DECLARATION

I, MARIAN OCRAN, do hereby declare that this dissertation which is being submitted in fulfilment of the requirement for the degree of MSc in Medical Ultrasonography is the result of my own research performed under supervision, and that except where otherwise other sources are acknowledged and duly referenced, this work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree. I hereby give permission for the Department of Radiography to seek dissemination of the dissertation in any appropriate format.

Signed ...........................................Date..............................

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(Secondary Supervisor)

Signed ...........................................Date..............................

(HEAD OF DEPARTMENT)
DEDICATION
There was one and now two………
I dedicate this work to my family, you are like no other.
ACKNOWLEDGEMENT

To my lecturers and supervisors of the Department of Radiography, School of Biomedical and Allied Health Sciences, it took your tutelage to enable me to this stage. I appreciate your contributions towards the success of this study.

The support of staff of the Radiology Department and Obstetrics & Gynaecology units of the 37 Military Hospital goes without saying. This work would not have come together without you and not forgetting Amy and Selorm, for the assistance and moral support.

My course mates, Mr Twum Barima and Mrs Linda Nyarko you guys made the difference. I survived because you were there.

Nothing moves without God. The prayers of the righteous indeed availeth much. Reverend & Mrs Clifford Gadafi Kasim and the pastoral board of Initiators of Change Ministries, you took care of this journey even before it begun. God bless you greatly.

Finally, I acknowledge the support of my husband, parents and siblings for the encouragement when the pressure was neck breaking.
ABSTRACT

Background: There has been an increase in caesarean sections due to complications, which include malpresentation of foetus. Despite the good outcomes of present day caesarean sections, expectant mothers diagnosed with breech presentation still experience great turmoil. The risk factors provided by literature for the occurrence of breech presentation are many and varied. However, some factors such as maternal age and number of pregnancies are common to all.

Aim: The aim of the research is to assess the occurrence of breech presentation using the 37 Military Hospital as a case study.

Methodology: The study adopted a cross-sectional and descriptive design. Ninety-four (94) pregnant women of gestational age ≥ 37 weeks were recruited via purposive sampling and were assessed with ultrasound scan to determine foetal positions. Data processing and analysis were done using the Statistical Package for Social Sciences (SPSS) version 21.

Results: The results of the study showed no statistically significant relationship between maternal age, number of births (parity), education and occupation, and the occurrence of breech presentation. Also, the percentage of pregnant women of ≥ 37 weeks gestation with breech pregnancy during the study period at the 37 Military Hospital was 12.8%.

Conclusion: The percentage of women of ≥37 weeks gestation with breech pregnancy during the study period at the 37 Military Hospital was 12.8%. There is no statistically significant relationship between maternal age, number of births (parity), the level of education and occupation and the occurrence of breech presentation.

Recommendation: It is recommended that, at term (37 weeks) gestation, all pregnant women especially those in rural areas undergo ultrasound scan to inform their clinicians and enable monitoring and planning of safe delivery. Ultrasound scan should be considered a fundamental aspect of effective healthcare delivery and hence, equipment be made available
within reasonable distance for easy access by pregnant women. The lack of evidence on risk factors among Ghanaian women implies that more effort is required to mitigate problems associated with breech delivery.

**Keywords:** Breech, foetal presentation, term pregnancy, maternal age, parity
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<td>Vocational certificate</td>
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<tr>
<td>Hz</td>
<td>Hertz</td>
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<tr>
<td>IUGR</td>
<td>intrauterine growth retardation</td>
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<tr>
<td>JHS</td>
<td>Junior High School</td>
</tr>
<tr>
<td>SHS</td>
<td>Senior High School</td>
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<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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<td>World Health Organization</td>
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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Foetal presentation has been emphasized to be an important consideration during labour (Timby, 2005). Similarly, the World Health Organization ([WHO], 2015) has also established that foetal presentation is one of the bases of categorization in the classification of caesarean section. According to Sharma (2010), foetal presentation refers to how the foetus is situated in the uterus, and the presenting part is closest to the cervix. Sharma (2010) further describes the various types of foetal presentation as vertex or cephalic where the head is the presenting part, transverse lie or shoulder presentation and breech presentation the buttocks lead in this case. Breech occurs when the podalic end of foetus enters the pelvis before the head (Amitava & Bar, 2015). Breech presentation, according to Sharma, accounts for 3-4% of all deliveries.

Timby (2005) identifies the types of breech presentations as complete, frank, footling, and kneeling. These are explained as buttocks presenting and the thighs flexed on abdomen (complete); buttocks as the presenting part and the thighs extended across the abdomen and chest (frank); either one or both legs are extended both at the hip and the knee (footling), and the legs extended at the hip but flexed at the knee (kneeling). Stevenson (2006) also stated that breech presentation occurs at a frequency of 3.1% in singleton pregnancies. Although risk factors for breech presentation are outlined, the mechanism of alignment in cephalic position at term is unknown (Mostello, Chang, Bai, Wang, Guild, Stamps, & Leet, 2014).
1.2 PROBLEM STATEMENT

Maternal and child health has been a major issue for the country in recent times as many maternal and child deaths due to delivery complications have been recorded. One major complication that contributes to this issue is foetal positioning because it affects the mode of delivery and requires high level of skill of the medical team or health attendant.

The use of ultrasound has made it easier for determining foetal positioning, leading to better management of breech presentations. However many areas in Ghana are not privileged to access this useful service. In addition, poverty in certain parts of the country makes the decision to undergo ultrasound scan a challenge. According to WHO (2010), out of half a million women who die during pregnancy or childbirth, majority are from developing countries, including Ghana. Anecdotal evidence reveals that the occurrence of maternal mortality is independent of the number of health facilities and the availability of trained personnel across the country. This shows that the best chance of survival is to avoid risks. Hence, there is the need for in-depth analyses of risks associated with gestational complications and probable ways to avoid them to ensure maternal wellbeing.

