but maternal outcomes are the most common long-term outcomes.

Although hypertension in pregnancy/preeclampsia is generally thought of as a transient problem that goes away once the baby is born, it still presents a significant risk of long-term complications. Infants who are born prematurely and tiny will spend time in neonatal intensive care units and develop delays. Preeclampsia in subsequent pregnancies, as well as other long-term maternal health risks, are among the potential long-term consequences (Mustafa, Ahmed, Gupta & Venuto, 2012).

The duration and timing of onset of the acute episode decide the likelihood of persistent preeclampsia in subsequent pregnancies (Stella, 2008). Women who develop serious, early preeclampsia during their first pregnancy are thought to have a 25–65% chance of developing permanent preeclampsia in subsequent pregnancies (Sibai and associates, 1986).

Women with milder forms of preeclampsia, on the other hand, have a lower incidence of recurrent episodes (5–7%) than women who had a normal pregnancy (Cambell et al., 1985; Trogstad et al., 2004; Mostello, Kallogjeri, Tungsiripat, & Leet, 2008). Preeclampsia is less likely when the first pregnancy is a twin, according to Bellamy and Casas, than when the first pregnancy is a singleton. The correlation between preeclampsia and cardiovascular disease has been thoroughly investigated, with the results well described and reported. Women with a history of preeclampsia have a significantly higher risk of developing hypertension, ischemic heart disease, stroke, type II diabetes, and venous thromboembolism than women who have never had the disorder (Bellamy et al., 2007). Preeclampsia with initiation as a multipara, chronic preeclampsia, severe preeclampsia, gestational hypertension, or early-onset preeclampsia is all associated with an increased risk of long-term cardiovascular diseases (Bellamy et al., 2007). Peripartum cardiomyopathy is more common in women with preeclampsia (Dennis, & Castro, 2014).

There is no clear pathophysiologic connection between preeclampsia and later-onset cardiovascular disease.

Endothelial dysfunction, insulin resistance, sympathetic overactivity, pro-inflammatory activity, and an abnormal lipid profile, which is typically an early symptom of metabolic syndrome, have all been studied (Chambers et al., 2001; Agatisa et al., 2004; Kaaja & Pohyhonen-Alho, 2006).

HDP affects the function and the morphology of the kidney (Gaber et al., 1994). Microalbuminuria is more common in women who have HDP after birth, according to some reports (Kaissling & Le-Hir, 2008; Suzuki et al., 2008; McDonald, Han, Walsh, Gerstein, & Devereaux, 2010). Suzuki and colleagues (2008) found a connection between biopsy-related renal dysfunction and a history of preeclampsia in a case-control study. However, there have been few studies on whether HDP is linked to end-stage kidney disease (Vikse, Irgens, Leivestad, Skjrven, & Iversen, 2008). In a Norwegian study, Vikse and colleagues discovered a 3.2-fold increased risk of End-Stage Renal Disease in pregnant women with hypertension. Women with HDP are also more likely to develop end-stage kidney disease according to Wang and colleagues (2013).

The most common liver disease in pregnancy is intrahepatic cholestasis (IPC), which is characterized by pruritis and elevated liver enzymes.

Preterm birth (19-60%), meconium passage before 37 weeks (17%), intrapartum non-reassuring foetal heart tracing (22-41%), respiratory distress syndrome, and stillbirth are all linked to ICP (0.75-7 percent) (Kenyon et al., 2002; Glantz, Marschall, & Mattsson, 2004; Zeeca et al., 2006).

Early delivery should always be advocated, according to Lo and colleagues (2014), because of the high incidence of stillbirth and neonatal mortality. They also agree that, in the absence of an evidence-based guideline for optimum delivery timing, induction of labor at 36-37 weeks of pregnancy or after reporting of foetal lung maturity should be performed. For ICP difficult pregnancies, Williamson and colleagues (2014) made a similar suggestion.

Several studies have looked for predictors of poor neonatal outcomes in women with ICP (Lee et al., 2008; Rook et al., 2012; Geenes et al., 2014; Jin et al., 2015). Meconium staining, low birth weight, preterm delivery, and stillbirth have all been linked to serum total bile acid (TBA) > 40mmol in other studies (Glantz et al., 2004, Geenes et al., 2014 & Kawakita et al., 2015).

In addition, Kawakita and colleagues (2015) found a correlation between serum TBA levels, meconium-stained amniotic fluid, and stillbirth. Mitchell and Chandraharan (2018) discovered that serum alanine aminotransferase levels and direct bilirubin levels are related to a high risk of MSAF.

Meconium-stained amniotic fluid has been shown to cause complications in 8-20% of pregnancies (Berkus et al., 1994; Sigh et al., 2009), and its occurrence is directly proportional to gestational age at delivery (Berkus et al., 1994; Sigh et al., 2009). (Balchin et al., 2011).

The most common neonatal pathology associated with MSAF is respiratory morbidity, and its most severe form, meconium aspiration syndrome (MAS), occurs in 5 to 10% of cases (Walsh et al., 2007; Bhat & Rao, 2008; Singh et al., 2009). Furthermore, the involvement of MSAF is associated with neonatal complications such as sepsis, seizures, neurologic dysfunction, and prolonged hospitalization in a neonatal intensive care unit.

Several studies have shown that MSAF is a risk factor for perinatal morbidity (Reddy et al., 2011; Spong, 2013; Linder et al., 2015; Hiersh et al., 2016 & 2017).

Many observational studies looked into the possible link between HDP and cancer risk. When women with preeclampsia were monitored for long periods after giving birth, they were found to have a lower risk of cancer or no risk at all. (Cohn et al., 2001 ; Ness, 2001 ; Vattten, Romundstad, Trichopoulos & Skjaerven, 2002 ; Aagaard et al., 2006). A recent systematic review backs this up, finding no significant connection between preeclampsia and cancer risk. The immune system's possible role in disease pathogenesis may explain, at least in part, preeclampsia's "protective" effect. Preeclampsia is more common in women with active immune systems, but they are often less likely to develop cancer.

Caesarean Section has been recommended as a major intervention for women with HDP to minimize maternal and perinatal mortality and morbidity, whether elective or emergency (Mustafa et al., 2012; Magee et al., 2014; Brown et al., 2018). Women with HDP have a higher rate of caesarean sections, according to many reports (Tuuli et al., 2011; Brown et al., 2015; Ngwenya et al., 2017). Studies conducted in the Ghanaian tertiary hospitals show that caesarean section was high among women with HDP (Adu-Bonssaffoh et al., 2015 & 2017; Dassah et al., 2019). The caesarean section rate was estimated to be between 50% and 70% in these studies. Dassah et al. (2019) found a decrease in the incidence of caesarean section among women with HDP at the Komfo Anokye Teaching Hospital over the previous 6 years.

There has been an improvement in PPH in some developed countries (Guasch & Gilsanz, 2016). Despite the seriousness of the effects of PPH, clinical management is not evidence-based and varies greatly between centers (Knight et al., 2009; Fuller & Bucklin, 2010; Kozek-langenecker et al., 2013). Haemorrhage in general and for that matter PPH is known to be more prevalent and severer in women with HDP due to thrombocytopenia resulting from the pathogenesis of preeclampsia (Brown et al., 2018).

Most of the studies conducted in Ghana paid very little attention to haemorrhage of all categories (Lee et al., 2012; Adu-Bonssaffoh et al., 2015 & 2016; Dassah et al., 2019). Intrapartum haemorrhage is a severe and potentially fatal condition. Placental abruption, uterine atony, placenta accrete, and genital tract lacerations are some of the recognized etiologies. Early detection of blood loss, identification of the source of the haemorrhage, and volume resuscitation, including red blood cells and blood products as required, all contribute to excellent maternal outcomes (Guasch &Gilsanz, 2016). The pathogenesis of

HDP makes it an increased risk for placental abruption and PROM which are risk factors for haemorrhage (Mustafa et al., 2012).

Women with HDP's Perinatal Outcomes

Perinatal morbidity and mortality have been linked to HDP (Olusanya et al., 2011). Yadav et al. (1997) reported that HDP contributes 22% of perinatal deaths and it is highest in women with preeclampsia (Buga et al., 1997). Intrauterine growth restriction, birth asphyxia, preterm delivery, and low birth weight are examples of adverse neonatal outcomes that have been related to high perinatal mortality (Yadav et al., 1997; Buga et al., 1999; Bell, 2010; Gudeta & Regassa, 2019).

Placental insufficiency, placental abruption, and preterm delivery complications have all been linked to poor perinatal outcomes (Sha & Gupta, 2019). Their prevalence varies with institutions and may be due to resource availability as well as management practices in the care of women with HDP and their neonates. Intrauterine death has been reported in 6.8% of women with HDP. Perinatal mortality rates among women with HDP in a Ghanaian tertiary hospital have been documented as 106 per 1000 births (Lee et al., 2012).

Adverse perinatal outcomes, according to the World Health Organization (WHO), are essential measures of maternal health and reflect the standard of obstetric and paediatric care. The unacceptable high rate of perinatal mortality highlighted the need to rethink the multidisciplinary approach to HDP management. To ensure appropriate and comprehensive treatment for women with HDP and their neonates, Sha and Gupta (2019) suggested actively including neonatologists, laboratory personnel, midwives, obstetric surgeons, obstetricians, and paediatricians in the decision-making process. A Ghanaian study revealed that essential drugs required for the management of HDP are available in only 55% of the facilities that needed them (Adu Bonsafoh et al., 2017).

Maternal Complications as Risk Factor for Perinatal Outcome

A premature rupture of membrane happens when a woman is more than 37 weeks pregnant and has a rupture of membrane before labor begins. Preterm premature rupture of membranes occurs when the membranes rupture before 37 weeks of pregnancy (PPROM). SPROM (spontaneous preterm rupture of the membranes) is a rupture of the membranes that occurs before or after 37 weeks of pregnancy. A prolonged rupture of membrane occurs when a rupture of membrane lasts longer than 24 hours and occurs before the start of labor. (Sharma & Dey, 2017).

There is an association between premature rupture of a pregnant woman's membranes and an APGAR score of less than 7 at minute one in infants born to women with gestational hypertension, according to some studies (Chen et al., 2010; Souza et al., 2016; Asadollahi et al., 2020; Wiegerink et al., 2020). Other studies have found no correlation between premature membrane rupture in pregnant women with gestational hypertension and an APGAR score of less than 7 at minute one (Eleie et al., 2010; Razaz et al., 2019).

Secondly, some studies have found a correlation between premature membrane rupture in pregnant women with gestational hypertension and babies born to these women getting an APGAR score of less than 7 in the first five minutes (Thangwijitra, Sripramodya, & Kanchanawat, 2010; Salustiano, Campos, Ibidi, Ruano & Zugaib, 2012; Razaz, Cnattingius, & Joseph, 2019). Other research has found no connection between preterm labor and an APGAR score of less than 7 at minute one in pregnant women with gestational hypertension (Eleie et al., 2010; Razaz et al., 2019).

Premature rupture of membranes in pregnant women with hypertensive disorders in pregnancy has been related to the delivery of small for gestational age infants, according to DiGiulio et al., (2010). This was also verified in a study by Grisaru-Granovsky et al., 2012, and DeMauro et al., 2019, who found that premature membrane rupture in pregnant women with hypertensive disorders results in the delivery of babies who are small for gestational age. Premature rupture of membranes in pregnant women with hypertensive disorders is not correlated with the weight of babies born to those women, according to other reports (Maheshwari et al., 2012; Abdali et al., 2017; Kurek Eken et al., 2017).

According to studies conducted by Pasquier (2009), Hinz et al. (2010), and Ye et al. (2011) it was generally observed that premature rupture of membrane in pregnant women with hypertensive disorders has an association with the intensive care unit admission requirement of the babies born to such mothers. In other studies, conducted by Carter, Xenakis, Holden, & Dudley, (2012), Kurek Eken (2017), and Saghafi (2017), it was observed that premature rupture of membrane in pregnant women with hypertensive disorders has no association with intensive care unit admission requirement of the neonates born to such mothers.

Furthermore, some studies have identified that premature rupture of membrane in pregnant women with hypertensive disorders has an association with congenital abnormalities experienced by such neonates (Dars, Malik, Samreen, & Kazi, 2014; Kwak et al., 2014; Ocviyanti, & Wahono, 2018). Other research has shown that premature membrane rupture in pregnant women with gestational hypertension has no substantial link to congenital anomalies in the babies born to these mothers (Jaiswal, Hariharan, & Dewani, 2017; Ocviyanti, & Wahono, 2018).

Some studies have identified that premature rupture of membrane in pregnant women with hypertensive disease has an association with survival at birth of such neonates (Blumenfeld et al., 2010; Brumbaugh et al., 2014). Other research has shown that premature membrane rupture in pregnant women with gestational hypertension does not affect the neonates' survival after birth (Simmons et al., 2010; Erdemir et al., 2013; Brumbaugh et al., 2014).

Few studies have shown that meconium-stained amniotic fluid has an association with the APGAR score less than 7 at minute one (Al-Riyami, 2013; Test, 2011; Gezer et al., 2013). Few studies have found a connection between meconium-stained amniotic fluid and an APGAR score of less than 7 at minute one (Al-Riyami, 2013; Test, 2011; Gezer et al., 2013). Other studies have found no connection between the existence of meconium-stained amniotic fluid and an APGAR score of less than 7 at minute one. (Chen et al., 2010; Armani et al., 2013; Razaz, Cnattingius & Joseph, 2019).

Some studies also have shown that meconium-stained amniotic fluid has an association with APGAR score of the baby with a score less than 7 at minute five. Other studies also revealed that the presence of meconium-stained amniotic fluid has no significant association with APGAR score of the baby at minute five.

Several studies have discovered a connection between meconium-stained amniotic fluid and small-for-gestational-age infants (Balchin et al., 2011; Hutton & Thorpe, 2014; Pariente et al., 2015). According to other researchers, meconium-stained amniotic fluid has no relation to babies who are small for gestational age (Shaikh, Mehmood & Shaikh, 2010; Locatelli et al., 2004).

Some studies revealed that meconium-stained amniotic fluid has an association with the intensive care unit admission requirement of babies born to women with gestational hypertension (Sheiner et al., 2002; Khatun et al., 2009; Wertheimer et al., 2020). Other studies suggested that meconium-stained amniotic fluid does not have any association with intensive care unit admission required by babies born to women with gestational hypertensive disorders (Ziadeh & Sunna, 2000; Singh, Clark, Powers & Spitzer, 2009).

Some studies have identified that meconium-stained amniotic fluid has an association with congenital abnormalities experienced by such neonates (Dars, Malik, Samreen, & Kazi, 2014; Kwak et al., 2014; Ocviyanti, & Wahono, 2018). Other studies have found no connection between meconium-stained amniotic fluid in pregnant women with gestational hypertension and congenital defects in the babies born to these mothers (Mundhra & Agarwal, 2013; Jaiswal, Hariharan, & Dewani, 2017).

Some studies have identified that meconium-stained amniotic fluid has an association with congenital abnormalities experienced by such neonates (Wosenu, Worku, & Gelagay, 2018; Paz Levy et al., 2019; Krieger et al., 2020). Other studies also suggested that meconium-stained amniotic fluid in pregnant women with gestational hypertension has no association with the survival at birth of such neonates (Xu et al., 2010; Balchin, Whittaker, Lamont, & Steer, 2011; Krieger, Horev, Wainstock, Sheiner, & Walfisch, 2020).

In some studies, hemorrhage during pregnancy has been related to an APGAR score of less than 7 at 1 minute (Koifman et al., 2008; Bener, Saleh, & Yousafzai, 2012; Ghimire & Ghimire, 2013; Bener, Saleh, & Yousafzai, 2012; Ghimire & Ghimire, 2013; Bener, Saleh, & Yousafzai, 2012; Ghimire & Ghimire, 2013; Bener, Saleh, & Yousafzai, 2012). Other research has found no connection between a pregnant woman's haemorrhage and an APGAR score of less than 7 at 1 minute. (Nojomi, Haghighi, Bijari, Rezvani, & Tabatabaee, 2010; Hashem, & Sarsam, 2019).

According to some research, haemorrhage during pregnancy is linked to an APGAR score of less than 7 at 5 minutes in women with gestational hypertension (Salustiano, Campos, Ibidi, 2012; Dalili, Sheikh, Hardani, Nili, 2016; Razaz, Cnattingius, & Joseph, 2019). According to other research, haemorrhage during pregnancy is not related to an APGAR score of less than 7 at 5 minutes (Maghsoudloo, Eftekhar, Ashraf, Khan, & Sereshkeh, 2011; Werner, Janevic & ~~,~~Illuzzi, 2011; Zhu, Tang &~~,~~ Zhao, 2015).

Some research studies have shown that bleeding during pregnancy results in babies who are small for gestational age. (Lykke, Dideriksen, & Lidegaard, 2010; Knol, Schultinge, Veeger & Kluin-Nelemans, 2012). However, some other studies revealed that bleeding does not result in small for gestational age (Bros, Chabrot, Kastler, Ouchchane, 2012; Steggerda et al., 2013).

Some studies have revealed that bleeding in pregnancy requires intensive care unit admission. (Bhat, Navada & ~~,~~Rao, 2013; Ashraf, Mishra~~,~~ & Kundra, 2014). However, a small body of research in this area has concluded that there is no connection between bleeding in pregnant women and the need

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for intensive care (Demirkiran, Dikmen, Utku & Urkmez, 2003; Zeeman, 2006).

Some studies have shown that there is an association between haemorrhage in pregnancy and congenital abnormality (Saraswat, Bhattacharya, Maheshwari & Bhattacharya, 2010; Ornoy, Reece & Pavlinkova, 2015). Other studies have found no correlation between women's bleeding and congenital defects in their babies (Bener, Saleh, & Yousafzai, 2012; Gupta, 2016; Ouyang et al., 2016).

Bleeding during pregnancy has been linked to the baby's survival at birth in several studies (Shrestha, Dangol, Shrestha, & Shrestha, 2010; Norman et al., 2017; Wagura, Wasunna, Laving & Wamalwa, 2018). Other studies reported that there is no association between haemorrhage and congenital abnormality (Nezvalová-Henriksen, Spigset, & Nordeng, 2011; Wei, Catalano, Profit, Gould, & Lee, 2016).

According to some reports, abruption of the placenta is linked to an APGAR score of less than 7 at minute one (Markhus, Rasmussen, Lie & Irgens, 2011; Pariente et al., 2011; Macheku et al., 2015).

Other research has found no correlation between abruption placenta and an APGAR score of less than 7 at minute one (Downes, Grantz, & Shenassa, 2017; Budak et al., 2018; Saquib, Hamza, AlSayed, Saeed, & Abbas, 2020).

According to some reports, abruption placenta is linked to an APGAR score of less than 7 at minute five (Furukawa, Doi, Furuta, & Sameshima, 2015; Pariente et al., 2011; Nkwabong, & Tiomela & Goula 2017). Other research has found no connection between abruption placenta and an APGAR score of less than 7 at minute five (Ranta et al., 2011; Rosenberg et al., 2011; Macheku et al., 2015). Several studies have shown that pregnant women with gestational hypertension who have an abruption placenta during childbirth are more likely to have babies that are small for their gestational age (Balchin et al., 2011; Hutton & Thorpe, 2014; Pariente et al., 2015). Other researchers revealed that gestational hypertensive pregnant women who experienced abruption placenta during delivery are not likely to produce babies who are small for gestational age (Shaikh, Mehmood & Shaikh, 2010). Few studies have revealed that abruption placenta during delivery among gestational hypertensive pregnant women has an association with intensive care unit admission requirements of the baby. (Downes, Shenassa & Grantz, 2017; Downes, Grantz & Shenassa, 2017; Maged et al., 2020). However, a small number of studies in this field have found no connection between placenta abruption and the need for intensive care unit admission in mothers with gestational hypertension (Ray, Urquia, Berger, & Vermeulen, 2012; Rossi, Hall, Dufendach, & DeFranco, 2019).

According to some research, there is a correlation between abruption placenta during childbirth and congenital defects in babies born to pregnant women with gestational hypertension (Saraswat, Bhattacharya, Maheshwari, & Bhattacharya, 2010; Ornoy, Reece & Pavlinkova, 2015). Other studies have shown that there is no association between abruption placenta among gestational hypertensive pregnant women and congenital abnormality in their babies (Tikkanen, 2011; Riihimäki et al., 2013; Khazaei, Jenabi, & Veisani, 2019).

Some studies have reported that there is an association between abruption placenta among gestational hypertensive pregnant women and the survival at birth of these babies (Durie et al., 2011, Reddy et al., 2012; Werner et al, 2012). Other studies have found no connection between abruption placenta and the survival rate of these babies at birth in pregnant women with gestational hypertension (Hibbard et al., 2010; Alfirevic, Milan & Livio, 2012).

Few studies have found a connection between the mode of delivery and an APGAR score of less than 7 at minute one in women with gestational hypertension (Iliodromiti et al., 2014; Fajar, Andalas, & Harapan, 2017; Gudayu, 2017). Other research has found no connection between the mode of delivery and an APGAR score of less than 7 at minute one in women with gestational hypertension (Tal et al., 2018; Razaz, Cnattingius & Joseph, 2019).

According to some research, the mode of delivery of babies born to women who have gestational hypertension is linked to an APGAR score of less than 7 at minute five (Werner et al., 2011; Iliodromiti et al., 2014; Thavarajah, Flatley, & Kumar, 2018). Other research has found a connection between the mode of delivery of babies born to women who have gestational hypertension and an APGAR score of less than 7 at minute five (Gudayu, 2017; Stuart, Olausson & Källen, 2011).

Different research studies have revealed that the mode of delivery of babies to mothers with gestational hypertension has an association with babies who are small for gestational age (Ghi et al., 2010; Almqvist, Cnattingius, Lichtenstein & Lundholm, 2012; Werner et al., 2012; Ghi et al., 2010). Other researchers discovered that the mode of delivery of babies born to mothers who have gestational hypertension has little effect on the babies' birth weight; babies who are small for gestational age have a lower birth weight (Ardissone et al., 2014; Khodayar-Pardo, Mira-Pascual, Collado & Martínez-Costa, 2014).

Some studies have revealed that the mode of delivery of babies to mothers with gestational hypertension has an association with intensive care unit admission requirements of the baby. (Goker, 2012; Oliveira, & Costa, 2015; Wilson et al., 2016). However, a few studies in this field have found no connection between the mode of delivery of babies born to mothers with gestational hypertension and the need for intensive care unit admission (Kim et al., 2010; Pollock, Rose & Dennis, 2010). Several studies have identified that the mode of delivery of babies to mothers with gestational hypertension has no association with congenital abnormalities experienced by such neonates (Werner et al., 2012; Evers, McDermott, Blomquist & Handa, 2014; Blomquist, Muñoz, Carroll, & Handa, 2018). Other studies also suggested that that the mode of delivery of babies to mothers with gestational hypertension has no association with congenital abnormalities experienced by such neonates born to these mothers (Sarkar, Patra, Dasgupta, Nayek, & Karmakar, 2013; Prior, 2018). The mode of delivery of babies born to mothers with gestational hypertension has been linked to the babies' survival rate (Sasaki et al., 2014; Edmonds et al., 2015; Hübner et al., 2016). Other studies, on the other hand, have found no such connection (Zeitlin et al., 2010: Kalimba & Ballot, 2013; Cetinkaya et al., 2015).

~~Finally, the availability of services and management strategies have an important effect on maternal and perinatal outcomes in women with HDP. According to the checked literature, the tertiary hospitals examined so far have a high rate of adverse maternal and perinatal outcomes. The situation could be even worse in the study's proposed locations, which have less resources. These considerations illustrate the significance of this study.~~

Figure 1: Conceptual framework on maternal and perinatal birth outcomes among pregnant women with HDP

Cause **Effect**

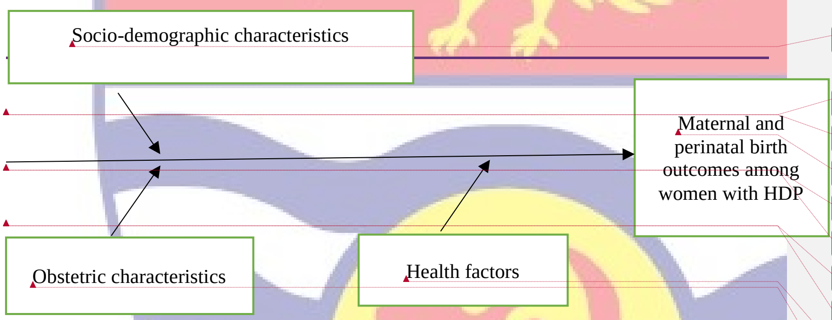

Figure 1: Conceptual framework adapted from the fishbone model proposed by Kaoro Ishakawa, 1968.

Narrative to the Framework

The conceptual framework for this work was adapted from the fishbone model which was proposed by Kaoro Ishakawa, 1968. The model is a cause-and-effect diagram that can help in brainstorming to identify the possible causes of a problem. The fishbone model is similar to a fish, which has a head (as an effect) and a body in the form of bones, illustrated as causes of known problems (Tiann, 2012). Using the Fishbone model helps a researcher to identify the possible root causes, the basic reasons, for a specific effect, problem, or condition. It also helps a researcher to sort out and relate some interacting

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factors affecting a particular process or effect. Furthermore, it analyzes existing problems so that corrective action can be taken. This model provides a vague idea about a problem and it provides limited information on the cause of a problem but it was chosen for the study because it helps in capturing all the variables needed for the study. It also suited the study and helps to achieve the objectives of the study toto clarify how HDP affects maternal and perinatal outcomes in women in the Volta Region. Several factors would contribute to the outcome in a hypertensive pregnant woman. These include socio-demographic/socioeconomic factors, antenatal care services provided, [illegible] good tool to find and significantly analyze affecting factors in identifying the [illegible]

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Demographic /Socioeconomic Risk Factors

The age and parity of a woman is most likely to affect the maternal and perinatal outcome. Women who had had previous delivery and those older may respond to obstetric threats differently. The knowledge level and experiences of such individuals may play a vital role in health seeking behaviour. For example, if the woman is an elderly person and has had previous deliveries, she might have experience in pregnancy and its related issues and so she may decide to either seek early health care or not. On the other hand, if the woman has no experience in pregnancy and its related issues, she may also take things for granted and may not seek help or vice versa.

On the educational status of the woman: it is assumed that women who are better educated would have improved interest in health issues and as such would influence their care-seeking behaviour. The less educated on the other hand are likely not to seek health care however an uneducated individual who gets very little information could get apprehensive at the least threat for which the educated woman would neglect.

Ethnicity and religion: There may be certain beliefs and practices as far as pregnancy-related issues are concerned which may favour birth outcome or otherwise. Income and marital status can influence birth outcomes. When an individual is financially sound, accessing health care services may not be a problem. On the other hand, if a person is not financially secure, it may be an obstacle to obtaining health care, even in a life-threatening situation.

Similarly, spousal support improves maternal health hence the marital status could play a role in obstetric outcomes.

Finally, the availability of services and management strategies have an important effect on maternal and perinatal outcomes in women with HDP. According to the checked literature, the tertiary hospitals examined so far have a high rate of adverse maternal and perinatal outcomes. The situation could be even worse in the study's proposed locations, which have less resources. These considerations illustrate the significance of this study.

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CHAPTER THREE

METHODOLOGY

Introduction

This chapter details how the analysis was carried out to achieve its objectives. It gives detailed information about the research design and explains why the study's research design was chosen. It also delves deeper into the research area, population, sample and sampling method, and research instrument. Others include pilot testing of the research instrument, data collection, and data processing.

Study Design

This research used an observational sample design. Rosenbaum listed five types of observational studies: case-control, cross-sectional, cohort/panel, and ecological studies (2010). After a careful assessment and comparison of the various observational studies, the analytical cross-sectional design was chosen for the study. An analytical cross-sectional design is a type of quantitative, non-experimental research design that examines the relationship between variables of interest as they exist in a defined population at a single point in time or over a short period. It is not able to determine whether the outcome followed exposure in time or exposure resulted from the outcome. Also, it is not suitable for studying rare diseases or diseases with a short duration and it is unable to measure incidence. The analytical cross-sectional design was chosen for this study because it can measure prevalence for all factors under investigation, allows multiple outcomes and exposures to be studied, is good for descriptive analyses and for generating hypotheses, and is relatively quick and easy to use. It is analytical using both primary and secondary data.

Study Area

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The Volta District, with Ho as its capital, is one of Ghana's sixteen administrative regions. It is east of Lake Volta and west of the Republic of Togo. There are 18 administrative districts in the county. The Volta Regional prevalence rates of hypertensive disorders among antenatal clients have been on the increase and have been documented as 7.8%, 8.2%, 8.8%, 8.95%, and 9.3% for the years 2013, 2014, 2015 2016, and 2017 respectively (GHS, 2018). Most health facilities lack obstetricians and paediatricians. Neonatal intensive care units are also absent in most of the facilities. Peki Government Hospital has no paediatrician, has one obstetrician, and no neonatal intensive care unit. Anfoega Hospital has one obstetrician, no paediatrician, and a mini neonatal intensive care unit. Keta Municipal has one paediatrician who is currently the Medical Superintendent of the facility, no obstetrician, one neonatal intensive care unit, and a laboratory that is not well equipped with adequate resources. Aflao Government Hospital does not have a resident paediatrician but the hospital has one visiting obstetrician, a neonatal intensive care unit with a laboratory that is not fully functioning. There is no resident paediatrician at Ho Municipal Hospital, but there is one obstetrician and a neonatal intensive care unit with a laboratory. Dzodze District Hospital has a laboratory that is not fully equipped with resources but the facility has no paediatrician, no obstetrician, and no neonatal intensive care unit. The capacity of these facilities to adequately manage hypertensive disorders and their associated complications is lacking due to the complete absence or inadequate availability of obstetricians, paediatricians, a well-equipped neonatal intensive care unit, and a laboratory. These will compromise the quality of care offered to clients with hypertensive disorders and their neonates. Six of the eighteen district hospitals participated in the study, including Peki Government Hospital, Ho Municipal hospital, Aflao Government Hospital, Keta District Hospital, Anfoega Catholic Hospital, and Dzodze Government Hospital in the Volta Region.

~~Study Population and Target~~ Population

The target population for this study included pregnant women with chronic hypertension, gestational hypertension, pre-eclampsia, or eclampsia.

Sampling Technique

The respondents for the sample were chosen using purposeful sampling. Purposive sampling entails the researcher personally selecting or 'handpicking' the sample party (Creswell, 2009). Thus, the researcher selects the sample due to some peculiar characteristics of the group. The characteristic in this study is HDP.

Using a simple random sampling process, the six district hospitals were chosen. The researcher used the lottery approach of simple random sampling. This was done to ensure that each of the 18 district and municipal hospitals had a fair chance of being chosen.

~~Inclusion Criteria~~

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Exclusion Criteria

Women with HDP who had documented medical or obstetric conditions that could affect birth outcomes, such as diabetes, extreme anaemia, or a history of sexually transmitted infection, were removed, as were those whose information could not be given or captured in the data extraction instrument.

