A DESCRIPTION OF THE UTILISATION OF THE PARTOGRAPH BY MIDWIVES IN THE PUBLIC HOSPITALS IN THE UMGUNGUNDLOVU DISTRICT, KWAZULU-NATAL

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Dissertation submitted in fulfilment of the requirements for the Degree in Masters of Technology in Nursing in the Faculty of Health Sciences at the Durban University of Technology

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Date : December 2013

Declaration

This is to certify that the work is entirely my own and not of any other person, unless explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the Durban University of Technology or to any other institution for assessment or for any other purpose.

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Abstract

Introduction

High maternal, perinatal and under-five morbidity and mortality are some of the formidable development challenges in Africa. The World Health Organisation (WHO) estimates that worldwide, as many as 1500 women die every day due to complications related to pregnancy or childbirth (WHO 2010). The partograph or partogram, an inexpensive tool, was designed by WHO to be used by midwives for decision-making during labour. Many studies conducted in and out of Africa reflect sub-optimal use of the partograph.

Aim of the study

The aim of the study was to describe the utilisation of the partograph by registered midwives working in the maternity sections of public hospitals in the uMgungundlovu District in the province of KwaZulu-Natal.

Methodology

A quantitative descriptive cross-sectional study was used to describe the use of the partograph in the selected hospitals, and carried out in two phases. In phase one, 197 participants completed a questionnaire. In phase two, retrospective audits on 310 completed maternity records were done. The collected data was analysed using SPSS version 20 and presented in frequency tables, cross-tabulations and graphs.

Results

The results revealed that there were certain parameters that were given more focus when it came to correct and consistent recording, such as contractions (80.0%) and cervical dilatation (89%) whilst others were poorly done, such as the duration of labour (13.5%), pain relief (23.5%) and unrecorded partographs from the primary health care clinics and community health centres (80.8%).

Dedication

I dedicate this dissertation to my loving family, especially my mother-in-law Sona, whose support was invaluable. To my husband Visham, my sons Revash and Akhil, my daughter Priyanka (Payal) and my mum Kamala for their patience, love, motivation and encouragement during this long process.

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Glossary of Terms

Basic Ante Natal Care (BANC): It is a quality improvement programme that focuses on the minimum level of ANC that every pregnant woman should receive. The care is simplified to a bare minimum so that every midwife should be able to perform the necessary tests and measures. The programme is supported by a detailed system of flow charts (Pattinson 2005: 1).

Labour: In this study, labour refers to the process when a woman gives birth to a baby, and the midwife managing her (Brooker 2006: 136).

Midwife: A midwife is a licensed health care practitioner who is registered with the South African Nursing Council and has completed a recognised education and training programme to nurture, assist and treat the client, who can be a woman, a neonate or a family in the process of promoting a healthy pregnancy, labour and post-partum period (South African Nursing Council, 2001). The term midwife will also be used for an accoucher (male midwife).

Maternal mortality rate: The death of a woman while pregnant or within 42 days of termination of pregnancy, expressed as 100 000 live births (Dippenaar and Da Serra 2012: 8).

Maternity wards: Maternity wards in the context of this document includes labour ward, antenatal ward, antenatal clinic, postnatal ward and nursery.

Partograph or partogram: It is a graphic recording that comprehensively allows monitoring of the foetal condition, the progress of labour and maternal condition (WHO 1994).

Professional nurse: A person registered with the South African Nursing Council (SANC) as a nurse under Article 16 of *Nursing Act, No 33 of 2005,* as amended

(Republic of South Africa 2005). The terms ‘registered nurse’ and ‘professional nurse’ are used interchangeably.

South African Nursing Council: The body entrusted to set and maintain standards of nursing education and practice in the Republic of South Africa. It is an autonomous, financially independent, statutory body, initially established by the *Nursing Act, No. 45 of 1944*, and currently by the *Nursing Act, No. 50 of 1978* as amended to the *Nursing Act No. 33 of 2005* (Republic of South Africa 2005).

List of Acronyms

BANC : Basic Antenatal Care

CARMMA: Campaign on Accelerated Reduction of Maternal and Child Mortality in Africa

CHC : Community Health Centre

DHS : District Health Care System

ESMOE : Essential Steps in Managing Obstetrical Emergencies

KZN : KwaZulu-Natal

MDG : Millennium Developmental Goals

MNCWH : Maternal, Neonatal, Child and Women's Health

MMR : Maternal Mortality Rate

NCCEMD: National Committee for Confidential Enquiry into Maternal Deaths

PATH : Programme for Appropriate Technology in Health

PHC : Primary Health Care Clinic

PIP : Problem Identification Programme

PPIP : Perinatal Problem Identification Programme

UNDP : United Nations Development Programme

WHO : World Health Organisation

CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

In 1987, the WHO introduced the Safe Motherhood Initiatives with the aim of reducing maternal and child mortality rates (World Health Organisation 2002: 6). O'Brien, Gans-Lartey, Fontanie and Atachie (2011: 444) state that in this document, the presence of a skilled attendant must be available at every birth and a tool must be available to that skilled attendant. This tool is the WHO partograph that is designed to monitor the progress of labour, as well as maternal and foetal well-being. A partograph or partogram is an effective clinical tool used during labour surveillance for early diagnosis of complications. The partograph is a simple chart that, when used routinely for every birth, aids the monitoring of labour and provides early warning of the need for intervention so health workers can provide prompt, appropriate care (World Health Organisation 1994). This improves birth outcomes because mothers receive better treatment, and may prevent life-threatening conditions, such as birth asphyxia and post-partum haemorrhage. The WHO has advocated its use and endorsed its support for the use in resource poor countries (World Health Organisation 1994). It is a comprehensive tool of communication which indicates foetal condition, maternal condition, and the progress of labour at a glance. This tool if used consistently, recorded on correctly, analysed and interpreted insightfully, can save the lives of both mother and child. The use of the partograph therefore becomes an essential decision-making tool to assist the midwife in making the correct decisions for the woman and her baby (Fistula Care and Maternal Health Task Force 2012: 19).

High maternal, perinatal and under-five morbidity and mortality are some of the formidable development challenges in Africa. The World Health Organisation (WHO) estimates that worldwide, as many as 1500 women die

every day due to complications related to pregnancy or childbirth (World Health Organisation 2010). Maternal and perinatal death rate remains the major challenge of health care in South Africa and maternal death reporting had increased by 20% during 2005-2007 trienniums when comparing it to the 2002-2004 trienniums (Department of Health 2008: 7). South Africa, amongst the various attempts to address this problem included Maternal, Neonatal, Child and Women's Health (MNCWH) as one of the priority programmes in the ten year strategic plan for the country. The three South African reports, namely the Saving Mothers from the National Committee for Confidential Enquiry into Maternal Deaths (NCCEMD), Saving Babies from Perinatal Problem Identification Programme (PPIP) and Saving Children from Child Problem Identification Programme (PIP) all offer a review of the healthcare provided to the mothers, babies and children in South Africa (Bradshaw, Copra, Kerber, Lawn, Moodley, Pattinson, Patrick, Stephen, and Velaphi 2008). The findings of these reports highlighted avoidable causes of the thousands of deaths of the mothers, babies and children and made recommendations to strengthen the quality of care provided to the mothers, babies and children at the time when they need it the most.

KwaZulu-Natal (KZN) province serves a population of 9 924,000 and is the largest province in South Africa. The average annual births are estimated to be 172,710 (KwaZulu-Natal Department of Health 2010). In KZN, there are 52 hospitals and more than 500 PHC clinics and 13 community health centres (CHCs) providing maternal care services. In spite of the existing infrastructure, maternal and new-born deaths are far too common in this province, as in much of South Africa, and most are preventable with appropriate care and action. The target of the Millennium Development Goals (MDGs) 4 and 5 by the United Nations Development Programme (UNDP) are to reduce maternal and child mortality rates by 2015 (Department of Health 2011: 12). The eight MDGs as espoused by the United Nations in 2000 have been accepted by the Ministry of Health in South Africa. MDG 4 calls for the

reduction of under-five mortality rate by two thirds, and a reduction of maternal mortality rate (MMR) by three quarters, which is MDG 5.

Whilst fighting to achieve the above MDGs by 2015, there seems to be a losing battle as maternal and perinatal mortality rates remain high in South Africa. According to the National Perinatal Morbidity and Mortality Report 2008-2010 (Department of Health 2011: 12), there has been no change over the past five years. This is supported by the results of the Saving Mothers Report 2008-2010 which states that maternal mortality ratio (MMR) has increased when compared with 2005-2007 report (National Committee for Confidential Enquiry into Maternal Deaths (NCCEMD) 2011: iii). In light of these two reports, there is growing concern about the standards of maternal and child care in South Africa (National Committee for Confidential Enquiry into Maternal Deaths 2011).

The National Department of Health of South Africa faces the great challenge of reducing maternal and child mortality and have come up with many strategies. As stated in the South Africa's Strategic Plan for a Campaign on Accelerated Reduction of Maternal and Child Mortality in Africa (CARMMA), 40% of all maternal deaths are avoidable (Department of Health 2012). Prolonged labour and obstructed labour fall under this category of avoidable maternal deaths. According to the Fistula Care and Maternal Health Task Force (2012: 1), prolonged labour and obstructed labour are the major causes of maternal and new-born morbidity and mortality; they can lead to a ruptured uterus, postpartum haemorrhage, infection, obstetric fistula and foetal injury or death. It is further stated in this document that one of the tools used to monitor labour and prevent prolonged labour and obstructed labour is the partograph, a pre-printed one-page form on which labour observations are recorded.

1.2 PROBLEM STATEMENT

A number of researchers argue that the use of the partograph has a large part to play in reducing maternal and perinatal mortality rates (Ogwang, Karyabakabo and Rutebemberwa 2009; Opiah 2001; Fawole, Hunyinbo and Adekanle 2008). Therefore, the use of the partograph is essential during the intrapartum care. The problems identified on the proper use and interpretation of the partograph in other Southern African countries seems to have similar trends in South Africa. Many researchers state that the partograph although a tool of great value, it is very much under-utilised. Lester (2000: 56) found the use of the partograph was limited, and when used was not correctly used. Basu, Hoosain, Leballo, Leistner, Masango, Mercer, Mohapi, Petkar and Tshiovhe (2009: 578) also found that the partogram was a poorly used monitoring tool in a large Johannesburg Hospital, and assumed that inadequate recording on the partograph was one of the factors contributing to maternal mortality and morbidity.

A number of research studies reveal that there is a challenge of correct and consistent use of the partograph (Lester 2000; Magon 2011; Mathibe-Neke 2009; Opiah 2001). These studies reveal that there exists poor utilisation of the partograph and questions the midwives' competence and knowledge on the use of the partograph. The following factors have been identified as the contributory factors towards the poor utilisation of the partograph: non-availability of the partograph, shortage of staff, lack of in-service training and the number of years of experience in intrapartum care (Ogwang et al. 2009; Opiah 2001; Magon (2011: 2) argues that caregivers may regard filling in the partograph as an additional chore. The study conducted by Lavender, Omoni, Lee, Wakasiaka, Watiti and Mathai (2011: 15) also revealed that partographs were filled in retrospectively, and done only as a defensive practice to avoid being reprimanded by the matron.

Most studies that have been conducted in South Africa on the utilisation of the partograph were done in the Gauteng province (Basu et al. 2009; Lester 2000; Mathibe-Neke 2009). There seems to be a lack of similar studies done in KZN. Recent reports reveal that KZN Province is leading in the maternal mortality rates at 23% (National Committee for Confidential Enquiry into Maternal Deaths 2011: 2). Obstetric haemorrhage accounts for 14% of maternal deaths (National Committee for Confidential Enquiry into Maternal Deaths 2011: 4). Obstetric haemorrhage belongs to the category of avoidable deaths, meaning that early detection and prompt action can save the life of the woman. Correct and consistent use of the partograph is considered as an 'early warning system' to detect prolonged labour, cephalo-pelvic disproportion and obstructed labour, which lead to avoidable maternal deaths (World Health Organisation 1994). It therefore becomes imperative to describe the utilisation of the partograph in KZN, bearing in mind the high maternal mortality rates and the avoidable deaths caused by obstetric haemorrhage.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to describe the utilisation of the partograph by registered midwives working in the maternity sections of public hospitals in the uMgungundlovu District, KZN.

1.4 OBJECTIVES OF THE STUDY

The objectives of the study were to:

- Assess midwives' knowledge and competence on the use of the partograph during labour.
- Establish if there is organisational support for the use of the partograph.
- Identify factors that affect the use of the partograph by midwives.

1.5 SIGNIFICANCE OF THE STUDY

This research is essential to influence the reduction of maternal and neonatal mortality and morbidity rates, which are on the increase in South Africa. Knowing the factors that influence the use of the partograph and with evidence to support it, it can be taken to the highest levels of health care in South Africa so that recommendations and suggestions can be proposed and implemented. Saving a mother and child through correct and competent use of the partograph has a spiralling effect which can contribute to the attainment of the United Nations MDGs by 2015. By creating innovative and other methods on how to use the partograph, it can increase confidence and facilitate supervision of junior and learner midwives working in the labour ward so that the partograph is used correctly and consistently and thus benefit these categories of staff (Fistula Care and Maternal Health Task Force 2012: 19). This can contribute to lifelong learning for all practitioners working in a labour ward.

The barriers and challenges identified in the study can influence policy making and create an enabling environment for midwife practitioners in the operational field. Managers have knowledge from the research on how to plan pre and in-service training of the clinical staff, making them confident and competent. The most significant benefit would be the improved health care provided to the mother and child by improved support for the practitioner at the grassroots level. Confidence and competence in rendering care to the mother during labour will boost the confidence of the client in the health care system, and thus also improve its reputation.

1.6 OUTLINE OF THE STUDY

Chapter 1: Overview of the study.

Chapter 2: Literature review.

Chapter 3: Research methodology.

Chapter 4: Presentation of the results.

Chapter 5: Discussion of results.