According to Zsirai, Csákány, Vargha, Fülöp and Tabák (2016), breech presentation is an indication for pathological pregnancy in preterm delivery and is associated with gestational complications. A study by Demol, Bashiri, Furman, Maymon, Shoham-Vardi and Mazor (2000) showed a prevalence of 73% in breech presentation among preterm births of the 12.8% prevalence of malpresentation and higher rates of perinatal mortality among non-vertex presentation. Apart from the medical implications, the news of a breech presentation causes anxiety in any expectant mother, most especially, a primigravida. Although literature shows that a reasonable number of studies have been undertaken on breech pregnancy, none is recorded from Africa. This presents a challenge in relating findings to African women.
1.3 SIGNIFICANCE OF STUDY

Various studies have indicated that the best management of breech presentation is a caesarean section (Sparling, 2013; Sharma, 2010; Stevenson & Judith, 2006). However, WHO (2010) warns of the potential complications of caesarean sections and that it should be undertaken only when medically prudent. An establishment of a relationship between maternal age, number of births, level of education and occupation to the occurrence of breech presentation is expected from the results of this study. This may appropriate recommendations to improve obstetric care in the country, particularly with respect to breech presentation. Likewise, the results of this study may show high-risk groups so that better attention is provided them to minimise the complication during delivery. The findings from the study may also serve as a source of reference for students and researchers who wish to undertake future studies on the occurrence of breech presentation.

1.4 HYPOTHESIS

The following four hypotheses were tested:

**H1:** There is a statistically significant relationship between maternal age and the occurrence of breech presentation.

**H2:** There is a statistically significant relationship between number of births and the occurrence of breech presentation.

**H3:** There is a statistically significant relationship of education to the occurrence of breech pregnancy.

**H4:** There is a statistically significant relationship of occupation to the occurrence of breech pregnancy.
1.5 AIM

The aim of the study is to assess the occurrence of breech presentation using ultrasound scan.

1.6 SPECIFIC OBJECTIVES

1. To determine the percentage of women of $\geq 37$ weeks gestation with breech pregnancy during the study period at the 37 Military Hospital using ultrasound scan.

2. To determine the relationship between demographic variables (age, parity, education, occupation), and the occurrence of breech pregnancy of singleton pregnant women presenting at the 37 Military Hospital.
CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This Chapter presents a review of related literature from books, journals and online sources. The literature review covers the definition of the uterus, medical ultrasonography, occurrence of breech presentation and predisposing factors associated with breech presentation.

2.2 THE UTERUS

The uterus, popularly referred to as the womb, is a hollow muscular organ of the female reproductive system responsible for embryonic and foetal growth during pregnancy (Taylor, 2017). While in the views of Guyton and Hall (2006), the uterus is an organ of the female reproductive system designed to receive an embryo or egg and ensure its development, Franasiak and Scott (2015), however give a clear and concise meaning to the uterus by describing it as a female organ where eggs are fertilised and development of baby occurs.

The uterus undergoes changes in size, shape and position during life (Skandalakis, 2009). In pregnancy, the fundus of the uterus projects above the accurate line of the pelvis and the cervix is longer and wider than the body of the uterus. At puberty, the fundus now drops to the level of the accurate line at the inlet to the true pelvis and becomes pear-shaped which is maintained in adult life and the body is larger than the cervix. However, the location changes to fall within the true pelvis as described by Lierse (2012).

Scanlon (2015) also describes the uterus as that of an inverted pear shaped organ measuring about (7.5 x 5 x 2.5) cm, located superior to the bladder and between the two ovaries in the pelvic cavity with the broad ligament that covers the ovaries extending over it. The pear-shaped appearance is given by its fundus which is the upper portion located above the entry
of the fallopian tubes, the body which is the largest portion between the fundus and the cervix, the narrow lowest portion that opens into the vagina. In the same vein, Reimer (2010) refers to the uterus as being in layers. The outer layer called serosa, which is the covering of the peritoneum over the uterus, the layer beneath this is the myometrium consisting of smooth muscles and the innermost layer called endometrium.

This endometrium forms the cavity of the uterus which appears like a slit with a triangular shape (Miftahof & Nam, 2011). The internal orifice of the cervix and base forms the apex by the internal surface of the fundus. During gestation, the endometrium opens up as it is filled with gestational sac and later a foetus, amniotic fluid and placenta. Norwitz and Schorge (2010) indicate that the amniotic fluid, which provides nourishment, cushions the baby from external blows and allows foetal movements inside the womb, is at its maximum volume of 750-800 ml at 34 weeks gestation but reduces to 600ml at 40 weeks and reduces further beyond 40 weeks. Sparling (2013) notes that foetal movement at 10-12 weeks is forceful enough to cause a change in foetal positioning but movement tends to reduce between 20-36 weeks of gestation.

The uterus becomes soft and loose in texture due to the enlargement of its cellular connecting membranes and vessels caused by pregnancy. However, there is a period of recovery known as puerperium which is a 6 week period post-delivery where the uterus has been studied to regain a near pre-pregnant state (Coad & Dunstall, 2011).

2.3 MEDICAL ULTRASONOGRAPHY

Medical ultrasonography has brought great revolution in the examination of foetuses, enabling the pictorial view of an otherwise mystery of gestation (Nicolson & Fleming, 2013). With its use, ranging from the identification of the presence of gestation to identifying congenital foetal anomalies, its impact cannot be underrated. Triunfo, Guariglia, Rosati and
Scambia (2011) label foetal presentation as one of the indications for the use of ultrasound and describe this method of diagnosis as non-invasive, safe, and affordable. For most obstetric scans, Mularz, Dalati and Pedigo (2016) suggest that a 3-10MHz probe is used.

The determination of foetal presentation is done in the second and third trimesters of pregnancy, which according to McGuire & Beerman (2012) ranges from week 14 to 26 and 27 to delivery respectively. This determination is further described by Berghella (2012) as an “essential element of second trimester ultrasound”. Medical ultrasound is a term to denote sound frequencies above 20 000 Hz, beyond the range of human hearing (Lutz & Buscarini, 2011). Also known as diagnostic sonography (ultrasonography), medical ultrasound is an ultrasound-based diagnostic imaging technique used to visualise subcutaneous body structures including tendons, muscles, joints, vessels and internal organs for possible causes and effects of a disease or injuries (Sprawls Educational Foundation, 2009).

Obstetric ultrasonography is the use of medical ultrasonography in pregnancy in which sound wave energy is used to create real-time visual images of the developing embryo or foetus in its mother’s uterus (womb). The procedure is a standard part of prenatal care in many countries, as it can provide a variety of information about the health of the mother, the timing and progress of the pregnancy, and the health and development of the embryo or foetus (Sheiner, Hackmon & Shoham-Vardi, 2007).