Sample Size Determination

The Cochran (1977) formula was used to calculate the sample size N: $N=z^2pq/e^2$ Where z = critical precision, e = desired precision, P = expected prevalence, q= 1-p using 95% confidence interval, and an estimated precision of 5%. With the Volta Regional prevalence of 9.3% of HDP in 2017, $Z=1.96^2$ e=0.05 then n

$= (1.96^2*0.0903*0.907/0.05^2) = 129.6$. The sample size was 130.

Research Instrument

A Data Extraction Form was designed for the collection of the relevant data from clients' folders, antenatal register, and labour ward report book. Trained midwives collected data from facilities from each participant. As an appendix, a copy of the instrument is included.

The instrument had five sections, namely, demographic information, health facility factors, maternal characteristics, obstetric and perinatal outcomes of pregnancy. Section A contained the demographic information that is age (in years), educational background, religion, ethnicity, and income level. Section B presented the health facility factors. These included the presence of an obstetrician, a paediatrician, and an intensive care unit. Section C includes the maternal/obstetric features, which include gestational age at booking, gestational age at delivery, systolic pressure at booking, diastolic pressure at booking, body mass index at booking, and diagnosis. The maternal/obstetric outcomes were listed under section D. This section had the following conditions under pregnancy complications; mode of delivery, haemorrhage, placental abruption PROM, MSAF, renal and hepatic dysfunctions. Management interventions were also captured under this section. Spontaneous vaginal delivery, assisted vaginal delivery, and caesarean section deliveries were also taken into consideration.

Pilot-Testing of Instrument

Connelly (2008) defines pilot research as a small-scale version or trial run conducted before the actual analysis. Pilot testing is done to make sure the data collection instrument is accurate and reliable. A pilot test has the advantage of revealing areas where the main research project might fail, such as where research procedures aren't followed or suggested methods or instruments are insufficient or overly complicated. When the instrument was reviewed by the supervisor and the Ghana Health Service's Institutional Review Board, the material validity of the instrument was identified. According to Roberts et al, (2006), validity of a study is a way of demonstrating and communicating the rightfulness of a research processes and the trustworthiness of research findings The analysis revealed some useful ideas, which were integrated into the final questionnaire. The research instrument was pilot-tested at the Hohoe Government Hospital to ensure its reliability. This hospital was chosen because it shares similar characteristics and facilities with those used for the actual study, as proposed by Schofield and Knauss, (2010). It involved extracting data from the maternity booklets of 20 subjects within two (2) working days on October 1 and October 2, 2019. The 15 minutes estimated time allotted to a client was found to be inadequate since between 30-45 minutes was spent filling each form. Pretested data were analysed with a focus on the internal consistency, Cronbach 's alpha (between 0.72-0.76), inter-item correlation and item to total correlation. The results from the pilot testing revealed that although the form was able to collect several data, some issues about the obstetric outcome were conspicuously missing. As a result, certain elements were added, and the form was deemed suitable for collecting data for the report.

Data Collection Techniques

A data extraction form was used to collect delivery and other clinical data within 24-72 hours post-partum with the assistance of qualified midwives at the clinics. Maternal and perinatal outcomes include form of delivery, placental abruption, amniotic fluid stained with meconium, premature rupture of membranes, gestational age, birth weight, preterm birth, and APGAR score less than 7 at minutes 1 and 5. These data were extracted from all 130 mothers' folders, delivery record book, antenatal register, and labour ward report using the data extraction guide. The respondents for the sample were chosen using purposeful sampling. Purposive sampling entails the researcher personally selecting or 'handpicking' the sample party (Creswell, 2009). Thus, the researcher selects the sample due to some peculiar characteristics of the group. The characteristic in this study is HDP. Using a simple random sampling process, the six district hospitals were chosen. The researcher used the lottery approach of simple random sampling. This was done to ensure that each of the 18 district and municipal hospitals had a fair chance of being chosen.

Unavailability of adequate resources to travel from one hospital to the other to collect data or difficulty in convincing the ward in-charges to asses patient during working hours were challenges experienced during data collection. The study was conducted between September 1, 2019, and July 2021.

Data Analysis

Statistical Package for the Social Sciences (SPSS) version 21.0 was used to clean, code, join, and analyze the data collected. Both descriptive and inferential statistical methods were used to analyze the data. (Multivariable binomial regression analysis) like frequencies, percentages, means, Chi-square test, and odds ratios. Frequencies, percentages were used to analyse research objectives 1, 2, and 3 whilst chi-square test and odd ratios were used to analyse research objectives 4 and 5. After statistical considerations of the variables involved, the study answered all the research questions at a 0.05 significance level. This implies that the study gave only a 5% chance of error, which is statistically insignificant. Also, tables were used to summarize the results of the study.

Inclusion Criteria

Pregnant women with hypertensive disorders who gave birth during the study period and did not have any medical or obstetric condition that would prevent the facilities from reporting birth outcomes were included.

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Exclusion Criteria

Women with HDP who had documented medical or obstetric conditions that could affect birth outcomes, such as diabetes, extreme anaemia, or a history of sexually transmitted infection, were removed, as were those whose information could not be given or captured in the data extraction instrument.

Approval was given by the Ethical committee of the research division of the Ghana Ministry of Health. Service Ethical review board. The management of the individual hospitals gave permission for the data collection. They were The researcher was in charge of this by assuringed hospital executives that the principle of confidentiality and anonymity would be strictly followed. Participants whose records were used in the study had to sign a consent form before they could participate and had the option to withdraw from the study at anytime. they choose to..

Limitation

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RESULTS AND DISCUSSION

Introduction

This chapter presents the results of the analysed data collected from the respondents. The main aim of the study was to determine maternal and perinatal outcomes among pregnant women with hypertensive disorders in the Volta Region.

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~~Maternal and perinatal outcome among pregnant women with hypertensive disorders~~

Variable	Parameters	Frequency (N)	Percentage (%)
Age	<20	16	12.3
	20-25	30	23.1
	26-30	33	25.4
	31-35	23	17.7
	36-40	18	13.8
	>40	10	7.7
Income			
	Low	45	34.6
	Medium	66	50.8
	High	19	14.6
Education			
	No formal education	13	10.0
	Basic	35	26.9
	Secondary	39	30.0
	Tertiary	43	33.1
Marital Status	Married	106	81.5
	Divorced	13	10
	Never Married	11	8.5
Religion			
	Christian	82	63.1
	Islam	31	23.8
	Traditional	8	6.2
	Others	9	6.9
Ethnicity			

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Akan	17	13.1
Ewe	68	52.3
Ga/Dangme	5	3.8
Mole/Dagbani	36	27.7
Others	4	3.1

Table 1: Socio-demographic characteristics of respondents (n=130)

Source: Field Data, 2020

Table 1.0 presents a summary of the results on the socio-demographic characteristics of respondents. The characteristics examined were; age, income, educational level, religion, marital status, and ethnicity. Most of the respondents (102)78.5% of the (130) 100% were 35 years and below whereas (28)21.6% were above 35 years - thus being in the high obstetric risk group. Concerning income, the majority of the respondents (85)65.4% were medium to high-income earners whereas (45)34.6% were low-income earners. A hundred and seventeen (117) representing 90% of the respondents had had at least 9 years of formal education up to the Junior Secondary Level.

For religion, Christians, representing 82(63.1%) were the dominant group whereas Muslims and traditionalists were 31(23.8%) and 8(6.2%) respectively. The majority of the respondents 106(81.5%) were married. In terms of ethnicity, most of the respondents 68(52.3%) were Ewe's and this finding confirms the Ewe dominated nature of the Volta Region.

~~**Maternal and perinatal outcomes among pregnant women with hypertensive disorders.**~~

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Variables (Maternal Outcomes)	Parameters	Frequency (N)	Percentage (%)
Haemorrhage	Anti-partum	13	10
	Intra-partum	50	38.4
	Post-partum	27	20.8
	No	40	30.8
Mode of delivery	Spontaneous vaginal delivery |	53	40.77
	Caesarean section	73	56.15

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	Assisted/forceps delivery	4	3.08
Placenta abruption	Present	17	13.08
	Absent	113	86.92
Meconium-stained amniotic Fluid	Present	32	24.62
	Absent	98	75.38
Pre-mature rupture of membranes	Present	31	23.85
	Absent	99	76.15
MgSO4 intervention	Present	67	51.54
	Absent	63	48.46

Source: Field Data, 2020

Table 2 presents the analysed data on maternal outcomes of respondents studied. The majority of the respondents 73 (56.17%) had caesarean section while spontaneous vaginal delivery and assisted delivery represents 53(40.77%) and 4(3.08%) respectively. For haemorrhage, the majority of the respondents 50(38.4%) experienced intrapartum haemorrhage, 13 (10%) experienced prepartum haemorrhage, 27(20.8%) experienced post-partum haemorrhage and 40(30.8%) experienced no haemorrhage. Meconium-stained amniotic fluid was present in 32 (24.62%) of the deliveries. Out of the 130(100%) respondents 13.08% experienced placental abruption and 23.85% experienced premature rupture of membrane. No patient had a renal or hepatic dysfunction. A majority of 67 (51.54%) required MgSO4 intervention.

Variables (Perinatal Outcomes)	Parameters	Frequency (N)	Percentage (%)

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An APGAR score of at 1 minute	< 7	87	66.92
	≥ 7	43	33.08
An APGAR score of at 5 minutes	< 7	17	13.08
	≥ 7	113	86.92
Low birth weight	Present	43	33.08
	Absent	87	66.92
Required ICU admission	Present	33	25.38
	Absent	97	74.62
Congenital Abnormality	Present	13	10
	Absent	117	90
Survival at birth	Live birth	119	91.54
	Stillbirth	11	8.46

Table 3.0: Perinatal outcomes among respondents (N=130).

Source: Field Data, 2020

Table 3.0 presents the analysed data for perinatal outcomes of respondents studied. The perinatal outcomes that were assessed include; An APGAR below 7 at minute 1 and 5, low birth weight, intensive care unit admission requirement, congenital abnormalities and survival at birth. At minute 1, 87(66.92%) of neonates born to the respondents had an APGAR score below 7. At minute 5, 17(13.08%) of neonates born to the respondents had An APGAR score of below 7, Forty-three (33.08%) of the neonates born to the respondents had low birth weight whereas 33(25.38%) required NICU admissions. Also, 13(10%) of the neonates born to the respondents had congenital abnormalities that can physically be observed. The majority of 119(91.54%) were live births.

~~**Maternal and perinatal outcomes among pregnant women with hypertensive disorders.**~~

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From the results, low income is a risk factor for congenital abnormalities. Marriage is also a risk factor An APGAR score of below 7 at minute 5 and ethnicity (Ewe) is a risk factor for an APGAR score of below 7 at minute 1.

Table 4: Socio-demographic Risk factors of adverse perinatal outcomes

Socio-demographic characteristics	Adverse perinatal outcomes: An APGAR score of at <7 at minute			An APGAR score of <7 at minute 5			Small of gestational age			Congenital abnormality			Small for gestational age			NICU admission requirement		
	p-value	Odd ratio	Confidence interval	p-value	Odd ratio	Confidence interval	p- value	Odd ratio	Confidence Interval	p-value	Odd ratio	Confidence interval	p-value	Odd ratio	Confidence interval	p-value	Odd ratio	Con[illegible] interval
Age	0.085	2.500877	0.881634-7.094086	0.875	1.137215	0.230563-5.609122	0.901	0.524903	0.30924-2.810604	1.787262	0.553	0.262531-12.16736	0.897	1.102806	0.25025-4.859869	1.627553	0.391	0.5[illegible] 5-4.9498
Income	0.689	1.236254	0.438227-3.487519	0.94	1.052136	0.277271-3.992446	0.714	0.639899	0.431469-3.411116	0.047485	0.005	0.005765-0.39112	0.253	2.198057	0.569075-8.490009	1.286743	0.627	0.46[illegible] 3.562033
Education	0.723	1.126785	0.582871-2.178262	0.166	1.883276	0.769627-4.608376	0.234	0.50813	0.770475-2.912326	6.09526	0.006	1.667568-22.27927	0.649	0.805205	0.316774-2.046745	0.586967	0.123	0.29[illegible] 1.156136
Religion	0.219	1.457668	0.799654-2.657142	0.356	1.469907	0.648327-3.332618	0.926	0.284668	0.595745-1.767427	0.505455	0.218	0.170756-1.496198	0.483	1.358126	0.577932-3.191563	1.273254	0.467	0.6[illegible] 2.44295
Marital Status	0.581	0.779388	0.321688-1.888308	0.016	0.341218	0.141966-0.820121	0.453	0.302719	0.326651-1.646998	0.19201	0.045	0.038202-0.965065	0.22	0.562503	0.224371-1.410206	1.317741	0.527	0.5[illegible] 3.100931
Ethnicity	0.021	0.615962	0.408438-0.928928	0.058	0.627426	0.387726-1.015313	0.603	0.170238	0.627952-1.31042	1.218975	0.602	0.579685-2.563292	0.037	0.606758	0.379384-0.970404	0.748811	0.136	0.5[illegible] 1.095132

Table 4 presents a binary logistic regression analysis of socio-demographic risk factors against perinatal outcomes. From table 4, women who are low-income earners were 99.5% likely to produce neonates with congenital abnormalities than women who were high to medium-income earners {P=0.047, OR=0.005 and CI (0.005765-0.39112)}. Also, women who were not married were 66% likely to give birth to babies with An APGAR score of below 7 at minute 5 than women who are married {P=0.016, OR=0.341, CI (0.141966-0.820121)}. Furthermore, Ewe women are 38% likely to give birth to babies with An APGAR score of below 7 at minute 1 than non-Ewe women (P=0.021, OR=0.616, CI (0.408438-0.928928).

From the results, low income is a risk factor for congenital abnormalities. Marriage is also a risk factor An APGAR score of below 7 at minute 5 and ethnicity (Ewe) is a risk factor for an APGAR score of below 7 at minute 1.

Maternal and perinatal outcomes among pregnant women with hypertensive disorders.

Table 5 presents the analysed data of socio-demographic risk factors for maternal outcomes among the respondents. From the results, women below age 35 are 78% more likely to experience premature rupture of membrane during gestation than women who are above age 35{P=0.011, OR=0.216447 CI (0.066632-0.703104)}. Women who were illiterates or do not have formal education were 2.7 times more likely to experience placenta abruption than their educated counterparts {P= 0.05, OR=2.72, CI (0.987535-7.536204)}. Also, women who are Ewes are 1.5 times more likely to experience haemorrhage than non-Ewes {P=0.026, OR=1.5, CI (1.048595- 2.135155)}. Furthermore, women who are Christians are 1.7 times likely to experience haemorrhage than non-Christians {P=0.05. OR=1.726595, CI (0.976691- 3.052275)}.

Finally, married women are 88% likely to experience placenta abruption than women who are not married (P=0.004, OR=0.12, CI (0.028324-0.518262).

Table 5: Socio-demographic Risk factors of adverse maternal outcomes

Socio-demographic characteristics	Adverse Maternal outcomes																	
	Haemorrhage			**Mode of delivery**			**Placenta Abruption**			**Meconium-stained amniotic fluid**			**Pre-matured rapture of membrane**			**MgSO4 intervention**		
	p-value	Odd ratio	Confidence Interval	p-Value	Odd ratio	Confidence Interval	p-value	Odd ratio	Confidence Interval	p- value	Odd ratio	Confidence interval	p- value	Odd ratio	Confidence interval	**p-value**	**Odd ratio**	**Confid interval**
Age	0.985	0.990808	0.379155-2.589182	0.368	0.656544	0.262685-1.64094	0.1	6.649723	0.697076-63.43473	0.47	0.649381	0.201142-2.096502	0.011	0.216447	0.066632-0.703104	1.18	1.833384	0.670 -5.01
Income	0.865	1.087684	0.411995-2.871528	0.492	1.369593	0.557897-3.36224	0.081	0.201003	0.03325-1.215096	0.851	0.892982	0.274318-2.906904	0.198	2.213001	0.660171-7.418343	-1.74	0.420999	0.158 -1.11
Education	0.189	1.510676	0.816108-2.796376	0.812	0.93485	0.537044-1.627324	0.053	2.728051	0.987535-7.536204	0.328	0.681071	0.315578-1.469868	0.055	0.477739	0.224333-1.017391	1.08	1.367417	0.773 -2.41
Religion	0.05	1.726595	0.976691-3.052275	0.673	0.899072	0.548427-1.473909	0.477	0.675959	0.229459-1.99129	0.8	1.089183	0.562915-2.107459	0.209	0.661717	0.347571-1.259796	0.55	1.185709	0.647 -2.17
Marital Status	0.606	0.812895	0.369968-1.786097	0.181	1.618124	0.799148-3.276395	0.004	0.121157	0.028324-0.518262	0.116	0.515211	0.225292-1.178215	0.885	1.063471	0.462519-2.445239	-2.16	0.389862	0.166 0.914
Ethnicity	0.026	1.4963	1.048595-2.135155	0.836	0.966846	0.702283-1.331075	0.114	1.862188	0.862005-4.022885	0.074	0.692261	0.462584-1.035976	0.037	0.606758	0.379384-0.970404	0.82	1.175621	0.799 -1.72

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Table 5 presents the analysed data of socio-demographic risk factors for maternal outcomes among the respondents. From the results, women below age 35 are 78% more likely to experience premature rupture of membrane during gestation than women who are above age 35{P=0.011, OR=0.216447 CI (0.066632-0.703104)}. Women who were illiterates or do not have formal education were 2.7 times more likely to experience placenta abruption than their educated counterparts {P= 0.05, OR=2.72, CI (0.987535-7.536204)}. Also, women who are Ewes are 1.5 times more likely to experience haemorrhage than non-Ewes {P=0.026, OR=1.5, CI (1.048595- 2.135155)}. Furthermore, women who are Christians are 1.7 times likely to experience haemorrhage than non-Christians {P=0.05. OR=1.726595, CI (0.976691- 3.052275)}.

Finally, married women are 88% likely to experience placenta abruption than women who are not married (P=0.004, OR=0.12, CI (0.028324-0.518262).

Maternal and perinatal outcomes among pregnant women with hypertensive disorders.

Table 6 presents the pregnancy complications as risk factors for perinatal outcomes. Pregnant women with gestational hypertension who experienced premature rupture of membrane were 7.6 times more likely to produce babies with An APGAR score of below 7 at minute 1 than those who did not experience premature rupture of membrane {P=0.003, OR=7.602, CI (1.988307- 29.06299)}.

Secondly, pregnant women with gestational hypertension who experienced premature rupture of membrane were 3.2 times more likely to deliver babies who were small for gestational age than those who did not experience premature rupture of membrane {P=0. 0016, OR=3.2, CI (1.245893-8.217542)}.

Thirdly, babies of women who had had premature rupture of membrane were 59.14 times more likely to require intensive care unit admission than those who did not experience premature rupture of membrane {P<0.001, OR= 59.14, CI (10.56621-331.0453)}.

Furthermore, pregnant women with gestational hypertension who experienced meconium-stained amniotic fluid are 1.26 times more likely to deliver babies with An APGAR score of below 7 at minute 5 than pregnant women with gestational hypertension who did not experience meconium-stained amniotic fluid {P=0.006, OR=3.6, CI (1.445738-8.964277)}.

Also, pregnant women with gestational hypertension who experienced meconium-stained amniotic fluid are 98% more likely to deliver stillborn babies than those who did not experience meconium-stained amniotic fluid {P=0.002, OR=0.0243181, CI (0.0023154-0.2554031)}.

Women who experienced haemorrhage were 5.83 times more likely to have babies with An APGAR score of below 7 at minute 1 than their counterparts who did not experience haemorrhage {P=0.003, OR=5.83, CI (1.825552-18.64993)}.

In addition, women who experienced haemorrhage were 84% times more deliver neonates with an APGAR score of below 7 at minute 5 than women who did not experience haemorrhage {P=0.030, OR=0.1650229, CI (0.0323518-0.8417638)}.

Women who have abruption placenta were 4.4 times more likely to have neonates with An APGAR score of below 7 at 1 minute than those who did not experience abruption placenta (P=0.010, OR=4.4, CI=1.425-13.512)}.

Also, women with abruption placenta are 2.2 times more likely to have neonates with an APGAR score of below 7 at minute 5 than those who did not experience abruption placenta {P=0.025 OR= 2.2, CI (1.169911-10.51493)}.

Furthermore, women who experienced abruption placenta are 6.2 times more likely to have neonates who are small for gestational age than those who did not experience abruption placenta {P=0.012 OR= 6.6, CI (1.516988-27.95112)}.

Women who experienced abruption placenta are 86% more likely to have stillborn neonates than those who did not experience abruption placenta {P=0.005, OR= 0.141204, CI (0.0362838-0.5495167)}.

For the mode of delivery, women who had spontaneous vaginal delivery are 69% more likely to have neonates with APGAR score below 7 at minute 1 than those who did not have spontaneous vaginal delivery {P=0.021, OR=0.3115685, CI (0.1153094-0.8418647)}.

Pregnancy Complication	Adverse Perinatal outcomes																	
	APGAR Score < 7 at minute 1 at			APGAR Score < 7 at minutes 5			Small for gestational age			Required ICU admission			Congenital Abnormality			Survival at birth		
	P-value	Odd Ratio	CI	P-value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-value	Odd Ratio	C
Premature Rupture of membrane	0.003	7.60172	1.988307-29.06299	0.888	1.098777	0.2978811-4.052998	0.016	3.199715	1.245893-8.217542	0.000	59.14301	10.56621-331.0453	0.517	1.553425	0.4096473 - 5.89075	0.148	0.3697183	0.095 - 1.42

Meconium – stained amniotic fluid	0.676	1.26	0.4267937-3.71983	0.006	3.6	1.445738-8.964277	0.142	1.850575	0.813295-4.210801	0.182	1.809524	0.7579254-4.320183	0.250	2.031503	0.6072369-6.796366	0.002	0.024318~~1~~	0.002315 2554031
Haemorrhage	0.003	5.83493~~2~~	1.825552-18.64993	0.030	0.165022~~9~~	0.0323518-0.8417638	0.435	1.672618	0.4601199-6.080263	0.195	1.852345	0.0864466-1.646955	0.066	2.530523	0.941576 - 6.80088	0.873	0.8269094	0.079859 8.562254
Abruption placenta	0.010	4.387	1.425-13.512	0.025	2.184017	1.169911-10.51493	0.012	6.511645	1.516988-27.95112	0.318	1.737374	0.5872822-5.139726	0.094	3.290904	0.8164626 - 13.2646	0.005	0.141204	0.03628 - 0.54951
Mode of Delivery	0.021	0.31156~~85~~	0.1153094-0.8418647	0.013	12.2311~~8~~	1.707565-87.61102	0.024	0.281606~~3~~	0.0937472-0.8459141	0.162	0.4743389	0.1667174-1.349573	0.256	2.176432	0.5694619 - 8.318128	0.527	1.901514	0.259694 13.92309

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Furthermore, pregnant women with gestational hypertension who experienced meconium-stained amniotic fluid are 1.26 times more likely to deliver babies with An APGAR score of below 7 at minute 5 than pregnant women with gestational hypertension who did not experience meconium-stained amniotic fluid {P=0.006, OR=3.6, CI (1.445738-8.964277)}.

Also, pregnant women with gestational hypertension who experienced meconium-stained amniotic fluid are 98% more likely to deliver stillborn babies than those who did not experience meconium-stained amniotic fluid {P=0.002, OR=0.0243181, CI (0.0023154-0.2554031)}.

Women who experienced haemorrhage were 5.83 times more likely to have babies with An APGAR score of below 7 at minute 1 than their counterparts who did not experience haemorrhage {P=0.003, OR=5.83, CI (1.825552-18.64993)}.

In addition, women who experienced haemorrhage were 84% times more deliver neonates with an APGAR score of below 7 at minute 5 than women who did not experience haemorrhage {P=0.030, OR=0.1650229, CI (0.0323518-0.8417638)}.

Women who have abruption placenta were 4.4 times more likely to have neonates with An APGAR score of below 7 at 1 minute than those who did not experience abruption placenta (P=0.010, OR=4.4, CI=1.425-13.512)}.

Also, women with abruption placenta are 2.2 times more likely to have neonates with an APGAR score of below 7 at minute 5 than those who did not experience abruption placenta {P=0.025 OR= 2.2, CI (1.169911-10.51493)}.

Furthermore, women who experienced abruption placenta are 6.2 times more likely to have neonates who are small for gestational age than those who did not experience abruption placenta {P=0.012 OR= 6.6, CI (1.516988-27.95112)}.

Women who experienced abruption placenta are 86% more likely to have stillborn neonates than those who did not experience abruption placenta {P=0.005, OR= 0.141204, CI (0.0362838-0.5495167)}.

For the mode of delivery, women who had spontaneous vaginal delivery are 69% more likely to have neonates with APGAR score below 7 at minute 1 than those who did not have spontaneous vaginal delivery {P=0.021, OR=0.3115685, CI (0.1153094-0.8418647)}.

Also, women who delivered spontaneous vaginal delivery are 12.23 times more likely to have neonates with an APGAR score below 7 at minute 5 than their counterparts {P=0.013, OR=12.23118, CI (1.707568-87.61102)}.

Furthermore, pregnant women with HDP who had spontaneous vaginal delivery are 72% times more likely to have neonates who are small-for-gestational-age than their counterparts {P=0.024, OR=0.2816063, CI (0.0937472-0.8459141)}.

Pregnancy Complication	Adverse Perinatal outcomes																	
	APGAR Score < 7 at minute 1 ~~at~~			APGAR Score < 7 at minutes 5			Small for gestational age			Required ICU admission			Congenital Abnormality			Survival at birth		
	P-value	Odd Ratio	CI	P-value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-value	Odd Ratio	C
Premature Rupture of membrane	0.003	7.60172	1.988307-29.06299	0.888	1.09877 ~~7~~	0.2978811-4.052998	0.016	3.199715	1.245893-8.217542	0.000	59.14301	10.56621-331.0453	0.517	1.553425	0.4096473 - 5.89075	0.148	0.3697183	0.095 - 1.42
Meconium – stained amniotic fluid	0.676	1.26	0.4267937-3.71983	0.006	3.6	1.445738-8.964277	0.142	1.850575	0.813295-4.210801	0.182	1.809524	0.7579254-4.320183	0.250	2.031503	0.6072369-6.796366	0.002	0.024318~~1~~	0.0023 25540
Haemorrhage	0.003	5.83493 ~~2~~	1.825552-18.64993	0.030	0.165022 ~~9~~	0.0323518-0.8417638	0.435	1.672618	0.4601199-6.080263	0.195	1.852345	0.0864466-1.646955	0.066	2.530523	0.941576 - 6.80088	0.873	0.8269094	0.0798 8.5622
Abruption placenta	0.010	4.387	1.425-13.512	0.025	2.184017	1.169911-10.51493	0.012	6.511645	1.516988-27.95112	0.318	1.737374	0.5872822-5.139726	0.094	3.290904	0.8164626 - 13.2646	0.005	0.141204	0.036 - 0.549
Mode of Delivery	0.021	0.31156 ~~85~~	0.1153094-0.8418647	0.013	12.2311 ~~8~~	1.707565-87.61102	0.024	0.281606~~3~~	0.0937472-0.8459141	0.162	0.4743389	0.1667174-1.349573	0.256	2.176432	0.5694619 - 8.318128	0.527	1.901514	0.2596 13.923

Table 6: Maternal complications risk factors for perinatal outcomes

Pregnancy Complication	Adverse Perinatal outcomes: APGAR Score < 7 at minute 1 ~~at~~			APGAR Score < 7 at minutes 5			Small for gestational age			Required ICU admission			Congenital Abnormality			Survival at birth		
	P-value	Odd Ratio	CI	P-value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-Value	Odd Ratio	CI	P-value	Odd Ratio	CI
Premature Rupture of membrane	0.003	7.60172	1.988307-29.06299	0.888	1.09877~~7~~	0.2978811-4.052998	0.016	3.199715	1.245893-8.217542	0.000	59.14301	10.56621-331.0453	0.517	1.553425	0.4096473-5.89075	0.148	0.3697183	0.09595 - 1.4244
Meconium – stained amniotic fluid	0.676	1.26	0.4267937-3.71983	0.006	3.6	1.445738-8.964277	0.142	1.850575	0.813295-4.210801	0.182	1.809524	0.7579254-4.320183	0.250	2.031503	0.6072369-6.796366	0.002	0.024318~~1~~	0.002315 2554031
Haemorrhage	0.003	5.83493~~2~~	1.825552-18.64993	0.030	0.165022~~9~~	0.0323518-0.8417638	0.435	1.672618	0.4601199-6.080263	0.195	1.852345	0.0864466-1.646955	0.066	2.530523	0.941576 - 6.80088	0.873	0.8269094	0.079859 8.562254
Abruption placenta	0.010	4.387	1.425-13.512	0.025	2.184017	1.169911-10.51493	0.012	6.511645	1.516988-27.95112	0.318	1.737374	0.5872822-5.139726	0.094	3.290904	0.8164626 - 13.2646	0.005	0.141204	0.03628 - 0.54951
Mode of Delivery	0.021	0.31156~~85~~	0.1153094-0.8418647	0.013	12.2311~~8~~	1.707565-87.61102	0.024	0.281606~~3~~	0.0937472-0.8459141	0.162	0.4743389	0.1667174-1.349573	0.256	2.176432	0.5694619 - 8.318128	0.527	1.901514	0.259694 13.92309

Table 6 presents the pregnancy complications as risk factors for perinatal outcomes. Pregnant women with gestational hypertension who experienced premature rupture of membrane were 7.6 times more likely to produce babies with An APGAR score of below 7 at minute 1 than those who did not experience premature rupture of membrane {P=0.003, OR=7.602, CI (1.988307- 29.06299)}.

Secondly, pregnant women with gestational hypertension who experienced premature rupture of membrane were 3.2 times more likely to deliver babies who were small for gestational age than those who did not experience premature rupture of membrane {P=0. 0016, OR=3.2, CI (1.245893-8.217542)}.

Thirdly, babies of women who had had premature rupture of membrane were 59.14 times more likely to require intensive care unit admission than those who did not experience premature rupture of membrane {P<0.001, OR= 59.14, CI (10.56621-331.0453)}.

Furthermore, pregnant women with gestational hypertension who experienced meconium-stained amniotic fluid are 1.26 times more likely to deliver babies with An APGAR score of below 7 at minute 5 than pregnant women with gestational hypertension who did not experience meconium-stained amniotic fluid {P=0.006, OR=3.6, CI (1.445738-8.964277)}.

Also, pregnant women with gestational hypertension who experienced meconium-stained amniotic fluid are 98% more likely to deliver stillborn babies than those who did not experience meconium-stained amniotic fluid {P=0.002, OR=0.0243181, CI (0.0023154-0.2554031)}.

Women who experienced haemorrhage were 5.83 times more likely to have babies with An APGAR score of below 7 at minute 1 than their counterparts who did not experience haemorrhage {P=0.003, OR=5.83, CI (1.825552-18.64993)}.