1.7 CONCLUSION

This chapter gave an in-depth discussion on the background to the study on the use of the partograph in labour. The chapter highlights the researchability of the problem and the gaps that exist on the use of the partograph in a South African context. The next chapter will provide more insight into the study by reviewing literature that is available on similar studies.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter focuses on the thoughts, views, assumptions and investigations made by various authors and researchers. A nexus search of the literature was conducted over a period of six months, using different scholarly search engines. The search strategy included using obvious key words related to partograph, midwife, maternity records and BANC. The World Wide Web, including search engines such as Google Scholar, was also searched for similar key words, producing a number of further papers and resources. The reference lists of key articles were scrutinised and this identified other relevant articles. In order to provide a complete overview of available knowledge and resources, peer reviewed and non-peer reviewed journals and materials on the World Wide Web were used. In case of doubt, abstracts were assessed on suitability for inclusion in the literature review.

2.2 HISTORY OF THE PARTOGRAPH

According to the various literature reviewed, the first realistic human recording of labour was described by Dr E. A. Friedman in 1954 where he outlined a normal cervical dilatation pattern after he had conducted a large study on women in the USA (Philpott, 1972; World Health Organisation 1988 and 1994). Dr Friedman (1954) described labour as divided into two phases: the early latent phase lasting eight hours, where the cervix dilated from 0 to 3 cm; and the active phase where the cervix dilated from 3-10 cm. The active phase is an accelerated phase of cervical dilatation. Therefore, it is shorter than that of the latent phase.

Since then Philpott (1972), after conducting extensive studies on women from central and Southern Africa, was able to publish a nomogram of cervical dilatation on women from Africa (World Health Organisation 1988: 4). This study was done in 1971 based on the cervicograph where Philpott developed the first partograph to be used in Zimbabwe hospitals due to the shortage of experienced obstetricians (World Health Organisation 2002). Philpott introduced the concepts of an alert line and an action line. This simple graphic presentation simplifies the teaching of labour to the residents, interns, medical and nursing students (Ledger and Facog 1969: 176). These authors further state that a clear visual image of labour is presented in contrast to hazy lecture and textbook descriptions which are seldom clarified by bedside nursing. They further suggest that abnormalities of progress can be recognised and descriptive terminology applied to deviations from normal. In these early stages, the value of labour graphs was recognised and improvements were made from there onwards.

According to the WHO (2002), Philpott (1972) in his study conducted in central Africa calculated the average slowest dilatation rate of the cervix in the active phase of labour as 1 cm per hour, which was charted on the partograph as the alert line. This rate was named the minimal normal rate both for primaparae and for multiparae. In a case of slower progress of labour, the cervicograph crossed the alert line. In such cases, the woman was transported to a central level maternity where prolonged labour could be managed. It should be noted that the average dilatation rate of 1 cm/hour is slower than the rate of 1.2cm/hour proposed by Friedman (1954). Based on the same study, Philpott and Castle (World Health Organisation 2002) developed the action line, four hours to the right of the alert line. He argued that the quick correction of the unsatisfactory progress of labour could successfully result in vaginal deliveries.

John Studd, a professor at Birmingham Hospital (UK), visited Zimbabwe in 1971 and was impressed with the preliminary results of the use of the partograph. Together with Philpott and Castle, he decided to study the effectiveness of the partograph in a European population in the UK. By 1973, nearly half of UK clinical maternities used Philpott's partograph as a part of Studd's trial involving 15 000 women of different races. After the results of Studd's trial suggesting that the use of the partograph helps to detect prolonged labour early, the use of the partograph became a routine practice in the UK (World Health Organisation 2002).

As previously mentioned, the latent phase is the first eight hours from the onset of labour up to 3 cm of cervical dilatation. The active phase of labour is when the cervix dilates from 3 cm up to 10 cm, or fully dilated (World Health Organisation 1988: 5). According to research, and as commonly accepted, the cervical dilatation is calculated at an average rate of 1cm an hour which compares to the first time line, which is called the alert line (Philpott 1972: 165). The second time line, which is called the action line, is drawn four hours later on the graph. Philpott (1972: 165) states that the action line was drawn four hours to the right of the alert line to allow time to transfer patients from a PHC to a hospital setting without impairing the success of an active management of labour and vaginal delivery in a normal patient.

The following information lays down the principles of the WHO Model of the partograph (World Health Organisation 1988: 5):

- The active phase of labour commences at 3cm cervical dilatation.
- The latent phase of labour should last no longer than eight hours.
- During active labour, the rate of cervical dilatation should not be slower than 1cm per hour.

- A lag time of four hours between a slowing of labour and a need for intervention is unlikely to compromise the foetus or the mother and avoids unnecessary intervention.

- Vaginal examinations should be performed as infrequently as is comparable safe practice (four hourly is recommended).

- Midwives and other personnel managing labour may have difficulty in constructing alert and action lines and it is better to use a partograph with pre-set lines, although too many lines may add further confusion.

The WHO partograph consists of three components:

- The foetal record.

- The record of the progress of labour.

- The maternal record (World Health Organisation 1988: 7).

2.3 THE WHO PARTOGRAPHS AND ITS CURRENT USE

The first WHO partograph or 'Composite partograph' has been adopted by the National Department of Health of South Africa except for the action line (the second time line) which is drawn two hours later from the alert line instead of four hours. Van Bogaert (2003: 830) argues that it is not clear why the action line was drawn two hours later from the alert line. The author further claims that in CHCs the action line should be regarded as a transfer line to hospitals for intervention. Many trials were done to compare a four hour action line to a two hour action line. These trials revealed that there was no significant difference, except that a two hour action line led to inappropriate actions such as caesarean sections and labour augmentations which were raised slightly (Lavender, Alferevic and Walkinshaw 1988; Soni 2009). These authors further explained

that having a shorter labour proved to be beneficial for the woman as it improved client satisfaction and was preferred by labouring women.

The WHO introduced the 'modified' partograph in the year 2000. According to Yisma, Dessalegn, Astatkie and Fesseha (2013: 2) the latent phase was removed from the modified partograph to alleviate problems of confusing it with false labour and unnecessary interventions.These researchers further argued that a prolonged latent phase was relatively infrequent and there were no significant outcomes to poor perinatal morbidity. The modified partograph also defined the beginning of the active phase of labour at 4cm cervical dilatation instead of 3cm, and kept all the other parameters of the composite partograph, such as descent of the foetal head. Kwast, Poovan, Vera and Kohls (2008:527) also found that caesarean section rates were definitely lower in woman where the partograph without a latent phase was used than the partograph that had a latent phase. In South Africa the National Department of Health has retained the active phase from the modified partograph (which commences cervical dilatation at 4cm), and has kept the latent phase from the composite partograph.

The current WHO partograph known as the 'simplified' partograph was introduced in 2003, but unlike the composite partograph and like the modified partograph it does not have a latent phase. It starts the active phase at 4cm with the major difference of excluding descent of the foetal head (Mathews, Rajaratnam, George and Mathai 2007; Yisma et al. 2013). Research conducted on the simplified partograph by Mathews et al. (2007: 149) revealed that doctors in the cross-over study that was conducted over a period of three months preferred the simplified partographs. They felt these were more user-friendly and were recorded on more consistently, except for descent of the foetal head, which the participants felt made the simplified partograph less valuable. This partograph, although very simple to record on, has left out a vital parameter being the descent of the presenting part, which

is a very important indicator for obstructed labour. Obstructed labour is suspected if the presenting part does not enter the pelvic brim and there is no descent of the presenting part in the presence of good uterine contractions (Dippenaar and Da Serra 2012; Fraser and Cooper 2009). Prevention of obstructed labour is a very important intervention towards reducing maternal and perinatal mortality and morbidity and in achieving MDGs 4 and 5 (Magon 2011: 2).

2.4 WORLDVIEW ON PARTOGRAPH

The partograph, or partogram, is an inexpensive tool that was designed by the WHO to be used by midwives for decision-making during labour (World Health Organisation 1994: 1399). At a glance one can assess all three components, namely foetal record, the record of the progress of labour and maternal record, and make a decision about that particular labour. This tool is invaluable when used correctly and interpreted or analysed effectively. The use of the partograph is not restricted to the so called resource poor countries or developing countries and WHO advocates its widespread use (World Health Organisation 1994: 1399). According to the Fistula Care and Maternal Health Task Force (2012: 4), the partograph does not appear to be used that much in the more resource-rich countries such as the United States of America and Turkey, since in these more affluent countries the maternal and perinatal mortality rates are low due to the high standards of care. Little research has come from these areas; therefore a more global search for partograph use did not yield much information.

In 2008, nearly 358000 women died in pregnancy and childbirth worldwide (WHO 2010). Prolonged labour and obstructed labour are major causes of maternal and new-born morbidity and mortality. They can lead to a ruptured uterus, postpartum haemorrhage, infection, obstetric fistula, urinary and faecal incontinence, pain, infertility and foetal injury or death (Fistula Care and

Maternal Health Task Force 2012: 1; Schuiling 2012: 3). Mathai (2009 as cited in Schuiling 2012) elaborates further that beside the great physical consequences suffered by the women, they often face abandonment by their husbands and are ostracised by families as well as communities. Early detection and timely intervention on obstetric complications are the most important activities to prevent maternal and perinatal mortality and morbidity (Yisma et al. 2013: 6). These authors agree that the partograph (modified partograph used in their study) help predict deviations from the normal progress of labour, and support timely and proven intervention (Yisma et al. 2013: 2). A study conducted in Ghana showed that after introduction of the WHO partograph in the labour wards of Accra in the 1990's, there was a reduction of rupture of the uterus. An analysis showed that the incidence of rupture of the uterus decreased from 1 in 523 in the 1970s when the partograph was not used, to 1 in 253 from January 1996 to December 2001, favouring the use of the partograph (Seffah 2003: 169).

Maternal morbidity and neonatal morbidity seems to be on the increase and not improving in less affluent countries. Africa and Southern African countries seem to have the highest maternal mortality rates. Therefore, they have taken the lead in partograph research. For example, many papers have emerged from Nigeria. Fatusi, Makinde, Adeyemi, Orji and Onwudiegwu (2008: 41) state that maternal mortality is a leading health and development problem. These authors further state that Nigeria has the second highest maternal mortality rate. The mortality rates seem to arise from similar problems throughout Southern African Countries, that is, postpartum haemorrhage, puerperal sepsis, prolonged and obstructed labour (Fatusi et al. 2008; Fawole, Hunyinbo and Adekanle 2008; Lavender et al. 2011).

Competent use of the partograph can save lives by ensuring that labour is closely monitored and life-threatening complications such as obstructed labour are identified and treated as seen from the literature presented above. It is evident that the partograph is essential, but many countries are faced with

sub-optimal use of the partograph. The Fistula Care and Maternal Health Task Force (2012: 9-10) has, therefore, advocated that there should be an essential enabling environment for the correct and consistent use of the partograph, as indicated below:

- The partograph is not as inexpensive or simple as it seems: It requires specific competencies such as accurate assessment of cervical dilatation, precise graphic plotting, analytical and interpretative skills and sound decision-making skills, which require theoretical training and months of practice under supervision.

- Protocols for care are critical: Every nation and every facility should have well-documented clinical standards and protocols for delivery and labour.

- Context matters: Women give birth at home, at health centres and in hospitals, therefore along the continuum of care from home to hospital there should be a skilled birth attendant and emergency obstetric and neonatal care. This may be lacking in low-resource settings, putting the woman and her child at risk.
- Teamwork and supervision are fundamental: Competent clinical supervisors must support the correct and consistent use of the partograph and provide ongoing mentoring to improve staff skills.

2.5 CONCLUSION

This chapter reviewed literature on the use of the partograph and the recordings done on it. Many researchers conclude that the partograph is an essential monitoring tool in labour. It seems to be more relevant in resource-poor countries. Reviewed literature indicates that in developing countries where doctors and obstetricians are scarce, a partograph is a simple inexpensive tool that makes monitoring of the woman in labour simple but effective for the midwife. The comprehensiveness of the tool makes it an

ideal communication document for a total handover of the client. Many trials, investigations and research done on the partograph suggest that this tool is under-utilised, and when it is used the recordings on it seem to be incomplete or incorrect, as a result this tool becomes ineffective. In the next chapter, the research methodology will be discussed, where a quantitative cross-sectional study was conducted to describe the use of the partograph by qualified midwives in selected hospitals.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology is a process of choosing a research design, deciding on the appropriate sample, setting the most accurate measurement methods, and then carrying out the data collection and data analysis. During this process it is imperative that ethical principles are applied and abided by. Burns and Grove (2006: 38) state that methodological limitations can limit the creditability of findings. These authors argue that such limitations stem from such factors such as an unrepresentative sample, weak design, single setting, use of instruments with limited reliability and validity, limited control over data collection, and improper use of statistical analyses. Therefore, the researcher makes her decisions based on a well-informed process that will enhance research outcomes. This chapter aims to bring understanding of the research methodology chosen by the researcher.

3.2 DESIGN

A quantitative descriptive cross-sectional study was used to describe the use of the partograph by qualified midwives in the selected hospitals. This was a survey type of design where data was collected at one point in time. Creswell (2009: 145) states that a survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. Creswell (2009: 146) further explains that four types of data collection methods can be used in a quantitative design, that is self-administered questionnaires, interviews, structured record reviews and structured observations. For this study, two of the four types were used: the self-administered questionnaire and the structured record review. A descriptive study design appears to be more popular in nursing research since this study aims to describe the use of the partograph in maternity wards.

Burns and Grove (2006: 240) state that the purpose of a descriptive study design provides a picture of a situation as it naturally happens, and that it may be used to develop theories, identify problems with current practice, justify current practice, make judgments, or determine what other practitioners in similar situations are doing.

3.3 DONABEDIAN'S CONCEPTUAL FRAMEWORK

The framework guiding this study was Donabedian's conceptual model on quality care, which focuses on evaluating a system. This model is flexible and can be applied to any situation, the end-result being quality care to the patient. Avedis Donabedian, the father of the conceptual framework, utilises three essential factors to evaluate a system, namely:

- Structure.
- Process.
- Outcomes (Figure 3.1).