According to Wiafe, Odoi and Dassah (2011), maternal death may occur in the third trimester of pregnancy due to conditions such as antepartum haemorrhage, hypertensive disorders, thromboembolism, chorioamnionitis, cardiac disease, anaemia (sickle cell disease), rupture of uterine scar, etc. Conditions such as prematurity, macrosomia, intrauterine growth retardation (IUGR), infections, maternal diabetes, and maternal isoimmunisation may also cause perinatal mortality. Additionally, all the major causes of maternal death may also lead to
perinatal death. Ultrasound imaging plays a role in the assessment of foetal growth and well-being, foetal presentation, placental location, ultrasound-guided procedures. There is a plethora of diagnostic and therapeutic applications practiced in medicine with ultrasound.

2.4 OCCURRENCE OF BREECH PRESENTATION

Breech presentation occurs when the baby is positioned head up in the uterus (womb) of the pregnant woman, hence feet directed toward the birth canal (Hickok, Gordon, Milber, Williams & Daling, 1992). In other words, a breech birth occurs when the baby is born bottom first instead of the normal, head first (Hofmeyr, Hannah & Lawrie, 2015). There are three types of breech presentation; namely frank breech, complete breech and footling or incomplete breech (Bennett & Brown, 1999). According to Cruikshank (1999), frank breech is when the baby’s hips are flexed knees extended jointly whereas complete breech occurs when the baby’s hips and knees flexed together. Cruikshank (1999) also adds that footling or incomplete breech is when the baby present one or two feet or one knee extends and the other flexed with hips flexed. Breech presentation is the most prevalent human malpresentation and comes about in three to four percent (3% - 4%) of pregnant women (Hickok, Gordon, Milber, Williams & Daling, 1992).

A study conducted by Abduljabbar, Fetyani, Sait, Amalgrabi and Alsaggaf (2016) on the prevalence and mode of delivery of breech presentation at King Abdulaziz University Hospital in Jeddah, Saudi Arabia indicated that within 13 years, spanning from January 2002 to August 2014, the hospital recorded a total number of 55,853 deliveries. Out of this total deliveries, the hospital recorded 604 (1.1%) breech presentations (Abduljabbar et al., 2016) However, concerning the mode of delivery, 132 patients were primigravida, and 380 were multigravida (25.9%) with 124 delivering vaginally (24.2%). From the findings, the rate or
occurrence of breech presentation in Jeddah was very low considering the number of deliveries in 13 years.

In another study in which a 3-years audit was carried out on all women diagnosed of breech presentation in the antenatal clinic of a District Hospital in Durban, South Africa, the hospital recorded 466 (2.4%) singleton term breech deliveries out of a total of 19,197 deliveries (Moodley, Khedun & Devjee, 2010). This suggested that incidence of breech presentation was generally low at the district hospital in Durban, South Africa. Concerning singleton term breech or singleton pregnancies generally, the finding was however consistent with the assertion made by Stevenson (2006), that breech presentation occurs at a relatively low frequency of 3.1% in singleton pregnancies.

Peterson on the other hand narrows it down to its occurrence amongst malformations indicating that breech presentation is the commonest malformation accounting for 3-4% (Peterson, 2006). He further suggested that breech presentation is more common amongst white non-Hispanics than black non-Hispanics and women of middle to high socio-economic status than those in lower socio-economic status.

Stevenson (2006) further describes breech as occurring more commonly in primigravida women, especially, elderly primigravida, associating this occurrence to the shape and reduced space for foetal growth. This assertion by Stevenson (2006) is however inconsistent with the view of Zubor, Zigo, Sivakova, Moricova, Kapustova, Krivus et al. (2013), who suggested an increased risk with multiparity. However, since literature on anatomy describes a postnatal uterus as being lax hence creating more space, it may appear that fewer breech cases may occur in multiparity. This is in contrast with the findings of Cammu, Dony, Martens and Colman (2014) which suggested that breech decreases with increasing parity.
2.5 FACTORS ASSOCIATED WITH BREECH PRESENTATION

According to Luterkort, Persson and Weldner (1984), only about 15% of breech presentation have detectable causes. However, previous breech presentation pregnancy, late or lack of antenatal care, prematurity, low birth weight and congenital abnormalities are recognised risks for its occurrence (Amoah, Sapuri & Klufio, 2001). Some of these studies focused on risk factors of breech presentation and impact on caesarean section. Other factors associated with breech pregnancy spans from older maternal age, maternal medical history which includes primiparity, still birth, spontaneous abortion, maternal morbidities such as hypertension, oligohydramnios as well as foetal factors including foetal gender, gestational age at delivery, foetal anomalies and birth weight (Zsirai, Csakany, Vargha, Fulop, Tabak et al., 2016).

A study by Singh, Mishra, and Dewangan (2012) on delivery in breech presentation revealed that of the 2.1% incidence of breech presentation, prematurity was the most common cause. The outcome of a study by Singh et al. (2012) was supported by Demol et al. (2000) and Zsirai et al. (2016) who conducted their studies among preterm births. In the study by Zsirai et al. (2016), it was revealed that breech presentation was independently associated with older maternal age which Gockley, Melamed, Joseph, Clapp et al. (2016), categorise as being ≥ 40 years and medical history of primiparity. A similar study by Fruscalzo, Londero, Salvador, Bertozzi et al. (2014) also supports the assertion of older maternal age made by Zsirai et al., (2016).

A study by Weng, Yang and Chiu (2014) to estimate age-specific risks of adverse birth outcomes in childbearing women revealed that risks of stillbirth, neonatal death, preterm birth, congenital anomaly, and low birth weight were higher at the extremes of maternal age.
Similarly, the log-binomial model showed greater risks at the maternal ages of 26 and 30 years for a composite adverse birth outcome.

A study, to determine whether breech presentation at term related to known individual obstetric risk factors for adverse foetal outcome, indicated that breech presentation at term on its own was considerably related to antenatal stillbirth and a number of individual obstetric risk factors for adverse perinatal outcomes (Mcharey, Gissler, Rahkonen, Ulander, Vaisanen-Tommiska, Nuutila et al., 2017). In view of this, the study revealed oligohydramnios, foetal growth restriction, gestational diabetes, history of caesarean section and congenital anomalies as predisposing factors of breech presentation.

In a quantitative study, Cammu, Dony, Martens and Colman (2014), identified the determinants of breech presentation at parturition. Out of 611,021 women recorded, 28,059, representing 4.5% women delivered in breech presentation. Concerning the predisposing factors of breech presentation, low gestational age and birth weight, advanced maternal age, a scarred uterus, a female baby and a baby with a congenital malformation as the factors observed. From these studies, it is observed that the risk factors for breech presentation are varied. However, advanced maternal age appears to be common in many of these studies.