In addition, women who experienced haemorrhage were 84% times more deliver neonates with an APGAR score of below 7 at minute 5 than women who did not experience haemorrhage {P=0.030, OR=0.1650229, CI (0.0323518-0.8417638)}.

Women who have abruption placenta were 4.4 times more likely to have neonates with An APGAR score of below 7 at 1 minute than those who did not experience abruption placenta (P=0.010, OR=4.4, CI=1.425-13.512)}.

Also, women with abruption placenta are 2.2 times more likely to have neonates with an APGAR score of below 7 at minute 5 than those who did not experience abruption placenta {P=0.025 OR= 2.2, CI (1.169911-10.51493)}.

Furthermore, women who experienced abruption placenta are 6.2 times more likely to have neonates who are small for gestational age than those who did not experience abruption placenta {P=0.012 OR= 6.6, CI (1.516988-27.95112)}.

Women who experienced abruption placenta are 86% more likely to have stillborn neonates than those who did not experience abruption placenta {P=0.005, OR= 0.141204, CI (0.0362838-0.5495167)}.

For the mode of delivery, women who had spontaneous vaginal delivery are 69% more likely to have neonates with APGAR score below 7 at minute 1 than those who did not have spontaneous vaginal delivery {P=0.021, OR=0.3115685, CI (0.1153094-0.8418647)}.

Also, women who delivered spontaneous vaginal delivery are 12.23 times more likely to have neonates with an APGAR score below 7 at minute 5 than their counterparts {P=0.013, OR=12.23118, CI (1.707568-87.61102)}.

Furthermore, pregnant women with HDP who had spontaneous vaginal delivery are 72% times more likely to have neonates who are small-for gestational-age than their counterparts {P=0.024, OR=0.2816063, CI (0.0937472-0.8459141)}.

1. A majority (63.1%) of our respondents were Christians who belong to a low-risk obstetric age group of 20- 35 years (66.2%), are medium to high-income earners (65.4%), and have had at least 9 years of formal education (90%).
2. The majority (40.77%) delivered by caesarean section. The study also observed a high prevalence of obstetric complications such as meconium-stained amniotic fluid (24.62%), premature rupture of membrane (23.85%), haemorrhage (69.2%), and placenta abruption (13.08%).
3. The study observed a high prevalence of perinatal outcomes such as An APGAR score of below 7 at minute 1(66.92%) and 5(13.08%), low birth weight (33.08%), intensive care unit admission requirement (25.38%), congenital abnormalities (10%) and stillbirth (8.46%).
4. A. Maternal ethnicity is a risk factor for An APGAR score of below 7 at minute 1.

   B. Being single (not married) is a risk factor for an APGAR score of below 7 at minute 5.

C. Low income is a risk factor for congenital abnormalities.

5. A. Maternal ethnicity and religion are risk factors for haemorrhage.

   B. Maternal educational level is a risk factor placenta abruption

   ~~a.~~C. Maternal age (greater than 35 years) is a risk factor for premature rupture of membrane.

6. A. Premature rupture of membrane, haemorrhage, placenta abruption and mode of delivery (spontaneous vaginal delivery) are risk factors for An APGAR score of below 7 at minute 1.

   B. Meconium-stained amniotic fluid, haemorrhage, and placenta abruption are risk factors for An APGAR score of below 7 at minute 5.

   C. Premature rupture of membrane, placenta abruption, and spontaneous vaginal delivery are risk factors for small for gestational age.

   D. Premature rupture of membrane is a risk factor for neonatal intensive care unit admission.

   E. Meconium-stained amniotic fluid is a risk factor for stillbirth.

Discussion

The main findings from the analysed data of the study were discussed in light of current literature. They were compared with similar works of other researchers. The reasoning behind the findings and their relevance were emphasized.

A majority of our respondents were Christians who belong to a low-risk obstetric age group of 20- 35 years, are medium to high-income earners, and had had at least 9 years of formal education (90%). A similar age range for women with HDP has been identified in several other studies (Krieg et al., 2008; Addo et al., 2012; Lo et al., 2013). Maternal ages of below 20 years and more than 35 years have both been identified as risk factors for poor maternal and perinatal outcomes (Jacobson et al., 2004). Fatemeh and colleagues discovered that women under the age of 20 had a higher prevalence of HDP. In the last decade, there has been a widespread movement toward family planning and childbearing at an older age (Krieg et al., 2008). The relationship between advanced age, delayed childbearing, and perinatal outcomes are ambiguous. According to some studies, women with HDP have a lower chance of having a healthy pregnancy (Callaway et al., 2007; Simchen et al., 2006). For similar populations, other researchers have published similar results (Walker, 2016; Fretts et al., 1996; Jacobson et al., 2004). Nonetheless, the majority of studies have looked at pregnancy outcomes in women over the age of 35, and there is a lack of evidence on pregnancy outcomes in women who had children in the 1950s and 1960s (Callaway et al., 2000; Simchen et al., 2006). The current study found that advanced maternal age is a risk factor for PROM, which is consistent with previous findings.

Different ethnic and religious groups are known to have different levels of HDP risk. People of African descent are considered to be more vulnerable (Muatafa et al., 2012). Some studies also confirmed that there is an association between maternal characteristics such as ethnicity and haemorrhage in pregnancy (Bryant et al., 2012; Somer, Sinkey, & Bryant, 2017; Petersen et al., 2019). Other studies also confirmed that there is an association between ethnicity and premature rupture of membrane (Getahun et al., 2010; Menon, Fortunato, Velez Edwards, & Williams, 2010; Grobman et al., 2015). There is however no data to support any variation across ethnic and religious groups in Sub-Saharan Africa and for that matter Ghana.

The present study findings indicated a majority of the women with HDP were Christians who are Ewes. We also observed that ethnicity and the individual's religion were risk factors for haemorrhage. This could be attributed to several factors and practices that vary across ethnic groups. Food taboos have been documented to predispose pregnant women to anaemia which is a risk factor for haemorrhage. Food choices vary across ethnic groups in Ghana. The people of the Volta Region mostly Ewes have unique food choices and food taboos which could play an important role in this finding (Nti, 2017).

The majority (40.77%) delivered by caesarean section. The study also observed a high prevalence of obstetric complications such as MSAF (24.62%), PROM (23.85%), haemorrhage (69.2%), and placenta abruption (13.08%).

The use of a Caesarean section has been linked to the development of HDP. Olusanya et al. (2012) found a high prevalence of 90% in Nigerian women with HDP. Other studies from the sub-region have reported slightly lower figures compared to that of Nigeria. Wolde et al. (2011) and Adu-Bonsafoh et al. (2014) reported 37% and 45% from Ethiopia and Ghana respectively. These findings have been reported from studies that were done in tertiary institutions. The findings from the present study that indicated 45.8% of the deliveries being by caesarean section is consistent with what has been reported by Adu-Bonsafoh et al., (2014) but far lower than what has been reported by Olusanya et al., (2012). The current trend of management of preeclampsia recommends practices that encourage spontaneous vaginal delivery (Magee et al., 2014; Brown et al., 2018). Such practices are likely to be employed in resource poor-settings like the study area where the expertise to carry out caesarean sections may be limited. Others on the other hand have reported higher rates of caesarean section among women with HDP recently (Tuuli et al., 2011; Brown et al., 2018; Ngwenya et al., 2017).

Mitchell and Chandraharan (2018) discovered that serum alanine aminotransferase levels and direct bilirubin levels are related to a high risk of MSAF.

MSAF has been shown to cause complications in 8-20% of pregnancies with its incidence directly proportional to the gestational age at delivery (Sigh et al., 2009; Balchin et al., 2011).

Other confounders in the research setting may have affected the prevalence of 30.6 percent in the current study, which is significantly higher than previously recorded.

The most common neonatal pathology associated with MSAF is respiratory morbidity, and its most severe form, meconium aspiration syndrome (MAS), occurs in 5 to 10% of cases (Bhat et al., 2008; Walsh et al., 2007; Singh et al., 2009). Furthermore, the presence of MSAF is linked to other neonatal complications such as sepsis, seizures, neurologic dysfunction, and prolonged hospitalization in a neonatal intensive care unit.

MSAF was found to be a risk factor for An APGAR score of below 7 at minute 5 and stillbirth in the current analysis. MSAF has been linked to perinatal morbidity in several other studies. (Reddy et al., 2011; Spong, 2013 Linder et al., 2015; Hiersh et al., 2016 & 2017).

In some developing countries, there has been a rise in PPH (Guasch & Gilsanz, 2016). Despite the seriousness of PPH's consequences, clinical management is not evidence-based and differs greatly between centers. (Knight et al., 2009; Fuller & Bucklin, 2010; Kozek-langenecker et al., 2013).

Haemorrhage in general and for that matter PPH is known to be more prevalent and severer in women with HDP due to thrombocytopenia resulting from the pathogenesis of preeclampsia (Brown et al., 2018).

Most of the studies conducted in Ghana paid very little attention to haemorrhage of all categories (Lee et al., 2012; Adu-Bonssaffoh et al., 2015 & 2016; Dassah et al., 2019).

Intrapartum haemorrhage is a severe and potentially fatal condition. Placental abruption, uterine atony, placenta accreta, and genital tract lacerations are all possible causes. The early detection of blood loss, identification of the source of the haemorrhage, and volume resuscitation, including red blood cells and blood products as needed, would result in excellent maternal outcomes (Guasch & Gilsanz, 2016).

The pathogenesis of HDP makes it an increased risk for placental abruption and PROM which are risk factors for Haemorrhage (Mustafa et al., 2012). The current research discovered that haemorrhage is a risk factor for a low APGAR score below 7 at minutes 1 and 5. This should be expected as earlier findings reported adverse perinatal outcomes of haemorrhage (Kozek-langenecker et al., 2013). The present finding supported the findings reported by earlier authorities (Koifman et al., 2008; Bener, Saleh, & Yousafzai, 2012; Ghimire & Ghimire, 2013).

Perinatal morbidity and mortality have been linked to HDP (Olusanya et al., 2011, Mustafa, 2012). Brown et al. (2018) reported HDP contributes 22% of perinatal deaths and it is highest in women with preeclampsia (Magee et al., 2014). Intrauterine growth restriction, birth asphyxia, preterm delivery, and low birth weight are examples of adverse neonatal outcomes that have been linked to high perinatal mortality (Bell, 2010; Gudeta & Regassa, 2019). Perinatal outcomes such as APGAR score below 7 at minute 1 and 5, low birth weight, intensive care unit admission requirements, congenital defects, and stillbirth were all found to be common in this sample. Similar findings have been published in the past (Lee et al., 2012; Gudeta & Regassa, 2019).

Placental insufficiency, placental abruption, and preterm delivery complications have all been linked to poor perinatal outcomes (Shah & Gupta, 2019). The current study's results showed a high rate of preterm and low birth weight babies. In the study environment, these were previously identified as a high-risk population for ICU entry, perinatal morbidity, and mortality (Siakwa et al., 2014). Resource availability for the management of these cases might have contributed to this as posited by Gudeta and Regassa (2019).

To ensure appropriate and comprehensive treatment for women with HDP and their neonates, Sha and Gupta (2019) suggested actively including neonatologists, laboratory personnel, midwives, obstetric surgeons, obstetricians, and paediatricians in the decision-making process. According to a Ghanaian report, important drugs for the management of HDP are only available in 55% of the facilities that needed them (Adu Bonsafoh et al., 2017).

Premature rupture of a pregnant woman's membranes and APGAR score below 7 at minute one among infants born to women with gestational hypertension were linked in this research. Other researchers made a similar finding (Chen et al., 2010; Souza et al., 2016; Asadollahi et al., 2020; Wiegerink et al., 2020). Other research, on the other hand, found no connection between PROM and APGAR score below 7 at minute one in pregnant women with gestational hypertension (Eleie et al., 2010; Razaz et al, 2019; Nojomi, Haghighi, Bijari, Rezvani, & Tabatabaee, 2010; Hashem, & Sarsam, 2019).

Earlier research has linked abruption of the placenta to APGAR score below 7 at minute one, which is consistent with the current findings (Markhus, Rasmussen, Lie & Irgens, 2011; Pariente et al., 2011; Macheku et al., 2015). Other research, on the other hand, found the opposite (Budak et al., 2018; Saquib, Hamza, AlSayed, Saeed, & Abbas, 2020).

The current results show that abruption of the placenta is a risk factor for APGAR score below 7 at minute 5, which is in line with previous research (Furukawa, Sameshima, Ikenoue, Ohashi, & Nagai, 2011; Pariente et al., 2011; Nkwabong, & Tiomela Goula, 2017). Other studies have found no connection between abruption of the placenta and APGAR score below 7 at minute five (Ranta et al., 2011; Rosenberg et al., 2011; Macheku et al., 2015) This is most likely due to disparities in facility personnel for the treatment of these events. The expertise of the professionals to efficiently diagnose and manage these cases is key to a good outcome. The absence of key resources in most of these facilities might have influenced the outcomes significantly.

Some studies have shown that haemorrhage during pregnancy among women with gestational hypertension is correlated with an APGAR score below 7 at minute 5. This is consistent with the findings of the current study (Salustiano, Campos, Ibidi, 2012; Dalili, Sheikh, Hardani, Nili, 2016; Razaz, Cnattingius, & Joseph, 2019). According to other research, haemorrhage during pregnancy is not linked to APGAR score below 7 at 5 minutes (Maghsoudloo, Eftekhar, Ashraf, Khan, & Sereshkeh, 2011; Werner, Janevic, Illuzzi, 2011; Zhu, Tang, Zhao, 2015). What accounted for these inconsistencies has not been firmly established but could be attributed to the efficiency in the management of cases of PROM to reduce its impact on the neonate.

DiGiulio et al. (2010), in their research, found an association between PROM and the delivery of small-for-gestational-age babies in pregnant women with hypertensive disorders during pregnancy. Grisaru-Granovsky et al., 2012, and DeMauro et al., 2019 both recorded this in their studies. They also stated in their research that PROM causes the birth of small-for-gestational-age babies in pregnant women with hypertensive disorders. Other research has found that PROM levels in pregnant women with hypertensive disorders are unrelated to the weight of the babies they deliver (Maheshwari et al., 2012; Abdali et al., 2017; Kurek Eken et al., 2017).

According to various research findings, pregnant women with gestational hypertension who have an abruption placenta during delivery are more likely to have babies who are small for their gestational age (Balchin et al., 2011; Hutton & Thorpe, 2014; Pariente et al., 2015). A connection exists between haemorrhage and anaemia. Anaemic pregnant women are more likely to have babies that are small for their gestational age. Other researchers revealed that gestational hypertensive pregnant women who experienced abruption placenta may not necessarily produce babies who are small for gestational age (Shaikh, Mehmood & Shaikh, 2010).

According to research conducted by Pasquier (2009), Hintz et al. (2010), and Ye et al. (2011), PROM in pregnant women with hypertensive disorders is linked to the need for intensive care unit admission for their infants, which is consistent with the current finding. This however is inconsistent with what has been reported by others (Carter, Xenakis, Holden, & Dudley, 2012; Kurek Eken, 2017; and Saghafi, 2017),

Reasons for the adverse maternal and perinatal outcomes have been attributed to resource challenges for the adequate and timely intervention of complications emanating from HDP which are also major challenges in the study area. Adequate provision of resources for the management of women with HDP would go a long way to improve the care of women with HDP in particular and women's health in general in the region.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter summarizes the research and highlights the most critical results from the data analysis. It also highlights the findings' conclusions, as well as recommendations made to draw attention to certain obstetric and perinatal outcomes among women with HDP in the Volta Region. There are also suggestions for future study.

Summary

The researcher looked at the maternal and perinatal outcomes of women with HDP in Ghana's Volta Region. In addition, socio-demographic, maternal, and perinatal outcomes, as well as socio-demographic risk factors for adverse birth outcomes, were assessed. A total of 130 women with HDP were studied from six district hospitals. Data was extracted from antenatal and delivery records using a data extraction form and analysed using descriptive and inferential statistics, with statistical conclusions drawn at a 5% significant level. The majority of the participants were aged 20-35 years, Ewes, Christians, and the majority had formal education. The women with HDP who were observed had a high rate of adverse maternal and perinatal outcomes. The women with HDP who were observed had a high rate of adverse maternal and perinatal outcomes.

Conclusion

The researcher looked at the obstetric and perinatal results of pregnant women with HDP. In general, pregnant women are subject to a degree of negative obstetric and perinatal outcomes. Pregnant women from district hospitals in the Volta Region seem to be at a higher risk. This is most likely due to a lack of human resources and services to deal with these pregnancies. Reduced maternal and child mortality rates are one of the most important Sustainable Development Goals (SDGs), so care for all pregnant women, particularly those with HDP, must be prioritized.

Certain socio-demographic and maternal factors are risk factors for pregnancy outcomes. Hence, they represent important pointers to possible causes of pregnancy complications, which should be well noted. Mitigating these risks is paramount to having a less complicated and successful delivery. This requires the concerted effort from the pregnant women, husbands, and health care providers. The underlying factor to all these is regular attendance of antenatal clinics, skilled delivery, and effective neonatal care. Having less or no obstetric complications is a shared responsibility between the woman, family, and health care providers.

Recommendations

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For effective implementation of recommendations resulting from this study's findings, all stakeholders must be on board to:

1. Train and deploy obstetricians and paediatricians to the district health facilities in the region to enhance quality of care to women with HDP.
2. Provide improved laboratory services at the district level for effective diagnosis and monitoring of complications of women with HDP and their neonates.
3. Establish well-resourced neonatal intensive care units to manage neonates with complications of HDP.

4. Provide training and retraining for members of the maternal and child health care team with the requisite skills and knowledge to manage women with HDP.
5. Create awareness and educate the general population especially women of reproductive age on HDP and the risk factors for adverse maternal and perinatal outcomes.
6. Investigate resource availability and management practices of care for women with HDP to inform policies on management of HDP in the Ghanaian context.

REFERENCES

Aagaard-Tillery, K. M., Stoddard, G. J., Holmgren, C., Lacoursiere, D. Y., Fraser, A., Mineau, G. P., & Varner, M. W. (2006). Preeclampsia and subsequent risk of cancer in Utah. *American Journal oOf Obstetrics aAnd Gynaecology*, 195(3), 691-699.

Abdali, F., Taghavi, S., Vazifekhah, S., Behzad, M. N., & Attari, M. M. A. (2017). Effect of progesterone on latent phase prolongation in patients with preterm premature rupture of membranes. *Acta Medica Iranica*, 772-778.

Addo, J., Agyemang, C., Smeeth, L., Aikins, A. D. G., Adusei, A. K., & Ogedegbe, O. (2012). A review of population-based studies on hypertension in Ghana. *Ghana Medical Journal*, 46(2), 4-11.

Adu-Bonsaffoh, K., Antwi, D. A., Obed, S. A., & Gyan, B. (2015). Nitric oxide dysregulation in the pathogenesis of preeclampsia among Ghanaian women. *Integrated Blood Pressure Control*, 8, 1.

Adu-Bonsaffoh, K., Ntumy, M. Y., Obed, S. A., & Seffah, J. D. (2017). Perinatal outcomes of hypertensive disorders in pregnancy at a tertiary hospital in Ghana. *BMC Pregnancy and Childbirth*, 17(1), 388. https://doi.org/10.1186/s12884-017-1575-2

Adu-Bonsaffoh, K., Obed, S. A., & Seffah, J. D. (2014). Maternal outcomes of hypertensive disorders in pregnancy at Korle Bu Teaching Hospital, Ghana. *International Journal Oof Gynecology & Obstetrics*, 127(3), 238-242.

Adu-Bonsaffoh, K., Oppong, S. A., Binlinla, G., & Obed, S. A. (2013). Maternal deaths attributable to hypertensive disorders in a tertiary

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hospital in Ghana. *International Journal of Gynecology & Obstetrics*, 123(2), 110-113.

Adu-Bonsaffoh, K., Oppong, S. A., Binlinla, G., & Obed, S. A. (2013). Maternal deaths attributable to hypertensive disorders in a tertiary hospital in Ghana. *International Journal of Gynecology & Obstetrics*, 123(2), 110-113.

Adu-Bonsaffoh, K., Y Ntumy, M., A Obed, S., & Seffah, J. D (2017). Prevalence of Hypertensive Disorders in Pregnancy at Korle-Bu Teaching Hospital in Ghana. *Journal of Gynecology & Neonatal Biology*, 3(2), 1– 6. https://doi.org/10.15436/2380-5595.17.1243

Agatisa, P. K., Ness, R. B., Roberts, J. M., Costantino, J. P., Kuller, L. H., & McLaughlin, M. K. (2004). Impairment of endothelial function in women with a history of preeclampsia: *an indicator of cardiovascular risk.*

Al Riyami, N., Al-Ruheili, I., Al-Shezaw, F., & Al-Khabori, M. (2013). Extreme preterm premature rupture of membranes: risk factors and feto-maternal outcomes. *Oman Medical Journal*, 28(2), 108.

Alfirevic, Z., Milan, S. J., & Livio, S. (2012). Caesarean section versus vaginal delivery for preterm birth in singletons. *Cochrane Database of Systematic Reviews*, (6).

Alfirevic, Z., Milan, S. J., & Livio, S. (2012). Caesarean section versus vaginal delivery for preterm birth in singletons. *Cochrane Database of Systematic Reviews*, (6).

Almqvist, C., Cnattingius, S., Lichtenstein, P., & Lundholm, C. (2012). The impact of birth mode of delivery on childhood asthma and allergic

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diseases–a sibling study. *Clinical & Experimental Allergy*, 42(9), 1369-1376.

Al-Riyami, N., Al-Shezawi, F., Al-Ruheili, I., Al-Dughaishi, T., & Al-Khabori, M. (2013). Perinatal outcome in pregnancies with extreme preterm premature rupture of membranes (Mid-Trimester PROM). *Sultan Qaboos University medical journal*, 13(1), 51.

Alvarez, R. N., & Marin, R. (2001). Severe maternal complications associated with pre-eclampsia: an almost forgotten pathology? *Nefrologia: publicacion oficial de la Sociedad Espanola Nefrologia*, 21(6), 565-573.

American Journal of Physiology-Heart and Circulatory Physiology, 286(4), H1389-H1393.

Ardissone, A. N., Diomel, M., Davis-Richardson, A. G., Rechcigl, K. T., Li, N., Drew, J. C., ... & Neu, J. (2014). Meconium microbiome analysis identifies bacteria correlated with premature birth. *PloS one*, 9(3), e90784.

Armani, M., Gaggiano, C., Dallaglio, S., Romanini, E., Sospiri, C., & Magnani, C. (2013). Are there any strategies to improve neonatal outcomes associated with epidural analgesia in labour? *Acta bio-medica: Atenei Parmensis*, 84(2), 117-123.

Asadollahi, K., Karimi, A., Bagheri-Hosseinabadi, Z., Rezaei, N., Mussavi, M., Daliri, S. (2020). Investigation of the maternal and neonatal factors affecting the An APGAR score newborns: a case-control study. *International Journal of Paediatrics*.

Auger, N., Naimi, A. I., Smargiassi, A., Lo, E., & Kosatsky, T. (2014). *Extreme heat and risk of early delivery among preterm and term pregnancies. Epidemiology*, 344-350.

Backes, C. H., Markham, K., Moorehead, P., Cordero, L., Nankervis, C. A., & Giannone, P. J. (2011). *Maternal Preeclampsia and Neonatal Outcomes*, 2011. https://doi.org/10.1155/2011/214365

Balchin, I., Whittaker, J. C., Lamont, R. F., & Steer, P. J. (2011). Maternal and fetal characteristics associated with meconium-stained amniotic fluid. *Obstetrics & Gynecology*, 117(4), 828-835.

Bell, M. J. (2010). A historical overview of preeclampsia-eclampsia. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 39(5), 510–518. https://doi.org/10.1111/j.1552-6909.2010.01172.x

Bellamy, L., Casas, J. P., Hingorani, A. D., & Williams, D. J. (2007). Pre-eclampsia and risk of cardiovascular disease and cancer in later life: *systematic review and meta-analysis. Bmj*, 335(7627), 974.

Bener, A., Saleh, N. M., & Yousafzai, M. T. (2012). Prevalence and associated risk factors of antepartum haemorrhage among Arab women in an economically fast-growing society. *Nigerian Journal of clinical practice*, 15(2), 185-189.

Berhe, A. K., Kassa, G. M., Fekadu, G. A., & Muche, A. A. (2018). Prevalence of hypertensive disorders of pregnancy in Ethiopia: a systemic review and meta-analysis. *BMC Pregnancy and Childbirth*, 18(1), 34. https://doi.org/10.1186/s12884-018-1667-7

Berkus, M. D., Langer, O., Samueloff, A., Xenakis, E. M., Field, N. T., & Ridgway, L. E. (1994). Meconium-stained amniotic fluid: increased risk

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for the adverse neonatal outcome. *Obstetrics and gynaecology*, 84(1), 115-120.

Bhat, P. B. R., Navada, M. H., Rao, S. V., & Nagarathna, G. (2013). Evaluation of obstetric admissions to intensive care unit of a tertiary referral centre in coastal India. *Indian Journal oOf Critical Care Medicine: Peer-Reviewed, Official Publication oOf Indian Society oOf Critical Care Medicine*, 17(1), 34.

Bhat, R. Y., & Rao, A. (2008). Meconium-stained amniotic fluid and meconium aspiration syndrome: a prospective study. *Annals of tropical paediatrics*, 28(3), 199-203.

Blomquist, J. L., Muñoz, A., Carroll, M., & Handa, V. L. (2018). Association of delivery mode with pelvic floor disorders after childbirth. *Jama*, 320(23), 2438-2447.

Blumenfeld, Y. J., Lee, H. C., Gould, J. B., Langen, E. S., Jafari, A., & El-Sayed, Y. Y. (2010). The effect of preterm premature rupture of membranes on neonatal mortality rates. *Obstetrics & Gynaecology*, 116(6), 1381-1386.

Bodner, K., Wierrani, F., Grünberger, W., & Bodner-Adler, B. (2011). Influence of the mode of delivery on maternal and neonatal outcomes: a comparison between elective caesarean section and planned vaginal delivery in a low risk obstetric population. *Archives of Gynaecology and Obstetrics*, 283(6), 1193-1198.

Bottomley, C., Daemen, A., Mukri, F., Papageorghiou, A. T., Kirk, E., Pexsters, A., & Bourne, T. (2009). Assessing first-trimester growth: the influence of ethnic background and maternal age. *Human Reproduction*, 24(2), 284-290.

Bramham, K., Parnell, B., Nelson-Piercy, C., Seed, P. T., Poston, L., & Chappell, L. C. (2014). Chronic hypertension and pregnancy outcomes: systematic review and meta-analysis. *British Medicine Journal*, 348, g2301.

Bros, S., Chabrot, P., Kastler, A., Ouchchane, L., Cassagnes, L., Gallot, D., & Boyer, L. (2012). Recurrent bleeding within 24 hours after uterine artery embolization for severe postpartum haemorrhage: are there predictive factors? *Cardiovascular and Interventional Radiology*, 35(3), 508-514.

Brown, M. A., Magee, L. A., Kenny, L. C., Karumanchi, S. A., McCarthy, F. P., Saito, S., Ishaku, S. (2018). The hypertensive disorders of pregnancy: ISSHP classification, diagnosis & management recommendations for international practice. *Pregnancy Hypertension*, 13, 291–310. https://doi.org/10.1016/j.preghy.2018.05.004

Brumbaugh, J. E., Colaizy, T. T., Nuangchamnong, N., O'Brien, E. A., Fleener, D. K., Rijhsinghani, A., & Klein, J. M. (2014). Neonatal survival after prolonged preterm premature rupture of membranes before 24 weeks of gestation. *Obstetrics & Gynaecology*, 124(5), 992-998.

Bryant, A., Mhyre, J. M., Leffert, L. R., Hoban, R. A., Yakoob, M. Y., & Bateman, B. T. (2012). The association of maternal race and ethnicity and the risk of postpartum haemorrhage. *Anaesthesia & Analgesia*, 115(5), 1127-1136.

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Budak, M. Ş., Şentürk, M. B., Çakmak, Y., Polat, M., Doğan, O., & Pulatoğlu, (2018). Risk Factors and Outcomes of Placental Abruption: Evaluation of 53 Cases. *Haseki Tip Bulteni-Medical Bulletin Of Haseki*, 56(3), 203-208.

Buga, G. A., & Lumu, S. B. (1999). Hypertensive disorders of pregnancy at Umtata General Hospital: perinatal and maternal outcomes. *East African Medical Journal*, 76(4), 217-222.

C. (2020). Intrapartum and neonatal mortality in low-risk term women in midwife-led care and obstetrician-led care at the onset of labor: A national matched cohort study. *Acta Obstetricia et Gynecologica Scandinavica*, 99(4), 546-554.

Callaway, L. K., McIntyre, H. D., O'Callaghan, M., Williams, G. M., Najman, J. M., & Lawlor, D. A. (2007). The association of hypertensive disorders of pregnancy with weight gain over the subsequent 21 years: findings from a prospective cohort study. *American Journal oOf Epidemiology*, 166(4), 421-428.

Campbell, D. M., MacGillivray, I. A. N., & Carr-Hill, R. O. Y. (1985). Preeclampsia in a second pregnancy. BJOG: *An International Journal of Obstetrics & Gynaecology*, 92(2), 131-140.

Carolan, M. (2013). Maternal age ≥ 45 years and maternal and perinatal outcomes: a review of the evidence. *Midwifery*, 29(5), 479-489.

Carson, E., Sharmin, S., Maier, A. B., & Meij, J. J. (2018). Comparing indigenous mortality across urban, rural, and very remote areas: a systematic review and meta-analysis. *International Health*, 10(4), 219-227.

Carter, M. F., Xenakis, E., Holden, A., & Dudley, D. (2012). Neonatal intensive care unit admissions and their associations with late preterm birth and maternal risk factors in a population-based study. *The Journal of Maternal-foetal & Neonatal Medicine*, 25(4), 343-345.

Cetinkaya, S. E., Okulu, E., Soylemez, F., Akin, İ. M., Sahin, S., Akyel, T., ... Koc, A. (2015). Perinatal risk factors and mode of delivery are associated with mortality in very low birth weight infants. *The Journal of Maternal-foetal & Neonatal Medicine*, 28(11), 1318-1323.

Chalabi, H. A., Abu-Heija, A. T., E-Sunna, E., Zayed, F., & Badra, l. (1999). pregnancies-a clinical view. *Journal of Obstetrics and Gynaecology*, 19(3), 262-264.

Chambers, J. C., Eda, S., Bassett, P., Karim, Y., Thompson, S. G., Gallimore, J. R., & Kooner, J. S. (2001). C-reactive protein, insulin resistance, central obesity, and coronary heart disease risk in Indian Asians from the United Kingdom compared with European whites. *Circulation*, 104(2), 145-150.

Chen, M., Mcniff, C., Madan, J., Goodman, E., Davis, J. M., & Dammann, O. (2010). Maternal obesity and neonatal An APGAR score ofs. *The Journal of Maternal-foetal & Neonatal Medicine*, 23(1), 89-95.