For the purpose of this study the system referred to is the 'utilisation of the partograph by midwives', a tool that is used for quality care to the woman in the intrapartum period. The above three factors were used to evaluate the system.

The structure denotes the attributes of the setting in which the care occurs Donabedian (1988: 1745). For the purpose of this study the attributes of the process will be the training on the use of the tool, availability of the tool and experience of the user. Process is that which is actually done in giving care Donabedian (1988: 1745). Process is the actual performance to achieve the outcome, and it can be seen here as the in-service training, updates and

protocols available for training, supervision and mentorship on its use. Outcome denotes the effects on patient care Donabedian (1988: 1745). So, the outcome here will refer to the consistent and correct use of the partograph so that quality care is given to the client, which will result in client satisfaction. This can be evaluated by consistent use of the partograph, the knowledge diagnosis on the partograph, using the partograph as a referral tool, and lastly, results of the retrospective analysis of the tool to see if the recordings done are correct. According to Donabedian (1988: 1745) this three-part process of quality assessment will be possible only if there is a likelihood that good structure is in place, which increases the likelihood of a good process and ultimately increases the likelihood of good outcomes.

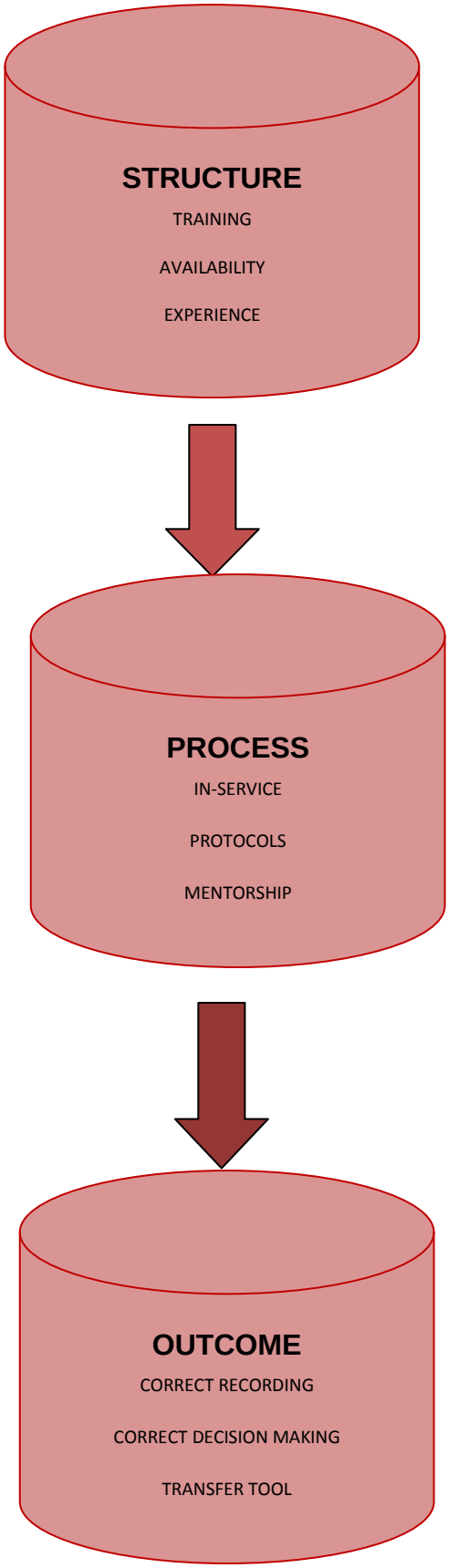

Figure 3.1: Donabedian's Conceptual Framework (Donabedian 1988).

3.4 SETTING

The uMgungundlovu District is one of eleven districts in the KZN Province (Figure 3.2). There are nine public hospitals situated in this district, of which four were eligible for the research to be conducted. The four hospitals have maternity sections with qualified midwives, so this made the four hospitals eligible for research to be conducted there. These hospitals were:

- Hospital A: District hospital.
- Hospital B: Combined regional and district hospital.
- Hospital C: Regional hospital.
- Hospital D: District hospital.

Mojaki, Basu, Letskokgohka and Govender (2011: 109) explain that the South African public health sector follows a hierarchical referral system. District hospitals play a central role between the primary health care (PHC) clinics, community health centres (CHCs), and regional and tertiary hospitals. It must be noted that District hospitals yield more deliveries than any other levels of care since most patients prefer to deliver there, and as stated by Mojaki et al. (2011: 109) most patients bypass the CHCs and PHCs and overload the District hospital. Therefore, the setting for this study was appropriate. Hospital C, which is a regional hospital and renders more specialised care, takes referrals from Hospital B. Hospital C functions at both regional and district levels and takes referrals from Hospital A and the surrounding CHCs and PHCs. Hospital D, which is a district hospital, takes referrals from the surrounding CHCs and PHCs.

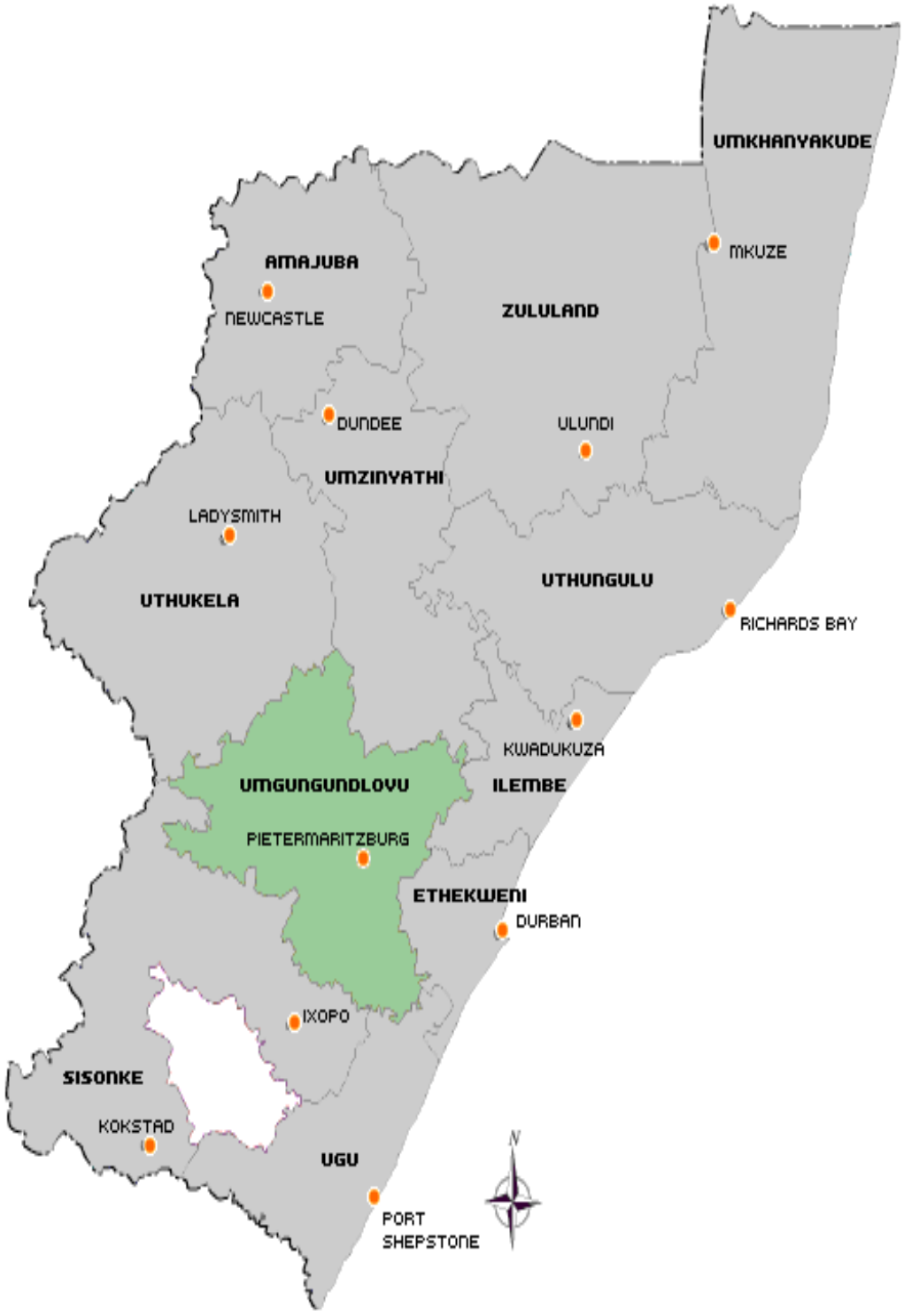

Figure 3.2: Map of KZN Department of Health (KwaZulu-Natal Department of Health 2013.

3.5 SAMPLING STRATEGY

A purposive sampling strategy was employed to select all the consenting midwives in maternity sections of the selected hospitals. De Vos et al. (2005: 202) describe purposive sampling as a sample based entirely on the judgement of the researcher, and which is composed of elements that contain the most characteristics representative of attributes of the population. The sample in this study required trained midwives who were familiar with the partograph since in their training curriculums it is a requirement for nursing women in labour. Polit and Beck (2012: 518) clarify further that this may be a stratified purposive sampling since the approach, although it is a maximum variation sample, is typically done along a single dimension. In this study, the qualified registered midwife is used. Therefore a purposive sample out of 300 midwives (Table 3.1) was chosen for phase one and a sample out of 1200 deliveries per month (Table 3.2.) for phase 2.

Table 3.1: Total number of midwives working in the maternity sections of the four hospitals

Name of the hospital	**Total No. of midwives**	**No. of midwives from other maternity wards**	**No. of midwives in labour ward**
Hospital A	22	14	8
Hospital B	139	96	43
Hospital C	79	50	29
Hospital D	60	37	23
Total	300	197	103

Table 3.2: Average number of deliveries per month in the four hospitals

Name of the hospital	**Average No. of deliveries per month**
Hospital A	100
Hospital B	650
Hospital C	100
Hospital D	550
Total	1200

3.5.1 Sampling process for the midwives

Using an alpha value of 0.05 and an accepted margin of error of 0.05; given the population of midwives is 300 (including 103 in labour wards and 197 in maternity wards); the minimum sample size required, using Cochrane's formula, was 169. To take into account non-response, 20% was added to this number. The sample size was 205. Since labour ward midwives use the partograph more than other midwives, the sample consisted of all 103 of them. The balance of the required sample was made up from the midwives from the maternity section by randomly sampling them. The requirement was 15 from Hospital A, 95 from Hospital B, 54 from Hospital C, and 41 from Hospital D (Table 3.3).

Table 3.3 Sample size for phase 1 – Questionnaire

	Population	**Maternity ward**	**Sample needed**	**Labour ward**	**Sample needed**	**Total sample**
Hospital A	22	14	7	8	8	15
Hospital B	139	96	52	43	43	95
Hospital C	79	50	25	29	29	54
Hospital D	60	37	18	23	23	41
Total	300	197	102	103	103	205

3.5.2 Sampling process for maternity case records

Taking an alpha value of 0.05 and an accepted error of 0.05, the required minimum sample size for simple random sampling (using Cochrane's formula) was 310 records. These needed to be taken proportionately from the four hospitals: 127 from each of Hospital B and Hospital D; and 28 from each of Hospital A and Hospital C (Table 3.4).

Table 3.4: Sample size for phase 2 – Retrospective analysis

Name of the hospital	Average number of deliveries per month	Sample size
Hospital A	100 – 125	28
Hospital B	550 – 650	127
Hospital C	100 – 125	28
Hospital D	450 – 550	127
Total	1200-1400	310

Inclusion criteria

- All midwives allocated in the maternity section with at least one year of experience. The sample included midwives that had completed one year community service in the maternity department after training.

Exclusion criteria

- All other categories of staff that are not qualified midwives.
- All learner midwives placed in the labour ward from R425 and R254 programmes.

3.6 DATA COLLECTION PROCESS

The data collection process was conducted in two phases.

3.6.1 Phase 1: Midwives questionnaire

During the first phase, the research assistant visited the maternity ward at the beginning of the month of the data collection process, whereby a self-administered questionnaire was handed out to the midwives (Appendix 5) after explaining the purpose of the study and obtaining informed consent. To obtain the required sample the research assistant visited wards during night duty and handed out questionnaires. Operational managers from the various maternity wards assisted in motivating staff to complete the questionnaires since the problem of maternal mortality was a concern to all. The research instrument was a questionnaire that had been used in an extensive study

done in Nigeria on the partograph. Dr Fawole granted the researcher permission to use the instrument and to adapt it to suit the context of the research (Appendix 8). The data collection method in this tool comprised mostly of closed-ended questions and just one open-ended question, which was distributed to qualified midwives working in the maternity wards across four hospitals in the district. The research assistant handed out the questionnaires to the midwives. Collection boxes were provided in the maternity wards for depositing the completed questionnaires to maintain confidentiality and anonymity.

The typical questionnaire as described by De Vos et al. (2005: 166) probably contains many questions that are designed to obtain facts and opinions about a phenomenon from people who are informed on a particular issue. Questionnaires are referred to as 'structured instruments' (Polit and Beck 2012: 297-298). It may consist of open-ended questions which allow people to respond in their own words in a narrative fashion, or it may consist of closed-ended (or fixed-alternative) questions that offer response options, from which respondents must choose the one that closely matches the appropriate response. The authors further explain that both open- and closed-ended questions have certain strengths and weaknesses. In summary, good closed-ended questions are difficult to construct but easy to administer and analyse, whilst open-ended questions allow for a richer, fuller and objective perspective but are time-consuming for the respondent (Polit and Beck 2012: 298).

3.6.2 Phase 2: Retrospective record review

During the second phase a retrospective review of the maternity case records of patients that were in labour was carried out to assess midwives' knowledge and competence on the use of the partograph. A tool for the record review was used (Appendix 6). A systematic sampling of the records was done (depending on the actual number) from each hospital by selecting every third

file from the registry department. According to De Vos et al. (2005: 200), for systematic sampling only the first case is selected randomly and all subsequent cases are selected according to a particular interval, such as every third file in this study.