Stevenson work goes further to suggest biological state of the mother, showing co-dependency of age and gravidity. Work undertaken by Ford, Roberts, Nassar, Giles and Morris (2010) in relating parity to the recurrence of breech presentation showed that the chances of breech increased after one breech delivery. From their results, the recurrence rate for a second pregnancy with breech presentation was 9.9%, and for a third, consecutive breech pregnancy the recurrence rate was 27.5%.
CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This Chapter presents the various methods adopted to address the objectives of the study. The Chapter covers the study design, study site, study population, sampling techniques, inclusion and exclusion criteria, procedure to be used, data management, statistical analysis and ethical consideration.

3.2 STUDY DESIGN

According to Creswell (2009) quantitative approaches have the strengths of allowing measurements and analyses of data and also to facilitate easier establishment of statistical relationship between independent and dependent variables and enhance the objectivity of the findings of the research. For these reasons, a quantitative cross-sectional design was adopted for this study.

3.3 STUDY SITE

The study was undertaken at the Ultrasound imaging unit of the 37 Military Hospital. This is a specialist hospital with a well-established obstetrics and gynaecology department, theatres and ultrasound imaging units within the obstetrics and gynaecology department and radiology departments. The hospital receives obstetric referrals from various hospitals and polyclinics in the region.

It is the largest military hospital in Ghana after the Korle Bu Teaching Hospital. The hospital was initially established to serve troops injured in the Second World War but was later opened to the public, though the hospital continues to be staffed primarily by military
personnel. Currently, the hospital has a total bed capacity of about 400 beds. It has a 24-hour accident and emergency department and pharmacy. Its imaging facilities are also available 24 hours a day. Other departments include divisions for dental treatment, paediatrics, and veterinary treatment. The hospital also serves as a teaching hospital for post-graduate medical students. The study was undertaken at the ultrasound unit of the Radiology Department of the hospital. This site was selected because it is well equipped for the study and the trust of the public in the integrity of the military institution, which will provide credibility to the safety of information given by participants.

3.4 STUDY POPULATION
The study population comprised singleton pregnant women living in Accra who visit the ultrasound unit of the 37 Military Hospital.

3.5 SAMPLING TECHNIQUES
According to Monga (2009), purposive sampling method helps to select the right respondents group for a study. Thus, women with singleton pregnancy at ≥ 37 weeks gestational age who visited the ultrasound unit of the 37 Military Hospital were included in the study until the required sample is obtained. However, Macnee and McCabe (2008) identified a disadvantage of purposive sampling which showed that the presence of risk indicated the sample may not be a true reflection of the population because of its defined characteristics. Taking cognisance of these, purposive sampling methods was used to select the respondents for the study.

3.6 SAMPLE SIZE
Available records of the 37 Military Hospital revealed that an average a total of 27-singleton pregnant women visited the ultrasound unit of the Hospital. Thus, for the period of January 2017 to April 2017 (4 months) an estimated number of 108 pregnant women were expected
to visit the ultrasound unit of the hospital. Based on this estimation, the minimum sample size was calculated, using the following formula (Galero-Tejer, 2011):

\[ n = \frac{N}{1+N(e^2)} \] at a confident interval of 90% and 0.1 margin of error.

where \( N \) = total population = 108, \( I = \) Constant, \( e = \) margin of error (0.1) and \( n = \) sample size

\[ n = \frac{108}{1+108(0.05)^2} \]

Thus, using a population size of 108, confidence interval (margin of error) of 5%, a sample size of 85 respondents was obtained. A non-respondent rate of 10% was factored in to give the required sample size of approximately 94.

3.7 INCLUSION AND EXCLUSION CRITERIA

3.7.1 Inclusion criteria

Singleton pregnancies of gestational age ≥37 weeks

3.7.2 Exclusion criteria

Multiple gestation and gestational age ≤37 weeks

3.8 PROCEDURE

The main instrument for the study was a structured questionnaire. The questions collected information on age of respondents, nationality, marital status, and educational level, occupation, number of pregnancies, number of births, previous surgeries and number of previous breech. Participants were recruited into the research from January 2017 to April 2017. The demographic profile of the women and obstetric history were obtained through the administering of the questionnaire. Obstetric ultrasound examination using a Siemens ultrasound equipment model number KT-LM150XD was then carried out to identify foetal presentation.
The figures below show pictures and ultrasound images of breech and cephalic presentations respectively.

**Fig. 3.1a:** Image of foetus in breech presentation in utero (www.mamanatural.com)  
Accessed: June 13, 2017

**Fig. 3.1b:** Ultrasound image of foetus in breech presentation (www.babybirthbasics.com)  
Accessed: June 13, 2017

**Fig. 3.2a:** Ultrasound image of foetus in cephalic presentation (Philippe, Eva (2011)).  

**Fig. 3.2b:** Image of foetus in cephalic presentation in utero (healthylifeandbeauty.com)  
3.9 DATA MANAGEMENT

The data obtained was verified and validated to ensure that all entries were correctly completed. The data was then coded and entered into the database of the SPSS code. The following quality control measures were taken to ensure data quality. The research assistant who assisted in the data collection was given a 3-day rigorous training on questionnaire administration, the questionnaires were coded and kept under lock and key in a cupboard and only the researcher and the supervisors had access to the data. Likewise, soft copy of data was stored on a CD-ROM and external hard drive. The principal investigator kept all the data collected for 2-3 years to allow for publication of research, after which questionnaires were disposed off.

3.10 STATISTICAL ANALYSIS

The SPSS version 21 was used for processing the data. The study made use of descriptive statistics of percentages and frequencies to answer the first specific objective of the study (to determine the percentage of women of ≥ 37 weeks gestation with breech pregnancy between January 2017 and April 2017). Logistic regression was used to examine the relationship between the demographic characteristics (age, parity, educational level, occupation) and occurrence of breech pregnancy. The odds ratio statistic was assessed at a confidence interval of 95%. A $p$-value ≤ 0.05 implied significance while a $p$-value > 0.05 implied otherwise.