Chettri, S., Adhisivam, B., & Bhat, B. V. (2015). Endotracheal suction for non-vigorous neonates born through a meconium-stained amniotic fluid: a randomized controlled trial. *The Journal of Paediatrics*, 166(5), 1208-1213.

Cohn, B. A., Cirillo, P. M., Christianson, R. E., van den Berg, B. J., & Siiteri, P. K. (2001). Placental characteristics and reduced risk of maternal breast cancer. *Journal of the National Cancer Institute*, 93(15), 1133-1140.

Connelly, L. M. (2008). Pilot studies. *Medsurg Nursing*, 17(6), 411.

Crentsil, J. E. (2017). *A Comparative Study of The Cost of Complementary/Alternative Medicine (CAM) And Conventional Treatment of Hypertension at The Ledzokuku Krowor Municipal Assembly (LEKMA) Hospital*, Accra (Doctoral dissertation, University of Ghana).

Creswell, J. W. (2009). *Mapping the field of mixed methods research*, 95-108.

Cruz, M. O., Gao, W., & Hibbard, J. U. (2012). What is the optimal time for delivery in women with gestational hypertension? *American Journal ~~O~~of Obstetrics ~~A~~and Gynecology*, 207(3), 214-e1.

Dalili, H., Sheikh, M., Hardani, A. K., Nili, F., Shariat, M., & Nayeri, F. (2016). Comparison of the combined versus conventional An APGAR score ofs in predicting adverse neonatal outcomes. *PloS one*, 11(2), e0149464.

Danso, K. A., & Opare-Addo, H. S. (2010). *Challenges associated with* development, 64(2), 129-143.

Dars, S., Malik, S., Samreen, I., & Kazi, R. A. (2014). Maternal morbidity and perinatal outcome in preterm premature rupture of membranes before 37 weeks gestation. *Pakistan Journal o~~O~~f Medical Sciences*, 30(3), 626.

Dassah, E. T., Kusi-Mensah, E., Morhe, E. S., & Odoi, A. T. (2019). Maternal and perinatal outcomes among women with hypertensive disorders in pregnancy in Kumasi, Ghana. *PloS one*, 14(10).

Davis, G. K., Mackenzie, C., Brown, M. A., Homer, C. S., Holt, J., McHugh, L., & Mangos, G. (2007). Predicting transformation from gestational hypertension to preeclampsia in clinical practice: a possible role for 24-hour ambulatory blood pressure monitoring. *Hypertension in Pregnancy*, 26(1), 77-87.

DeMauro, S. B., Jensen, E. A., Bann, C. M., Bell, E. F., Hibbs, A. M., Hintz, S. R., & Lorch, S. A. (2019). Home oxygen and 2-year outcomes of preterm infants with bronchopulmonary badysplasia. *Paediatrics*, 143(5).

Demirkiran, O., Dikmen, Y., Utku, T., & Urkmez, S. (2003). Critically ill obstetric patients in the intensive care unit. *International Journal of Obstetric Aanaesthesia*, 12(4), 266-270.

Dennis, A. T., & Castro, J. M. (2014). Echocardiographic differences between preeclampsia and peripartum cardiomyopathy. *International Journal oOf Obstetric Anaesthesia*, 23(3), 260-266.

DiGiulio, D. B., Gervasi, M. T., Romero, R., Vaisbuch, E., Mazaki-Tovi, S., Kusanovic, J. P., & Chaiworapongsa, T. (2010). *Microbial Invasion Development*, 64(2), 129-143.

Downes, K. L., Grantz, K. L., & Shenassa, E. D. (2017). Maternal, labour, delivery, and perinatal outcomes associated with placental abruption: a systematic review. *American Journal Oof Perinatology*, 34(10), 935.

Downes, K. L., Shenassa, E. D., & Grantz, K. L. (2017). Neonatal outcomes associated with placental abruption. *American Journal oOf Epidemiology*, 186(12), 1319-1328.

Duley, L., Meher, S., & Abalos, E. (2006). Management of pre-eclampsia. *British Medicine Journal*, 332(7539), 463-468.

Durie, D. E., Sciscione, A. C., Hoffman, M. K., Mackley, A. B., & Paul, D. A. (2011). Mode of delivery and outcomes in very-low-birth-weight infants in the vertex presentation. *American Journal of Perinatology*, 28(03), 195-200.

Edmonds, B. T., McKenzie, F., Macheras, M., Srinivas, S. K., & Lorch, S. A. (2015). Morbidity and mortality associated with mode of delivery for breech periviable deliveries. *American Journal of Obstetrics and Gynaecology*, 213(1), 70-e1.

Effect of maternal diabetes on the embryo, foetus, and children: congenital anomalies, genetic and epigenetic changes and developmental outcomes. *Birth Defects Research Part C: Embryo Today: Reviews*, 105(1), 53-72.

Eiland, E., Nzerue, C., & Faulkner, M. (2012). Preeclampsia 2012. *Journal of Pregnancy*. https://doi.org/10.1155/2012/586578

Eitlin, J., Di Lallo, D., Blondel, B., Weber, T., Schmidt, S., Künzel, W., & MOSAIC Research Group. (2010). Variability in caesarean section rates for very preterm births at 28–31 weeks of gestation in 10 European regions: results of the MOSAIC project. *European Journal of Obstetrics Gynaecology and Reproductive Biology*, 149(2), 147-152.

Eleje, G. U., Ezebialu, I. U., Umeobika, J. C., Eke, A. C., Ezeama, C. O., & Okechukwu, Z. C. (2010). Pre-labor rupture of membranes at term: a review of management in a health care institution. *Afrimedic Journal*, 1(2), 10-14.

Erdemir, G., Kultursay, N., Calkavur, S., Zekioğlu, O., Koroglu, O. A., Cakmak, B., & Sagol, S. (2013). Histological chorioamnionitis: effects on premature delivery and neonatal prognosis. *Paediatrics & Neonatology*, 54(4), 267-274.

Eun, S., Lee, J. M., Yi, D. Y., Lee, N. M., Kim, H., Yun, S. W., ... & Chae, S. A. (2016). Assessment of the association between An APGAR score ofs and seizures in infants below 1-year-old. *Seizure*, 37, 48-54.

Evers, E. C., McDermott, K. C., Blomquist, J. L., & Handa, V. L. (2014). Mode of delivery and subsequent fertility. *Human Reproduction*, 29(11), 2569-2574.

Fajar, J. K., Andalas, M., & Harapan, H. (2017). Comparison of An APGAR score ofs in breech presentations between vaginal and caesarean delivery. *Tzu-Chi Medical Journal*, 29(1), 24.

Fisher, S. J. (2015). Why is placentation abnormal in preeclampsia? *American Journal of Obstetrics and Gynecology*. Elsevier Inc. https://doi.org/10.1016/j.ajog.2015.08.042

Fretts, R. C., Schmittdiel, J., McLean, F. H., Usher, R. H., & Goldman, M. B. (1996). Increased Maternal Age and the Risk of foetal Death. *Obstetrical & gynaecological survey*, 51(4), 221-223.

Fuller, A. J., & Bucklin, B. A. (2010). Blood product replacement for postpartum haemorrhage. *Clinical obstetrics and gynaecology*, 53(1), 196-208.

Furukawa, S., Sameshima, H., Ikenoue, T., Ohashi, M., & Nagai, Y. (2011). Is the perinatal outcome of placental abruption modified by clinical presentation? *Journal of pregnancy*, 2011.

Formatted: Default Paragraph Font, Font: (Default) Calibri, 10 pt, Font color: Text 1

Formatted: Font color: Text 1

Gaber, L. W., Spargo, B. H., & Lindheimer, M. D. (1994). 12 Renal pathology in pre-eclampsia. *Bailliere's clinical obstetrics and gynaecology*, 8(2), 443-468.

Garg, A., Toy, S., Tripodis, Y., Silverstein, M., & Freeman, E. (2015). Addressing social determinants of health at well-child care visits: A cluster RCT. *Paediatrics*, 135(2), e296–e304. https://doi.org/10.1542/peds.2014-2888

Garovic, V. D., & Hayman, S. R. (2007). Hypertension in pregnancy: an emerging risk factor for cardiovascular disease. *Nature clinical practice Nephrology*, 3(11), 613-622.

Geenes, V., Chappell, L. C., Seed, P. T., Steer, P. J., Knight, M., & Williamson, C. (2014). Association of severe intrahepatic cholestasis of pregnancy with adverse pregnancy outcomes: a prospective population-based case-control study. *Hepatology*, 59(4), 1482-1491.

Getahun, D., Strickland, D., Ananth, C. V., Fassett, M. J., Sacks, D. A., Kirby, R. S., & Jacobsen, S. J. (2010). Recurrence of preterm premature rupture of membranes in relation to the interval between pregnancies. *American Journal of Obstetrics and Gynaecology*, 202(6), 570-e1.

Gezer, A., Parafit-Yalciner, E., Guralp, O., Yedigoz, V., Altinok, T., & Madazli, R. (2013). Neonatal morbidity mortality outcomes in pre-term premature rupture of membranes. *Journal of Obstetrics and Gynaecology*, 33(1), 38-42.

Ghi, T., Maroni, E., Arcangeli, T., Alessandroni, R., Stella, M., Youssef, A., & Pelusi, G. (2010). Mode of delivery in the preterm gestation and maternal and neonatal outcome. *The Journal of Maternal-foetal & Neonatal Medicine*, 23(12), 1424-1428.

Ghimire, R. H., & Ghimire, S. (2013). Maternal and foetal Outcome Following Severe Anaemia In Pregnancy: Results From Nobel Medical College Teaching Hospital, Biratnagar, Nepal. *Journal of Nobel Medical College*, 2(1), 22-26.

Glantz, A., Marschall, H. U., & Mattsson, L. Å. (2004). Intrahepatic cholestasis of pregnancy: relationships between bile acid levels and fetal complication rates. *Hepatology*, 40(2), 467-474.

Goker, A., Yanikkerem, E., Demet, M. M., Dikayak, S., Yildirim, Y., & Koyuncu, F. M. (2012). Postpartum depression is mode of delivery a risk factor. *International Scholarly Research Notices*, 2012.

Grisaru-Granovsky, S., Reichman, B., Lerner-Geva, L., Boyko, V., Hammerman, C., Samueloff, A. & Israel Neonatal Network. (2012). Mortality and morbidity in preterm small-for-gestational-age infants: a population-based study. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynaecology*, 206(2), 150-e1.

Grobman, W. A., Bailit, J. L., Rice, M. M., Wapner, R. J., Reddy, U. M., Varner, M. W., & Tita, A. T. (2015). Racial and ethnic disparities in maternal morbidity and obstetric care. *Obstetrics and ~~g~~Gynaecology*, 125(6), 1460.

Guasch, E., & Gilsanz, F. (2016). Treatment of postpartum haemorrhage with blood products in a tertiary hospital: outcomes and predictive factors associated with severe haemorrhage. *Clinical and Applied Thrombosis/Haemostasis*, 22(7), 685-692.

Gudayu, T. W. (2017). Proportion and factors associated with low fifth minute An APGAR score of among singleton new-born babies in Gondar University Referral Hospital; North West Ethiopia. *African ~~h~~Health ~~s~~Sciences*, 17(1), 1-6.

Gudeta, T. A., & Regassa, T. M. (2019). Pregnancy Induced Hypertension and Associated Factors among Women Attending Delivery Service at Mizan-Tepi University Teaching Hospital, Tepi General Hospital, and Gebretsadik Shawo Hospital, Southwest, Ethiopia. *Ethiopian Journal of Health Sciences*, 29(1), 831–840. https://doi.org/10.4314/ejhs.v29i1.4

Gupta, N. (2016). Antepartum haemorrhage. *In Principles of Critical Care in Obstetrics.* Springer, New Delhi. (pp. 281-301).

Hashem, A., & Sarsam, S. D. (2019). The impact of incidental ultrasound finding of subchorionic and retroplacental hematoma in early pregnancy. *The Journal of Obstetrics and Gynaecology of India*, 69(1), 43-49.

Heard, E., Whitfield, K. E., Edwards, C. L., Bruce, M. A., & Beech, B. M. (2011). Mediating effects of social support on the relationship among perceived stress, depression, and hypertension in African Americans. *Journal of the National Medical Association*, 103(2), 116-122.

Hendler, I., Blackwell, S. C., Mehta, S. H., Whitty, J. E., Russell, E., Sorokin, Y., & Cotton, D. B. (2005). The levels of leptin, adiponectin, and resistin *First-trimester vaginal bleeding and complications later in pregnancy*.

Hibbard, J. U., Wilkins, I., Sun, L., Gregory, K., Haberman, S., Hoffman, M., & Burkman, R. (2010). Respiratory morbidity in late preterm births. JAMA: *the ~~j~~Journal of the American Medical Association*, 304(4), 419.

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Hiersch, L., Krispin, E., Aviram, A., Wiznitzer, A., Yogev, Y., & Ashwal, E. (2016). Effect of meconium-stained amniotic fluid on perinatal complications in low-risk pregnancies at term. *American ~~j~~Journal of ~~p~~Perinatology*, 33(04), 378-384.

Hiersch, L., Krispin, E., Linder, N., Aviram, A., Gabbay-Benziv, R., Yogev, Y., & Ashwal, E. (2017). Meconium-stained amniotic fluid and neonatal morbidity in low-risk pregnancies at term: the effect of gestational age. *American ~~j~~Journal of ~~p~~Perinatology*, 34(02), 183-190.

Hintz, S. R., Bann, C. M., Ambalavanan, N., Cotten, C. M., Das, A., & Higgins, R. D. (2010). Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. Predicting time to hospital discharge for extremely preterm infants. *Paediatrics*, 125(1), 146-154.

Hofmeyr, G. J., Haws, R. A., Bergström, S., Lee, A. C., Okong, P., Darmstadt, G. L., & Lawn, J. E. (2009). Obstetric care in low-resource settings: what, who, and how to overcome challenges to scale up. *International Journal of Gynaecology & Obstetrics*, 107, S21-S45.

Hua, X., Zhang, J., Guo, Y., Shen, M., Gaudet, L., Janoudi, G., & Wen, S. W. (2016). Effect of folic acid supplementation during pregnancy on gestational hypertension/preeclampsia: A systematic review and meta-analysis. *Hypertension in ~~p~~Pregnancy*, 35(4), 447-460.

Hübner, M. E., Ramirez, R., Burgos, J., Dominguez, A., & Tapia, J. L. (2016). Mode of delivery and antenatal steroids and their association with survival and severe intraventricular haemorrhage in very low birth weight infants. *Journal of Perinatology*, 36(10), 832-836.

Hutcheon, J. A., Lisonkova, S., & Joseph, K. S. (2011). Epidemiology of pre-eclampsia and the other hypertensive disorders of pregnancy. *Best practice & research Clinical Oobstetrics & Ggynaecology*, 25(4), 391-403

Hutton, E. K., & Thorpe, J. (2014). Consequences of meconium-stained amniotic fluid: what does the evidence tell us. *Early human dDevelopment*, 90(7), 333-339.

Hypertensive disease during pregnancy in low-income countries. *International Journal of Gynaecology & Obstetrics*, 110(1), 78-81.

Iliodromiti, S., Mackay, D. F., Smith, G. C., Pell, J. P., & Nelson, S. M. (2014). An APGAR score of and the risk of cause-specific infant mortality: a population-based cohort study. *The Lancet*, 384(9956), 1749-1755.

in normal weight, overweight, and obese pregnant women with and without preeclampsia. *American Jjournal of Oobstetrics and Ggynaecology*, 193(3), 979-983.

Ishaku, S. (2018). Hypertensive disorders of pregnancy: ISSHP classification, diagnosis, and management recommendations for international practice. *Hypertension*, 72(1), 24-43.

Jacobson, S. W., Jacobson, J. L., Sokol, R. J., Chiodo, L. M., & Corobana, R. (2004). Maternal age, alcohol abuse history, and quality of parenting as intellectual function. Alcoholism: *Clinical and Experimental Research*, 28(11), 1732-1745.

Jaiswal, A. A., Hariharan, C., & Dewani, D. K. (2017). Study of maternal and foetal outcomes in premature rupture of membrane in central rural India. *Int J Reprod Contracept Obstet Gynecol*, 6(4), 1409-12.

Jensen, E. A., Foglia, E. E., Dysart, K. C., Simmons, R. A., Aghai, Z. H., Cook, A., & DeMauro, S. B. (2019). Adverse effects of small for gestational age differ by gestational week among very preterm infants. *Archives of Disease in Childhood-foetal and Neonatal Edition*, 104(2), F192-F198.

Jeyabalan, A. (2013). Epidemiology of preeclampsia: impact of obesity.

Jin, J., Pan, S. L., Huang, L. P., Yu, Y. H., Zhong, M., & Zhang, G. W. (2015). Risk factors for adverse fetal outcomes among women with early-versus late-onset intrahepatic cholestasis of pregnancy. *International Journal of Gynecology & Obstetrics*, *128*(3), 236-240.

Kaaja, R. J., & Pöyhönen-Alho, M. K. (2006). Insulin resistance and sympathetic overactivity in women. *Journal of Hhypertension*, 24(1), 131-141.

Kaissling, B., & Le Hir, M. (2008). The renal cortical interstitium: morphological and functional aspects. *Histochemistry and Ccell Bbiology*, 130(2), 247-262.

Kalimba, E. M., & Ballot, D. E. (2013). Survival of extremely low-birth-weight infants. *South African Journal of Child Health*, 7(1), 13-18.

Kattah, A. G., Suarez, M. L. G., Milic, N., Kantarci, K., Zeydan, B., Mosley, T., & Garovic, V. D. (2018). Hormone Therapy and Urine Protein Excretion: A Multi-racial Cohort Study, Systematic Review and Meta-Analysis. *Menopause* (New York, NY), 25(6), 625.

Kawakita, T., Parikh, L. I., Ramsey, P. S., Huang, C. C., Zeymo, A., Fernandez, M., & Iqbal, S. N. (2015). Predictors of adverse neonatal outcomes in intrahepatic cholestasis of pregnancy. *American Jjournal of Oobstetrics and Ggynaecology*, 213(4), 570-e1.

Kenyon, S., Taylor, D. J., Tarnow-Mordi, W. O., & Oracle Collaborative Group. (2002). Oracle—antibiotics for preterm prelabour rupture of the membranes: short-term and long-term outcomes. *Acta Pædiatrica*, 91, 12-15.

Khatun, M. H. A., Arzu, J., Haque, E., Kamal, M. A., Al Mamun, M. A., Khan, M. F. H., & Hoque, M. M. (2009). foetal outcome in deliveries with meconium-stained liquor. *Bangladesh Journal of Child Health*, 33(2), 41-45.

Khazaei, S., Jenabi, E., & Veisani, Y. (2019). The association of Mullerianomalies and placenta abruption: a meta-analysis. *The Journal of Maternal-foetal & Neonatal Medicine*, 32(3), 512-516.

Khodayar-Pardo, P., Mira-Pascual, L., Collado, M. C., & Martínez-Costa, C. (2014). Impact of lactation stage, gestational age and mode of delivery on breast milk microbiota. *Journal of Perinatology*, 34(8), 599-605.

Kikkawa, F. (2013). Management of eclampsia and stroke during pregnancy. *Neurologia Mmedico-chirurgica*, 53(8), 513-519. https://doi.org/10.1111/nure.12055

Kim, M. M., Barnato, A. E., Angus, D. C., Fleisher, L. F., & Kahn, J. M. (2010). The effect of multidisciplinary care teams on intensive care unit mortality. *Archives of Iinternal Mmedicine*, 170(4), 369-376.

Kintiraki, E., Papakatsika, S., Kotronis, G., Goulis, D., & Kotsis, V. (2015). Pregnancy-Induced hypertension. *HORMONES*, 14(2), 211–223. https://doi.org/10.14310/horm.2002.1582

Knight, M., Callaghan, W. M., Berg, C., Alexander, S., Bouvier-Colle, M. H., Ford, J. B., & Oats, J. (2009). Trends in postpartum haemorrhage in high resource countries: a review and recommendations from the International Postpartum Haemorrhage Collaborative Group. *BMC ~~p~~Pregnancy and ~~c~~Childbirth*, 9(1), 55.

Knol, H. M., Schultinge, L., Veeger, N. J., Kluin-Nelemans, H. C., Erwich, J. J., & Meijer, K. (2012). The risk of postpartum hemorrhage in women using high dose of low-molecular-weight heparins during pregnancy. *Thrombosis ~~r~~Research*, 130(3), 334-338.

Koifman, A., Levy, A., Zaulan, Y., Harlev, A., Mazor, M., Wiznitzer, A., & Sheiner, E. (2008). The clinical significance of bleeding during the second trimester of pregnancy. *Archives of ~~g~~Gynaecology and ~~o~~Obstetrics*, 278(1), 47-51.

Kozek-Langenecker, S. A., Afshari, A., Albaladejo, P., Santullano, C. A. A., De Robertis, E., Filipescu, D. C. & Wyffels, P. (2013). Management of severe perioperative bleeding: guidelines from the European Society of Anaesthesiology. *European Journal of Anaesthesiology* (EJA), 30(6), 270-382.

Krieg, S. A., Henne, M. B., & Westphal, L. M. (2008). Obstetric outcomes in donor oocyte pregnancies compared with advanced maternal age in vitro fertilization pregnancies. *Fertility and ~~s~~Sterility*, 90(1), 65-70.

Krieger, Y., Horev, A., Wainstock, T., Sheiner, E., & Walfisch, A. (2020). Meconium-stained amniotic fluid as a protective factor against childhood dermatitis and skin rash-related hospitalization in the offspring–a population-based cohort analysis. *Journal of the European Academy of Dermatology and Venereology*, 34(2), 319-324.

Kurek Eken, M., Tüten, A., Özkaya, E., Karatekin, G., & Karateke, A. (2017). Major determinants of survival and length of stay in the neonatal intensive care unit of new-borns from women with premature preterm rupture of membranes. *The Journal of Maternal-foetal & Neonatal Medicine*, 30(16), 1972-1975.

Kwak, D. W., Hwang, H. S., Kwon, J. Y., Park, Y. W., & Kim, Y. H. (2014). Co-infection with vaginal Ureaplasma urealyticum and Mycoplasma hominis increases adverse pregnancy outcomes in patients with preterm labour or preterm premature rupture of membranes. *The Journal of Maternal-foetal & Neonatal Medicine*, 27(4), 333-337.

Lancet Physical Activity Series Working Group. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: analysis of burden of disease and life expectancy. *The Lancet*, 380(9838), 219-229.

Lee, A. C., Katz, J., Blencowe, H., Cousens, S., Kozuki, N., Vogel, J. P., & Christian, P. (2013). National and regional estimates of term and preterm babies born small for gestational age in 138 low-income and middle-income countries in 2010. *The Lancet Global Health*, 1(1), e26-e36.

Lee, A. C., Lawn, J. E., Cousens, S., Kumar, V., Osrin, D., Bhutta, Z. A., & Darmstadt, G. L. (2009). Linking families and facilities for care at birth: what works to avert intrapartum-related deaths. *International Journal of Gynaecology & Obstetrics*, 107, S65-S88.

Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., Katzmarzyk, P. T., Liu, Q., Yang, H., Sun, X., & Li, G. (2019). Risk factors and complications of small for gestational age. *Pakistan ~~j~~Journal of ~~m~~Medical ~~sc~~Sciences*, 35(5), 1199.

Lee, S. E., Romero, R., Park, C. W., Jun, J. K., & Yoon, B. H. (2008). The frequency and significance of intraamniotic inflammation in patients with cervical insufficiency. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynaecology*, 198(6), 633-e1.

Linder, N., Hiersch, L., Fridman, E., Lubin, D., Kouadio, F., Berkowicz, N., & Melamed, N. (2015). The effect of gestational age on neonatal outcome in low-risk singleton term deliveries. *The Journal of Maternal-foetal & Neonatal Medicine*, 28(3), 297-302.

Lindheimer, M. D., Taler, S. J., & Cunningham, F. G. (2009). ASH position paper: hypertension in pregnancy. *The Journal of Clinical Hypertension*, 11(4), 214-225.

Livingston, J. C., Chin, R., Haddad, B., McKinney, E. T., Ahokas, R., & Sibai, B. M. (2000). Reductions of vascular endothelial growth factor and placental growth factor concentrations in severe preeclampsia. *American journal of obstetrics and gynaecology*, 183(6), 1554-1557.

Lo, J. C., Darracq, M. A., & Clark, R. F. (2014). A review of methylene blue treatment for cardiovascular collapse. *The Journal of ~~e~~Emergency ~~m~~Medicine*, 46(5), 670-679.

Lo, J. C., Sinaiko, A., Chandra, M., Daley, M. F., Greenspan, L. C., Parker, E. D., & O'Connor, P. J. (2013). Prehypertension and hypertension in community-based paediatric practice. *Paediatrics*, 131(2), e415-e424.

Locatelli, A., Vergani, P., Toso, L., Verderio, M., Pezzullo, J. C., & Ghidini, A. (2004). Perinatal outcome associated with oligohydramnios in uncomplicated term pregnancies. *Archives of Gynaecology and Obstetrics*, 269(2), 130-133.

Logan, A. G. (2014). Diagnosis, Evaluation, and Management of the Hypertensive Disorders of Pregnancy: Executive Summary. *Journal of Obstetrics and Gynaecology Canada*, 36(5), 416–438. https://doi.org/10.1016/S1701-2163(15)30588-0

Lustig, R. H., Mietus-Snyder, M. L., Bacchetti, P., Lazar, A. A., Velasquez-Mieyer, P. A., & Christensen, M. L. (2006). Insulin dynamics predict body mass index and z-score response to insulin suppression or sensitization pharmacotherapy in obese children. *The Journal of Paediatrics*, 148(1), 23-29.

Lykke, J. A., Dideriksen, K. L., Lidegaard, Ø., & Langhoff-Roos, J. (2010).

M. (2005). Hypertensive disorders in pregnancy: a population-based study. *Medical Journal of Australia*, 182(7), 332-335.

Macheku, G. S., Philemon, R. N., Oneko, O., Mlay, P. S., Masenga, G., Obure, J., & Mahande, M. J. (2015). Frequency, risk factors and feto-maternal outcomes of abruptio placentae in Northern Tanzania: a registry-based retrospective cohort study. *BMC Pregnancy and Childbirth*, 15(1), 242.

MacKay, A. P., Berg, C. J., & Atrash, H. K. (2001). Pregnancy-related mortality from preeclampsia and eclampsia. *Obstetrics & Gynaecology*, 97(4), 533-538.

Maged, A. M., Elsherief, A., Hassan, H., Salaheldin, D., Omran, K. A., Almohamady, M., & Lotfy, R. (2020). Maternal, foetal, and neonatal outcomes among different types of hypertensive disorders associating

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pregnancy needing intensive care management. *The Journal of Maternal-foetal & Neonatal Medicine*, 33(2), 314-321.

Magee, L. A., Pels, A., Helewa, M., Rey, E., von Dadelszen, P., & Audibert, F. ,.(2014). Defining "Term" Pregnancy Workgroup. Jama, 309(23), 2445-2446.

Maheshwari, A., Pandey, S., Shetty, A., Hamilton, M., & Bhattacharya, S. (2012). Obstetric and perinatal outcomes in singleton pregnancies resulting from the transfer of frozen thawed versus fresh embryos generated through in vitro fertilization treatment: a systematic review and meta-analysis. *Fertility and sSterility*, 98(2), 368-377.

Marín, R., Testa, A., & Pañeda, F. (2001). Preeclampsia and peripartum cardiomyopathy: infrequent association. *Nefrologia: Publicacion Oficial de la Sociedad Espanola Nefrologia*, 21(1), 84-87.

Markhus, V. H., Rasmussen, S., Lie, S. A., & Irgens, L. M. (2011). Placental abruption and premature rupture of membranes. *Acta oObsbstetricia et Gynecologica Scandinavica*, 90(9), 1024-1029.

Maternal morbidity and perinatal outcome in preterm premature rupture of membranes before 37 weeks gestation. *Pakistan Journal Oof Medical Sciences*, 30(3), 626.

McDonald, S. D., Han, Z., Walsh, M. W., Gerstein, H. C., & Devereaux, P. J. (2010). Kidney disease after preeclampsia: a systematic review and meta-analysis. *American Journal of Kidney Diseases*, 55(6), 1026-1039.

Mellier, G. (2009). *Neonatal outcomes after elective delivery management of preterm premature rupture of the membranes before 34 Limited*. https://doi.org/10.1155/2012/105918

Menon, R., Fortunato, S. J., Velez Edwards, D. R., & Williams, S. M. (2010). Association of genetic variants, ethnicity, and preterm birth with amniotic fluid cytokine concentrations. *Annals of human genetics*, 74(2), 165-183.

Mitchell, S., & Chandraharan, E. (2018). Meconium-stained amniotic fluid. *Obstetrics, Gynaecology & Reproductive Medicine*, 28(4), 120-124.

Mohammed, M. I. I. (2014). *Awareness of Pregnancy-induced Hypertension among Pregnant Women in Bashaier University Hospital, Khartoum State, Sudan (2013)* (Doctoral dissertation, University of Gezira).

Morton, G. J., Cummings, D. E., Baskin, D. G., Barsh, G. S., & Schwartz, M. W. (2006). Central nervous system control of food intake and body weight. Nature, 443(7109), 289-295.

Mostello, D., Kallogjeri, D., Tungsiripat, R., & Leet, T. (2008). Recurrence of preeclampsia: effects of gestational age at delivery of the first pregnancy, body mass index, paternity, and the interval between births. American Journal oOf Obstetrics And Gynaecology, 199(1), 55-e1.

Mundhra, R., & Agarwal, M. (2013). Fetal outcome in meconium stained deliveries. Journal of clinical and diagnostic research: JCDR, 7(12), 2874.

Mustafa, R., Ahmed, S., Gupta, A., & Venuto, R. C. (2012). A comprehensive review of hypertension in pregnancy. *Journal of Pregnancy*. Hindawi

Ness, R. B., & Sibai, B. M. (2006). Shared and disparate components of the pathophysiologies of fetal growth restriction and preeclampsia. *American Journal ~~O~~of Obstetrics And Gynecology, 195*(1), 40-49.

Ness, R. B., Grisso, J. A., Vergona, R., Klapper, J., Morgan, M., & Wheeler, J. E. (2001). Oral contraceptives, other methods of contraception, and risk reduction for ovarian cancer. *Epidemiology*, 307-312.

Nezvalová-Henriksen, K., Spigset, O., & Nordeng, H. (2011). Effects of codeine on pregnancy outcome: results from a large population-based cohort study. *European Journal ~~O~~of Clinical Pharmacology*, 67(12), 1253-1261.

Ngwenya, S. (2017). Severe preeclampsia and eclampsia: incidence, complications, and perinatal outcomes at a low-resource setting, Mpilo Central Hospital, Bulawayo, Zimbabwe. *International Journal ~~O~~of Women's Health*, 9, 353.