3.7 PILOT TEST

The pilot study is sometimes called a feasibility study (Polit and Beck 2012: 195). In this study, it was necessary to examine the reliability and validity of the research instruments as well as develop and refine them (Burns and Grove 2006: 38). A pilot test of the questionnaire was conducted on two midwives (one in the labour ward and one in the postnatal ward) who did not participate in the main study. This was done to test the content validity and reliability of the tool. The tool was tested in the hospital with the largest population of midwives in Hospital A. The retrospective tool was tested on ten maternity case records which were not part of the main study. The hospital with the largest number of deliveries (Hospital A) was chosen. The records were obtained from the registry and were only seen by the researcher and were not taken out of the hospital. No names, registered numbers or personal particulars from the files appeared in any of the record review tools, which ensured anonymity of the patients.

3.8 VALIDITY AND RELIABILITY OF THE RESEARCH INSTRUMENTS

According to De Vos et al. (2005: 173) the definition of validity has two aspects: that the instrument actually measures the concept in question, and that the concept is measured accurately. This author also classifies validity into four major kinds of validity: content validity, face validity, criterion-related validity and construct validity. In this study two of the subtypes were used to validate the instruments used for data collection, namely content validity and

face validity. De Vos et al. (2005: 173) explain that content validity is concerned with the representativeness of the sample. De Vos et al. (2005: 173) further state that content reliability is established on the basis of judgements, that is, researchers or other experts make judgements about whether the measure covers the universe of facets that make up the concept. The tool used for the first phase of this study was previously utilised in an extensive study in Nigeria, and it was also piloted to test appropriateness to the South African context. The tool (midwives questionnaire) was therefore appropriate and relevant for the sample that was selected, since it was able to measure the concept accurately and align it to the objectives of the study. Face validity refers to whether the instrument looks like it is measuring the target construct (Polit and Beck 2012:336). The author further explains that although face validity is not considered strong evidence of validity, it is required to persuade people to participate in the study.

Reliability can be established by the consistency of the measure obtained in the use of a particular instrument (Burns and Grove 2009: 376). The tool that was used obtained consistent results with the reliability scale used in Statistical Package for Social Sciences (SPSS version 20). As reflected by De Vos et al. (2005: 176), reliability of the instrument can be established if the instrument measures the same thing more than once and results in the same objectives. This tool was used previously as mentioned, and also piloted for reliability.

3.9 DATA ANALYSIS

The researcher consulted a statistician who assisted with the determination of the sample size and the statistical tests used for this study (Appendix 7). Descriptive statistics, in the form of tables and graphs, are used to describe the data graphically. In addition, measures of central tendency, including

means and modes, as well as a measure of spread using the standard deviation was calculated, where appropriate.

In order to test for significant trends in the data, inferential statistics was applied. These included Pearson's correlation, t-tests, ANOVA and chi-square tests. Where the conditions are not met for the application of these tests, non-parametric equivalent tests was applied. Throughout, a p-value of 0.05 was used to indicate significance. The analysis was carried out using SPSS version 20.

3.10 ETHICAL CONSIDERATIONS

A research study is subject to Codes of Ethics and good practice for the protection of the participants (Polit and Beck 2012: 152). Ethical codes are based upon a few generally accepted moral values of respect for individual beneficence, respect for human dignity and justice. To ensure ethical considerations, these three broad principles, on which standards of ethical conduct research are based, were used (Polit and Beck 2012: 152).

3.10.1 Beneficence

Beneficence imposes a duty on a researcher to minimise harm and maximise benefits. It is the researcher's duty to avoid, prevent, or minimise unnecessary harm in studies with humans (Polit and Beck (2012: 152). These authors further state that participants have a right to be protected from exploitation and should be assured that their participation or information they might provide will not be used against them. The right to freedom from harm and discomfort was maintained, as participants were not subjected to any risk of harm or injury. The study was reviewed by the Institutional Research and Ethics Committee, and thereafter ethics clearance was granted (Appendix 1). Permission was sought from and granted by the uMgungundlovu District Manager (Appendices 2a and 2b) and the Department of Health (Appendices

3a and 3b). The researcher also signed a non-disclosure declaration (Appendix 9) before accessing patient files. The files were not taken out of the hospital. All data obtained will be stored safely under lock and key for fifteen years and then shredded.

3.10.2 Respect for human dignity

Respect for human dignity includes the right to self-determination and to full disclosure (Polit and Beck, 2012: 154). The information letter explaining what the study was about was provided to the participants before commencement of the study, and the participants signed a consent form (Appendix 4). Participants were requested not to write their names on the questionnaire in order to maintain confidentiality. Participants were also informed that participation was totally voluntary and that they were free to withdraw at any time without penalty.

3.10.3 Justice

Polit and Beck (2012: 155) state that justice involves a participant's right to fair treatment and their right to privacy, where participant selection has to be based on study requirements and not on a group's vulnerability. Selection of potential participants was open and fair without any discrimination. Midwives who declined to participate in the study were not treated in a prejudicial manner. To ensure the right to privacy, participants' details were not written in the reports.

3.11 CONCLUSION

In summary, this chapter took us through the research design, setting, population and sample size, the data collection process, as well as data analysis. The research collection tools had to be reliable and valid and therefore the pilot test added more value. Collection of data was done in two

phases and two types of collection instruments were used, namely the self-administered questionnaire as well as the record review tool. Ethical considerations were applied so that no harm and breach of confidentiality came to the respondents. The next chapter will show the presentations of the results.

CHAPTER 4

PRESENTATION OF RESULTS

4.1 INTRODUCTION

As elucidated in Chapter three, the research occurred in two phases. Phase one required qualified midwives to complete a self-administered questionnaire. This was followed by phase two, where the researcher audited the maternity case records specifically on completed partographs to corroborate the information from the questionnaire. The data that was analysed is presented in this chapter.

4.2 DESCRIPTION OF THE DIFFERENT TESTS USED FOR DATA ANALYSIS

- A chi-square goodness of fit test: ('gof'): A univariate test, used on a categorical variable to test whether any of the response options were selected significantly more/less often that the others. Under the null hypothesis, it was assumed that all responses were equally selected.
- Wilcoxon Signed Ranks test: A non-parametric test used to test, in this study, whether the average value was significantly different from a value of 3 (the central score).
- Chi-square test of independence: Applied to a cross tabulation to see whether a significant relationship exists between the two variables. Under the null hypothesis, the variables were independent. When conditions for this test were not met, a Fisher's exact test was used in its place.
- Kruskal-Wallis: A non-parametric equivalent to ANOVA, this tests whether average scores/mean ranks for the different categories of a categorical variable were significantly different. When significant differences were found for a variable with more than two categories, a

Mann-Whitney U test was performed on pairs of categories to detect specific differences.

4.3 PHASE 1: ANALYSIS OF MIDWIVES QUESTIONNAIRE

4.3.1 Frequency distribution of midwives in the four different hospitals

Table 4.1: Frequency distribution of midwives in the four different hospitals

		Frequency	Percent
Valid	Hospital A	14	7.1
	Hospital B	92	46.7
	Hospital C	50	25.4
	Hospital D	41	20.8
	Total	197	100.0

Table 4.1 indicates how participants (midwives) were spread across the four hospitals. Out of a total of n=197, Hospital A had 7.1 % (n=14) participants, Hospital B with the largest distribution of midwives had 46.7% (n=92) participants, Hospital C had 25.4% (n=50) participants and Hospital D had 20.8 % (n=41) participants.

4.3.2 Number of midwives in labour ward

Table 4.2: Midwives working in labour ward

		Frequency	Percent
Valid	Yes	91	46.2
	No	106	53.8
	Total	197	100.0

Table 4.2 indicates that out a total of n=197, less than half the number of midwives 46.2% (n=91) work in the labour ward and had direct contact with

the partograph. A slightly higher distribution of midwives 53.6% (n=105) work in all the other maternity wards and had indirect contact with the partograph.

4.3.3 Distribution of participants at different levels of practice

Table 4.3: Distribution of midwives at different levels of practice

		Frequency	Percent
Valid	District	83	42.1
	Regional	86	43.7
	Provincial	28	14.2
	Total	197	100.0

Table 4.3 shows the distribution of participants, a total of n=197 at the different levels of practice. At district level there were 42.1% (n=83), at regional level there were 43.7% (n=86) and at provincial level there were 14.2% (n=28).

4.3.4 Age of the participants

Table 4.4: Age of the participants

		Frequency	Percent
Valid	<30	32	16.2
	30 – 39	78	39.6
	40 – 49	55	27.9
	50 – 59	28	14.2
	60+	4	2.0
	Total	197	100.0

A total of 16.2% (n=32) participants were below 30 years of age, 39.6% (n=78) fell in the age group of 30-39 years, 27.9% (n=55) in the age group 40-

49 years, 14.2% (n=28) in the age group 50-59 years, and a small number of 2% (n=4) fell in the age group over 60 years out of a total of n=197 participants.

4.3.5 Gender of the participants

Table 4.5: Gender of the participants

		Frequency	Percent
Valid	Male	10	5.1
	Female	187	94.9
	Total	197	100.0

In Table 4.5 the results show a significant number 94.9% (n=187) of participants were female and 5.1% (n=10) were male from a total of n=197.

4.3.6 Years of experience as a midwife/accoucher

Table 4.6: Experience in years as a midwife/accoucher

		Frequency	Percent
Valid	<2 years	65	33.0
	2 - 4 years	35	17.8
	>4 - 9 years	49	24.9
	>9 - 14 years	23	11.7
	>14 - 19 years	10	5.1
	>19	15	7.6
	Total	197	100.0

Table 4.6 indicates that 33% (n=65) had less than two years of experience, 17.8% (n=35) had two to four years of experience, 24.9% (n=49) had greater than two up to nine years of experience, 11.7% (n=23) had greater than nine up to fourteen years of experience, 5.1% (n=10) had greater than fourteen up

to nineteen years of experience and 7.6% (n=15) had greater than nineteen years of practice.

4.3.7 Summary of questions 2 to 6

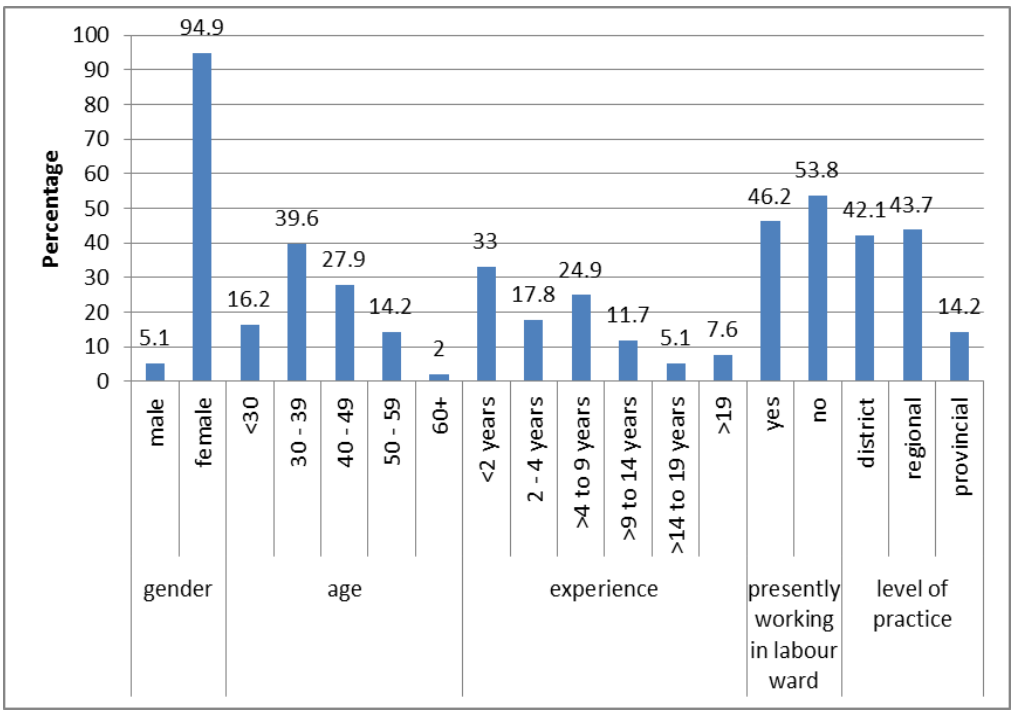

Figure 4.1 Grouped analyses on questions two to six.

In the graph above a grouped presentation is shown on the gender, age, level of experience and practice and if the respondent was placed in the labour ward or other maternity wards.

4.3.8 Familiarity with the partograph

Table 4.7: Acquaintance with the partograph

		Frequency	Percent
Valid	Yes	197	100.0
	No	0	0.0
	Total	197	100.0

Out of n=197 the response showed that 100% (n=197)) of participants were familiar with the partograph.

4.3.9 Partograph availability in the labour ward

Table 4.8: Availability of the partograph

		Frequency	Percent
Valid	Yes	191	97.0
	No	5	2.5
	Total	196	99.5
Missing	System	1	0.5
Total		197	100.0

A significant number 97% (n=196) indicated that partographs were available in the labour wards, as applied to the chi-square goodness of fit test (χ^2(1, N=196) = 176.510, p<0.0005).

4.3.10 Frequency of usage of the partograph

Table 4.9 Frequency of usage of the partograph

		Frequency	Percent
Valid	Always	179	90.9
	Often	15	7.6
	Sometimes	3	1.5
	Total	197	100.0

In table 4.9 on the frequency of usage of the partograph the results showed that significantly more participants 90.9% (n=179) out of n=197 chose the response ‘always’ (χ^2(4, N=197) = 622.162, p<0.0005) and there was a zero number of responses to ‘rarely’ and ‘never’ Only 7.6% (n=15) chose ‘often’ and only 1.5% (n=3) chose ‘sometimes’.