3.11 ETHICAL CONSIDERATION

Ethical clearance and approval was sought from the Ethics and Protocol Review Committee of School of Biomedical and Allied Health Sciences, while permission to perform the studies at the study site was sought from the 37 Military Hospital. In addition, informed consent was obtained from participants before their enrollment in the study. Patients who declined participation after consenting were withdrawn from the study. During scanning, the
ultrasound room was closed to the public. Permission was sought from the participant before the services of an interpreter was engaged when need be. To ensure confidentiality, questionnaires were coded and kept in a locked cabinet accessible by the researcher only.
CHAPTER FOUR

RESULTS AND ANALYSIS

4.1 INTRODUCTION

This Chapter presents the results of the study and analysis of data obtained. The socio-demographic characteristics of the respondents are first presented followed by results of the specific objectives of the study. The results are presented in pie chart, bar chart and tables.

4.2 DEMOGRAPHICS

The marital status of the participants are presented in Fig 4.1

**Personal data (n=94)**

![Marital status of participants](Figure 4.1: Marital status of participants)

As shown in Figure 4.1, most of the pregnant women (n=89 or 94.7%) were married and 5 (5.3%) were single.

The educational background of the participants (Fig 4.2) showed that 47 (50.0%) of the pregnant women had tertiary education, whiles 25 (26.6%) had secondary education, 16 (17.0%) were primary or JSS pupils. only 6 (6.4%) had diploma certificates.
The age distribution of the pregnant women is shown in Table 4.1. Majority of the pregnant women 51 (54.3%) were aged 30 to 34 years.

Table 4.1: Maternal age (n=94)

<table>
<thead>
<tr>
<th>Maternal Age (years)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-24</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>25-29</td>
<td>19</td>
<td>20.2</td>
</tr>
<tr>
<td>30-34</td>
<td>51</td>
<td>54.3</td>
</tr>
<tr>
<td>35-39</td>
<td>15</td>
<td>16.0</td>
</tr>
<tr>
<td>≥ 40</td>
<td>6</td>
<td>6.4</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Pregnant women aged 20-24 (n=3, 3.2%) and above 40 years (n=6, 6.4%) were least represented.
All the participants were employed or engaged in some form of occupation (Fig 4.3).

![Figure 4.3: Occupation of participants](image)

As indicated in Figure 4.3, most were either vocational workers (n=34, 36.2%) or administrative workers (n=31, 33.0%). There were mere health workers (n=16, 17%) then commercial (n=9, 9.6%) and (n=4, 4.3%) were office workers.

### 4.3 MEDICAL DATA

The results of the parity distribution is presented in Fig 4.4.

![Figure 4.4: Parity](image)
Birth included stillbirths. As indicated, majority have delivered once 31 (33.0%), while 29 (30.9%) had two births, and 25 (26.6%) had never given birth before in particular, 6 (6.4%) had three deliveries, and 3 (3.2%) had four deliveries.

The number of previous surgeries is illustrated in Fig 4.5.

![Figure 4.5: Number of previous surgeries](image)

As indicated in Figure 4.5, majority of the pregnant women 77 (81.9%) had no histories of surgery in the past, while 11 (11.7%) have had one surgery previously. The percentage of multiple surgeries were 5 (5.3%) had two and 1 (1.1%) for four surgeries respectively.

A pie chart of number of previous surgeries shown in Figure 4.6

![Figure 4.6: Number of previous breech](image)
As shown in Figure 4.6, majority of the women (n=91 96.8%) never had a breech pregnancy in the past, while 3 (3.2%) experienced breech once previously.

### 4.4 ULTRASOUND SCAN FINDINGS

Distribution of gestational ages presented in Table 4.2

Table 4.2 Gestational age

<table>
<thead>
<tr>
<th>Gestational age (weeks)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>12</td>
<td>12.8</td>
</tr>
<tr>
<td>37+1</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>37+2</td>
<td>10</td>
<td>10.6</td>
</tr>
<tr>
<td>37+3</td>
<td>5</td>
<td>5.3</td>
</tr>
<tr>
<td>37+4</td>
<td>6</td>
<td>6.4</td>
</tr>
<tr>
<td>37+5</td>
<td>5</td>
<td>5.3</td>
</tr>
<tr>
<td>37+6</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>38</td>
<td>11</td>
<td>11.7</td>
</tr>
<tr>
<td>38+1</td>
<td>5</td>
<td>5.3</td>
</tr>
<tr>
<td>38+2</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>38+3</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>38+4</td>
<td>2</td>
<td>2.1</td>
</tr>
<tr>
<td>38+5</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>38+6</td>
<td>7</td>
<td>7.4</td>
</tr>
<tr>
<td>39</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>39+1</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>39+2</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>39+3</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td>39+4</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>39+6</td>
<td>3</td>
<td>3.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>94</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
As shown in Table 4.2, majority of the pregnant women (n=12, 12.8%) had a gestational age of 37 weeks, 11 (11.7%) had a gestational age of 38 weeks, while 10 (10.6%) had 37+2 weeks. Pregnant women at 39+1 weeks and 39+4 weeks of gestation were 1 (1.1%) respectively.

Diagram of foetal presentation shown in Fig 4.7

![Figure 4.7: Foetal presentation](image)

The foetus in 82 (87.2%) pregnant women were cephalic while 12 (12.8%) were in breech.

Foetal gender distribution presented in Fig 4.8

![Figure 4.8: Foetal gender](image)
As illustrated in Figure 4.8, majority of the foetal gender were males (n=39, 41.5%), while 32 (34.0%) were females and 23 (24.5%) were unknown.

4.4.2 Breech Pregnancy

The distribution of women of ≥37 weeks gestation with breech pregnancy during the study period at the 37 Military Hospital is shown in Table 4.3.

Table 4.3: Cross-tabulation between gestational age and foetal presentation (n=94)

<table>
<thead>
<tr>
<th>Gestational age</th>
<th>Foetal presentation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cephalic</td>
<td>Breech</td>
</tr>
<tr>
<td>≥ 37weeks</td>
<td>Count</td>
<td>% within gestational age</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>% within gestational age</td>
</tr>
</tbody>
</table>

Table 4.3 shows that, out of the 94 pregnant women whose gestation period was ≥37, majority 82 (87.2%) had cephalic presentation while 12 (12.8%) had breech presentation.

4.5 HYPOTHESIS

Hypotheses of the relationship between demographic variables (age, parity, education, occupation) of singleton pregnant women and the occurrence of breech pregnancy were made as indicated below.

H1: There is a statistically significant relationship between maternal age and the occurrence of breech presentation.

H2: There is a statistically significant relationship between number of births and the occurrence of breech presentation.

H3: There is a significant relationship between education to the occurrence of breech pregnancy.
**H4:** There is a statistically significant relationship of occupation to the occurrence of breech pregnancy.