Nkwabong, E., & Tiomela Goula, G. (2017). Placenta abruption surface and perinatal outcome. *The Journal of Maternal-foetal & Neonatal Medicine*, 30(12), 1456-1459.

Nojomi, M., Haghighi, L., Bijari, B., Rezvani, L., & Tabatabaee, S. K. (2010). Delayed childbearing: pregnancy and maternal outcomes. *International Journal of Reproductive Biomedicine*, 8(2), 80-0.

Norman, M., Piedvache, A., Børch, K., Huusom, L. D., Bonamy, A. K. E., Howell, E. A., & Varendi, H. (2017). Association of short antenatal corticosteroid administration-to-birth intervals with survival and morbidity among very preterm infants: results from the EPICE cohort. *JAMA paediatrics*, 171(7), 678-686.

Nti, G. A. (2017). *Food preferences of customers of food service establishments in Ho in the Volta Region of Ghana* (Doctoral dissertation, University of Cape Coast). Nutrition Reviews, 71 Suppl 1(0 1), S18-25.

Nwoko, R., Plecas, D., & Garovic, V. D. (2012). Acute kidney injury in the pregnant patient. *Clin Nephrol*, 78(6), 478-86.

Nyarko-Sampson, E., Dabone, K. T., & Brenya, E. E. (2017). Perception and Patronage of Aphrodisiacs among Male Students in the University of Cape Coast: Implications for Counselling in Higher Educational Institutions. *Zimbabwe Journal of Educational Research*, 29(1).

Obstetrics & Gynecology, 115(5), 935-944.

Ocviyanti, D., & Wahono, W. T. (2018). Risk factors for neonatal sepsis in pregnant women with premature rupture of the membrane. *Journal of Pregnancy*, 2018.

Ohno, Y., Kawai, M., Morikawa, S., Sakakibara, K., Tanaka, K., Ishikawa, K.,

Oliveira, L. C., & da Costa, A. A. R. (2015). Maternal near miss in the intensive care unit: clinical and epidemiological aspects. *Revista Brasileira de terapia intensiva*, 27(3), 220.

Olusanya, B. O. (2011). Perinatal outcomes of multiple births in southwest Nigeria. *Journal of hHealth, Ppopulation, and Nnutrition*, 29(6), 639.

Olusanya, B. O., & Solanke, O. A. (2012). Perinatal correlates of delayed childbearing in a developing country. *Archives of gGynaecology and obObstetrics*, 285(4), 951-957.

Ornoy, A., Reece, E. A., Pavlinkova, G., Kappen, C., & Miller, R. K. (2015). Defining "Term" Pregnancy Workgroup. Jama, 309(23), 2445-2446.

Pariente, G., Peles, C., Perri, Z. H., Baumfeld, Y., Mastrolia, S. A., Koifman, A., ... & Hershkovitz, R. (2015). Meconium-stained amniotic fluid–risk factors and immediate perinatal outcomes among SGA infants. *The Journal of Maternal-foetal & Neonatal Medicine*, 28(9), 1064-1067.

Pariente, G., Wiznitzer, A., Sergienko, R., Mazor, M., Holcberg, G., & Sheiner, E. (2011). Placental abruption: a critical analysis of risk factors and perinatal outcomes. *The Journal of Maternal-foetal & Neonatal Medicine*, 24(5), 698-702.

Pasquier, J. C., Picaud, J. C., Rabilloud, M., Claris, O., Ecochard, R., Moret, S.,

Paul, S. K., Asian, S., Goh, M., & Torabi, S. A. (2019). Managing sudden transportation disruptions in supply chains under-delivery delay and quantity loss. *Annals of Operations Research*, 273(1-2), 783-814.

Paz Levy, D., Walfisch, A., Wainstock, T., Sergienko, R., Kluwgant, D., Landau, D., & Sheiner, E. (2019). Meconium-stained amniotic fluid exposure is associated with a lower incidence fspring long-term infectious morbidity. *American Journal of Reproductive Immunology*, 81(6), e13108.

Petersen, E. E., Davis, N. L., Goodman, D., Cox, S., Syverson, C., Seed, K., ... & Barfield, W. (2019). Racial/ethnic disparities in pregnancy-related deaths—the United States, 2007–2016. *Morbidity and Mortality Weekly Report*, 68(35), 762.

Pollock, W., Rose, L., & Dennis, C. L. (2010). Pregnant and postpartum admissions to the intensive care unit: a systematic review. *Intensive Care Medicine*, 36(9), 1465-1474.

Popkin, B. M. (2001). The nutrition transition and obesity in the developing world. *The Journal of ~~n~~Nutrition*, 131(3), 871S-873S.

Prior, M., Richardson, A., Asif, S., Polanski, L., Parris-Larkin, M., Chandler, J., & Raine-Fenning, N. J. (2018). Outcome of assisted reproduction in women with congenital uterine anomalies: a prospective observational study. *Ultrasound in Obstetrics & Gynaecology*, 51(1), 110-117.

Rainaldi, M. A., & Perlman, J. M. (2016). Pathophysiology of birth asphyxia. *Clinics in ~~p~~Perinatology*, 43(3), 409-422.

Ranta, J. K., Raatikainen, K., Romppanen, J., Pulkki, K., & Heinonen, S. (2011). Decreased PAPP-A is associated with preeclampsia, premature delivery, and small for gestational age infants but not with placental abruption. *European Journal of Obstetrics & Gynaecology and Reproductive Biology*, 157(1), 48-52.

Ray, J. G., Burrows, R. F., Burrows, E. A., & Vermeulen, M. J. (2001). MOS HIP: McMaster outcome study of hypertension in pregnancy. *Early ~~h~~Human ~~m~~Moderators of the ~~e~~Effects of ~~p~~Prenatal ~~a~~Alcohol ~~e~~Exposure* on 7.5-year

Ray, J. G., Urquia, M. L., Berger, H., & Vermeulen, M. J. (2012). Maternal and neonatal separation and mortality associated with concurrent admissions to intensive care units. *CMAJ*, 184(18), E956-E962.

Razaz, N., Cnattingius, S., & Joseph, K. S. (2019). Association between An APGAR score ofs of 7 to 9 and neonatal mortality and morbidity: a population-based cohort study of term infants in Sweden. *British Medicine Journal*, 365.

Reddy, U. M., Bettegowda, V. R., Dias, T., Yamada-Kushnir, T., Ko, C. W., & Willinger, M. (2011). Term pregnancy: a period of heterogeneous risk for infant mortality. *Obstetrics and ~~g~~Gynecology*, 117(6), 1279.

Reddy, U. M., Zhang, J., Sun, L., Chen, Z., Raju, T. N., & Laughon, S. K. (2012). Neonatal mortality by attempted route of delivery in early preterm birth. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynaecology*, 207(2), 117-e1.

Report of the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. (2000). *American Journal of Obstetrics and Gynecology*, 183(1), S1–S22. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10920346

Riihimäki, O., Metsäranta, M., Ritvanen, A., Gissler, M., Luukkaala, T., Paavonen, J., & Tikkanen, M. (2013). Increased prevalence of major congenital anomalies in births with placental abruption. *Obstetrics & Gynaecology*, 122(2 PART 1), 268-274.

Rijhsinghani, A., & Klein, J. M. (2014). Neonatal survival after prolonged preterm premature rupture of membranes before 24 weeks of gestation. *Obstetrics & Gynaecology*, 124(5), 992-998.

Roberts, C. L., Ford, J. B., Henderson-Smart, D. J., Algert, C. S., & Morris, J. of the amniotic cavity in pregnancies with small-for-gestational-age foetuses. *Journal of ~~p~~Perinatal ~~m~~Medicine*, 38(5), 495-502.

Rooks, J. P. (2012). Labour pain management other than neuraxial: what do we know and where do we go next? *Birth*, 39(4), 318-322.

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Rosenbaum, P. R. (2010). Design of observational studies (Vol. 10). New York: Springer.

Rosenberg, T., Pariente, G., Sergienko, R., Wiznitzer, A., & Sheiner, E. (2011). Critical analysis of risk factors and outcome of placenta previa. *Archives of Gynecology and Obstetrics*, 284(1), 47-51.

Rossi, R. M., Hall, E., Dufendach, K., & DeFranco, E. A. (2019). Predictive model of factors associated with maternal intensive care unit admission. *Obstetrics & Gynecology*, 134(2), 216-224.

Saghafi, N., Pourali, L., Ghazvini, K., Maleki, A., Ghavidel, M., & Babaki, M. K. (2018). Cervical bacterial colonization in women with preterm premature rupture of membrane and pregnancy outcomes: A cohort study. *International Journal of Reproductive BioMedicine*, 16(5), 341.

Salustiano, E. M. A., Campos, J. A. D. B., Ibidi, S. M., Ruano, R., & Zugaib, M. (2012). Low An APGAR score ofs at 5 minutes in a low-risk population: maternal and obstetrical factors and postnatal outcome. *Revista da Associação Médica Brasileira*, 58(5), 587-593.

Sanuade, O. A., Boatemaa, S., & Kushitor, M. K. (2018). Hypertension prevalence, awareness, treatment, and control in Ghanaian population: Evidence from the Ghana demographic and health survey. *PloS one*, 13(11), e0205985.

Saquib, S., Hamza, L. K., AlSayed, A., Saeed, F., & Abbas, M. (2020). Prevalence and Its Feto-Maternal Outcome in Placental Abruption: A Retrospective Study for 5 Years from Dubai Hospital. *Dubai Medical Journal*, 3(1), 26-31.

Saraswat, L., Bhattacharya, S., Maheshwari, A., & Bhattacharya, S. (2010). Maternal and perinatal outcome in women with threatened miscarriage in the first trimester: a systematic review. BJOG: *An International Journal of Obstetrics & Gynaecology*, 117(3), 245-257.

Sarkar, S., Patra, C., Dasgupta, M. K., Nayek, K., & Karmakar, P. R. (2013). Prevalence of congenital anomalies in neonates and associated risk factors in a tertiary care hospital in eastern India. *Journal ~~O~~Of Clinical Neonatology*, 2(3), 131.

Sasaki, Y., Ikeda, T., Nishimura, K., Katsuragi, S., Sengoku, K., Kusuda, S., & Fujimura, M. (2014). Association of antenatal corticosteroids and the mode of delivery with the mortality and morbidity of infants weighing below 1,500 g at birth in Japan. *Neonatology*, 106(2), 81-86.

Scantlebury, D. C., Kattah, A. G., Weissgerber, T. L., Agarwal, S., Mielke, M. M., Weaver, A. L., & White, W. M. (2018). Impact of a history of hypertension in pregnancy on a later diagnosis of atrial fibrillation. *Journal of the American Heart Association*, 7(10), e007584.

Schofield, M., & Knauss, C. (2010). Surveys and questionnaires in health research. *Research methods in health: Foundations for E~~e~~vidence-based ~~p~~Practice*, 213-236.

Seifoleslami, M. (2017). Report on the management of thrombocytopenia in obstetric patients: A retrospective study. *Interventional Medicine and Applied Science*, 9(4), 204-207.

Shah, S., & Gupta, A. (2019). Hypertensive Disorders of Pregnancy. *Cardiology Clinics*, 37(3), 345–354. https://doi.org/10.1016/j.ccl.2019.04.008

Shaikh, E. M., Mehmood, S., & Shaikh, M. A. (2010). Neonatal outcome in meconium-stained amniotic fluid-one-year experience. *Journal Of Pakistan Medical Association*, 60(9), 711-4.

Shamsi, U., Saleem, S., Nishter, N., & Ameen, A. (2013). Epidemiology and risk factors of preeclampsia; an overview of observational studies. *Al Ameen J Med Sci*, 6(4), 292-300.

Sharma, S. K., & Dey, M. (2017). Maternal and neonatal outcome in cases of premature rupture of membranes beyond 34 weeks of gestation. *Int J Reprod Contracept Obstet Gynecol*, 6, 1302-05.

Sheiner, E., Hadar, A., Shoham-Vardi, I., Hallak, M., Katz, M., & Mazor, M. (2002). The effect of meconium on the perinatal outcome: a prospective analysis. *The Journal of Maternal-Fetal & Neonatal Medicine*, 11(1), 54-59.

Shen, M., Smith, G. N., Rodger, M., White, R. R., Walker, M. C., & Wen, S. W. (2017). Comparison of risk factors and outcomes of gestational hypertension and pre-eclampsia. *PLoS ONE*, 12(4). https://doi.org/10.1371/journal.pone.0175914

Shiozaki, A., Matsuda, Y., Satoh, S., & Saito, S. (2013). Comparison of risk factors for gestational hypertension and preeclampsia in Japanese singleton pregnancies. *Journal of Obstetrics and Gynaecology Research*, 39(2), 492-499.

Shrestha, S., Dangol, S. S., Shrestha, M., & Shrestha, R. P. B. (2010). The outcome of preterm babies and associated risk factors in a hospital. *Journal of the Nepal Medical Association*, 50(180).

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Siakwa, M., Kpikpitse, D., Ankobil, A., Mupepi, S. C., John, M., Doe, P., ... & Owoo, E. H. (2014). *Effects of Chronic Hepatitis B Infection on Pregnancy and Birth Outcomes in Ghana.*

Sibai, B. M. (2008). The coexistence of gestational hypertension and diabetes: influence on pregnancy outcome. *American ~~j~~Journal of ~~p~~Perinatology*, 25(06), 325-329.

Sibai, B. M., Taslimi, M. M., El-Nazer, A., Amon, E., Mabie, B. C., & Ryan, G. M. (1986). Maternal-perinatal outcome associated with the syndrome of hemolysis, elevated liver enzymes, and low platelets in severe preeclampsia-eclampsia. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynecology*, 155(3), 501-507.

Simchen, M. J., Yinon, Y., Moran, O., Schiff, E., & Sivan, E. (2006). *Pregnancy outcome after age 50. Obstetrics & Gynecology*, 108(5), 1084-1088.

Simmons, L. E., Rubens, C. E., Darmstadt, G. L., & Gravett, M. G. (2010, December). Preventing preterm birth and neonatal mortality: exploring the epidemiology, causes, and interventions. *In Seminars in ~~p~~Perinatology*. 34(6), 408-415.

Singh, B. S., Clark, R. H., Powers, R. J., & Spitzer, A. R. (2009). Meconium aspiration syndrome remains a significant problem in the NICU: outcomes and treatment patterns in term neonates admitted for intensive care during ten years. *Journal of ~~p~~Perinatology*, 29(7), 497-503.

Somer, S. J. H., Sinkey, R. G., & Bryant, A. S. (2017). Epidemiology of racial/ethnic disparities in severe maternal morbidity and mortality. *In Seminars in ~~p~~Perinatology*. 41(5), 258-265.

Sori, D., Belete, A., & Wolde, M. (2016). Meconium-stained amniotic fluid: factors affecting maternal and perinatal outcomes at Jimma University specialized teaching hospital, South West Ethiopia. *Gynecol Obstet (Sunnyvale)*, 6(394), 2161-0932.

Souza, A. S. R., Patriota, A. F., Guerra, G. V. D. Q. L., & Melo, B. C. P. D. (2016). Evaluation of perinatal outcomes in pregnant women with preterm premature rupture of membranes. *Revista da Associação Médica Brasileira*, 62(3), 269-275.

Spong, C. Y. (2013). Defining "term" pregnancy: recommendations from the

Steggerda, S. J., De Bruïne, F. T., van den Berg-Huysmans, A. A., Rijken, M., Leijser, L. M., Walther, F. J., & van Wezel-Meijler, G. (2013). Small cerebellar hemorrhage in preterm infants: perinatal and postnatal factors and outcome. *The Cerebellum*, 12(6), 794-801.

Stella, C. L., O'Brien, J. M., Forrester, K. J., Barton, J. R., Istwan, N., Rhea, D.,

Stuart, A., Olausson, P. O., & Källen, K. (2011). An APGAR score ofs at 5 minutes after birth in relation to school performance at 16 years of age. *Obstetrics & Gynecology*, 118(2), 201-208.

Suzuki, H., Watanabe, Y., Arima, H., Kobayashi, K., Ohno, Y., & Kanno, Y. (2008). Short-and long-term prognosis of blood pressure and kidney disease in women with a history of preeclampsia. *Clinical and eExperimental nNephrology*, 12(2), 102-109.

Tal, A., Peretz, H., Garmi, G., Zafran, N., Romano, S., & Salim, R. (2018). Effect of inter-twin delivery interval on umbilical artery pH and An APGAR score of in the second twin. *Birth*, 45(1), 37-42.

Tchirikov, M., Schlabritz-Loutsevitch, N., Maher, J., Buchmann, J., Naberezhnev, Y., Winarno, A. S., & Seliger, G. (2018). Mid-trimester preterm premature rupture of membranes (PPROM): etiology, diagnosis, classification, international recommendations of treatment options and outcome. *Journal of ~~p~~Perinatal ~~m~~Medicine*, 46(5), 465-488.

Test, G., Levy, A., Wiznitzer, A., Mazor, M., Holcberg, G., Zlotnik, A., & Sheiner, E. (2011). Factors affecting the latency period in patients with preterm premature rupture of membranes. *Archives of ~~g~~Gynecology and ~~o~~Obstetrics*, 283(4), 707-710.

Thangwijitra, S., Sripramodya, C., & Kanchanawat, S. (2010). Risk factors of birth asphyxia in pregnancy 37 complete weeks and over by An APGAR score less than 7 at 5 minutes. *Thai Journal of Obstetrics and Gynaecology*, 54-62.

Thavarajah, H., Flatley, C., & Kumar, S. (2018). The relationship between the five-minute An APGAR score of, mode of birth, and neonatal outcomes. *The Journal of Maternal-Fetal & Neonatal Medicine*, 31(10), 1335-1341.

Tikkanen, M. (2011). Placental abruption: epidemiology, risk factors, and consequences. *Acta ~~o~~Obstetricia et ~~g~~Gynecologica Scandinavica*, 90(2), 140-149.

Tranquilli, A. L., Brown, M. A., Zeeman, G. G., Dekker, G., & Sibai, B. M. (2013). The definition of severe and early-onset preeclampsia. Statements from the International Society for the Study of Hypertension in Pregnancy (ISSHP). Pregnancy Hypertension: *An International Journal of Women's Cardiovascular Health*, 3(1), 44-47.

Trogstad, L., Skrondal, A., Stoltenberg, C., Magnus, P., Nesheim, B. I., & Eskild, A. (2004). Recurrence risk of preeclampsia in twin and singleton pregnancies. *American jJournal of mMedical gGenetics Part A*, 126(1), 41-45.

Tuuli, M. G., Rampersad, R., Stamilio, D., Macones, G., & Odibo, A. O. (2011). Perinatal outcomes in women with preeclampsia and superimposed preeclampsia: do they differ? *American jJournal of oObstetrics and gGynecology*, 204(6), 508-e1.

Umesawa, M., & Kobashi, G. (2017). Epidemiology of hypertensive disorders in pregnancy: Prevalence, risk factors, predictors and prognosis. *Hypertension Research*, 40(3), 213–220. https://doi.org/10.1038/hr.2016.126

Vatten, L. J., Romundstad, P. R., Trichopoulos, D., & Skjaerven, R. (2002). Pre-eclampsia in pregnancy and subsequent risk for breast cancer. *British Journal of Cancer*, 87(9), 971-973.

Vikse, B. E., Irgens, L. M., Leivestad, T., Skjærven, R., & Iversen, B. M. (2008). Preeclampsia and the risk of end-stage renal disease. *New England Journal of Medicine*, 359(8), 800-809.

Villar, J., Carroli, G., Wojdyla, D., Abalos, E., Giordano, D., Ba'aqeel, H. & World Health Organization Antenatal Care Trial Research Group. (2006). Preeclampsia, gestational hypertension and intrauterine growth restriction, related or independent conditions?. *American Journal of Obstetrics and Gynecology*, 194(4), 921-931.

Wagura, P., Wasunna, A., Laving, A., & Wamalwa, D. (2018). Prevalence and factors associated with preterm birth at Kenyatta national hospital. *BMC Pregnancy and Childbirth*, 18(1), 1-8.

Walker, K. F., Bugg, G. J., Macpherson, M., McCormick, C., Grace, N., Wildsmith, C., ... & Thornton, J. G. (2016). Randomized trial of labor induction in women 35 years of age or older. *New England Journal of Medicine*, 374(9), 813-822.

Wall, S. N., Lee, A. C., Niermeyer, S., English, M., Keenan, W. J., Carlo, W., & Lawn, J. E. (2009). *Neonatal resuscitation in low-resource settings*: what, who, and how to overcome challenges to scale up. International *Journal of Gynecology & Obstetrics*, 107(Supplement), S47-S64.

Walsh, M. C., & Fanaroff, J. M. (2007). Meconium-stained fluid: approach to the mother and the baby. *Clinics in Perinatology*, 34(4), 653-665.

Wang, I. K., Muo, C. H., Chang, Y. C., Liang, C. C., Chang, C. T., Lin, S. Y., & Morisky, D. E. (2013). Association between hypertensive disorders during pregnancy and end-stage renal disease: a population-based study. *Cmaj*, 185(3), 207-213.

Wang, L., Leng, J., Liu, H., Zhang, S., Wang, J., Li, W., ... & Yang, X. (2017). Association between hypertensive disorders of pregnancy and the risk of postpartum hypertension: a cohort study in women with gestational diabetes. *Journal of Human Hypertension*, 31(11), 725-730.

weeks' gestation (DOMINOS study). *European Journal of Obstetrics & Gynaecology and Reproductive Biology*, 143(1), 18-23.

Werner, E. F., Janevic, T. M., Illuzzi, J., Funai, E. F., Savitz, D. A., & Lipkind, H. S. (2011). Mode of delivery in nulliparous women and neonatal intracranial injury. *Obstetrics and Gynecology*, 118(6), 1239.

Werner, E. F., Savitz, D. A., Janevic, T. M., Ehsanipoor, R. M., Thung, S. F., Funai, E. F., & Lipkind, H. S. (2012). Mode of delivery and neonatal outcomes in preterm, small-for-gestational-age newborns. *Obstetrics and Gynecology*, 120(3), 560.

Wertheimer, A., Shemer, A., Hadar, E., Berezowsky, A., Wiznitzer, A., & Krispin, E. (2020). The effect of meconium-stained amniotic fluid on perinatal outcome in pregnancies complicated by preterm premature rupture of membranes. *Archives of Gynecology and Obstetrics*, 301, 1181-1187.

Wiegerinck, M. M., Eskes, M., Van Der Post, J. A., Mol, B. W., & Ravelli, A. Williamson, C., & Geenes, V. (2014). Intrahepatic cholestasis of pregnancy. *Obstetrics & Gynecology*, 124(1), 120-133.

Wilson, E., Maier, R. F., Norman, M., Misselwitz, B., Howell, E. A., Zeitlin, J., ... & Pryds, O. (2016). Admission hypothermia in very preterm infants and neonatal mortality and morbidity. *The Journal of pediatrics*, 175, 61-67.

Wolde, Z., Segni, H., & Woldie, M. (2011). Hypertensive disorders of pregnancy in Jimma University specialized hospital. *Ethiopian Journal of Health Sciences*, 21(3).

Wong, T. Y., Groen, H., Faas, M. M., & van Pampus, M. G. (2013). Clinical risk factors for gestational hypertensive disorders in pregnant women at high risk for developing preeclampsia. Pregnancy Hypertension: *An*

International Journal of Women's Cardiovascular Health, 3(4), 248-253.

World Health Organization. (2006). The world health report 2006: working together for health. World Health Organization. The effect of placental abruption on the outcome of extremely premature infants. *The Journal of Maternal-Fetal & Neonatal Medicine*, 28(6), 705-708.

Wosenu, L., Worku, A. G., Teshome, D. F., & Gelagay, A. A. (2018). Determinants of birth asphyxia among live birth newborns in University of Gondar referral hospital, northwest Ethiopia: A case-control study. *PloS one*, 13(9), e0203763.

Wright, D., Syngelaki, A., Akolekar, R., Poon, L. C., & Nicolaides, K. H. (2015). Competing risks model in screening for preeclampsia by maternal characteristics and medical history. *American Journal of Obstetrics and Gynecology*, 213(1), 62-e1.

Wu, G., Imhoff-Kunsch, B., & Girard, A. W. (2012). Biological mechanisms for nutritional regulation of maternal health and fetal development. *Paediatric and Perinatal Epidemiology*, 26, 4-26.

Wu, Y., Chen, Y., Shen, M., Guo, Y., Wen, S. W., Lanes, A., ... & Hua, X. (2019). Adverse maternal and neonatal outcomes among singleton pregnancies in women of very advanced maternal age: a retrospective cohort study. *BMC Pregnancy aAnd Childbirth*, 19(1), 1-9.

Xiong, T., Mu, Y., Liang, J., Zhu, J., Li, X., Li, J., Mu, D., (2018). Hypertensive disorders in pregnancy and stillbirth rates: a facility-based study in China. *Bulletin of the World Health Organization*, 96(8), 531– https://doi.org/10.2471/BLT.18.208447

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Xu, H., Calvet, M., Wei, S., Luo, Z. C., & Fraser, W. D. (2010). Risk factors for early and late-onset of respiratory symptoms in babies born through meconium. *American Journal of Perinatology*, 27(04), 271-278.

Yadav, J. S., Roubin, G. S., Iyer, S., Vitek, J., King, P., Jordan, W. D., & Fisher, W. S. (1997). Elective stenting of the extracranial carotid arteries. *Circulation*, 95(2), 376-381.

Ye, C., Ruan, Y., Zou, L., Li, G., Li, C., Chen, Y., & Zhang, W. (2014). The 2011 survey on hypertensive disorders of pregnancy (HDP) in China: prevalence, risk factors, complications, pregnancy and perinatal outcomes. *PloS one*, *9*(6), e100180.

Ye, G., Jiang, Z., Lu, S., & Le, Y. U. A. N. L. U. O. (2011). Premature infants born after preterm premature rupture of membranes with 24–34 weeks of gestation: a study of factors influencing length of neonatal intensive care unit stay. *The Journal of Maternal-Foetal & Neonatal Medicine*, 24(7), 960-965.

Yogev, Y., Melamed, N., Bardin, R., Tenenbaum-Gavish, K., Ben-Shitrit, G., Ben-Haroush, A. (2010). Pregnancy outcome at extremely advanced maternal age. *American Journal of Obstetrics and Gynecology*, 203(6), 558-e1.

Zecca, E., De Luca, D., Marras, M., Caruso, A., Bernardini, T., & Romagnoli, C. (2006). Intrahepatic cholestasis of pregnancy and neonatal respiratory distress syndrome. *Paediatrics*, 117(5), 1669-1672.

Zeeman, G. G. (2006). Obstetric critical care: a blueprint for improved outcomes. *Critical Care Medicine*, 34(9), S208-14.

Zhang, J., Meikle, S., & Trumble, A. (2003). Severe maternal morbidity associated with hypertensive disorders in pregnancy in the United States. *Hypertension in Pregnancy*, 22(2), 203-212.

Zhu, T., Tang, J., Zhao, F., Qu, Y., & Mu, D. (2015). Association between maternal obesity and offspring An APGAR score of or cord pH: a systematic review and meta-analysis. *Scientific reports*, 5, 18386.

Ziadeh, S., & Sunna, E. (2000). Obstetric and perinatal outcomes of pregnancies with term labour and meconium-stained amniotic fluid. *Archives of Gynaecology and Obstetrics*, 264(2), 84-87.

Zibaeenezhad, M. J., Ghodsi, M., Arab, P., & Gholzom, N. (2010). The Prevalence of Hypertensive Disorders of Pregnancy in Shiraz, Southern Iran. *Iranian Cardiovascular Research Journal* Retrieved from www.icrj.irOriginalArticle

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APPENDICES

APPENDIX A

DECLARATION FORM

I am Emmanuel Komladzah, a University of Cape Coast Master of Nursing student. I am investigating maternal and perinatal outcome of hypertensive women who are pregnant. Information provided is for academic purposes only and will not affect the care participants receive. Participation is voluntary. You are assured of anonymity and you are at liberty to withdraw from the study anytime you choose to.

………………………………..   …………………………….

Signature   **Date**

(Tel. 0243628447)

CONSENT FORM

I hereby declared that all issues concerning the research have been properly explained to me in a language I understand. I was allowed to ask questions to which answers were provided to my satisfaction and thereby consented to participate in the study on my own.

………………………………..   …………………………….

Signature   **Date**

CHOOSE THE APPROPRIATE RESPONSES TO THE QUESTIONS

SECTION A: SOCIO-DEMOGRAPHIC DATA

Question No.	Questions	Response
1	**Age** I. < 20 II. 20-25 III. 26-30 IV. 31-35 V. 36-40 VI. > 40	{ }
2	**Income** I. Low II. Medium III. High	{ }
3	**Education** I. Illiterate II. Primary III. Secondary IV. Tertiary	{ }
4	**Religion** I. Christian II. Islam III. Traditional IV. Others	{ }
5	**Marital status** I. Married II. Divorced	{ }
6	**Ethnicity** I. Ewe II. Twi III. Ga/ Dangme	{ }

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	IV. Mole/Dagbani V. Others	

~~III. Ga/Dangme~~

SECTION B: HEALTH FACILITY FACTORS

Question No.	Questions	
7	**Obstetrician** I. Present II. Absent	 { } { }
8	**Paediatrician** I. Present II. Absent	 { } { }
9	**Neonatal intensive care unit** I. Present II. Absent	 { } { }
10	**Obstetrician** I. Present II. Absent	 { } { }
11	**Paediatrician** I. Present II. Absent	 { } { }

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Table 6 presents the pregnancy complications as risk factors for perinatal outcomes. Pregnant women with gestational hypertension who experienced premature rupture of membrane were 7.6 times more likely to produce babies with An APGAR score of below 7 at minute 1 than those who did not experience premature rupture of membrane {P=0.003, OR=7.602, CI (1.988307- 29.06299)}.

Secondly, pregnant women with gestational hypertension who experienced premature rupture of membrane were 3.2 times more likely to deliver babies who were small for gestational age than those who did not experience premature rupture of membrane {P=0. 0016, OR=3.2, CI (1.245893-8.217542)}.

Thirdly, babies of women who had had premature rupture of membrane were 59.14 times more likely to require intensive care unit admission than those who did not experience premature rupture of membrane {P<0.001, OR= 59.14, CI (10.56621-331.0453)}.

Furthermore, pregnant women with gestational hypertension who experienced meconium-stained amniotic fluid are 1.26 times more likely to deliver babies with An APGAR score of below 7 at minute 5 than pregnant women with gestational hypertension who did not experience meconium-stained amniotic fluid {P=0.006, OR=3.6, CI (1.445738-8.964277)}.

Also, pregnant women with gestational hypertension who experienced meconium-stained amniotic fluid are 98% more likely to deliver stillborn babies than those who did not experience meconium-stained amniotic fluid {P=0.002, OR=0.0243181, CI (0.0023154-0.2554031)}.

Women who experienced haemorrhage were 5.83 times more likely to have babies with An APGAR score of below 7 at minute 1 than their counterparts who did not experience haemorrhage {P=0.003, OR=5.83, CI (1.825552-18.64993)}.