4.3.11 Analyses on availability and frequency of usage of the partograph

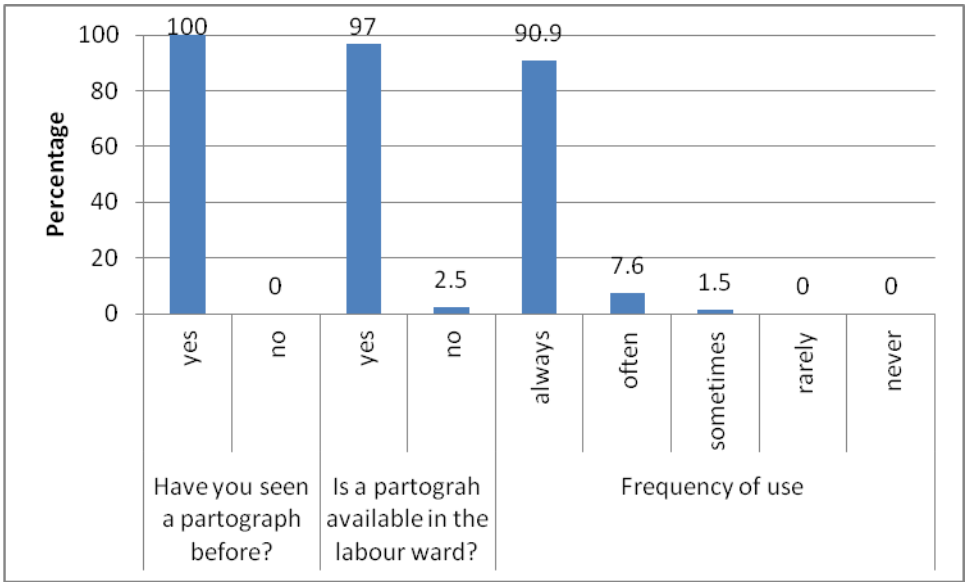

Figure 4.2 Grouped analyses on availability, familiarity and frequency of usage of the partograph.

The above graph indicates a grouped analysis on availability and frequency of usage of the partograph.

4.3.12 Points on non-usage of the partograph

Table 4.10 Reasons for non-usage of the partograph

Reasons	Frequency
Birth before arrival	5
Emergency caesarean section	4
Elective caesarean section	7
Fully dilated/head on perineum	11
Busy department	4
Staff shortage	4
Unsure on how to use	6
Early labour/latent labour	6
Precipitate labour	1
Referral without a partograph	1
Limited resources	1

Although a significant majority of participants declared that the partograph is ‘always’ used, there were those participants that detailed some reasons for non-use of the partograph in table 4.10 above. Clients that come in ‘fully dilated or head on the perineum’ is indicated by the greater number of responses which is eleven(11), ‘elective caesarean section’ is seven (7), ‘unsure on how to use the partograph and ‘early labour/latent phase’ had six (6) each, ‘birth before arrival’ has five (5) ‘emergency caesarean section, busy department, and staff shortage’ had four (4) responses each, ‘precipitate labour, referral without a partograph, and limited resources’ had one response each.

4.3.13 Training on the partograph

Table 4.11: Previous training

		Frequency	Percent
Valid	Yes	188	95.4
	No	9	4.6
	Total	197	100.0

Chi-square goodness of fit test indicated that a significant majority of participants ($\chi^2(1, N=197) = 162.645, p<0.0005$), which is 95.4% (n=188), replied that they had training on the partograph, and 4.6% (n=9) had no training.

4.3.14 Updates and in-service training on the partograph

Table 4.12: Updates and in-service training

		Frequency	Percent
Valid	Yes	90	45.7
	No	107	54.3
	Total	197	100.0

Notably there was an insignificant difference in the selection of responses, however more than half of the participants 54.3% (n=109) had no in-service training/updates and 45.7% (n=90) had in-service training.

4.3.15 Frequency of updates and in-service

Table 4.13: Frequency of updates

		Frequency	Percent
Valid	Every week	9	4.6
	At least once a month	33	16.8
	At least once every 6 months	21	10.7
	At least once a year	17	8.6
	Less than once a year	10	5.1
	Total	90	45.7
Missing	System	107	54.3
Total		197	100.0

A significant majority of participants 16.8% (n=33) responded to having updates and in-service training at least ‘once a month’ ($\chi^2(4, N=90) = 22.341$, $p<0.0005$), 10.7% (n=21) ‘at least every six months’, 8.6% (n=17) ‘at least once a year’, 5.1% (n=10) ‘less than once a year’ and 4.6% (n=9) ‘every week’.

4.3.16 Availability of a policy on the use of the partograph

Table 4.14: Availability of a policy on use of the partograph

		Frequency	Percent
Valid	Yes	163	82.7
	No	33	16.8
	Total	96	99.5
	Missing system	1	0.5
	Total	197	100.0

Significantly more, 82.7% (n=163) responded 'yes' (χ^2(1, N=196) = 86.224, p<0.0005) indicating that they did have policies on how to use the partograph and 16.8% (n=33) did not have any policy.

4.3.17 Determine if there is a need for in-service training

Table 4.15: Need for in- service training

		Frequency	Percent
Valid	Yes	196	99.5
	No	1	0.5
	Total	197	100.0

In table 4.15 a significant majority 99.5 % (n=196) indicated that there was a need for in-service training and 0.5% (n=1) responded that was no need for training, out of a total n=197.

4.3.18 Grouped analyses on training and frequency of updates and in-service

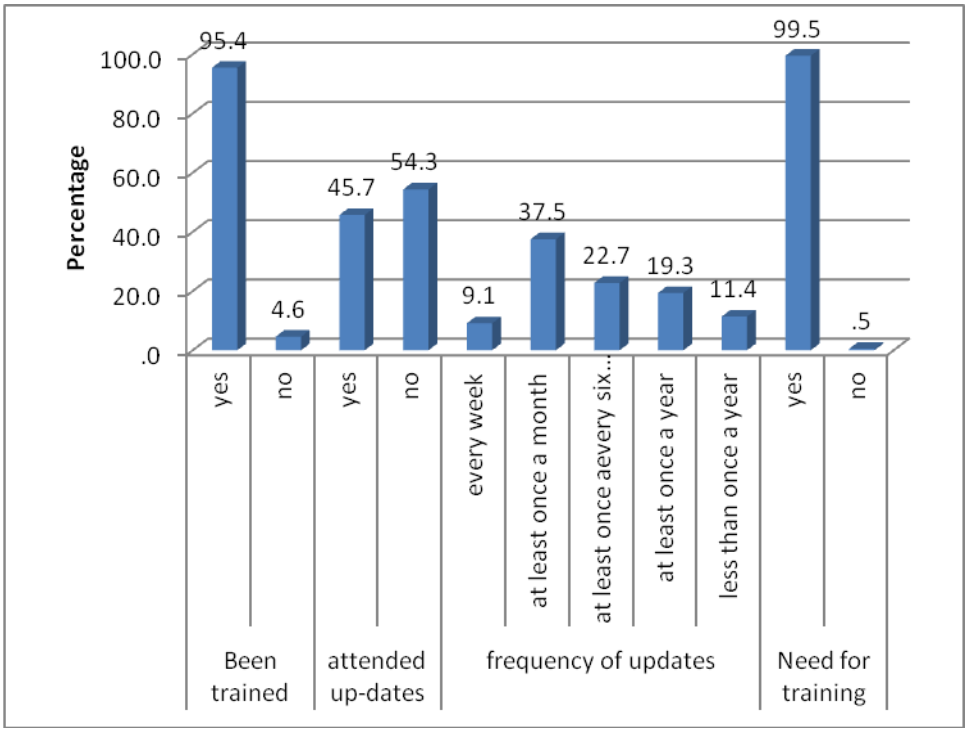

Figure 4.3 Grouped analyses on training and frequency of updates/in-service

Figure 4.3 above indicates a grouped analysis on participants that had been trained previously, those that attended updates, the frequency of updates, and the need for training.

4.3.19 Frequency of usage of the partograph at the different levels of health care

Table 4.16 : Frequencies of usage in the different levels of health care

	Use: PHC				Use: district hospital				Use: regional hospital				Use :provincial hospital				Use: all levels of care			
	Category	Observed N	Expected N	Residual	Category	Observed N	Expected N	Residual	Category	Observed N	Expected N	Residual	Category	Observed N	Expected N	Residual	Category	Observed N	Expected N	Residual
1	Yes	174	61,0	113.0	Yes	174	60,3	113.7	Yes	175	60,3	114.7	Yes	174	60,3	113.7	Yes	185	65.3	119.7
2	No	1	61,0	-60.0	No	1	60.3	-59.3	No	0	60.3	-60.3	No	1	60.3	-59.3	No	3	65.3	-62.3
3	Don't know	8	61.0	-53.0	Don't know	6	60.3	-54.3	Don't know	6	60.3	-54.3	Don't know	6	60.3	-54.3	Don't know	8	65.3	-57.3
Total		183				181				181				181				196		

The results indicate that a significant majority answered ‘yes’ in all levels of care. PHC 88.3% ($\chi^2(2, N=183) = 314.393, p<0.0005$), district hospital 88.3% ($\chi^2(2, N=181) = 321.425, p<0.0005$), regional hospital 88.8% ($\chi^2(2, N=181) = 327.193, p<0.0005$), provincial hospital 88.3% ($\chi^2(2, N=181) = 321.425, p<0.0005$), all levels of care 98.9% ($\chi^2(2, N=196) = 328.969, p<0.0005$). Participants agreed significantly that the partograph can be used at all different levels of care.

4.3.20 Summary on the frequency of usage of the partograph at different levels of health care

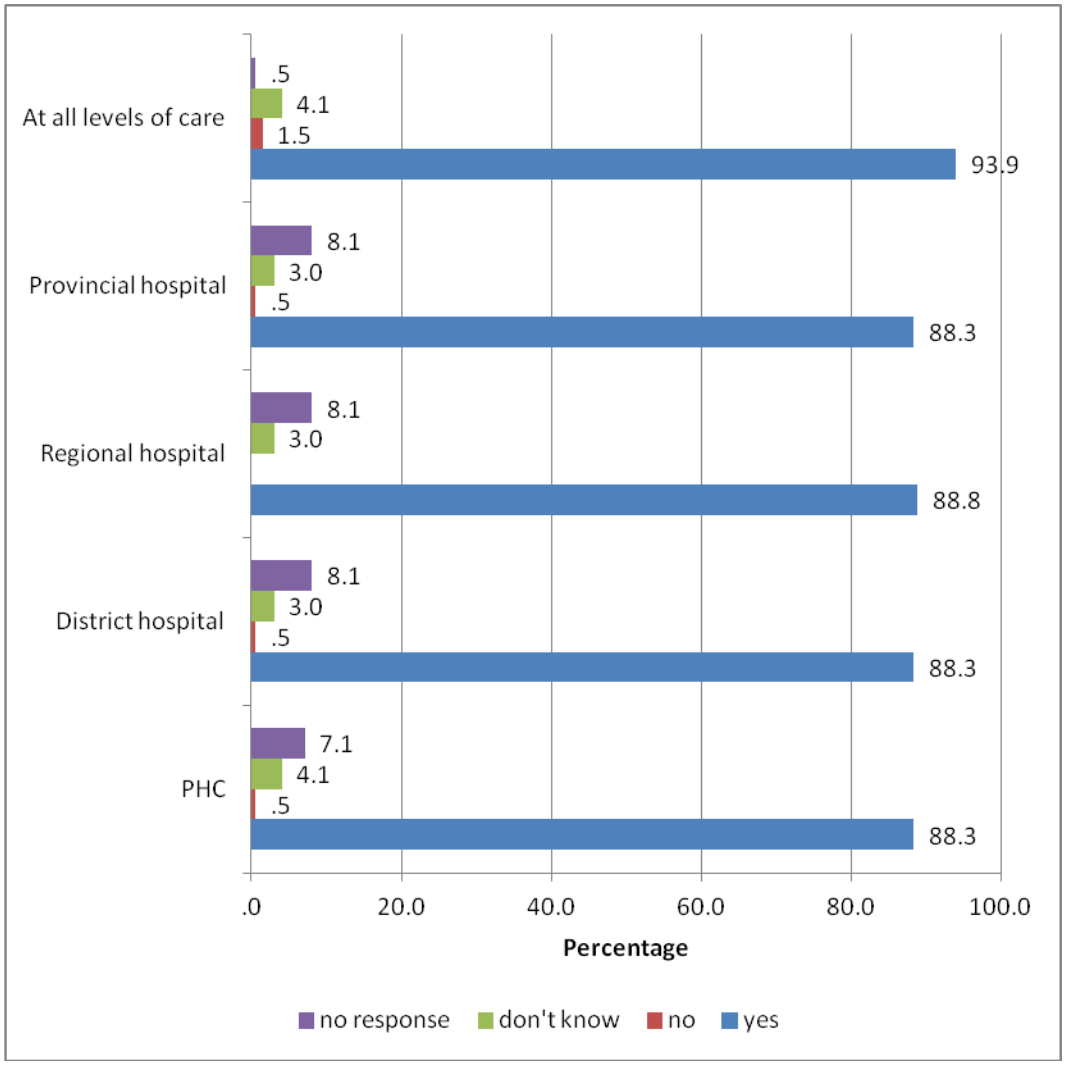

Figure 4.4 Grouped response on usage of partograph at different levels of health care

The above graph indicates that the partograph can be used at all levels of care, that is at the PHC, district , regional and provincial hospitals.