The distribution of foetal presentation by demographic characteristics of respondents is presented in Table 4.4.

**Table 4.4: Foetal presentation via demographic characterization**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number of respondents</th>
<th>Foetal presentation</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cephalic</td>
<td>Breech</td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/JSS</td>
<td>16 (100.0%)</td>
<td>13 (81.3%)</td>
<td>3 (18.8%)</td>
</tr>
<tr>
<td>SHS/CERT</td>
<td>25 (100.0%)</td>
<td>22 (88.0%)</td>
<td>3 (12.0%)</td>
</tr>
<tr>
<td>Diploma</td>
<td>6 (100.0%)</td>
<td>4 (66.7%)</td>
<td>2 (13.3%)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>47 (100.0%)</td>
<td>43 (91.5%)</td>
<td>4 (8.5%)</td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>25 (100.0%)</td>
<td>21 (84.0%)</td>
<td>4 (16.0%)</td>
</tr>
<tr>
<td>One</td>
<td>31 (100.0%)</td>
<td>29 (93.5%)</td>
<td>2 (6.5%)</td>
</tr>
<tr>
<td>Two</td>
<td>29 (100.0%)</td>
<td>24 (82.8%)</td>
<td>5 (17.2%)</td>
</tr>
<tr>
<td>Three</td>
<td>6 (100.0%)</td>
<td>5 (83.3%)</td>
<td>1 (16.7%)</td>
</tr>
<tr>
<td>Four</td>
<td>3 (100.0%)</td>
<td>3 (100.0%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commerce</td>
<td>9 (100.0%)</td>
<td>7 (77.8%)</td>
<td>2 (22.2%)</td>
</tr>
<tr>
<td>Health worker</td>
<td>16 (100.0%)</td>
<td>14 (87.5%)</td>
<td>2 (12.5%)</td>
</tr>
<tr>
<td>Officer</td>
<td>4 (100.0%)</td>
<td>3 (75.0%)</td>
<td>1 (25.0%)</td>
</tr>
<tr>
<td>Vocational</td>
<td>34 (100.0%)</td>
<td>31 (91.2%)</td>
<td>3 (8.8%)</td>
</tr>
<tr>
<td><strong>Maternal Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-24 years</td>
<td>3 (100.0%)</td>
<td>1 (33.3%)</td>
<td>2 (66.7%)</td>
</tr>
<tr>
<td>25-29 years</td>
<td>19 (100.0%)</td>
<td>18 (94.7%)</td>
<td>1 (5.3%)</td>
</tr>
<tr>
<td>30-34 years</td>
<td>51 (100.0%)</td>
<td>45 (88.2%)</td>
<td>6 (11.8%)</td>
</tr>
<tr>
<td>35-39 years</td>
<td>15 (100.0%)</td>
<td>14 (93.3%)</td>
<td>1 (6.7%)</td>
</tr>
<tr>
<td>≥ 40 years</td>
<td>6 (100.0%)</td>
<td>4 (66.7%)</td>
<td>2 (33.3%)</td>
</tr>
</tbody>
</table>
Table 4.4 shows that, out of the 16 pregnant women who had completed primary/JSS, most had cephalic presentation (13 or 81.3%) while (3 or 18.8%) had breech presentation. The $p$-value of 0.312 indicates that there is no statistically significant relationship between education level and breech presentation. Also of the 25 pregnant women who had completed SHS/CERT, majority had cephalic presentation (22 or 88.0%) while (3 or 12.0%) had breech presentation. Out of the 6 pregnant women who had completed diploma course, majority had a cephalic presentation (4 or 66.7%) while (2 or 8.5%) had breech presentation. From the 47 pregnant women who had completed tertiary, majority had a cephalic presentation (43 or 91.5%) while (4 or 8.5%) had breech presentation.

As indicated in Table 4, out of the 25 pregnant women who had never given birth, majority had a cephalic presentation (21 or 84.0%) while (4 or 16.0%) had breech presentation. Of the proportion of the 29 pregnant women who had given birth twice, most had a cephalic presentation (24 or 82.8%) while (5 or 17.2%) had breech presentation. Out of the 6 pregnant women who had given birth three times, most had a cephalic presentation (5 or 83.2%) while (1 or 16.7%) had breech presentation. All 3 (100.0%) of the pregnant women who had given birth four times had a cephalic presentation while none 0 (0.0%) had breech presentation.

As indicated in Table 4, out of the 9 pregnant women who were into commerce/ traders, majority had a cephalic presentation 7 (77.8%) while 2 (22.2%) had a breech presentation. Of the 16 pregnant women who were health workers, most had a cephalic presentation 14 (87.5%) while 2 (12.5%) had a breech presentation. Out of the 4 pregnant women who were office workers, 3 (75.0%) had a cephalic presentation while 1 (25.0%) had a breech presentation. A greater proportion of the 34 pregnant women had cephalic presentation 31(91.2%) while 3(8.8%) had breech presentation.
As illustrated in Table 4, out of the 3 pregnant women with maternal age of 20 to 24, 2 (66.7%) had a breech presentation while 1 (33.3%) had a cephalic presentation. Of the 19 pregnant women whose maternal age were 25 to 29 years, most had a cephalic presentation 18 (94.7%) while 1 (5.3%) had a breech presentation. Most of the 51 pregnant women whose maternal age were 30 to 34 years, 45 (88.2%) had a cephalic presentation and 6 (11.8%) had a breech presentation. Out of the 15 pregnant women whose maternal age were 35 to 39 years, 14 (93.3%) had cephalic presentation and 1 (6.7%) had a breech presentation. A greater fraction the 6 pregnant women whose age were 40 years and above, 4 (66.7%) had a cephalic presentation and 2 (33.3%) had a breech presentation.

Table 4.5 shows logistic regression of demographic variable and foetal presentation. As shown in Table 4.5, the multiple logistic regression revealed that the odds of pregnant women who have completed SSS/CERT compared to those who have completed primary/JSS to have breech presentation was 3.805. Also, the odds of pregnant women who had completed diploma and tertiary compared to those who have completed primary/JSS to have breech presentation was 1.771 and 8.317 respectively.