In addition, women who experienced haemorrhage were 84% times more deliver neonates with an APGAR score of below 7 at minute 5 than women who did not experience haemorrhage {P=0.030, OR=0.1650229, CI (0.0323518-0.8417638)}.

Women who have abruption placenta were 4.4 times more likely to have neonates with An APGAR score of below 7 at 1 minute than those who did not experience abruption placenta (P=0.010, OR=4.4, CI=1.425-13.512)}.

Also, women with abruption placenta are 2.2 times more likely to have neonates with an APGAR score of below 7 at minute 5 than those who did not experience abruption placenta {P=0.025 OR= 2.2, CI (1.169911-10.51493)}.

Furthermore, women who experienced abruption placenta are 6.2 times more likely to have neonates who are small for gestational age than those who did not experience abruption placenta {P=0.012 OR= 6.6, CI (1.516988-27.95112)}.

Women who experienced abruption placenta are 86% more likely to have stillborn neonates than those who did not experience abruption placenta {P=0.005, OR= 0.141204, CI (0.0362838-0.5495167)}.

For the mode of delivery, women who had spontaneous vaginal delivery are 69% more likely to have neonates with APGAR score below 7 at minute 1 than those who did not have spontaneous vaginal delivery {P=0.021, OR=0.3115685, CI (0.1153094-0.8418647)}.

Also, women who delivered spontaneous vaginal delivery are 12.23 times more likely to have neonates with an APGAR score below 7 at minute 5 than their counterparts {P=0.013, OR=12.23118, CI (1.707568-87.61102)}.

Furthermore, pregnant women with HDP who had spontaneous vaginal delivery are 72% times more likely to have neonates who are small-for gestational-age than their counterparts {P=0.024, OR=0.2816063, CI (0.0937472-0.8459141)}.

1. A majority (63.1%) of our respondents were Christians who belong to a low-risk obstetric age group of 20- 35 years (66.2%), are medium to high-income earners (65.4%), and have had at least 9 years of formal education (90%).
2. The majority (40.77%) delivered by caesarean section. The study also observed a high prevalence of obstetric complications such as meconium-stained amniotic fluid (24.62%), premature rupture of membrane (23.85%), haemorrhage (69.2%), and placenta abruption (13.08%).
3. The study observed a high prevalence of perinatal outcomes such as An APGAR score of below 7 at minute 1(66.92%) and 5(13.08%), low birth weight (33.08%), intensive care unit admission requirement (25.38%), congenital abnormalities (10%) and stillbirth (8.46%).
4. A. Maternal ethnicity is a risk factor for An APGAR score of below 7 at minute 1.

   B. Being single (not married) is a risk factor for an APGAR score of below 7 at minute 5.

C. Low income is a risk factor for congenital abnormalities.

5. A. Maternal ethnicity and religion are risk factors for haemorrhage.

   B. Maternal educational level is a risk factor placenta abruption

   ~~a.~~C. Maternal age (greater than 35 years) is a risk factor for premature rupture of membrane.

6. A. Premature rupture of membrane, haemorrhage, placenta abruption and mode of delivery (spontaneous vaginal delivery) are risk factors for An APGAR score of below 7 at minute 1.

   B. Meconium-stained amniotic fluid, haemorrhage, and placenta abruption are risk factors for An APGAR score of below 7 at minute 5.

   C. Premature rupture of membrane, placenta abruption, and spontaneous vaginal delivery are risk factors for small for gestational age.

   D. Premature rupture of membrane is a risk factor for neonatal intensive care unit admission.

   E. Meconium-stained amniotic fluid is a risk factor for stillbirth.

Discussion

The main findings from the analysed data of the study were discussed in light of current literature. They were compared with similar works of other researchers. The reasoning behind the findings and their relevance were emphasized.

A majority of our respondents were Christians who belong to a low-risk obstetric age group of 20- 35 years, are medium to high-income earners, and had had at least 9 years of formal education (90%). A similar age range for women with HDP has been identified in several other studies (Krieg et al., 2008; Addo et al., 2012; Lo et al., 2013). Maternal ages of below 20 years and more than 35 years have both been identified as risk factors for poor maternal and perinatal outcomes (Jacobson et al., 2004). Fatemeh and colleagues discovered that women under the age of 20 had a higher prevalence of HDP. In the last decade, there has been a widespread movement toward family planning and childbearing at an older age (Krieg et al., 2008). The relationship between advanced age, delayed childbearing, and perinatal outcomes are ambiguous. According to some studies, women with HDP have a lower chance of having a healthy pregnancy (Callaway et al., 2007; Simchen et al., 2006). For similar populations, other researchers have published similar results (Walker, 2016; Fretts et al., 1996; Jacobson et al., 2004). Nonetheless, the majority of studies have looked at pregnancy outcomes in women over the age of 35, and there is a lack of evidence on pregnancy outcomes in women who had children in the 1950s and 1960s (Callaway et al., 2000; Simchen et al., 2006). The current study found that advanced maternal age is a risk factor for PROM, which is consistent with previous findings.

Different ethnic and religious groups are known to have different levels of HDP risk. People of African descent are considered to be more vulnerable (Muatafa et al., 2012). Some studies also confirmed that there is an association between maternal characteristics such as ethnicity and haemorrhage in pregnancy (Bryant et al., 2012; Somer, Sinkey, & Bryant, 2017; Petersen et al., 2019). Other studies also confirmed that there is an association between ethnicity and premature rupture of membrane (Getahun et al., 2010; Menon, Fortunato, Velez Edwards, & Williams, 2010; Grobman et al., 2015). There is however no data to support any variation across ethnic and religious groups in Sub-Saharan Africa and for that matter Ghana.

The present study findings indicated a majority of the women with HDP were Christians who are Ewes. We also observed that ethnicity and the individual's religion were risk factors for haemorrhage. This could be attributed to several factors and practices that vary across ethnic groups. Food taboos have been documented to predispose pregnant women to anaemia which is a risk factor for haemorrhage. Food choices vary across ethnic groups in Ghana. The people of the Volta Region mostly Ewes have unique food choices and food taboos which could play an important role in this finding (Nti, 2017).

The majority (40.77%) delivered by caesarean section. The study also observed a high prevalence of obstetric complications such as MSAF (24.62%), PROM (23.85%), haemorrhage (69.2%), and placenta abruption (13.08%).

The use of a Caesarean section has been linked to the development of HDP. Olusanya et al. (2012) found a high prevalence of 90% in Nigerian women with HDP. Other studies from the sub-region have reported slightly lower figures compared to that of Nigeria. Wolde et al. (2011) and Adu-Bonsafoh et al. (2014) reported 37% and 45% from Ethiopia and Ghana respectively. These findings have been reported from studies that were done in tertiary institutions. The findings from the present study that indicated 45.8% of the deliveries being by caesarean section is consistent with what has been reported by Adu-Bonsafoh et al., (2014) but far lower than what has been reported by Olusanya et al., (2012). The current trend of management of preeclampsia recommends practices that encourage spontaneous vaginal delivery (Magee et al., 2014; Brown et al., 2018). Such practices are likely to be employed in resource poor-settings like the study area where the expertise to carry out caesarean sections may be limited. Others on the other hand have reported higher rates of caesarean section among women with HDP recently (Tuuli et al., 2011; Brown et al., 2018; Ngwenya et al., 2017).

Mitchell and Chandraharan (2018) discovered that serum alanine aminotransferase levels and direct bilirubin levels are related to a high risk of MSAF.

MSAF has been shown to cause complications in 8-20% of pregnancies with its incidence directly proportional to the gestational age at delivery (Sigh et al., 2009; Balchin et al., 2011).

Other confounders in the research setting may have affected the prevalence of 30.6 percent in the current study, which is significantly higher than previously recorded.

The most common neonatal pathology associated with MSAF is respiratory morbidity, and its most severe form, meconium aspiration syndrome (MAS), occurs in 5 to 10% of cases (Bhat et al., 2008; Walsh et al., 2007; Singh et al., 2009). Furthermore, the presence of MSAF is linked to other neonatal complications such as sepsis, seizures, neurologic dysfunction, and prolonged hospitalization in a neonatal intensive care unit.

MSAF was found to be a risk factor for An APGAR score of below 7 at minute 5 and stillbirth in the current analysis. MSAF has been linked to perinatal morbidity in several other studies. (Reddy et al., 2011; Spong, 2013 Linder et al., 2015; Hiersh et al., 2016 & 2017).

In some developing countries, there has been a rise in PPH (Guasch & Gilsanz, 2016). Despite the seriousness of PPH's consequences, clinical management is not evidence-based and differs greatly between centers. (Knight et al., 2009; Fuller & Bucklin, 2010; Kozek-langenecker et al., 2013).

Haemorrhage in general and for that matter PPH is known to be more prevalent and severer in women with HDP due to thrombocytopenia resulting from the pathogenesis of preeclampsia (Brown et al., 2018).

Most of the studies conducted in Ghana paid very little attention to haemorrhage of all categories (Lee et al., 2012; Adu-Bonssaffoh et al., 2015 & 2016; Dassah et al., 2019).

Intrapartum haemorrhage is a severe and potentially fatal condition. Placental abruption, uterine atony, placenta accreta, and genital tract lacerations are all possible causes. The early detection of blood loss, identification of the source of the haemorrhage, and volume resuscitation, including red blood cells and blood products as needed, would result in excellent maternal outcomes (Guasch & Gilsanz, 2016).

The pathogenesis of HDP makes it an increased risk for placental abruption and PROM which are risk factors for Haemorrhage (Mustafa et al., 2012). The current research discovered that haemorrhage is a risk factor for a low APGAR score below 7 at minutes 1 and 5. This should be expected as earlier findings reported adverse perinatal outcomes of haemorrhage (Kozek-langenecker et al., 2013). The present finding supported the findings reported by earlier authorities (Koifman et al., 2008; Bener, Saleh, & Yousafzai, 2012; Ghimire & Ghimire, 2013).

Perinatal morbidity and mortality have been linked to HDP (Olusanya et al., 2011, Mustafa, 2012). Brown et al. (2018) reported HDP contributes 22% of perinatal deaths and it is highest in women with preeclampsia (Magee et al., 2014). Intrauterine growth restriction, birth asphyxia, preterm delivery, and low birth weight are examples of adverse neonatal outcomes that have been linked to high perinatal mortality (Bell, 2010; Gudeta & Regassa, 2019). Perinatal outcomes such as APGAR score below 7 at minute 1 and 5, low birth weight, intensive care unit admission requirements, congenital defects, and stillbirth were all found to be common in this sample. Similar findings have been published in the past (Lee et al., 2012; Gudeta & Regassa, 2019).

Placental insufficiency, placental abruption, and preterm delivery complications have all been linked to poor perinatal outcomes (Shah & Gupta, 2019). The current study's results showed a high rate of preterm and low birth weight babies. In the study environment, these were previously identified as a high-risk population for ICU entry, perinatal morbidity, and mortality (Siakwa et al., 2014). Resource availability for the management of these cases might have contributed to this as posited by Gudeta and Regassa (2019).

To ensure appropriate and comprehensive treatment for women with HDP and their neonates, Sha and Gupta (2019) suggested actively including neonatologists, laboratory personnel, midwives, obstetric surgeons, obstetricians, and paediatricians in the decision-making process. According to a Ghanaian report, important drugs for the management of HDP are only available in 55% of the facilities that needed them (Adu Bonsafoh et al., 2017).

Premature rupture of a pregnant woman's membranes and APGAR score below 7 at minute one among infants born to women with gestational hypertension were linked in this research. Other researchers made a similar finding (Chen et al., 2010; Souza et al., 2016; Asadollahi et al., 2020; Wiegerink et al., 2020). Other research, on the other hand, found no connection between PROM and APGAR score below 7 at minute one in pregnant women with gestational hypertension (Eleie et al., 2010; Razaz et al, 2019; Nojomi, Haghighi, Bijari, Rezvani, & Tabatabaee, 2010; Hashem, & Sarsam, 2019).

Earlier research has linked abruption of the placenta to APGAR score below 7 at minute one, which is consistent with the current findings (Markhus, Rasmussen, Lie & Irgens, 2011; Pariente et al., 2011; Macheku et al., 2015). Other research, on the other hand, found the opposite (Budak et al., 2018; Saquib, Hamza, AlSayed, Saeed, & Abbas, 2020).

The current results show that abruption of the placenta is a risk factor for APGAR score below 7 at minute 5, which is in line with previous research (Furukawa, Sameshima, Ikenoue, Ohashi, & Nagai, 2011; Pariente et al., 2011; Nkwabong, & Tiomela Goula, 2017). Other studies have found no connection between abruption of the placenta and APGAR score below 7 at minute five (Ranta et al., 2011; Rosenberg et al., 2011; Macheku et al., 2015) This is most likely due to disparities in facility personnel for the treatment of these events. The expertise of the professionals to efficiently diagnose and manage these cases is key to a good outcome. The absence of key resources in most of these facilities might have influenced the outcomes significantly.

Some studies have shown that haemorrhage during pregnancy among women with gestational hypertension is correlated with an APGAR score below 7 at minute 5. This is consistent with the findings of the current study (Salustiano, Campos, Ibidi, 2012; Dalili, Sheikh, Hardani, Nili, 2016; Razaz, Cnattingius, & Joseph, 2019). According to other research, haemorrhage during pregnancy is not linked to APGAR score below 7 at 5 minutes (Maghsoudloo, Eftekhar, Ashraf, Khan, & Sereshkeh, 2011; Werner, Janevic, Illuzzi, 2011; Zhu, Tang, Zhao, 2015). What accounted for these inconsistencies has not been firmly established but could be attributed to the efficiency in the management of cases of PROM to reduce its impact on the neonate.

DiGiulio et al. (2010), in their research, found an association between PROM and the delivery of small-for-gestational-age babies in pregnant women with hypertensive disorders during pregnancy. Grisaru-Granovsky et al., 2012, and DeMauro et al., 2019 both recorded this in their studies. They also stated in their research that PROM causes the birth of small-for-gestational-age babies in pregnant women with hypertensive disorders. Other research has found that PROM levels in pregnant women with hypertensive disorders are unrelated to the weight of the babies they deliver (Maheshwari et al., 2012; Abdali et al., 2017; Kurek Eken et al., 2017).

According to various research findings, pregnant women with gestational hypertension who have an abruption placenta during delivery are more likely to have babies who are small for their gestational age (Balchin et al., 2011; Hutton & Thorpe, 2014; Pariente et al., 2015). A connection exists between haemorrhage and anaemia. Anaemic pregnant women are more likely to have babies that are small for their gestational age. Other researchers revealed that gestational hypertensive pregnant women who experienced abruption placenta may not necessarily produce babies who are small for gestational age (Shaikh, Mehmood & Shaikh, 2010).

According to research conducted by Pasquier (2009), Hintz et al. (2010), and Ye et al. (2011), PROM in pregnant women with hypertensive disorders is linked to the need for intensive care unit admission for their infants, which is consistent with the current finding. This however is inconsistent with what has been reported by others (Carter, Xenakis, Holden, & Dudley, 2012; Kurek Eken, 2017; and Saghafi, 2017),

Reasons for the adverse maternal and perinatal outcomes have been attributed to resource challenges for the adequate and timely intervention of complications emanating from HDP which are also major challenges in the study area. Adequate provision of resources for the management of women with HDP would go a long way to improve the care of women with HDP in particular and women's health in general in the region.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter summarizes the research and highlights the most critical results from the data analysis. It also highlights the findings' conclusions, as well as recommendations made to draw attention to certain obstetric and perinatal outcomes among women with HDP in the Volta Region. There are also suggestions for future study.

Summary

The researcher looked at the maternal and perinatal outcomes of women with HDP in Ghana's Volta Region. In addition, socio-demographic, maternal, and perinatal outcomes, as well as socio-demographic risk factors for adverse birth outcomes, were assessed. A total of 130 women with HDP were studied from six district hospitals. Data was extracted from antenatal and delivery records using a data extraction form and analysed using descriptive and inferential statistics, with statistical conclusions drawn at a 5% significant level. The majority of the participants were aged 20-35 years, Ewes, Christians, and the majority had formal education. The women with HDP who were observed had a high rate of adverse maternal and perinatal outcomes. The women with HDP who were observed had a high rate of adverse maternal and perinatal outcomes.

Conclusion

The researcher looked at the obstetric and perinatal results of pregnant women with HDP. In general, pregnant women are subject to a degree of negative obstetric and perinatal outcomes. Pregnant women from district hospitals in the Volta Region seem to be at a higher risk. This is most likely due to a lack of human resources and services to deal with these pregnancies. Reduced maternal and child mortality rates are one of the most important Sustainable Development Goals (SDGs), so care for all pregnant women, particularly those with HDP, must be prioritized.

Certain socio-demographic and maternal factors are risk factors for pregnancy outcomes. Hence, they represent important pointers to possible causes of pregnancy complications, which should be well noted. Mitigating these risks is paramount to having a less complicated and successful delivery. This requires the concerted effort from the pregnant women, husbands, and health care providers. The underlying factor to all these is regular attendance of antenatal clinics, skilled delivery, and effective neonatal care. Having less or no obstetric complications is a shared responsibility between the woman, family, and health care providers.

Recommendations

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For effective implementation of recommendations resulting from this study's findings, all stakeholders must be on board to:

1. Train and deploy obstetricians and paediatricians to the district health facilities in the region to enhance quality of care to women with HDP.
2. Provide improved laboratory services at the district level for effective diagnosis and monitoring of complications of women with HDP and their neonates.
3. Establish well-resourced neonatal intensive care units to manage neonates with complications of HDP.

4. Provide training and retraining for members of the maternal and child health care team with the requisite skills and knowledge to manage women with HDP.
5. Create awareness and educate the general population especially women of reproductive age on HDP and the risk factors for adverse maternal and perinatal outcomes.
6. Investigate resource availability and management practices of care for women with HDP to inform policies on management of HDP in the Ghanaian context.

REFERENCES

Aagaard-Tillery, K. M., Stoddard, G. J., Holmgren, C., Lacoursiere, D. Y., Fraser, A., Mineau, G. P., & Varner, M. W. (2006). Preeclampsia and subsequent risk of cancer in Utah. *American Journal of Obstetrics and Gynaecology*, 195(3), 691-699.

Abdali, F., Taghavi, S., Vazifekhah, S., Behzad, M. N., & Attari, M. M. A. (2017). Effect of progesterone on latent phase prolongation in patients with preterm premature rupture of membranes. *Acta Medica Iranica*, 772-778.

Addo, J., Agyemang, C., Smeeth, L., Aikins, A. D. G., Adusei, A. K., & Ogedegbe, O. (2012). A review of population-based studies on hypertension in Ghana. *Ghana Medical Journal*, 46(2), 4-11.

Adu-Bonsaffoh, K., Antwi, D. A., Obed, S. A., & Gyan, B. (2015). Nitric oxide dysregulation in the pathogenesis of preeclampsia among Ghanaian women. *Integrated Blood Pressure Control*, 8, 1.

Adu-Bonsaffoh, K., Ntumy, M. Y., Obed, S. A., & Seffah, J. D. (2017). Perinatal outcomes of hypertensive disorders in pregnancy at a tertiary hospital in Ghana. *BMC Pregnancy and Childbirth*, 17(1), 388. https://doi.org/10.1186/s12884-017-1575-2

Adu-Bonsaffoh, K., Obed, S. A., & Seffah, J. D. (2014). Maternal outcomes of hypertensive disorders in pregnancy at Korle Bu Teaching Hospital, Ghana. *International Journal of Gynecology & Obstetrics*, 127(3), 238-242.

Adu-Bonsaffoh, K., Oppong, S. A., Binlinla, G., & Obed, S. A. (2013). Maternal deaths attributable to hypertensive disorders in a tertiary

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hospital in Ghana. *International Journal of Gynecology & Obstetrics*, 123(2), 110-113.

Adu-Bonsaffoh, K., Oppong, S. A., Binlinla, G., & Obed, S. A. (2013). Maternal deaths attributable to hypertensive disorders in a tertiary hospital in Ghana. *International Journal of Gynecology & Obstetrics*, 123(2), 110-113.

Adu-Bonsaffoh, K., Y Ntumy, M., A Obed, S., & Seffah, J. D (2017). Prevalence of Hypertensive Disorders in Pregnancy at Korle-Bu Teaching Hospital in Ghana. *Journal of Gynecology & Neonatal Biology*, 3(2), 1– 6. https://doi.org/10.15436/2380-5595.17.1243

Agatisa, P. K., Ness, R. B., Roberts, J. M., Costantino, J. P., Kuller, L. H., & McLaughlin, M. K. (2004). Impairment of endothelial function in women with a history of preeclampsia: *an indicator of cardiovascular risk.*

Al Riyami, N., Al-Ruheili, I., Al-Shezaw, F., & Al-Khabori, M. (2013). Extreme preterm premature rupture of membranes: risk factors and feto-maternal outcomes. *Oman Medical Journal*, 28(2), 108.

Alfirevic, Z., Milan, S. J., & Livio, S. (2012). Caesarean section versus vaginal delivery for preterm birth in singletons. *Cochrane Database of Systematic Reviews*, (6).

Alfirevic, Z., Milan, S. J., & Livio, S. (2012). Caesarean section versus vaginal delivery for preterm birth in singletons. *Cochrane Database of Systematic Reviews*, (6).

Almqvist, C., Cnattingius, S., Lichtenstein, P., & Lundholm, C. (2012). The impact of birth mode of delivery on childhood asthma and allergic

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diseases–a sibling study. *Clinical & Experimental Allergy*, 42(9), 1369-1376.

Al-Riyami, N., Al-Shezawi, F., Al-Ruheili, I., Al-Dughaishi, T., & Al-Khabori, M. (2013). Perinatal outcome in pregnancies with extreme preterm premature rupture of membranes (Mid-Trimester PROM). *Sultan Qaboos University medical journal*, 13(1), 51.

Alvarez, R. N., & Marin, R. (2001). Severe maternal complications associated with pre-eclampsia: an almost forgotten pathology? *Nefrologia: publicacion oficial de la Sociedad Espanola Nefrologia*, 21(6), 565-573.

American Journal of Physiology-Heart and Circulatory Physiology, 286(4), H1389-H1393.

Ardissone, A. N., Diomel, M., Davis-Richardson, A. G., Rechcigl, K. T., Li, N., Drew, J. C., ... & Neu, J. (2014). Meconium microbiome analysis identifies bacteria correlated with premature birth. *PloS one*, 9(3), e90784.

Armani, M., Gaggiano, C., Dallaglio, S., Romanini, E., Sospiri, C., & Magnani, C. (2013). Are there any strategies to improve neonatal outcomes associated with epidural analgesia in labour? *Acta bio-medica: Atenei Parmensis*, 84(2), 117-123.

Asadollahi, K., Karimi, A., Bagheri-Hosseinabadi, Z., Rezaei, N., Mussavi, M., Daliri, S. (2020). Investigation of the maternal and neonatal factors affecting the An APGAR score newborns: a case-control study. *International Journal of Paediatrics*.

Auger, N., Naimi, A. I., Smargiassi, A., Lo, E., & Kosatsky, T. (2014). *Extreme heat and risk of early delivery among preterm and term pregnancies. Epidemiology*, 344-350.

Backes, C. H., Markham, K., Moorehead, P., Cordero, L., Nankervis, C. A., & Giannone, P. J. (2011). *Maternal Preeclampsia and Neonatal Outcomes*, 2011. https://doi.org/10.1155/2011/214365

Balchin, I., Whittaker, J. C., Lamont, R. F., & Steer, P. J. (2011). Maternal and fetal characteristics associated with meconium-stained amniotic fluid. *Obstetrics & Gynecology*, 117(4), 828-835.

Bell, M. J. (2010). A historical overview of preeclampsia-eclampsia. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 39(5), 510–518. https://doi.org/10.1111/j.1552-6909.2010.01172.x

Bellamy, L., Casas, J. P., Hingorani, A. D., & Williams, D. J. (2007). Pre-eclampsia and risk of cardiovascular disease and cancer in later life: *systematic review and meta-analysis. Bmj*, 335(7627), 974.

Bener, A., Saleh, N. M., & Yousafzai, M. T. (2012). Prevalence and associated risk factors of antepartum haemorrhage among Arab women in an economically fast-growing society. *Nigerian Journal of clinical practice*, 15(2), 185-189.

Berhe, A. K., Kassa, G. M., Fekadu, G. A., & Muche, A. A. (2018). Prevalence of hypertensive disorders of pregnancy in Ethiopia: a systemic review and meta-analysis. *BMC Pregnancy and Childbirth*, 18(1), 34. https://doi.org/10.1186/s12884-018-1667-7

Berkus, M. D., Langer, O., Samueloff, A., Xenakis, E. M., Field, N. T., & Ridgway, L. E. (1994). Meconium-stained amniotic fluid: increased risk

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for the adverse neonatal outcome. *Obstetrics and gynaecology*, 84(1), 115-120.

Bhat, P. B. R., Navada, M. H., Rao, S. V., & Nagarathna, G. (2013). Evaluation of obstetric admissions to intensive care unit of a tertiary referral centre in coastal India. *Indian Journal oOf Critical Care Medicine: Peer-Reviewed, Official Publication oOf Indian Society oOf Critical Care Medicine*, 17(1), 34.

Bhat, R. Y., & Rao, A. (2008). Meconium-stained amniotic fluid and meconium aspiration syndrome: a prospective study. *Annals of tropical paediatrics*, 28(3), 199-203.

Blomquist, J. L., Muñoz, A., Carroll, M., & Handa, V. L. (2018). Association of delivery mode with pelvic floor disorders after childbirth. *Jama*, 320(23), 2438-2447.

Blumenfeld, Y. J., Lee, H. C., Gould, J. B., Langen, E. S., Jafari, A., & El-Sayed, Y. Y. (2010). The effect of preterm premature rupture of membranes on neonatal mortality rates. *Obstetrics & Gynaecology*, 116(6), 1381-1386.

Bodner, K., Wierrani, F., Grünberger, W., & Bodner-Adler, B. (2011). Influence of the mode of delivery on maternal and neonatal outcomes: a comparison between elective caesarean section and planned vaginal delivery in a low risk obstetric population. *Archives of Gynaecology and Obstetrics*, 283(6), 1193-1198.

Bottomley, C., Daemen, A., Mukri, F., Papageorghiou, A. T., Kirk, E., Pexsters, A., & Bourne, T. (2009). Assessing first-trimester growth: the influence of ethnic background and maternal age. *Human Reproduction*, 24(2), 284-290.

Bramham, K., Parnell, B., Nelson-Piercy, C., Seed, P. T., Poston, L., & Chappell, L. C. (2014). Chronic hypertension and pregnancy outcomes: systematic review and meta-analysis. *British Medicine Journal*, 348, g2301.

Bros, S., Chabrot, P., Kastler, A., Ouchchane, L., Cassagnes, L., Gallot, D., & Boyer, L. (2012). Recurrent bleeding within 24 hours after uterine artery embolization for severe postpartum haemorrhage: are there predictive factors? *Cardiovascular and Interventional Radiology*, 35(3), 508-514.

Brown, M. A., Magee, L. A., Kenny, L. C., Karumanchi, S. A., McCarthy, F. P., Saito, S., Ishaku, S. (2018). The hypertensive disorders of pregnancy: ISSHP classification, diagnosis & management recommendations for international practice. *Pregnancy Hypertension*, 13, 291–310. https://doi.org/10.1016/j.preghy.2018.05.004

Brumbaugh, J. E., Colaizy, T. T., Nuangchamnong, N., O'Brien, E. A., Fleener, D. K., Rijhsinghani, A., & Klein, J. M. (2014). Neonatal survival after prolonged preterm premature rupture of membranes before 24 weeks of gestation. *Obstetrics & Gynaecology*, 124(5), 992-998.

Bryant, A., Mhyre, J. M., Leffert, L. R., Hoban, R. A., Yakoob, M. Y., & Bateman, B. T. (2012). The association of maternal race and ethnicity and the risk of postpartum haemorrhage. *Anaesthesia & Analgesia*, 115(5), 1127-1136.

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Budak, M. Ş., Şentürk, M. B., Çakmak, Y., Polat, M., Doğan, O., & Pulatoğlu, (2018). Risk Factors and Outcomes of Placental Abruption: Evaluation of 53 Cases. *Haseki Tip Bulteni-Medical Bulletin Of Haseki*, 56(3), 203-208.

Buga, G. A., & Lumu, S. B. (1999). Hypertensive disorders of pregnancy at Umtata General Hospital: perinatal and maternal outcomes. *East African Medical Journal*, 76(4), 217-222.

C. (2020). Intrapartum and neonatal mortality in low-risk term women in midwife-led care and obstetrician-led care at the onset of labor: A national matched cohort study. *Acta Obstetricia et Gynecologica Scandinavica*, 99(4), 546-554.

Callaway, L. K., McIntyre, H. D., O'Callaghan, M., Williams, G. M., Najman, J. M., & Lawlor, D. A. (2007). The association of hypertensive disorders of pregnancy with weight gain over the subsequent 21 years: findings from a prospective cohort study. *American Journal oOf Epidemiology*, 166(4), 421-428.

Campbell, D. M., MacGillivray, I. A. N., & Carr-Hill, R. O. Y. (1985). Preeclampsia in a second pregnancy. BJOG: *An International Journal of Obstetrics & Gynaecology*, 92(2), 131-140.

Carolan, M. (2013). Maternal age ≥ 45 years and maternal and perinatal outcomes: a review of the evidence. *Midwifery*, 29(5), 479-489.

Carson, E., Sharmin, S., Maier, A. B., & Meij, J. J. (2018). Comparing indigenous mortality across urban, rural, and very remote areas: a systematic review and meta-analysis. *International Health*, 10(4), 219-227.

Carter, M. F., Xenakis, E., Holden, A., & Dudley, D. (2012). Neonatal intensive care unit admissions and their associations with late preterm birth and maternal risk factors in a population-based study. *The Journal of Maternal-foetal & Neonatal Medicine*, 25(4), 343-345.

Cetinkaya, S. E., Okulu, E., Soylemez, F., Akin, İ. M., Sahin, S., Akyel, T., ... Koc, A. (2015). Perinatal risk factors and mode of delivery are associated with mortality in very low birth weight infants. *The Journal of Maternal-foetal & Neonatal Medicine*, 28(11), 1318-1323.

Chalabi, H. A., Abu-Heija, A. T., E-Sunna, E., Zayed, F., & Badra, l. (1999). pregnancies-a clinical view. *Journal of Obstetrics and Gynaecology*, 19(3), 262-264.

Chambers, J. C., Eda, S., Bassett, P., Karim, Y., Thompson, S. G., Gallimore, J. R., & Kooner, J. S. (2001). C-reactive protein, insulin resistance, central obesity, and coronary heart disease risk in Indian Asians from the United Kingdom compared with European whites. *Circulation*, 104(2), 145-150.

Chen, M., Mcniff, C., Madan, J., Goodman, E., Davis, J. M., & Dammann, O. (2010). Maternal obesity and neonatal An APGAR score ofs. *The Journal of Maternal-foetal & Neonatal Medicine*, 23(1), 89-95.