4.3.21 Frequencies of usage of the partograph as indicated by participants of different categories of health care workers

Table 4.17: Frequencies of usage of the partograph as indicated by participants of different categories of health care workers

	Trained to use: traditional birth attendant				trained to use: PHC nurses				trained to use: staff nurses				trained to use: midwives				trained to use: medical doctors			
	Category	Observed N	Expected N	Residual	Category	Observed N	Expected N	Residual	Category	Observed N	Expected N	Residual	Category	Observed N	Expected N	Residual	Category	Observed N	Expected N	Residual
1	Yes	20	60.3	-40.3	Yes	114	62.7	51.3	Yes	21	60.0	-39.0	Yes	195	65.7	129.3	Yes	133	63.0	70.0
2	No	80	60.3	19.7	No	25	62.7	-37.7	No	86	60.0	26.0	No	1	65.7	-64.7	No	11	63.0	-52.0
3	Don't know	81	60.3	20.7	Don't know	49	62.7	-13.7	Don't know	73	60.0	13.0	Don't know	1	65.7	-64.7	Don't know	45	63.0	-18.0
Total		181				188				180				197				189		

Of the participants, 11% (n=20) responded that traditional birth attendants (TBAs) could use the partograph whereas 44.2% (n=80) stated that TBAs could not, and just over an equal number 44.8% (n=81) responded that they did not know if TBAs could use the partograph. A significant majority 57.9% (n=114) responded that PHC nurses were trained to use the partograph, 12.7% (n=25) responded 'no' and 24.9% (n=49) indicated that that they did not know. Significantly less 10.7% (n=21) responded to staff nurses being trained to use the partograph and 43.7% (n=86) responded 'no' and 37.1% (n=73) responded 'don't know'. A significant majority of 99% (n=195) responded 'yes' to midwives sufficiently trained to use the partograph. Notably the majority 70.4% (n=133) responded 'yes' to doctors being trained to use the partograph.

4.3.22 Grouped response on the different categories of staff who could use the partograph

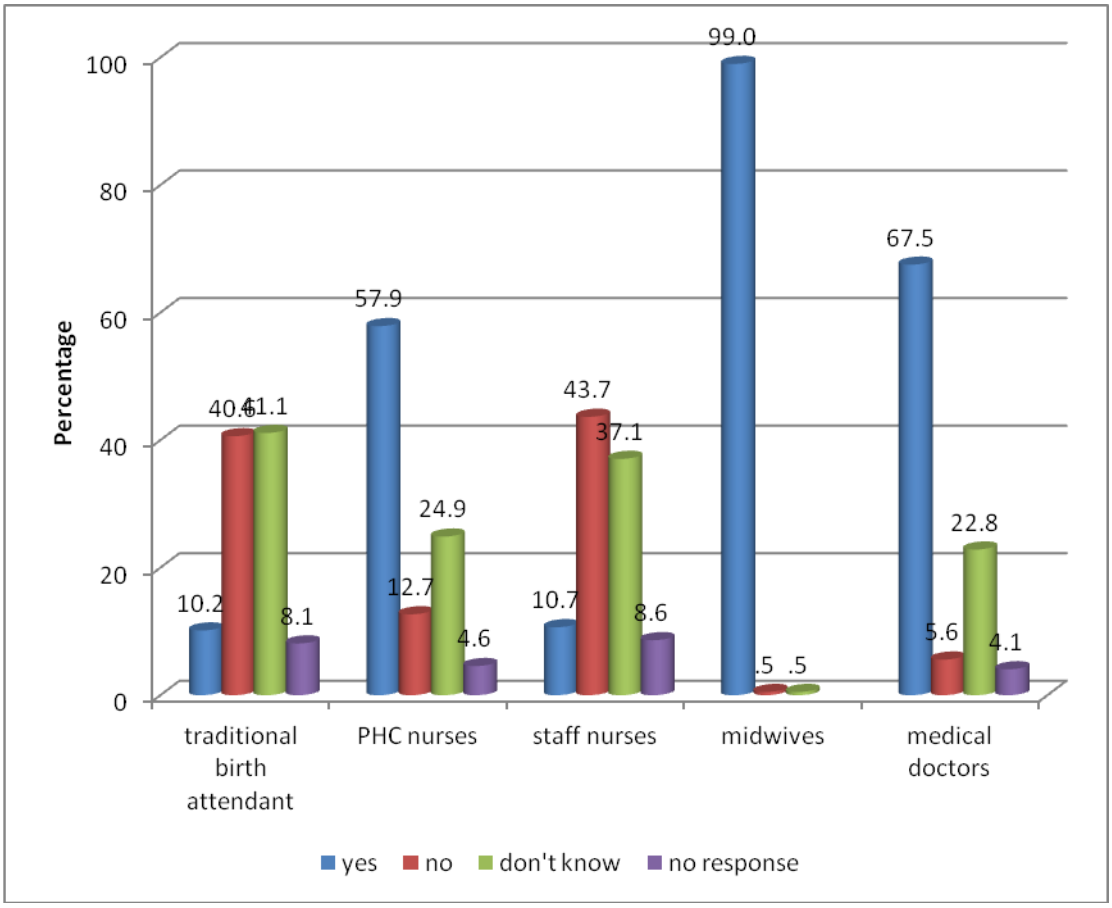

Fig 4.5 Grouped responses on the categories of health care workers who were sufficiently trained to use the partograph.

The graph above shows a summary of the response of the participants to the different categories of health care workers on whom they though had been trained sufficiently to use the partograph as reported on from table 4.3.17 above.

4.3.23 Diagnosis of prolonged labour

Table 4.18: Diagnosis of prolonged labour

		Frequency	Percent
Valid	Yes	189	95.9
	No	2	1.0
	Don't know	6	3.0
	Total	197	100.0

There was a significant majority 95.9% (n=189) who responded 'yes' (χ^2(2, N=197) = 345.584, p<0.0005) that a diagnosis of prolonged labour could be made on the partograph. Only 1.0% (n=2) responded 'no' and 3.0% (n=6) responded 'don't know'.

4.3.24 Diagnosis of obstructed labour

Table 4.19: Diagnosis of obstructed labour

		Frequency	Percent
Valid	Yes	185	93.9
	No	6	3.0
	Don't know	6	3.0
	Total	197	100.0

Significantly more 93.9% (n=185) responded 'yes' (χ^2(2, N=197) = 325.289, p<0.0005) that obstructed labour could be diagnosed on the partograph. Only 3.0% (n=6) responded 'no' and 3.0% (n=6) responded 'don't know'.

4.3.25 Diagnosis of poor progress

Table 4.20: Diagnosis of poor progress of labour

		Frequency	Percent
Valid	Yes	193	98.0
	No	2	1.0
	Don't know	2	1.0
	Total	197	100.0

There was a significant majority 98% (n=193) who responded 'yes' (χ^2(2, N=197) = 370.365, p<0.0005) that poor progress of labour could be diagnosed on the partograph. Only 1.0% (n=2) responded 'no' and 1.0% (n=2) responded 'don't know'.

4.3.26 Diagnosis of inefficient uterine action

Table 4.21: Diagnosis of inefficient uterine action

		Frequency	Percent
Valid	Yes	177	89.8
	No	7	3.6
	Don't know	12	6.1
	Total	196	99.5
Missing	4	1	.5
Total		197	100.0

Significantly more 89.8% (n=177) responded 'yes' (χ^2 (2, N=196) = 286.480, p<0.0005) that inefficient uterine action could be diagnosed on the partograph. Only 3.6% (n=7) responded 'no' and 6.1% (n=12) responded 'don't know'.

4.3.27 Diagnosis of suspected foetal distress

Table 4.22: Diagnosis of suspected foetal distress

		Frequency	Percent
Valid	Yes	175	88.8
	No	10	5.1
	Don't know	10	5.1
	Total	195	99.0
Missing	4	2	1.0
Total		197	100.0

There was a significant majority 88.8% (n=175) who responded 'yes' (χ^2(2, N=195) = 279.231, p<0.0005) that suspected foetal distress could be diagnosed on the partograph. Only 5.1% (n=10) responded 'no' and another 5.1% (n=10) responded 'don't know'.

4.3.28 Diagnosis of abnormal foetal heart rate

Table 4.23 Diagnosis of abnormal foetal heart rate

		Frequency	Percent
Valid	Yes	180	91.4
	No	9	4.6
	Don't know	7	3.6
	Total	196	99.5
Missing	4	1	.5
Total		197	100.0

Significantly more 91.4% (n=180) responded 'yes' (χ^2(2, N=196)=301.904, p<0.0005) that abnormal foetal heart could be diagnosed on the partograph, 4.6% (n=9) responded 'no' and 3.6% (n=7) responded 'don't know'.

4.3.29 Diagnosis of satisfactory progress of labour

Table 4.24: Diagnosis of satisfactory progress of labour

		Frequency	Percent
Valid	Yes	186	94.4
	No	3	1.5
	Don't know	5	2.5
	Total	194	98.5
Missing	4	3	1.5
Total		197	100.0

The majority of participants 94.4% (n=189) responded 'yes' (χ^2(2, N=194)=341.515, p<0.0005) to satisfactory progress of labour, the other 1.5% (n=3) responded 'no' and the rest 2.5% (n=5) 'don't know.

4.3.30 Diagnosis of need for augmentation of labour with oxytocin

Table 4.25: Diagnosis of need for augmentation of labour with oxytocin

		Frequency	Percent
Valid	Yes	189	95.9
	No	1	.5
	Don't know	6	3.0
	Total	196	99.5
Missing	4	1	.5
Total		197	100.0

Most participants 96.4% (n=189) agreed that diagnosis could be made for the need for augmentation of labour (χ^2(2, N=196)=351.316, p<0.0005) whilst 0.5% (n=1) said 'no' and 3.1% (n=6) 'don't know'.

4.3.31 Diagnosis of need for caesarean section

Table 4.26 Diagnosis of need for caesarean section

		Frequency	Percent
Valid	Yes	184	93.4
	No	4	2.0
	Don't know	7	3.6
	Total	195	99.0
Missing	4	2	1.0
Total		197	100.0

The majority of participants 94.4% (n=184) responded 'yes' ($\chi^2(2, N=195)=326.862$, $p<0.0005$), that the need for caesarean section could be diagnosed on the partograph and a small minority 2.1% (n=4) said 'no' while the rest 3.6% (n=7) 'did not know'.

4.3.32 Diagnosis of dehydration in the mother

Table 4.27: Diagnosis of dehydration in the mother

		Frequency	Percent
Valid	Yes	135	68.5
	No	36	18.3
	Don't know	21	10.7
	Total	192	97.5
Missing	4	5	2.5
Total		197	100.0

Significantly more 68.5% (n=135) agreed that dehydration in the mother could be diagnosed on the partograph, while 18.8% (n=36) disagreed and the others 10.9% (n=21) don't know.

4.3.33 Summary of questions 18.1 to 18.10 for making diagnoses of abnormal findings on the partograph

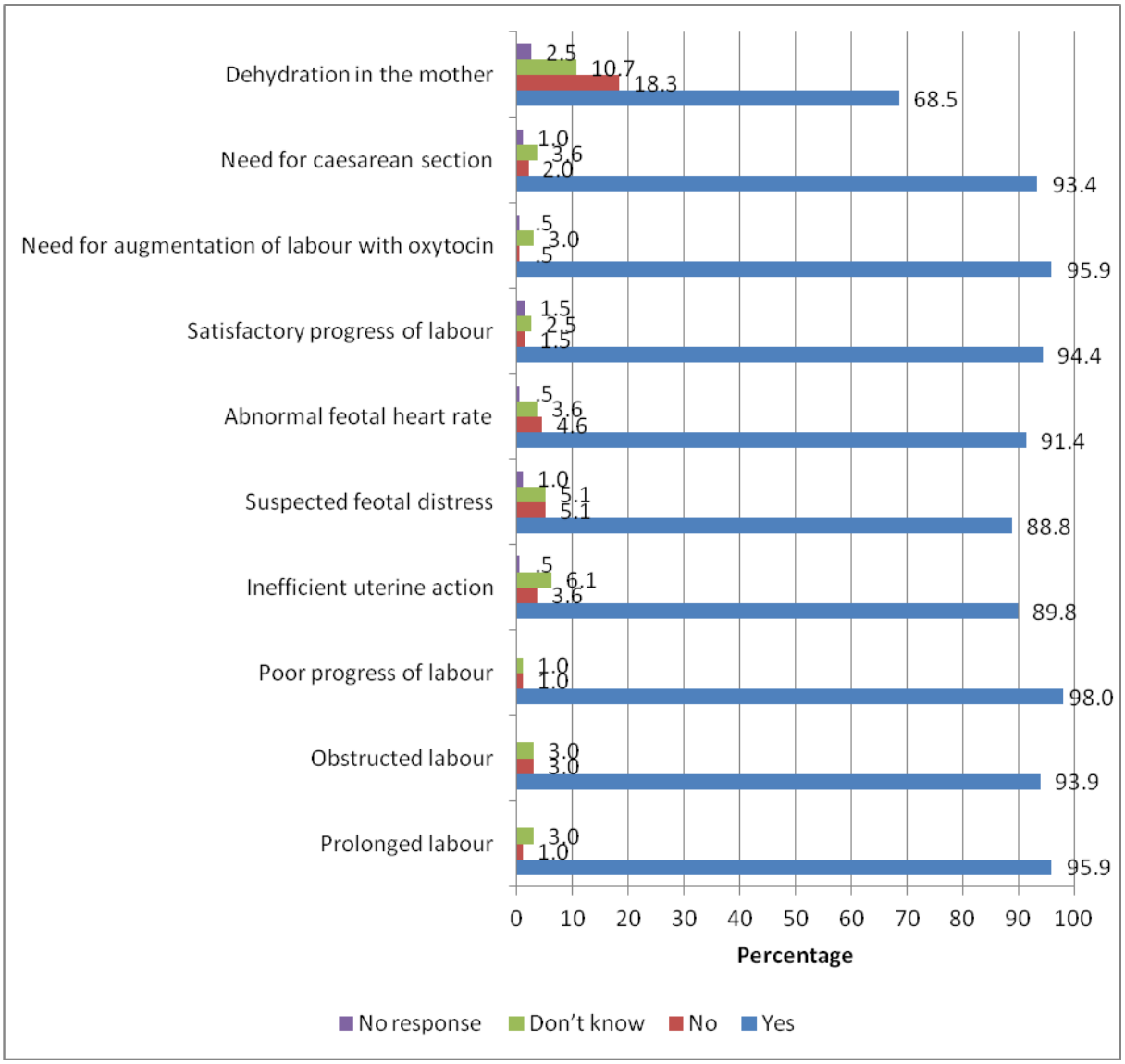

Figure 4.6: Grouped responses on abnormal diagnoses on the partograph

The figure above shows a summary of the responses by the participants on abnormal findings that are found on the partograph during its use which could be reported on, as seen in table 4.3.18 to table 4.3.27 above.