The odds of pregnant women who were 25-29, 30-34,35-39 and 40 years and above compared to those aged 20-24 years with breech presentation was 2.265, 0.042, 0.109 and 0.059 respectively.
Table 4.5: Logistic regression (demographic variable and foetal presentation)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cephalic versus Breach</th>
<th>Odds Ratio</th>
<th>95% C I</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lower</td>
<td>Upper</td>
<td></td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/JHS</td>
<td>1</td>
<td>0.415</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHS/CERT</td>
<td>3.805</td>
<td>0.374</td>
<td>38.708</td>
<td>0.259</td>
</tr>
<tr>
<td>Diploma</td>
<td>1.771</td>
<td>0.209</td>
<td>15.042</td>
<td>0.601</td>
</tr>
<tr>
<td>Tertiary</td>
<td>8.317</td>
<td>0.543</td>
<td>127.403</td>
<td>0.128</td>
</tr>
<tr>
<td><strong>Maternal Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-24 years</td>
<td>1</td>
<td>0.098</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-29 years</td>
<td>2.265</td>
<td>0.045</td>
<td>113.021</td>
<td>0.682</td>
</tr>
<tr>
<td>30-34 years</td>
<td>0.042</td>
<td>0.001</td>
<td>1.457</td>
<td>0.080</td>
</tr>
<tr>
<td>35-39 years</td>
<td>0.109</td>
<td>0.007</td>
<td>1.632</td>
<td>0.109</td>
</tr>
<tr>
<td>40 years and above</td>
<td>0.059</td>
<td>0.003</td>
<td>1.358</td>
<td>0.077</td>
</tr>
<tr>
<td><strong>Parity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity (0,1,2,3,4)</td>
<td>0.735</td>
<td>0.322</td>
<td>1.675</td>
<td>0.464</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative</td>
<td>1</td>
<td></td>
<td></td>
<td>0.430</td>
</tr>
<tr>
<td>Commerce</td>
<td>4.571</td>
<td>0.440</td>
<td>47.457</td>
<td>0.203</td>
</tr>
<tr>
<td>Health care workers</td>
<td>9.102</td>
<td>0.860</td>
<td>96.354</td>
<td>0.067</td>
</tr>
<tr>
<td>Officers</td>
<td>4.959</td>
<td>0.465</td>
<td>52.865</td>
<td>0.185</td>
</tr>
<tr>
<td>Vocational</td>
<td>1.402</td>
<td>0.009</td>
<td>210.180</td>
<td>0.895</td>
</tr>
</tbody>
</table>

The odds of pregnant women, in terms of parity to have breech presentation, were 0.735. The odds of pregnant women who were into commerce, health care workers, officers and vocational compared to those who were into administrative work to have breech presentation were 4.571, 9.102, 4.959, 1.402 respectively.
CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION

This Chapter explains patterns and relates to literature to understand the results obtained and to draw conclusions.

5.2 DISCUSSION OF FINDINGS

The findings of the study revealed that most of the pregnant women (12.8%) had a gestational age of 37 weeks which Daftary, Chakravarti, Pai and Kushtagi (2015) describe as the onset of the term period. Based on Sparling’s (2013) assertion that, foetal movement is reduced between 20-36 weeks, it can be said that ultrasound scan at 37 or 38 weeks gestation is the most suitable time for early scans for foetal presentation. This study revealed that most of the pregnant women (87.2%) had cephalic presentation, which agrees with the finding by Moodley et al (2010). The 33.0% of the pregnant women, with at least one parity indicates that there were less primigravida amongst the term pregnancies. This is similar to the findings by Abduljabbar, Fetyani, Sait, Amalgrabi and Alsaggaf (2016) work where 132 primigravida compared to 380 multigravida was recorded. This result can be explained with the ratio of single women (5.3%) to the married women (94.7%).

However, the question of whether more primigravida fail to reach term may arise. The result also showed that there was a higher occurrence of breech among the multiparity than nulliparity, which confirmed the findings of Zubor et al (2013). There was however no clear pattern as parity of 4 had no breech occurrence while parity 2 had 5. The general high occurrence of breech among multiparity is contrary to literature on the conditions of movement of foetus and the findings of Stevenson (2006). The results of the study also
revealed that, half (50.0%) of the pregnant women had completed tertiary education. The status and location of the study site may account for this distribution as the less educated may feel they cannot afford services of the facility. The tertiary level education however did not have any association with the occurrence of breech presentation with a p-value of 0.128. A high percentage (81.9%) of the pregnant women had no histories of surgery in the past. This may be due to Ghanaian women’s perception of caesarean section and surgeries in general (Adageba, Danso, Adusu-Donkor & Ankobea-Kokroe, 2008). This may further explain why previous surgery is an indicator in several literature but has no association in this research.

Despite the characteristics of study site having medical staff and serving military personnel, these two groups are of the least proportion among the various occupations. Pregnant women with vocational skills dominate with 36.2% with a p-value of 0.895. This is indicative that there is no statistically significant association with the occurrence of breech presentation at the 0.05 significant level. Apart from the military, the occupations listed do not exhibit any vigorous activity. However, from their odds ratios there is great variation, with administrators and vocational having close odds ratio of 1 and 1.402 respectively.

5.3 LIMITATIONS

1. Time Constraints: The period of the study (4 months), limited the recruitment of participants hence the small sample size.

2. Financial Challenges: The researcher’s inability to obtain sponsorship limited the study site to one convenient location which affected the populations characteristics.

3. Technical Skill: The difficulty in determining foetal gender at term affected results of the foetal gender variable.
CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 INTRODUCTION

This chapter draws conclusions from results and analysis made in previous chapter and makes recommendations based on the conclusions drawn.

6.2 KEY FINDINGS

The findings of the study revealed that most (11.7%) of the pregnant women had a gestation age of 37 weeks or 38 weeks. Similarly, 33.0% had one pregnancy for a viable gestation period. The findings additionally revealed that 50.0% of the pregnant women had completed tertiary education and more than 2/3rds (81.9%) of the pregnant women have not undergone surgery in the past. The study further revealed that most (87.2%) of the pregnant women had cephalic presentation and 41.5% of the foetal gender was male.

The study furthermore revealed that almost all (96.8%) of the pregnant women have never had a breech in the past and more than half 54.3% of the pregnant women were aged 30 to 34 years. Also, 33.0% of the pregnant women had one pregnancy for a viable gestation period and 36.2% of the pregnant women were vocational workers.

The finding of the study revealed that a high number (87.2%) of pregnant women whose gestation period was ≥37 had cephalic presentation. The study additionally revealed that (81.3%) who had completed primary/JSS had cephalic presentation. Additionally almost all (88.0%) the pregnant women who had completed SHS/CERT had cephalic presentation. Likewise, the study revealed that most (66.7%) pregnant women who had completed diploma course had cephalic presentation. Again, almost all (91.5%) the pregnant women who had
completed tertiary had a cephalic presentation. The study further revealed that most (84.0%) of the pregnant women who had never carried pregnancy had a cephalic presentation.