Chettri, S., Adhisivam, B., & Bhat, B. V. (2015). Endotracheal suction for non-vigorous neonates born through a meconium-stained amniotic fluid: a randomized controlled trial. *The Journal of Paediatrics*, 166(5), 1208-1213.

Cohn, B. A., Cirillo, P. M., Christianson, R. E., van den Berg, B. J., & Siiteri, P. K. (2001). Placental characteristics and reduced risk of maternal breast cancer. *Journal of the National Cancer Institute*, 93(15), 1133-1140.

Connelly, L. M. (2008). Pilot studies. *Medsurg Nursing*, 17(6), 411.

Crentsil, J. E. (2017). *A Comparative Study of The Cost of Complementary/Alternative Medicine (CAM) And Conventional Treatment of Hypertension at The Ledzokuku Krowor Municipal Assembly (LEKMA) Hospital*, Accra (Doctoral dissertation, University of Ghana).

Creswell, J. W. (2009). *Mapping the field of mixed methods research*, 95-108.

Cruz, M. O., Gao, W., & Hibbard, J. U. (2012). What is the optimal time for delivery in women with gestational hypertension? *American Journal ~~O~~of Obstetrics ~~A~~and Gynecology*, 207(3), 214-e1.

Dalili, H., Sheikh, M., Hardani, A. K., Nili, F., Shariat, M., & Nayeri, F. (2016). Comparison of the combined versus conventional An APGAR score ofs in predicting adverse neonatal outcomes. *PloS one*, 11(2), e0149464.

Danso, K. A., & Opare-Addo, H. S. (2010). *Challenges associated with* development, 64(2), 129-143.

Dars, S., Malik, S., Samreen, I., & Kazi, R. A. (2014). Maternal morbidity and perinatal outcome in preterm premature rupture of membranes before 37 weeks gestation. *Pakistan Journal o~~O~~f Medical Sciences*, 30(3), 626.

Dassah, E. T., Kusi-Mensah, E., Morhe, E. S., & Odoi, A. T. (2019). Maternal and perinatal outcomes among women with hypertensive disorders in pregnancy in Kumasi, Ghana. *PloS one*, 14(10).

Davis, G. K., Mackenzie, C., Brown, M. A., Homer, C. S., Holt, J., McHugh, L., & Mangos, G. (2007). Predicting transformation from gestational hypertension to preeclampsia in clinical practice: a possible role for 24-hour ambulatory blood pressure monitoring. *Hypertension in Pregnancy*, 26(1), 77-87.

DeMauro, S. B., Jensen, E. A., Bann, C. M., Bell, E. F., Hibbs, A. M., Hintz, S. R., & Lorch, S. A. (2019). Home oxygen and 2-year outcomes of preterm infants with bronchopulmonary badysplasia. *Paediatrics*, 143(5).

Demirkiran, O., Dikmen, Y., Utku, T., & Urkmez, S. (2003). Critically ill obstetric patients in the intensive care unit. *International Journal of Obstetric A~~a~~naesthesia*, 12(4), 266-270.

Dennis, A. T., & Castro, J. M. (2014). Echocardiographic differences between preeclampsia and peripartum cardiomyopathy. *International Journal o~~O~~f Obstetric Anaesthesia*, 23(3), 260-266.

DiGiulio, D. B., Gervasi, M. T., Romero, R., Vaisbuch, E., Mazaki-Tovi, S., Kusanovic, J. P., & Chaiworapongsa, T. (2010). *Microbial Invasion Development*, 64(2), 129-143.

Downes, K. L., Grantz, K. L., & Shenassa, E. D. (2017). Maternal, labour, delivery, and perinatal outcomes associated with placental abruption: a systematic review. *American Journal ~~O~~of Perinatology*, 34(10), 935.

Downes, K. L., Shenassa, E. D., & Grantz, K. L. (2017). Neonatal outcomes associated with placental abruption. *American Journal o~~O~~f Epidemiology*, 186(12), 1319-1328.

Duley, L., Meher, S., & Abalos, E. (2006). Management of pre-eclampsia. *British Medicine Journal*, 332(7539), 463-468.

Durie, D. E., Sciscione, A. C., Hoffman, M. K., Mackley, A. B., & Paul, D. A. (2011). Mode of delivery and outcomes in very-low-birth-weight infants in the vertex presentation. *American J~~j~~ournal of P~~p~~erinatology*, 28(03), 195-200.

Edmonds, B. T., McKenzie, F., Macheras, M., Srinivas, S. K., & Lorch, S. A. (2015). Morbidity and mortality associated with mode of delivery for breech periviable deliveries. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynaecology*, 213(1), 70-e1.

Effect of maternal diabetes on the embryo, foetus, and children: congenital anomalies, genetic and epigenetic changes and developmental outcomes. *Birth Defects Research Part C: Embryo Today: Reviews*, 105(1), 53-72.

Eiland, E., Nzerue, C., & Faulkner, M. (2012). Preeclampsia 2012. *Journal of Pregnancy*. https://doi.org/10.1155/2012/586578

Eitlin, J., Di Lallo, D., Blondel, B., Weber, T., Schmidt, S., Künzel, W., & MOSAIC Research Group. (2010). Variability in caesarean section rates for very preterm births at 28–31 weeks of gestation in 10 European regions: results of the MOSAIC project. *European Journal of Obstetrics Gynaecology and Reproductive Biology*, 149(2), 147-152.

Eleje, G. U., Ezebialu, I. U., Umeobika, J. C., Eke, A. C., Ezeama, C. O., & Okechukwu, Z. C. (2010). Pre-labor rupture of membranes at term: a review of management in a health care institution. *Afrimedic Journal*, 1(2), 10-14.

Erdemir, G., Kultursay, N., Calkavur, S., Zekioğlu, O., Koroglu, O. A., Cakmak, B., & Sagol, S. (2013). Histological chorioamnionitis: effects on premature delivery and neonatal prognosis. *Paediatrics & Neonatology*, 54(4), 267-274.

Eun, S., Lee, J. M., Yi, D. Y., Lee, N. M., Kim, H., Yun, S. W., ... & Chae, S. A. (2016). Assessment of the association between An APGAR score ofs and seizures in infants below 1-year-old. *Seizure*, 37, 48-54.

Evers, E. C., McDermott, K. C., Blomquist, J. L., & Handa, V. L. (2014). Mode of delivery and subsequent fertility. *Human Reproduction*, 29(11), 2569-2574.

Fajar, J. K., Andalas, M., & Harapan, H. (2017). Comparison of An APGAR score ofs in breech presentations between vaginal and caesarean delivery. *Tzu-Chi Medical Journal*, 29(1), 24.

Fisher, S. J. (2015). Why is placentation abnormal in preeclampsia? *American Journal of Obstetrics and Gynecology*. Elsevier Inc. https://doi.org/10.1016/j.ajog.2015.08.042

Fretts, R. C., Schmittdiel, J., McLean, F. H., Usher, R. H., & Goldman, M. B. (1996). Increased Maternal Age and the Risk of foetal Death. *Obstetrical & gynaecological survey*, 51(4), 221-223.

Fuller, A. J., & Bucklin, B. A. (2010). Blood product replacement for postpartum haemorrhage. *Clinical obstetrics and gynaecology*, 53(1), 196-208.

Furukawa, S., Sameshima, H., Ikenoue, T., Ohashi, M., & Nagai, Y. (2011). Is the perinatal outcome of placental abruption modified by clinical presentation? *Journal of pregnancy*, 2011.

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Gaber, L. W., Spargo, B. H., & Lindheimer, M. D. (1994). 12 Renal pathology in pre-eclampsia. *Bailliere's clinical obstetrics and gynaecology*, 8(2), 443-468.

Garg, A., Toy, S., Tripodis, Y., Silverstein, M., & Freeman, E. (2015). Addressing social determinants of health at well-child care visits: A cluster RCT. *Paediatrics*, 135(2), e296–e304. https://doi.org/10.1542/peds.2014-2888

Garovic, V. D., & Hayman, S. R. (2007). Hypertension in pregnancy: an emerging risk factor for cardiovascular disease. *Nature clinical practice Nephrology*, 3(11), 613-622.

Geenes, V., Chappell, L. C., Seed, P. T., Steer, P. J., Knight, M., & Williamson, C. (2014). Association of severe intrahepatic cholestasis of pregnancy with adverse pregnancy outcomes: a prospective population-based case-control study. *Hepatology*, 59(4), 1482-1491.

Getahun, D., Strickland, D., Ananth, C. V., Fassett, M. J., Sacks, D. A., Kirby, R. S., & Jacobsen, S. J. (2010). Recurrence of preterm premature rupture of membranes in relation to the interval between pregnancies. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynaecology*, 202(6), 570-e1.

Gezer, A., Parafit-Yalciner, E., Guralp, O., Yedigoz, V., Altinok, T., & Madazli, R. (2013). Neonatal morbidity mortality outcomes in pre-term premature rupture of membranes. *Journal of Obstetrics and Gynaecology*, 33(1), 38-42.

Ghi, T., Maroni, E., Arcangeli, T., Alessandroni, R., Stella, M., Youssef, A., & Pelusi, G. (2010). Mode of delivery in the preterm gestation and

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maternal and neonatal outcome. *The Journal of Maternal-foetal & Neonatal Medicine*, 23(12), 1424-1428.

Ghimire, R. H., & Ghimire, S. (2013). Maternal and foetal Outcome Following Severe Anaemia In Pregnancy: Results From Nobel Medical College Teaching Hospital, Biratnagar, Nepal. *Journal of Nobel Medical College*, 2(1), 22-26.

Glantz, A., Marschall, H. U., & Mattsson, L. Å. (2004). Intrahepatic cholestasis of pregnancy: relationships between bile acid levels and fetal complication rates. *Hepatology*, 40(2), 467-474.

Goker, A., Yanikkerem, E., Demet, M. M., Dikayak, S., Yildirim, Y., & Koyuncu, F. M. (2012). Postpartum depression is mode of delivery a risk factor. *International Scholarly Research Notices*, 2012.

Grisaru-Granovsky, S., Reichman, B., Lerner-Geva, L., Boyko, V., Hammerman, C., Samueloff, A. & Israel Neonatal Network. (2012). Mortality and morbidity in preterm small-for-gestational-age infants: a population-based study. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynaecology*, 206(2), 150-e1.

Grobman, W. A., Bailit, J. L., Rice, M. M., Wapner, R. J., Reddy, U. M., Varner, M. W., & Tita, A. T. (2015). Racial and ethnic disparities in maternal morbidity and obstetric care. *Obstetrics and ~~g~~Gynaecology*, 125(6), 1460.

Guasch, E., & Gilsanz, F. (2016). Treatment of postpartum haemorrhage with blood products in a tertiary hospital: outcomes and predictive factors associated with severe haemorrhage. *Clinical and Applied Thrombosis/Haemostasis*, 22(7), 685-692.

Gudayu, T. W. (2017). Proportion and factors associated with low fifth minute An APGAR score of among singleton new-born babies in Gondar University Referral Hospital; North West Ethiopia. *African Health Sciences*, 17(1), 1-6.

Gudeta, T. A., & Regassa, T. M. (2019). Pregnancy Induced Hypertension and Associated Factors among Women Attending Delivery Service at Mizan-Tepi University Teaching Hospital, Tepi General Hospital, and Gebretsadik Shawo Hospital, Southwest, Ethiopia. *Ethiopian Journal of Health Sciences*, 29(1), 831–840. https://doi.org/10.4314/ejhs.v29i1.4

Gupta, N. (2016). Antepartum haemorrhage. *In Principles of Critical Care in Obstetrics.* Springer, New Delhi. (pp. 281-301).

Hashem, A., & Sarsam, S. D. (2019). The impact of incidental ultrasound finding of subchorionic and retroplacental hematoma in early pregnancy. *The Journal of Obstetrics and Gynaecology of India*, 69(1), 43-49.

Heard, E., Whitfield, K. E., Edwards, C. L., Bruce, M. A., & Beech, B. M. (2011). Mediating effects of social support on the relationship among perceived stress, depression, and hypertension in African Americans. *Journal of the National Medical Association*, 103(2), 116-122.

Hendler, I., Blackwell, S. C., Mehta, S. H., Whitty, J. E., Russell, E., Sorokin, Y., & Cotton, D. B. (2005). The levels of leptin, adiponectin, and resistin *First-trimester vaginal bleeding and complications later in pregnancy*.

Hibbard, J. U., Wilkins, I., Sun, L., Gregory, K., Haberman, S., Hoffman, M., & Burkman, R. (2010). Respiratory morbidity in late preterm births. JAMA: *the Journal of the American Medical Association*, 304(4), 419.

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Hiersch, L., Krispin, E., Aviram, A., Wiznitzer, A., Yogev, Y., & Ashwal, E. (2016). Effect of meconium-stained amniotic fluid on perinatal complications in low-risk pregnancies at term. *American ~~j~~Journal of ~~p~~Perinatology*, 33(04), 378-384.

Hiersch, L., Krispin, E., Linder, N., Aviram, A., Gabbay-Benziv, R., Yogev, Y., & Ashwal, E. (2017). Meconium-stained amniotic fluid and neonatal morbidity in low-risk pregnancies at term: the effect of gestational age. *American ~~j~~Journal of ~~p~~Perinatology*, 34(02), 183-190.

Hintz, S. R., Bann, C. M., Ambalavanan, N., Cotten, C. M., Das, A., & Higgins, R. D. (2010). Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. Predicting time to hospital discharge for extremely preterm infants. *Paediatrics*, 125(1), 146-154.

Hofmeyr, G. J., Haws, R. A., Bergström, S., Lee, A. C., Okong, P., Darmstadt, G. L., & Lawn, J. E. (2009). Obstetric care in low-resource settings: what, who, and how to overcome challenges to scale up. *International Journal of Gynaecology & Obstetrics*, 107, S21-S45.

Hua, X., Zhang, J., Guo, Y., Shen, M., Gaudet, L., Janoudi, G., & Wen, S. W. (2016). Effect of folic acid supplementation during pregnancy on gestational hypertension/preeclampsia: A systematic review and meta-analysis. *Hypertension in ~~p~~Pregnancy*, 35(4), 447-460.

Hübner, M. E., Ramirez, R., Burgos, J., Dominguez, A., & Tapia, J. L. (2016). Mode of delivery and antenatal steroids and their association with survival and severe intraventricular haemorrhage in very low birth weight infants. *Journal of Perinatology*, 36(10), 832-836.

Hutcheon, J. A., Lisonkova, S., & Joseph, K. S. (2011). Epidemiology of pre-eclampsia and the other hypertensive disorders of pregnancy. *Best practice & research Clinical O~~o~~bstetrics & G~~g~~ynaecology*, 25(4), 391-403

Hutton, E. K., & Thorpe, J. (2014). Consequences of meconium-stained amniotic fluid: what does the evidence tell us. *Early human ~~d~~Development*, 90(7), 333-339.

Hypertensive disease during pregnancy in low-income countries. *International Journal of Gynaecology & Obstetrics*, 110(1), 78-81.

Iliodromiti, S., Mackay, D. F., Smith, G. C., Pell, J. P., & Nelson, S. M. (2014). An APGAR score of and the risk of cause-specific infant mortality: a population-based cohort study. *The Lancet*, 384(9956), 1749-1755.

in normal weight, overweight, and obese pregnant women with and without preeclampsia. *American J~~j~~ournal of O~~o~~bstetrics and G~~g~~ynaecology*, 193(3), 979-983.

Ishaku, S. (2018). Hypertensive disorders of pregnancy: ISSHP classification, diagnosis, and management recommendations for international practice. *Hypertension*, 72(1), 24-43.

Jacobson, S. W., Jacobson, J. L., Sokol, R. J., Chiodo, L. M., & Corobana, R. (2004). Maternal age, alcohol abuse history, and quality of parenting as intellectual function. Alcoholism: *Clinical and Experimental Research*, 28(11), 1732-1745.

Jaiswal, A. A., Hariharan, C., & Dewani, D. K. (2017). Study of maternal and foetal outcomes in premature rupture of membrane in central rural India. *Int J Reprod Contracept Obstet Gynecol*, 6(4), 1409-12.

Jensen, E. A., Foglia, E. E., Dysart, K. C., Simmons, R. A., Aghai, Z. H., Cook, A., & DeMauro, S. B. (2019). Adverse effects of small for gestational age differ by gestational week among very preterm infants. *Archives of Disease in Childhood-foetal and Neonatal Edition*, 104(2), F192-F198.

Jeyabalan, A. (2013). Epidemiology of preeclampsia: impact of obesity.

Jin, J., Pan, S. L., Huang, L. P., Yu, Y. H., Zhong, M., & Zhang, G. W. (2015). Risk factors for adverse fetal outcomes among women with early-versus late-onset intrahepatic cholestasis of pregnancy. *International Journal of Gynecology & Obstetrics*, *128*(3), 236-240.

Kaaja, R. J., & Pöyhönen-Alho, M. K. (2006). Insulin resistance and sympathetic overactivity in women. *Journal of Hypertension*, 24(1), 131-141.

Kaissling, B., & Le Hir, M. (2008). The renal cortical interstitium: morphological and functional aspects. *Histochemistry and Cell Biology*, 130(2), 247-262.

Kalimba, E. M., & Ballot, D. E. (2013). Survival of extremely low-birth-weight infants. *South African Journal of Child Health*, 7(1), 13-18.

Kattah, A. G., Suarez, M. L. G., Milic, N., Kantarci, K., Zeydan, B., Mosley, T., & Garovic, V. D. (2018). Hormone Therapy and Urine Protein Excretion: A Multi-racial Cohort Study, Systematic Review and Meta-Analysis. *Menopause* (New York, NY), 25(6), 625.

Kawakita, T., Parikh, L. I., Ramsey, P. S., Huang, C. C., Zeymo, A., Fernandez, M., & Iqbal, S. N. (2015). Predictors of adverse neonatal outcomes in intrahepatic cholestasis of pregnancy. *American Journal of Obstetrics and Gynaecology*, 213(4), 570-e1.

Kenyon, S., Taylor, D. J., Tarnow-Mordi, W. O., & Oracle Collaborative Group. (2002). Oracle—antibiotics for preterm prelabour rupture of the membranes: short-term and long-term outcomes. *Acta Pædiatrica*, 91, 12-15.

Khatun, M. H. A., Arzu, J., Haque, E., Kamal, M. A., Al Mamun, M. A., Khan, M. F. H., & Hoque, M. M. (2009). foetal outcome in deliveries with meconium-stained liquor. *Bangladesh Journal of Child Health*, 33(2), 41-45.

Khazaei, S., Jenabi, E., & Veisani, Y. (2019). The association of Mullerianomalies and placenta abruption: a meta-analysis. *The Journal of Maternal-foetal & Neonatal Medicine*, 32(3), 512-516.

Khodayar-Pardo, P., Mira-Pascual, L., Collado, M. C., & Martínez-Costa, C. (2014). Impact of lactation stage, gestational age and mode of delivery on breast milk microbiota. *Journal of Perinatology*, 34(8), 599-605.

Kikkawa, F. (2013). Management of eclampsia and stroke during pregnancy. *Neurologia Mmedico-chirurgica*, 53(8), 513-519. https://doi.org/10.1111/nure.12055

Kim, M. M., Barnato, A. E., Angus, D. C., Fleisher, L. F., & Kahn, J. M. (2010). The effect of multidisciplinary care teams on intensive care unit mortality. *Archives of Iinternal Mmedicine*, 170(4), 369-376.

Kintiraki, E., Papakatsika, S., Kotronis, G., Goulis, D., & Kotsis, V. (2015). Pregnancy-Induced hypertension. *HORMONES*, 14(2), 211–223. https://doi.org/10.14310/horm.2002.1582

Knight, M., Callaghan, W. M., Berg, C., Alexander, S., Bouvier-Colle, M. H., Ford, J. B., & Oats, J. (2009). Trends in postpartum haemorrhage in high

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resource countries: a review and recommendations from the International Postpartum Haemorrhage Collaborative Group. *BMC pPregnancy and cChildbirth*, 9(1), 55.

Knol, H. M., Schultinge, L., Veeger, N. J., Kluin-Nelemans, H. C., Erwich, J. J., & Meijer, K. (2012). The risk of postpartum hemorrhage in women using high dose of low-molecular-weight heparins during pregnancy. *Thrombosis rResearch*, 130(3), 334-338.

Koifman, A., Levy, A., Zaulan, Y., Harlev, A., Mazor, M., Wiznitzer, A., & Sheiner, E. (2008). The clinical significance of bleeding during the second trimester of pregnancy. *Archives of gGynaecology and oObstetrics*, 278(1), 47-51.

Kozek-Langenecker, S. A., Afshari, A., Albaladejo, P., Santullano, C. A. A., De Robertis, E., Filipescu, D. C. & Wyffels, P. (2013). Management of severe perioperative bleeding: guidelines from the European Society of Anaesthesiology. *European Journal of Anaesthesiology* (EJA), 30(6), 270-382.

Krieg, S. A., Henne, M. B., & Westphal, L. M. (2008). Obstetric outcomes in donor oocyte pregnancies compared with advanced maternal age in vitro fertilization pregnancies. *Fertility and sSterility*, 90(1), 65-70.

Krieger, Y., Horev, A., Wainstock, T., Sheiner, E., & Walfisch, A. (2020). Meconium-stained amniotic fluid as a protective factor against childhood dermatitis and skin rash-related hospitalization in the offspring–a population-based cohort analysis. *Journal of the European Academy of Dermatology and Venereology*, 34(2), 319-324.

Kurek Eken, M., Tüten, A., Özkaya, E., Karatekin, G., & Karateke, A. (2017). Major determinants of survival and length of stay in the neonatal intensive care unit of new-borns from women with premature preterm rupture of membranes. *The Journal of Maternal-foetal & Neonatal Medicine*, 30(16), 1972-1975.

Kwak, D. W., Hwang, H. S., Kwon, J. Y., Park, Y. W., & Kim, Y. H. (2014). Co-infection with vaginal Ureaplasma urealyticum and Mycoplasma hominis increases adverse pregnancy outcomes in patients with preterm labour or preterm premature rupture of membranes. *The Journal of Maternal-foetal & Neonatal Medicine*, 27(4), 333-337.

Lancet Physical Activity Series Working Group. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: analysis of burden of disease and life expectancy. *The Lancet*, 380(9838), 219-229.

Lee, A. C., Katz, J., Blencowe, H., Cousens, S., Kozuki, N., Vogel, J. P., & Christian, P. (2013). National and regional estimates of term and preterm babies born small for gestational age in 138 low-income and middle-income countries in 2010. *The Lancet Global Health*, 1(1), e26-e36.

Lee, A. C., Lawn, J. E., Cousens, S., Kumar, V., Osrin, D., Bhutta, Z. A., & Darmstadt, G. L. (2009). Linking families and facilities for care at birth: what works to avert intrapartum-related deaths. *International Journal of Gynaecology & Obstetrics*, 107, S65-S88.

Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., Katzmarzyk, P. T., Liu, Q., Yang, H., Sun, X., & Li, G. (2019). Risk factors and complications of small for gestational age. *Pakistan jJournal of mMedical scSciences*, 35(5), 1199.

Lee, S. E., Romero, R., Park, C. W., Jun, J. K., & Yoon, B. H. (2008). The frequency and significance of intraamniotic inflammation in patients with cervical insufficiency. *American jJournal of oObstetrics and gGynaecology*, 198(6), 633-e1.

Linder, N., Hiersch, L., Fridman, E., Lubin, D., Kouadio, F., Berkowicz, N., & Melamed, N. (2015). The effect of gestational age on neonatal outcome in low-risk singleton term deliveries. *The Journal of Maternal-foetal & Neonatal Medicine*, 28(3), 297-302.

Lindheimer, M. D., Taler, S. J., & Cunningham, F. G. (2009). ASH position paper: hypertension in pregnancy. *The Journal of Clinical Hypertension*, 11(4), 214-225.

Livingston, J. C., Chin, R., Haddad, B., McKinney, E. T., Ahokas, R., & Sibai, B. M. (2000). Reductions of vascular endothelial growth factor and placental growth factor concentrations in severe preeclampsia. *American journal of obstetrics and gynaecology*, 183(6), 1554-1557.

Lo, J. C., Darracq, M. A., & Clark, R. F. (2014). A review of methylene blue treatment for cardiovascular collapse. *The Journal of eEmergency mMedicine*, 46(5), 670-679.

Lo, J. C., Sinaiko, A., Chandra, M., Daley, M. F., Greenspan, L. C., Parker, E. D., & O'Connor, P. J. (2013). Prehypertension and hypertension in community-based paediatric practice. *Paediatrics*, 131(2), e415-e424.

Locatelli, A., Vergani, P., Toso, L., Verderio, M., Pezzullo, J. C., & Ghidini, A. (2004). Perinatal outcome associated with oligohydramnios in uncomplicated term pregnancies. *Archives of Gynaecology and Obstetrics*, 269(2), 130-133.

Logan, A. G. (2014). Diagnosis, Evaluation, and Management of the Hypertensive Disorders of Pregnancy: Executive Summary. *Journal of Obstetrics and Gynaecology Canada*, 36(5), 416–438. https://doi.org/10.1016/S1701-2163(15)30588-0

Lustig, R. H., Mietus-Snyder, M. L., Bacchetti, P., Lazar, A. A., Velasquez-Mieyer, P. A., & Christensen, M. L. (2006). Insulin dynamics predict body mass index and z-score response to insulin suppression or sensitization pharmacotherapy in obese children. *The Journal of Paediatrics*, 148(1), 23-29.

Lykke, J. A., Dideriksen, K. L., Lidegaard, Ø., & Langhoff-Roos, J. (2010).

M. (2005). Hypertensive disorders in pregnancy: a population-based study. *Medical Journal of Australia*, 182(7), 332-335.

Macheku, G. S., Philemon, R. N., Oneko, O., Mlay, P. S., Masenga, G., Obure, J., & Mahande, M. J. (2015). Frequency, risk factors and feto-maternal outcomes of abruptio placentae in Northern Tanzania: a registry-based retrospective cohort study. *BMC Pregnancy and Childbirth*, 15(1), 242.

MacKay, A. P., Berg, C. J., & Atrash, H. K. (2001). Pregnancy-related mortality from preeclampsia and eclampsia. *Obstetrics & Gynaecology*, 97(4), 533-538.

Maged, A. M., Elsherief, A., Hassan, H., Salaheldin, D., Omran, K. A., Almohamady, M., & Lotfy, R. (2020). Maternal, foetal, and neonatal outcomes among different types of hypertensive disorders associating

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pregnancy needing intensive care management. *The Journal of Maternal-foetal & Neonatal Medicine*, 33(2), 314-321.

Magee, L. A., Pels, A., Helewa, M., Rey, E., von Dadelszen, P., & Audibert, F. ,.(2014). Defining "Term" Pregnancy Workgroup. Jama, 309(23), 2445-2446.

Maheshwari, A., Pandey, S., Shetty, A., Hamilton, M., & Bhattacharya, S. (2012). Obstetric and perinatal outcomes in singleton pregnancies resulting from the transfer of frozen thawed versus fresh embryos generated through in vitro fertilization treatment: a systematic review and meta-analysis. *Fertility and sSterility*, 98(2), 368-377.

Marín, R., Testa, A., & Pañeda, F. (2001). Preeclampsia and peripartum cardiomyopathy: infrequent association. *Nefrologia: Publicacion Oficial de la Sociedad Espanola Nefrologia*, 21(1), 84-87.

Markhus, V. H., Rasmussen, S., Lie, S. A., & Irgens, L. M. (2011). Placental abruption and premature rupture of membranes. *Acta oObsbstetricia et Gynecologica Scandinavica*, 90(9), 1024-1029.

Maternal morbidity and perinatal outcome in preterm premature rupture of membranes before 37 weeks gestation. *Pakistan Journal Oof Medical Sciences*, 30(3), 626.

McDonald, S. D., Han, Z., Walsh, M. W., Gerstein, H. C., & Devereaux, P. J. (2010). Kidney disease after preeclampsia: a systematic review and meta-analysis. *American Journal of Kidney Diseases*, 55(6), 1026-1039.

Mellier, G. (2009). *Neonatal outcomes after elective delivery management of preterm premature rupture of the membranes before 34 Limited*. https://doi.org/10.1155/2012/105918

Menon, R., Fortunato, S. J., Velez Edwards, D. R., & Williams, S. M. (2010). Association of genetic variants, ethnicity, and preterm birth with amniotic fluid cytokine concentrations. *Annals of human genetics*, 74(2), 165-183.

Mitchell, S., & Chandraharan, E. (2018). Meconium-stained amniotic fluid. *Obstetrics, Gynaecology & Reproductive Medicine*, 28(4), 120-124.

Mohammed, M. I. I. (2014). *Awareness of Pregnancy-induced Hypertension among Pregnant Women in Bashaier University Hospital, Khartoum State, Sudan (2013)* (Doctoral dissertation, University of Gezira).

Morton, G. J., Cummings, D. E., Baskin, D. G., Barsh, G. S., & Schwartz, M. W. (2006). Central nervous system control of food intake and body weight. Nature, 443(7109), 289-295.

Mostello, D., Kallogjeri, D., Tungsiripat, R., & Leet, T. (2008). Recurrence of preeclampsia: effects of gestational age at delivery of the first pregnancy, body mass index, paternity, and the interval between births. American Journal oOf Obstetrics And Gynaecology, 199(1), 55-e1.

Mundhra, R., & Agarwal, M. (2013). Fetal outcome in meconium stained deliveries. Journal of clinical and diagnostic research: JCDR, 7(12), 2874.

Mustafa, R., Ahmed, S., Gupta, A., & Venuto, R. C. (2012). A comprehensive review of hypertension in pregnancy. *Journal of Pregnancy*. Hindawi

Ness, R. B., & Sibai, B. M. (2006). Shared and disparate components of the pathophysiologies of fetal growth restriction and preeclampsia. *American Journal ~~O~~of Obstetrics And Gynecology, 195*(1), 40-49.

Ness, R. B., Grisso, J. A., Vergona, R., Klapper, J., Morgan, M., & Wheeler, J. E. (2001). Oral contraceptives, other methods of contraception, and risk reduction for ovarian cancer. *Epidemiology*, 307-312.

Nezvalová-Henriksen, K., Spigset, O., & Nordeng, H. (2011). Effects of codeine on pregnancy outcome: results from a large population-based cohort study. *European Journal ~~O~~of Clinical Pharmacology*, 67(12), 1253-1261.

Ngwenya, S. (2017). Severe preeclampsia and eclampsia: incidence, complications, and perinatal outcomes at a low-resource setting, Mpilo Central Hospital, Bulawayo, Zimbabwe. *International Journal ~~O~~of Women's Health*, 9, 353.

Nkwabong, E., & Tiomela Goula, G. (2017). Placenta abruption surface and perinatal outcome. *The Journal of Maternal-foetal & Neonatal Medicine*, 30(12), 1456-1459.

Nojomi, M., Haghighi, L., Bijari, B., Rezvani, L., & Tabatabaee, S. K. (2010). Delayed childbearing: pregnancy and maternal outcomes. *International Journal of Reproductive Biomedicine*, 8(2), 80-0.