4.3.34 A tool for implementing safe motherhood

Table 4.28: A tool for implementing safe motherhood

		Frequency	Percent
Valid	Yes	179	90.9
	No	10	5.1
	Don't know	8	4.1
	Total	197	100.0

Significantly more participants 90.9% (n=196) selected 'yes' (χ^2 (2, N=197)=293.431, p<0.0005) that the partograph can be used as a tool for implementing safe motherhood, whilst 5.1% (n=10) said 'no' and the rest 4.1% (n=8) 'did not know'.

4.3.35 Quality and efficiency of care and influence of the partograph on maternal and new-born morbidity and mortality

Table 4.29 Wilcoxon signed ranks test

	N	Mean	Std. Deviation
Reduce maternal deaths	197	4.27	1.108
Reduce maternal morbidity	197	4.20	1.102
Reduce deaths in new-born	197	4.42	1.025
Reduce illness or morbidity in new-born	197	4.11	1.106
Increase efficiency of those attending	197	4.26	1.041
Mandatory for improved care	197	4.40	1.033

A Wilcoxon signed ranks test to see whether the average score for each question was significantly different from a neutral score of three (3). If there was a significant result, then we can interpret it as either significant agreement (if mean >3) or significant disagreement (if mean <3). Looking at the table 4.3.29 of means above, there was significant agreement that using

the partograph will reduce maternal deaths (Z(N=197)=-9.871, p < 0.0005). Participants significantly agreed that a partograph reduces maternal morbidity (Z(N=197) = -9.776, p < 0.0005). Still in significant majority, participants confirmed that the partograph reduces deaths in new-borns (Z(N=197)= -10.758, p < 0.0005). As with the other results a significant majority agreed that partograph reduces illness or morbidity in the new-born (Z(N=197)=-9.447, p < 0.0005). That a partograph increases efficiency was indicated by a significant majority of participants (Z(N=197)=-10.079, p < 0.0005). A significant agreement by the majority of the participants shows that the partograph was mandatory for improved care (Z(N=197)=-10.580, p < 0.0005).

4.3.36 Summary of results on the influence of morbidity and mortality on the mother and new-born as well the quality of care

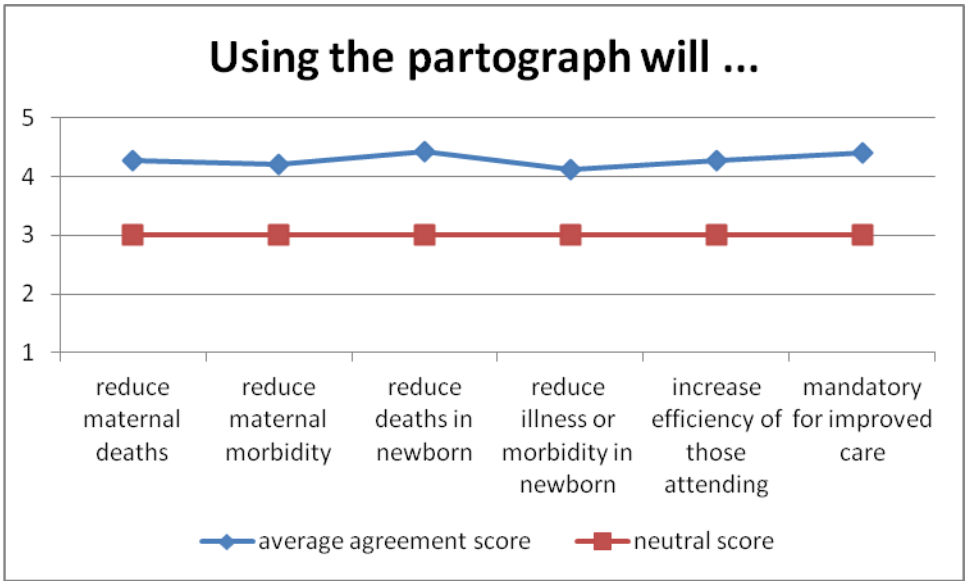

Figure 4.7 Grouped responses on the influence of the partograph on morbidity

In the graph above the neutral score of three (3) is indicated in red. Mean scores as calculated by the Wilcox singed ranks test which were greater than or less than three (3), were indicted in blue. All responses on the different aspects were greater than the mean score of three (3).

4.3.37 Normal progress of labour diagnosed on the labour graph

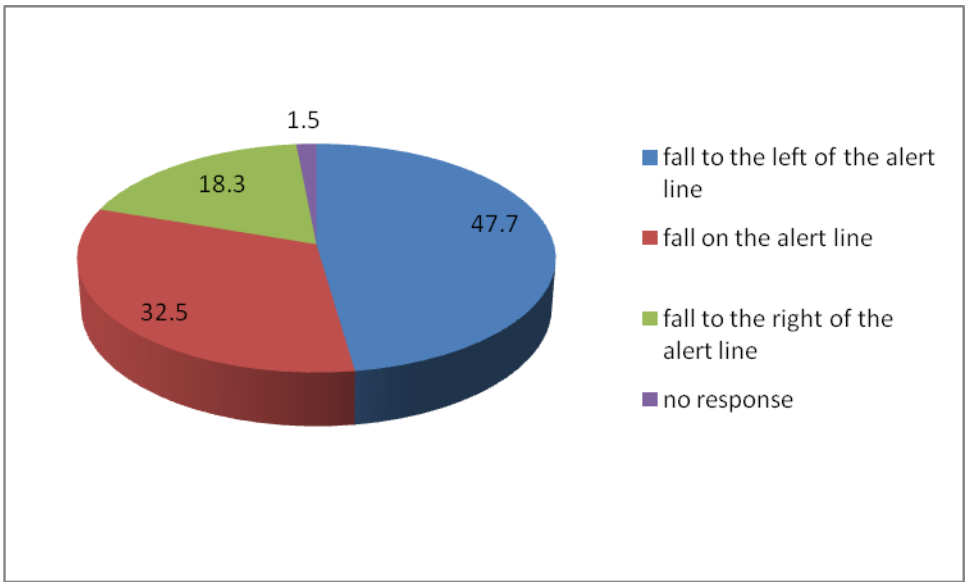

Figure 4.8 Pie chart showing responses to normal progress of labour

The above pie chart shows the response to the knowledge question that enquires about where the plot for cervical dilatation should fall with regard to the alert line. The result shows that significantly more 47.7% (n=94) selected the first option 'the plot on the partograph should fall to the left of the alert line'(χ^2 (2, N=194)=26.021, p<0.0005) for normal progress of labour. Many 32.5% (n=64) also chose the option 'fall on the alert line' and the smaller group of participants 18.3% (n=36) chose 'fall to the right of the alert line'.

4.3.38 Knowledge questions for plotting contractions and progress of labour on the partograph

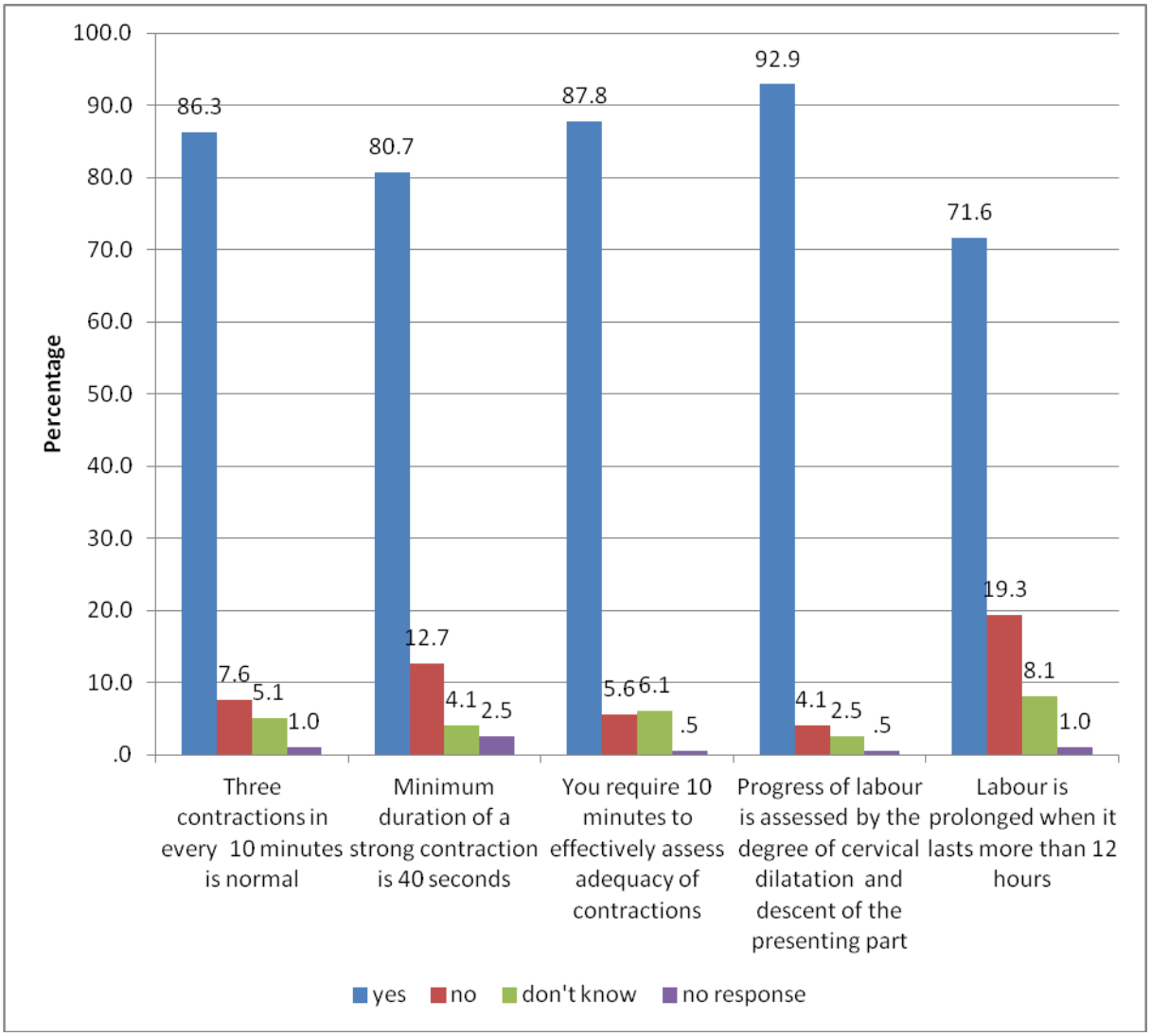

Figure 4.9 Grouped response on information about partograph

The graph above depicts responses to the knowledge questions which were the standard requirements for plotting on the partograph. A significant majority 86.3% (n=170) responded that three contractions in every ten minutes is normal. That the minimum duration of a strong contraction is forty seconds had a significant number 80.7% (n=159) of respondents conceding 'yes'. Ten minutes being required to effectively assess adequacy of contractions also obtained a significant high majority 87.8% (n=173) of 'yes' responses. A significant majority 92.9% (n=183) also responded 'yes' that progress of labour is assessed by the degree of cervical dilatation and

descent of the presenting part. A substantial majority 71.6% (n=141) also answered 'yes' that labour is prolonged when it lasts more than twelve hours which makes them incorrect, since labour is prolonged when it lasts more than eighteen hours.

4.3.39 Timing for entering information onto the partograph

Table 4.30: Entering information on a partograph

		Frequency	Percent
Valid	Upon diagnosis of labour	113	57.4
	While the woman is still in labour	83	42.1
	After delivery	1	.5
	Total	197	100.0

The result showed that significantly more 57.4% (n=113) selected option 1 (χ^2 (2, N=197)=102.376, p<0.0005) which was upon diagnosis of labour, significant fewer 1% (n=1) selected option 3 which was after delivery, and the rest 42.1% (n=83) selected option 2 which was while the woman was still in labour.

4.3.40 Referral of the client due to findings on the partograph

Table 4.31: Referral done because of the information on the partograph

		Frequency	Percent
Valid	Yes	155	78.7
	No	36	18.3
	I don't ever use a partograph	6	3.0
	Total	197	100.0

The result indicates that significantly more 78.7% (n=155) said 'yes' (χ^2 (2, N=197) =189.147, p<0.0005) for using the partograph as a referral tool.

Significantly fewer participants 18.3% (n=36) said ‘no’ and 3.0% (n=6) said ‘don’t ever use the partograph’.

4.3.41 Referral received due to information on the partograph

Table 4.32: Referral received due to information on the partograph

		Frequency	Percent
Valid	Yes	171	86.8
	No	26	13.2
	Total	197	100.0

The result indicates that significantly more 86.8% (n=171) said ‘yes’ (χ^2 (2, N=197)=106.726, p<0.0005) for receiving patients because of information on the partograph, and 13.2% (n=26) said ‘no’.

4.4 BIVARIATE ANALYSIS

4.4.1 Cross-tabulation on grouped experience versus diagnostic knowledge

Table 4.33: Grouped experience versus diagnostic knowledge

		Fill in info			
		Incorrect/don't know	Percent	Correct	Percent
Grouped experience	<2 years	38	58.5	27	41.5
	2 - 4 years	12	34.3	23	67.5
	>4 to 9 years	18	36.7	31	63.3
	>9 to 14 years	11	47.8	12	52.2
	>14 to 19 years	3	30	7	70
	>19	2	13.3	13	86.7
Total		84	42.6	113	57.3

In the table 4.33, which parallels diagnostic knowledge to years of experience those with less than two years experience, 58.5% (n=38) had incorrect/don’t

know as a response, and 41.5% (n=27) as correct from n=65. Those with 2 to 4 years of experience indicated 34.3% (n=12) as incorrect/don't know and 67.5% (n=23) indicated correct out of n=35. Those that had experience greater than 4 years to 9 years indicated 36.7% (n=18) as incorrect/don't know and 63.3% (n=31) as correct from a total of n=49. In the experience range greater than 9 years to 14 years 47.8% (n=11) responded incorrect /don't know compared to 52.2% (n=12) as correct from a total of n=23. Those with experience greater than 14 years to 19 years had incorrect/don't know responses at 30% (n=3) as compared to correct responses at 70% (n=7) from a total of n=10. In the experience range above 19 years 13.3% (n=2) had incorrect /don't know responses and 86.7% (n=13) had correct responses out of n= 15.