The results of the study revealed that most (87.5%) of the pregnant women who were health workers had a cephalic presentation. Also, most (75.0%) of the who were office workers had a cephalic presentation. Similarly, almost all (91.2%) of the pregnant women who were vocational workers had a cephalic presentation. Also a high number (66.7%) pregnant women who were 20 to 24 years had a breach presentation. Again, also almost all (94.7%) the pregnant women who were aged 25 to 29 years had a cephalic presentation.

The study further revealed that, a high number (88.2%) of pregnant women who were 30 to 34 years had a cephalic presentation. Likewise, almost all (93.3%) pregnant women whose maternal age were 35 to 39 years had cephalic presentation as well as the pregnant women (66.7%) who were 40 years and above.

6.3 CONCLUSION

The study sought to examine the percentage of women of ≥37 weeks gestation with breech pregnancy during the study period at the 37 Military Hospital and to identify the relationship between demographic variables (age, parity, education, occupation) of singleton pregnant women at the 37 Military Hospital and the occurrence of breech pregnancy.

The percentage of women of ≥37 weeks gestation with breech pregnancy during the study period at the 37 Military Hospital was 12.8%. Although not statistically significant, pregnant women who had completed SSS/CERT, diploma and tertiary have a higher odds ratio of having breech presentation than women who have completed primary/JSS. Similarly, pregnant women who were 30-34, 35-39 and 40 years and above have a lower odds ratio of having breech presentation compared to those who were 20-24 years.
Also, the odds of pregnant women in terms of parity to have breech presentation decreases by 0.735 as parity of pregnant women increases. Again, pregnant women who were into commerce, health care workers, officers and vocational have a higher odds ratio of having breech presentation than pregnant women who are into administrative work.

6.4 RECOMMENDATION

Based on the results of the study the following recommendations are made;

1. As the study revealed that there were no specific risk factors among Ghanaian women, for the occurrence of breech presentation, it is prudent that at term (37 weeks) gestation, all pregnant women especially those in rural areas have an ultrasound scan done to inform their clinicians and enable monitoring and planning of safe delivery.

2. Ultrasound scan should be considered a fundamental aspect of effective healthcare delivery and hence equipment be made available within reasonable distance for easy access by pregnant women.

3. There must be sensitization programs to disabuse the public’s mind about ultrasound scan being a luxury and meant only for the affluent in society.

4. The lack of evidence on risk factors among Ghanaian women implies that more effort is required to mitigate the problems associated with breech delivery.

5. Pregnant women diagnosed with breech presentation must be reassured that they are not responsible for its occurrence and be assured of safe delivery to avert anxiety.

6. The study recommends that future studies on this topic should include other hospitals so as to increase the sample size and help make a better generalisation of the study findings.

7. Also, future studies can consider a comparative study between two countries to see if there are disparities in the results obtained.
REFERENCES


APPENDIX A

INFORMATION SHEET

My name is Marian Ocran (10552254), an MSc student of the Department of Radiography, School of Biomedical and Allied Health Sciences, College of Health Sciences, University of Ghana. My email contact address is gyamfuah12@yahoo.com.

I am undertaking a research on the title “ASSOCIATION BETWEEN BREECH PRESENTATION AND DEMOGRAPHIC VARIABLES- A CASE STUDY AT THE 37 MILITARY HOSPITAL” in partial fulfilment to the award of MSc. Medical Ultrasonography.

You are humbly requested to be part of this research by virtue of meeting the requirements of being a pregnant woman with gestational age ≥37 weeks needed for this research. Your participation in this research is voluntary. You may decide to withdraw at any point during the research by notifying the researcher. Should you decline participation or opt out after agreeing to participate, your decision not to participate will not affect the quality of service you will receive at this facility.

Information collected from this research project will be kept confidential and saved under encryption on electronic devices. Hard copies would be filed in a locked cabinet.
APPENDIX B

INFORMED CONSENT FORM

I _________________________________________, declare that the above document describing the purpose, procedures as well as risks and benefits of the research titled “ASSOCIATION BETWEEN BREECH PRESENTATION AND DEMOGRAPHIC VARIABLES - A CASE STUDY AT THE 37 MILITARY HOSPITAL” has been thoroughly explained to me in the language I understand. I have been given the opportunity to have any questions about the research answered to my satisfaction. I hereby voluntarily agree to participate as a subject in this study.

_____________________________                                                 _____/_____/_________
Signature or Mark of Participant                    Date

If participant cannot read the form themselves, a witness must sign here.

I, ________________________________________ was present while the purpose, procedures as well as risks and benefits were read to the participant. All questions were answered and the participant has voluntarily agreed to participate as a subject in this research study.

_____________________________                                                 _____/_____/_________
Signature of Witness        Date

Interviewer’s statement:

I, __________________________________________, certify that the nature and purpose, the potential benefits and possible risks associated with participating in the study have explained to the above individual in the English/Twi/Ga/Ewe language. The participant has freely agreed to participate in the study.

____________________________    _______/_____/__________
Signature of person who obtained consent                       Date
APPENDIX C

DATA COLLECTION SHEET

I Marian Ocran a student of the School of Biomedical and Allied Health Sciences, College of Health Sciences, University of Ghana, Legon undertaking a research on Association Between Breech Presentation and Demographic Variables- A Case Study At The 37 Military Hospital. The thesis is in partial fulfilment of the requirement for the award of a MSc Medical Ultrasonography degree. I assure you that any responses provided in the research will be treated with the utmost confidentiality it deserves and will be used for only academic purpose.

Kindly fill-in details below

A. Personal Data
1. Age .......... 
2. Nationality .............. 
3. Marital status .............. 
4. Educational Level .......... 
5. Occupation .............. 

B. Medical Data (please tick √ where applicable)
1. Have you given birth before ? (still birth inclusive) Yes □  No □ 
   If Yes, how many times ............

2. Have you had any obstetric or gynaecological surgery before ? Yes □  No □ 
   If Yes, how many times ............

3. Have you had any previous pregnancy being a breech presentation? 
   If Yes, how many times ............
To be filled by researcher

C. Ultrasound scan findings
   1. Gestational Age .................
   2. Foetal Presentation.............
   3. Foetal Gender..................

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