Norman, M., Piedvache, A., Børch, K., Huusom, L. D., Bonamy, A. K. E., Howell, E. A., & Varendi, H. (2017). Association of short antenatal corticosteroid administration-to-birth intervals with survival and morbidity among very preterm infants: results from the EPICE cohort. *JAMA paediatrics*, 171(7), 678-686.

Nti, G. A. (2017). *Food preferences of customers of food service establishments in Ho in the Volta Region of Ghana* (Doctoral dissertation, University of Cape Coast). Nutrition Reviews, 71 Suppl 1(0 1), S18-25.

Nwoko, R., Plecas, D., & Garovic, V. D. (2012). Acute kidney injury in the pregnant patient. *Clin Nephrol*, 78(6), 478-86.

Nyarko-Sampson, E., Dabone, K. T., & Brenya, E. E. (2017). Perception and Patronage of Aphrodisiacs among Male Students in the University of Cape Coast: Implications for Counselling in Higher Educational Institutions. *Zimbabwe Journal of Educational Research*, 29(1).

Obstetrics & Gynecology, 115(5), 935-944.

Ocviyanti, D., & Wahono, W. T. (2018). Risk factors for neonatal sepsis in pregnant women with premature rupture of the membrane. *Journal of Pregnancy*, 2018.

Ohno, Y., Kawai, M., Morikawa, S., Sakakibara, K., Tanaka, K., Ishikawa, K.,

Oliveira, L. C., & da Costa, A. A. R. (2015). Maternal near miss in the intensive care unit: clinical and epidemiological aspects. *Revista Brasileira de terapia intensiva*, 27(3), 220.

Olusanya, B. O. (2011). Perinatal outcomes of multiple births in southwest Nigeria. *Journal of hHealth, Ppopulation, and Nnutrition*, 29(6), 639.

Olusanya, B. O., & Solanke, O. A. (2012). Perinatal correlates of delayed childbearing in a developing country. *Archives of gGynaecology and obObstetrics*, 285(4), 951-957.

Ornoy, A., Reece, E. A., Pavlinkova, G., Kappen, C., & Miller, R. K. (2015). Defining "Term" Pregnancy Workgroup. Jama, 309(23), 2445-2446.

Pariente, G., Peles, C., Perri, Z. H., Baumfeld, Y., Mastrolia, S. A., Koifman, A., ... & Hershkovitz, R. (2015). Meconium-stained amniotic fluid–risk factors and immediate perinatal outcomes among SGA infants. *The Journal of Maternal-foetal & Neonatal Medicine*, 28(9), 1064-1067.

Pariente, G., Wiznitzer, A., Sergienko, R., Mazor, M., Holcberg, G., & Sheiner, E. (2011). Placental abruption: a critical analysis of risk factors and perinatal outcomes. *The Journal of Maternal-foetal & Neonatal Medicine*, 24(5), 698-702.

Pasquier, J. C., Picaud, J. C., Rabilloud, M., Claris, O., Ecochard, R., Moret, S.,

Paul, S. K., Asian, S., Goh, M., & Torabi, S. A. (2019). Managing sudden transportation disruptions in supply chains under-delivery delay and quantity loss. *Annals of Operations Research*, 273(1-2), 783-814.

Paz Levy, D., Walfisch, A., Wainstock, T., Sergienko, R., Kluwgant, D., Landau, D., & Sheiner, E. (2019). Meconium-stained amniotic fluid exposure is associated with a lower incidence fspring long-term infectious morbidity. *American Journal of Reproductive Immunology*, 81(6), e13108.

Petersen, E. E., Davis, N. L., Goodman, D., Cox, S., Syverson, C., Seed, K., ... & Barfield, W. (2019). Racial/ethnic disparities in pregnancy-related deaths—the United States, 2007–2016. *Morbidity and Mortality Weekly Report*, 68(35), 762.

Pollock, W., Rose, L., & Dennis, C. L. (2010). Pregnant and postpartum admissions to the intensive care unit: a systematic review. *Intensive Care Medicine*, 36(9), 1465-1474.

Popkin, B. M. (2001). The nutrition transition and obesity in the developing world. *The Journal of ~~n~~Nutrition*, 131(3), 871S-873S.

Prior, M., Richardson, A., Asif, S., Polanski, L., Parris-Larkin, M., Chandler, J., & Raine-Fenning, N. J. (2018). Outcome of assisted reproduction in women with congenital uterine anomalies: a prospective observational study. *Ultrasound in Obstetrics & Gynaecology*, 51(1), 110-117.

Rainaldi, M. A., & Perlman, J. M. (2016). Pathophysiology of birth asphyxia. *Clinics in ~~p~~Perinatology*, 43(3), 409-422.

Ranta, J. K., Raatikainen, K., Romppanen, J., Pulkki, K., & Heinonen, S. (2011). Decreased PAPP-A is associated with preeclampsia, premature delivery, and small for gestational age infants but not with placental abruption. *European Journal of Obstetrics & Gynaecology and Reproductive Biology*, 157(1), 48-52.

Ray, J. G., Burrows, R. F., Burrows, E. A., & Vermeulen, M. J. (2001). MOS HIP: McMaster outcome study of hypertension in pregnancy. *Early ~~h~~Human ~~m~~Moderators of the ~~e~~Effects of ~~p~~Prenatal ~~a~~Alcohol ~~e~~Exposure* on 7.5-year

Ray, J. G., Urquia, M. L., Berger, H., & Vermeulen, M. J. (2012). Maternal and neonatal separation and mortality associated with concurrent admissions to intensive care units. *CMAJ*, 184(18), E956-E962.

Razaz, N., Cnattingius, S., & Joseph, K. S. (2019). Association between An APGAR score ofs of 7 to 9 and neonatal mortality and morbidity: a population-based cohort study of term infants in Sweden. *British Medicine Journal*, 365.

Reddy, U. M., Bettegowda, V. R., Dias, T., Yamada-Kushnir, T., Ko, C. W., & Willinger, M. (2011). Term pregnancy: a period of heterogeneous risk for infant mortality. *Obstetrics and ~~g~~Gynecology*, 117(6), 1279.

Reddy, U. M., Zhang, J., Sun, L., Chen, Z., Raju, T. N., & Laughon, S. K. (2012). Neonatal mortality by attempted route of delivery in early preterm birth. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynaecology*, 207(2), 117-e1.

Report of the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. (2000). *American Journal of Obstetrics and Gynecology*, 183(1), S1–S22. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10920346

Riihimäki, O., Metsäranta, M., Ritvanen, A., Gissler, M., Luukkaala, T., Paavonen, J., & Tikkanen, M. (2013). Increased prevalence of major congenital anomalies in births with placental abruption. *Obstetrics & Gynaecology*, 122(2 PART 1), 268-274.

Rijhsinghani, A., & Klein, J. M. (2014). Neonatal survival after prolonged preterm premature rupture of membranes before 24 weeks of gestation. *Obstetrics & Gynaecology*, 124(5), 992-998.

Roberts, C. L., Ford, J. B., Henderson-Smart, D. J., Algert, C. S., & Morris, J. of the amniotic cavity in pregnancies with small-for-gestational-age foetuses. *Journal of ~~p~~Perinatal ~~m~~Medicine*, 38(5), 495-502.

Rooks, J. P. (2012). Labour pain management other than neuraxial: what do we know and where do we go next? *Birth*, 39(4), 318-322.

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Rosenbaum, P. R. (2010). Design of observational studies (Vol. 10). New York: Springer.

Rosenberg, T., Pariente, G., Sergienko, R., Wiznitzer, A., & Sheiner, E. (2011). Critical analysis of risk factors and outcome of placenta previa. *Archives of Gynecology and Obstetrics*, 284(1), 47-51.

Rossi, R. M., Hall, E., Dufendach, K., & DeFranco, E. A. (2019). Predictive model of factors associated with maternal intensive care unit admission. *Obstetrics & Gynecology*, 134(2), 216-224.

Saghafi, N., Pourali, L., Ghazvini, K., Maleki, A., Ghavidel, M., & Babaki, M. K. (2018). Cervical bacterial colonization in women with preterm premature rupture of membrane and pregnancy outcomes: A cohort study. *International Journal of Reproductive BioMedicine*, 16(5), 341.

Salustiano, E. M. A., Campos, J. A. D. B., Ibidi, S. M., Ruano, R., & Zugaib, M. (2012). Low An APGAR score ofs at 5 minutes in a low-risk population: maternal and obstetrical factors and postnatal outcome. *Revista da Associação Médica Brasileira*, 58(5), 587-593.

Sanuade, O. A., Boatemaa, S., & Kushitor, M. K. (2018). Hypertension prevalence, awareness, treatment, and control in Ghanaian population: Evidence from the Ghana demographic and health survey. *PloS one*, 13(11), e0205985.

Saquib, S., Hamza, L. K., AlSayed, A., Saeed, F., & Abbas, M. (2020). Prevalence and Its Feto-Maternal Outcome in Placental Abruption: A Retrospective Study for 5 Years from Dubai Hospital. *Dubai Medical Journal*, 3(1), 26-31.

Saraswat, L., Bhattacharya, S., Maheshwari, A., & Bhattacharya, S. (2010). Maternal and perinatal outcome in women with threatened miscarriage in the first trimester: a systematic review. BJOG: *An International Journal of Obstetrics & Gynaecology*, 117(3), 245-257.

Sarkar, S., Patra, C., Dasgupta, M. K., Nayek, K., & Karmakar, P. R. (2013). Prevalence of congenital anomalies in neonates and associated risk factors in a tertiary care hospital in eastern India. *Journal ~~O~~Of Clinical Neonatology*, 2(3), 131.

Sasaki, Y., Ikeda, T., Nishimura, K., Katsuragi, S., Sengoku, K., Kusuda, S., & Fujimura, M. (2014). Association of antenatal corticosteroids and the mode of delivery with the mortality and morbidity of infants weighing below 1,500 g at birth in Japan. *Neonatology*, 106(2), 81-86.

Scantlebury, D. C., Kattah, A. G., Weissgerber, T. L., Agarwal, S., Mielke, M. M., Weaver, A. L., & White, W. M. (2018). Impact of a history of hypertension in pregnancy on a later diagnosis of atrial fibrillation. *Journal of the American Heart Association*, 7(10), e007584.

Schofield, M., & Knauss, C. (2010). Surveys and questionnaires in health research. *Research methods in health: Foundations for E~~e~~vidence-based ~~p~~Practice*, 213-236.

Seifoleslami, M. (2017). Report on the management of thrombocytopenia in obstetric patients: A retrospective study. *Interventional Medicine and Applied Science*, 9(4), 204-207.

Shah, S., & Gupta, A. (2019). Hypertensive Disorders of Pregnancy. *Cardiology Clinics*, 37(3), 345–354. https://doi.org/10.1016/j.ccl.2019.04.008

Shaikh, E. M., Mehmood, S., & Shaikh, M. A. (2010). Neonatal outcome in meconium-stained amniotic fluid-one-year experience. *Journal Of Pakistan Medical Association*, 60(9), 711-4.

Shamsi, U., Saleem, S., Nishter, N., & Ameen, A. (2013). Epidemiology and risk factors of preeclampsia; an overview of observational studies. *Al Ameen J Med Sci*, 6(4), 292-300.

Sharma, S. K., & Dey, M. (2017). Maternal and neonatal outcome in cases of premature rupture of membranes beyond 34 weeks of gestation. *Int J Reprod Contracept Obstet Gynecol*, 6, 1302-05.

Sheiner, E., Hadar, A., Shoham-Vardi, I., Hallak, M., Katz, M., & Mazor, M. (2002). The effect of meconium on the perinatal outcome: a prospective analysis. *The Journal of Maternal-Fetal & Neonatal Medicine*, 11(1), 54-59.

Shen, M., Smith, G. N., Rodger, M., White, R. R., Walker, M. C., & Wen, S. W. (2017). Comparison of risk factors and outcomes of gestational hypertension and pre-eclampsia. *PLoS ONE*, 12(4). https://doi.org/10.1371/journal.pone.0175914

Shiozaki, A., Matsuda, Y., Satoh, S., & Saito, S. (2013). Comparison of risk factors for gestational hypertension and preeclampsia in Japanese singleton pregnancies. *Journal of Obstetrics and Gynaecology Research*, 39(2), 492-499.

Shrestha, S., Dangol, S. S., Shrestha, M., & Shrestha, R. P. B. (2010). The outcome of preterm babies and associated risk factors in a hospital. *Journal of the Nepal Medical Association*, 50(180).

Siakwa, M., Kpikpitse, D., Ankobil, A., Mupepi, S. C., John, M., Doe, P., ... & Owoo, E. H. (2014). *Effects of Chronic Hepatitis B Infection on Pregnancy and Birth Outcomes in Ghana.*

Sibai, B. M. (2008). The coexistence of gestational hypertension and diabetes: influence on pregnancy outcome. *American ~~j~~Journal of ~~p~~Perinatology*, 25(06), 325-329.

Sibai, B. M., Taslimi, M. M., El-Nazer, A., Amon, E., Mabie, B. C., & Ryan, G. M. (1986). Maternal-perinatal outcome associated with the syndrome of hemolysis, elevated liver enzymes, and low platelets in severe preeclampsia-eclampsia. *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynecology*, 155(3), 501-507.

Simchen, M. J., Yinon, Y., Moran, O., Schiff, E., & Sivan, E. (2006). *Pregnancy outcome after age 50. Obstetrics & Gynecology*, 108(5), 1084-1088.

Simmons, L. E., Rubens, C. E., Darmstadt, G. L., & Gravett, M. G. (2010, December). Preventing preterm birth and neonatal mortality: exploring the epidemiology, causes, and interventions. *In Seminars in ~~p~~Perinatology*. 34(6), 408-415.

Singh, B. S., Clark, R. H., Powers, R. J., & Spitzer, A. R. (2009). Meconium aspiration syndrome remains a significant problem in the NICU: outcomes and treatment patterns in term neonates admitted for intensive care during ten years. *Journal of ~~p~~Perinatology*, 29(7), 497-503.

Somer, S. J. H., Sinkey, R. G., & Bryant, A. S. (2017). Epidemiology of racial/ethnic disparities in severe maternal morbidity and mortality. *In Seminars in ~~p~~Perinatology*. 41(5), 258-265.

Sori, D., Belete, A., & Wolde, M. (2016). Meconium-stained amniotic fluid: factors affecting maternal and perinatal outcomes at Jimma University specialized teaching hospital, South West Ethiopia. *Gynecol Obstet (Sunnyvale)*, 6(394), 2161-0932.

Souza, A. S. R., Patriota, A. F., Guerra, G. V. D. Q. L., & Melo, B. C. P. D. (2016). Evaluation of perinatal outcomes in pregnant women with preterm premature rupture of membranes. *Revista da Associação Médica Brasileira*, 62(3), 269-275.

Spong, C. Y. (2013). Defining "term" pregnancy: recommendations from the

Steggerda, S. J., De Bruïne, F. T., van den Berg-Huysmans, A. A., Rijken, M., Leijser, L. M., Walther, F. J., & van Wezel-Meijler, G. (2013). Small cerebellar hemorrhage in preterm infants: perinatal and postnatal factors and outcome. *The Cerebellum*, 12(6), 794-801.

Stella, C. L., O'Brien, J. M., Forrester, K. J., Barton, J. R., Istwan, N., Rhea, D.,

Stuart, A., Olausson, P. O., & Källen, K. (2011). An APGAR score ofs at 5 minutes after birth in relation to school performance at 16 years of age. *Obstetrics & Gynecology*, 118(2), 201-208.

Suzuki, H., Watanabe, Y., Arima, H., Kobayashi, K., Ohno, Y., & Kanno, Y. (2008). Short-and long-term prognosis of blood pressure and kidney disease in women with a history of preeclampsia. *Clinical and eExperimental nNephrology*, 12(2), 102-109.

Tal, A., Peretz, H., Garmi, G., Zafran, N., Romano, S., & Salim, R. (2018). Effect of inter-twin delivery interval on umbilical artery pH and An APGAR score of in the second twin. *Birth*, 45(1), 37-42.

Tchirikov, M., Schlabritz-Loutsevitch, N., Maher, J., Buchmann, J., Naberezhnev, Y., Winarno, A. S., & Seliger, G. (2018). Mid-trimester preterm premature rupture of membranes (PPROM): etiology, diagnosis, classification, international recommendations of treatment options and outcome. *Journal of ~~p~~Perinatal ~~m~~Medicine*, 46(5), 465-488.

Test, G., Levy, A., Wiznitzer, A., Mazor, M., Holcberg, G., Zlotnik, A., & Sheiner, E. (2011). Factors affecting the latency period in patients with preterm premature rupture of membranes. *Archives of ~~g~~Gynecology and ~~o~~Obstetrics*, 283(4), 707-710.

Thangwijitra, S., Sripramodya, C., & Kanchanawat, S. (2010). Risk factors of birth asphyxia in pregnancy 37 complete weeks and over by An APGAR score less than 7 at 5 minutes. *Thai Journal of Obstetrics and Gynaecology*, 54-62.

Thavarajah, H., Flatley, C., & Kumar, S. (2018). The relationship between the five-minute An APGAR score of, mode of birth, and neonatal outcomes. *The Journal of Maternal-Fetal & Neonatal Medicine*, 31(10), 1335-1341.

Tikkanen, M. (2011). Placental abruption: epidemiology, risk factors, and consequences. *Acta ~~o~~Obstetricia et ~~g~~Gynecologica Scandinavica*, 90(2), 140-149.

Tranquilli, A. L., Brown, M. A., Zeeman, G. G., Dekker, G., & Sibai, B. M. (2013). The definition of severe and early-onset preeclampsia. Statements from the International Society for the Study of Hypertension in Pregnancy (ISSHP). Pregnancy Hypertension: *An International Journal of Women's Cardiovascular Health*, 3(1), 44-47.

Trogstad, L., Skrondal, A., Stoltenberg, C., Magnus, P., Nesheim, B. I., & Eskild, A. (2004). Recurrence risk of preeclampsia in twin and singleton pregnancies. *American ~~j~~Journal of ~~m~~Medical ~~g~~Genetics Part A*, 126(1), 41-45.

Tuuli, M. G., Rampersad, R., Stamilio, D., Macones, G., & Odibo, A. O. (2011). Perinatal outcomes in women with preeclampsia and superimposed preeclampsia: do they differ? *American ~~j~~Journal of ~~o~~Obstetrics and ~~g~~Gynecology*, 204(6), 508-e1.

Umesawa, M., & Kobashi, G. (2017). Epidemiology of hypertensive disorders in pregnancy: Prevalence, risk factors, predictors and prognosis. *Hypertension Research*, 40(3), 213–220. https://doi.org/10.1038/hr.2016.126

Vatten, L. J., Romundstad, P. R., Trichopoulos, D., & Skjaerven, R. (2002). Pre-eclampsia in pregnancy and subsequent risk for breast cancer. *British Journal of Cancer*, 87(9), 971-973.

Vikse, B. E., Irgens, L. M., Leivestad, T., Skjærven, R., & Iversen, B. M. (2008). Preeclampsia and the risk of end-stage renal disease. *New England Journal of Medicine*, 359(8), 800-809.

Villar, J., Carroli, G., Wojdyla, D., Abalos, E., Giordano, D., Ba'aqeel, H. & World Health Organization Antenatal Care Trial Research Group. (2006). Preeclampsia, gestational hypertension and intrauterine growth restriction, related or independent conditions?. *American Journal of Obstetrics and Gynecology*, 194(4), 921-931.

Wagura, P., Wasunna, A., Laving, A., & Wamalwa, D. (2018). Prevalence and factors associated with preterm birth at Kenyatta national hospital. *BMC Pregnancy and Childbirth*, 18(1), 1-8.

Walker, K. F., Bugg, G. J., Macpherson, M., McCormick, C., Grace, N., Wildsmith, C., ... & Thornton, J. G. (2016). Randomized trial of labor induction in women 35 years of age or older. *New England Journal of Medicine*, 374(9), 813-822.

Wall, S. N., Lee, A. C., Niermeyer, S., English, M., Keenan, W. J., Carlo, W., & Lawn, J. E. (2009). *Neonatal resuscitation in low-resource settings*: what, who, and how to overcome challenges to scale up. International *Journal of Gynecology & Obstetrics*, 107(Supplement), S47-S64.

Walsh, M. C., & Fanaroff, J. M. (2007). Meconium-stained fluid: approach to the mother and the baby. *Clinics in Perinatology*, 34(4), 653-665.

Wang, I. K., Muo, C. H., Chang, Y. C., Liang, C. C., Chang, C. T., Lin, S. Y., & Morisky, D. E. (2013). Association between hypertensive disorders during pregnancy and end-stage renal disease: a population-based study. *Cmaj*, 185(3), 207-213.

Wang, L., Leng, J., Liu, H., Zhang, S., Wang, J., Li, W., ... & Yang, X. (2017). Association between hypertensive disorders of pregnancy and the risk of postpartum hypertension: a cohort study in women with gestational diabetes. *Journal of Human Hypertension*, 31(11), 725-730.

weeks' gestation (DOMINOS study). *European Journal of Obstetrics & Gynaecology and Reproductive Biology*, 143(1), 18-23.

Werner, E. F., Janevic, T. M., Illuzzi, J., Funai, E. F., Savitz, D. A., & Lipkind, H. S. (2011). Mode of delivery in nulliparous women and neonatal intracranial injury. *Obstetrics and Gynecology*, 118(6), 1239.

Werner, E. F., Savitz, D. A., Janevic, T. M., Ehsanipoor, R. M., Thung, S. F., Funai, E. F., & Lipkind, H. S. (2012). Mode of delivery and neonatal outcomes in preterm, small-for-gestational-age newborns. *Obstetrics and Gynecology*, 120(3), 560.

Wertheimer, A., Shemer, A., Hadar, E., Berezowsky, A., Wiznitzer, A., & Krispin, E. (2020). The effect of meconium-stained amniotic fluid on perinatal outcome in pregnancies complicated by preterm premature rupture of membranes. *Archives of Gynecology and Obstetrics*, 301, 1181-1187.

Wiegerinck, M. M., Eskes, M., Van Der Post, J. A., Mol, B. W., & Ravelli, A. Williamson, C., & Geenes, V. (2014). Intrahepatic cholestasis of pregnancy. *Obstetrics & Gynecology*, 124(1), 120-133.

Wilson, E., Maier, R. F., Norman, M., Misselwitz, B., Howell, E. A., Zeitlin, J., ... & Pryds, O. (2016). Admission hypothermia in very preterm infants and neonatal mortality and morbidity. *The Journal of pediatrics*, 175, 61-67.

Wolde, Z., Segni, H., & Woldie, M. (2011). Hypertensive disorders of pregnancy in Jimma University specialized hospital. *Ethiopian Journal of Health Sciences*, 21(3).

Wong, T. Y., Groen, H., Faas, M. M., & van Pampus, M. G. (2013). Clinical risk factors for gestational hypertensive disorders in pregnant women at high risk for developing preeclampsia. Pregnancy Hypertension*: An*

International Journal of Women's Cardiovascular Health, 3(4), 248-253.

World Health Organization. (2006). The world health report 2006: working together for health. World Health Organization. The effect of placental abruption on the outcome of extremely premature infants. *The Journal of Maternal-Fetal & Neonatal Medicine*, 28(6), 705-708.

Wosenu, L., Worku, A. G., Teshome, D. F., & Gelagay, A. A. (2018). Determinants of birth asphyxia among live birth newborns in University of Gondar referral hospital, northwest Ethiopia: A case-control study. *PloS one*, 13(9), e0203763.

Wright, D., Syngelaki, A., Akolekar, R., Poon, L. C., & Nicolaides, K. H. (2015). Competing risks model in screening for preeclampsia by maternal characteristics and medical history. *American Journal of Obstetrics and Gynecology*, 213(1), 62-e1.

Wu, G., Imhoff-Kunsch, B., & Girard, A. W. (2012). Biological mechanisms for nutritional regulation of maternal health and fetal development. *Paediatric and Perinatal Epidemiology*, 26, 4-26.

Wu, Y., Chen, Y., Shen, M., Guo, Y., Wen, S. W., Lanes, A., ... & Hua, X. (2019). Adverse maternal and neonatal outcomes among singleton pregnancies in women of very advanced maternal age: a retrospective cohort study. *BMC Pregnancy aAnd Childbirth*, 19(1), 1-9.

Xiong, T., Mu, Y., Liang, J., Zhu, J., Li, X., Li, J., Mu, D., (2018). Hypertensive disorders in pregnancy and stillbirth rates: a facility-based study in China. *Bulletin of the World Health Organization*, 96(8), 531– https://doi.org/10.2471/BLT.18.208447

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Xu, H., Calvet, M., Wei, S., Luo, Z. C., & Fraser, W. D. (2010). Risk factors for early and late-onset of respiratory symptoms in babies born through meconium. *American Journal of Perinatology*, 27(04), 271-278.

Yadav, J. S., Roubin, G. S., Iyer, S., Vitek, J., King, P., Jordan, W. D., & Fisher, W. S. (1997). Elective stenting of the extracranial carotid arteries. *Circulation*, 95(2), 376-381.

Ye, C., Ruan, Y., Zou, L., Li, G., Li, C., Chen, Y., & Zhang, W. (2014). The 2011 survey on hypertensive disorders of pregnancy (HDP) in China: prevalence, risk factors, complications, pregnancy and perinatal outcomes. *PloS one*, *9*(6), e100180.

Ye, G., Jiang, Z., Lu, S., & Le, Y. U. A. N. L. U. O. (2011). Premature infants born after preterm premature rupture of membranes with 24–34 weeks of gestation: a study of factors influencing length of neonatal intensive care unit stay. *The Journal of Maternal-Foetal & Neonatal Medicine*, 24(7), 960-965.

Yogev, Y., Melamed, N., Bardin, R., Tenenbaum-Gavish, K., Ben-Shitrit, G., Ben-Haroush, A. (2010). Pregnancy outcome at extremely advanced maternal age. *American Journal of Obstetrics and Gynecology*, 203(6), 558-e1.

Zecca, E., De Luca, D., Marras, M., Caruso, A., Bernardini, T., & Romagnoli, C. (2006). Intrahepatic cholestasis of pregnancy and neonatal respiratory distress syndrome. *Paediatrics*, 117(5), 1669-1672.

Zeeman, G. G. (2006). Obstetric critical care: a blueprint for improved outcomes. *Critical Care Medicine*, 34(9), S208-14.

Zhang, J., Meikle, S., & Trumble, A. (2003). Severe maternal morbidity associated with hypertensive disorders in pregnancy in the United States. *Hypertension in Pregnancy*, 22(2), 203-212.

Zhu, T., Tang, J., Zhao, F., Qu, Y., & Mu, D. (2015). Association between maternal obesity and offspring An APGAR score of or cord pH: a systematic review and meta-analysis. *Scientific reports*, 5, 18386.

Ziadeh, S., & Sunna, E. (2000). Obstetric and perinatal outcomes of pregnancies with term labour and meconium-stained amniotic fluid. *Archives of Gynaecology and Obstetrics*, 264(2), 84-87.

Zibaeenezhad, M. J., Ghodsi, M., Arab, P., & Gholzom, N. (2010). The Prevalence of Hypertensive Disorders of Pregnancy in Shiraz, Southern Iran. *Iranian Cardiovascular Research Journal* Retrieved from www.icrj.irOriginalArticle

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APPENDICES

APPENDIX A

DECLARATION FORM

I am Emmanuel Komladzah, a University of Cape Coast Master of Nursing student. I am investigating maternal and perinatal outcome of hypertensive women who are pregnant. Information provided is for academic purposes only and will not affect the care participants receive. Participation is voluntary. You are assured of anonymity and you are at liberty to withdraw from the study anytime you choose to.

……………………………….. ……………………………….

Signature **Date**

(Tel. 0243628447)

CONSENT FORM

I hereby declared that all issues concerning the research have been properly explained to me in a language I understand. I was allowed to ask questions to which answers were provided to my satisfaction and thereby consented to participate in the study on my own.

………………………………..   ……………………………..

Signature   **Date**

CHOOSE THE APPROPRIATE RESPONSES TO THE QUESTIONS

SECTION A: SOCIO-DEMOGRAPHIC DATA

Question No.	Questions	Response
1	**Age** I. < 20 II. 20-25 III. 26-30 IV. 31-35 V. 36-40 VI. > 40	{ }
2	**Income** I. Low II. Medium III. High	{ }
3	**Education** I. Illiterate II. Primary III. Secondary IV. Tertiary	{ }
4	**Religion** I. Christian II. Islam III. Traditional IV. Others	{ }
5	**Marital status** I. Married II. Divorced	{ }
6	**Ethnicity** I. Ewe II. Twi III. Ga/ Dangme	{ }

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	IV. Mole/Dagbani V. Others	

~~III. Ga/Dangme~~

SECTION B: HEALTH FACILITY FACTORS

Question No.	Questions	
7	**Obstetrician** I. Present II. Absent	 { } { }
8	**Paediatrician** I. Present II. Absent	 { } { }
9	**Neonatal intensive care unit** I. Present II. Absent	 { } { }
10	**Obstetrician** I. Present II. Absent	 { } { }
11	**Paediatrician** I. Present II. Absent	 { } { }

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SECTION C: MATERNAL OUTCOMES

Question No.	Questions	Response
12	**Antenatal attendance** I. Below 4 II. 4 or more	{ }
13	**Parity Order** I. Primigravida II. Multigravida	{ }
16	**Meconium-Stained Amniotic fluid** I. Present II. Absent	{ }
17	**Premature Rupture of Membrane** I. Present II. Absent	{ }
18	**Hemorrhage** I. Pre-partum II. intrapartum III. Postpartum	{ }
19	**Placentae abruption** I. Present II. Absent	{ }
	~~II. Absent~~	
20	**Renal dysfunctions** I. Present II. Absent	{ }
21	**Liver dysfunction** I. Present	{ }

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	II. Absent	
22	**MgSO4 Intervention Required** I. Yes II. No	{ }
23	**Diabetes** I. Non II. Type 1 III. Type 11	{ }

SECTION D: PERINATAL CHARACTERISTICS

Question No.	Questions	Response
24	**Survival at birth** I. Live birth II. Stillbirth	{ }
25	**Sex of Neonates** I. Male II. Female	{ }
26	**Small for Gestational Age** I. Yes II. No	{ }
27	**Big for gestational age** I. Yes II. No	{ }
28	**Birth weight** I. < 1500g II. 1500-2500g III. 2500g	{ }

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29	~~III. 2500g~~ **An APGAR score of at minute 1** I.<7 II.>7	**{ }**
30	**An APGAR score of at 5 Minute** I.<7 II.>7 –	**{ }**
31	~~22.~~ **ICU admission required.** I. Yes II. No	**{ }**
32	~~23.~~ **Congenital abnormality** I. Present II. Absent	**{ }**
33	**congen** **If ital abnormality is present state type**	…………………………………
34	**Birth Defects** I. Present II. Absent	**{ }**

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