4.4.2 Experience versus diagnostic knowledge using the Chi-square tests

Table 4.34: Chi-square tests on experience versus diagnostic knowledge

	Value	Df	Asymp Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-square	14.523[a]	5	.013	.011		
Likelihood Ratio	15.296	5	.009	.012		
Fisher's Exact Test	14.475			.012		
Linear-by-Linear Association	9.093[b]	1	.003	.003	.001	.000
N of Valid Cases	197					

In table 4.34, the Chi-square test of independence result revealed that more than expected of those with less than 2 years experience either did not know or got it incorrect, while more than expected of those with over 19 years experience know when to fill the information in to the partograph(χ^2(5, N=197) =14.523, p=0.011).

4.4.3 Summary of experience versus diagnostic knowledge

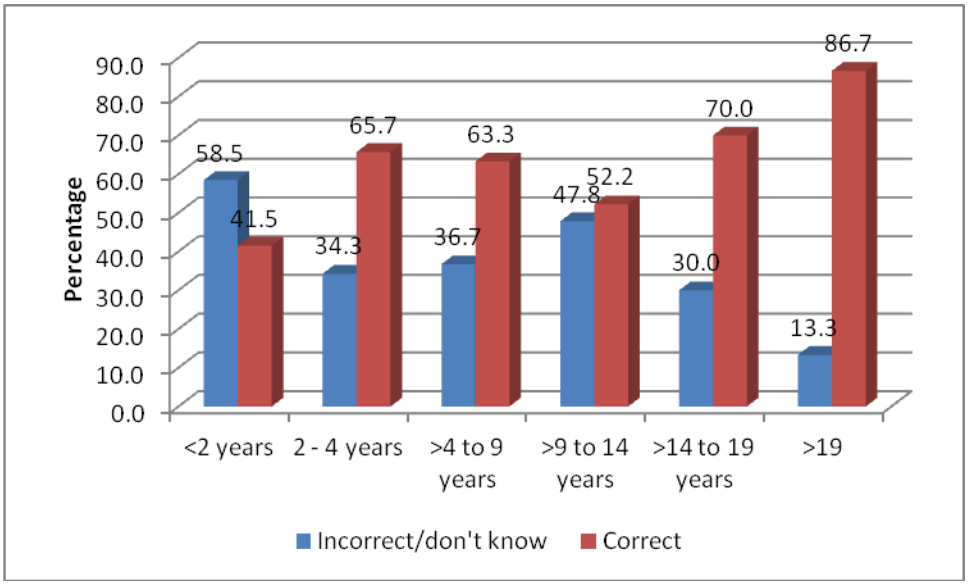

Figure 4.10 Grouped experience cross-tabulated with diagnostic knowledge

The above figure gives a picture on how years of experience parallels to diagnostic knowledge that needed plotting on the partograph. There is a clear trend showing that the more experienced performed better than those with less years of experience.

4.4.4 Mean rank tests showing a cross-tabulation on diagnostic knowledge compared to frequency of updates

Table 4.35: Mean rank tests showing a cross-tabulation on diagnostic knowledge compared to frequency of updates

	Frequency of updates	N	Mean Rank
Diagnostic knowledge	Every week	8	33.19
	At least once a month	33	53.14
	At least once every 6 months	20	39.25
	At least once a year	17	37.53
	Less than once a year	10	47.40
	Total	88	

There is a significant difference in the mean rank of these scores for the various categories of update frequencies. Those who had updates at least once a month scored higher than those who had updates every week (Z(N=41)=-2.620, p=0.009); those who had updates at least once a month scored higher than those who had updates at least once every 6 months (Z(N=53)=-2.356, p=0.018); and those who had updates at least once a month scored higher than those who had updates at least once a year (Z(N=50)=-2.329, p=0.020). Clearly those with updates once a month scored better than all the others.

4.4.5 Summary of average diagnostic scores cross-tabulated with frequency of in-service and updates

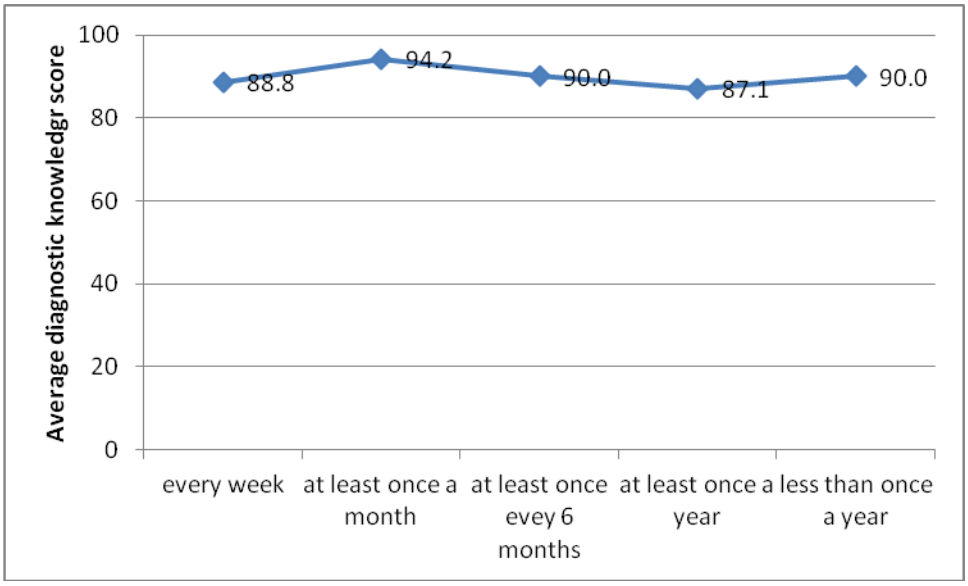

Figure 4.11 Grouped in-service and updates compared to diagnostic knowledge

The above graph parallels the frequency of having in-service and updates as to how well diagnostic knowledge questions were answered. Those having in-service /updates at least once a month had the highest scores in figure 4.11 above.

4.4.6 Cross-tabulation on availability of policy on how to use the partograph at the different hospitals

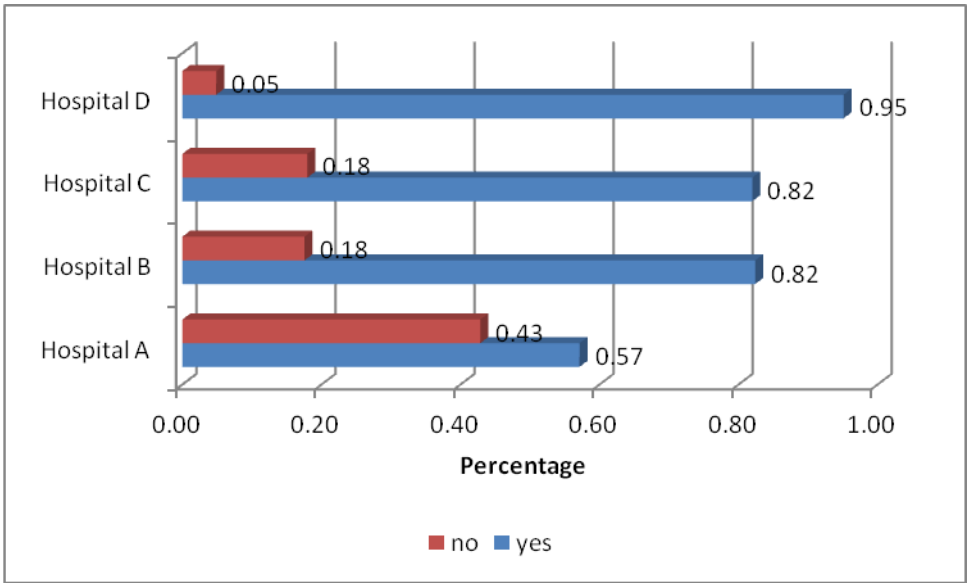

Figure 4.12 Fisher's exact test to availability of policy at the various hospitals

Using the Fisher's exact test, significantly more than expected of the participants from Hospital A indicated that there was no policy for guidance on the use of the partograph as compared to other hospitals.

4.4.7 Cross-tabulation of different hospitals knowing when to enter information on the partograph

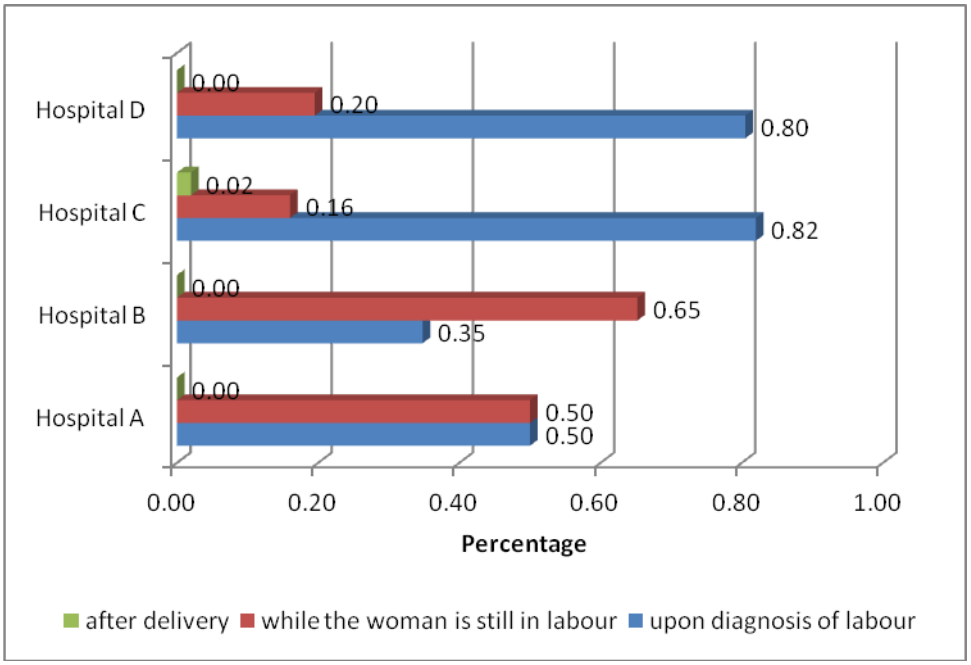

Figure 4.13: A summary of cross-tabulation of the different hospitals knowing when to enter information onto the partograph

Significantly more than expected of the participants from Hospital B indicated that information was entered while the woman was still in labour; and more than expected of those from Hospital C and Hospital D entered the information upon diagnosis of labour (Fisher's exact (N=197)=47.330, $p<0.0005$).

4.5 PHASE TWO: RETROSPECTIVE ANALYSIS USING THE RECORD REVIEW TOOL

SECTION A: DATA ON REFERRAL

4.5.1 Type of partograph used

Table 4.36: Partograph used

		Frequency	Percent
Valid	Old	154	49.7
	New	156	50.3
	Total	310	100.0

Results showed that there was no significant difference, so participants were exposed to both formats new 49.7% (n=154) and old 50.3% (n=156) from total of n=310.

4.5.2 Name of the patient entered on the partograph

Table 4.37: Patient name entered

		Frequency	Percent
Valid	Yes	307	99.0
	No	3	1.0
	Total	310	100.0

A significant majority of charts 99% (n=307) had entered the patients name onto the partograph and only 1.0% (n=3) did not comply out of n=310.

4.5.3 Patient referred from other health care centres

Table 4:38 Patient referred

		Frequency	Percent
Valid	Yes	26	8.4
	No	284	91.6
	Total	310	100.0

Significantly more were not referred, as more responses were ‘no’ 91.6% (n=284) than those referred 8.4% (n=26) from a total of n=310.

4.5.4 Referred from different health care centres

Table 4.39: Referred from which health care centre

		Frequency	Percent
Valid	PHC	12	46.2
	CHC	9	34.6
	District	5	19.2
	Total	26	100.0
Missing	System	284	
Total		310	

Significantly more were referred from a PHC 46.2% (n=12), followed by CHC 34.9% (n=9) and lastly from the district 19.2% (n=5) from a total of n=26.

4.5.5 Records available on receiving patient

Table 4.40: Accompanied by records

		Frequency	Percent
Valid	Yes	26	100.0
Missing	System	284	
Total		310	

All patients were accompanied by records 26(100%) out of n=26.

4.5.6 Patient referred in the latent phase of labour

Table 4.41: Referred in latent phase

		Frequency	Percent
Valid	Yes	19	73.1
	No	7	26.9
	Total	26	100.0
Missing	System	284	
Total		310	

Most patients were referred in the latent phase 73.1% (n=19) and only 26.9% (n=7) were referred in the active phase out of a total of n=26.

4.5.7 Patient referred in the active phase of labour

Table 4.42: Referred in active phase

		Frequency	Percent
Valid	Yes	7	26.9
	No	19	73.1
	Total	26	100.0
Missing	System	284	
Total		310	

Most patients were referred in the latent phase 73.1% (n=19) and only 26.9% (n=7) were referred in the active phase out of a total of n=26.

4.5.8 Referral with recordings commenced on the partograph

Table 4.43: Recording commenced

		Frequency	Percent
Valid	Yes	5	19.2
	No	21	80.8
	Total	26	100.0
Missing	System	284	
Total		310	

A significant minority of recordings show that only 19.2% (n=5) of patients were referred with the partograph recordings commenced, and the rest the majority without 80.8% (n=21) out of n=26.

4.5.9 Referral done due to findings on the partograph

Table 4.44: Referral from findings

		Frequency	Percent
Valid	Yes	5	19.2
	No	21	80.8
	Total	26	100.0
Missing	System	284	
Total		310	

In table 4.44 80.8% (n=21) patients were referred due to other reasons, not due to findings on the partograph which is 19.2% (n=5) out of n=26.

4.5.10 Summary on referral patterns and related data on referral

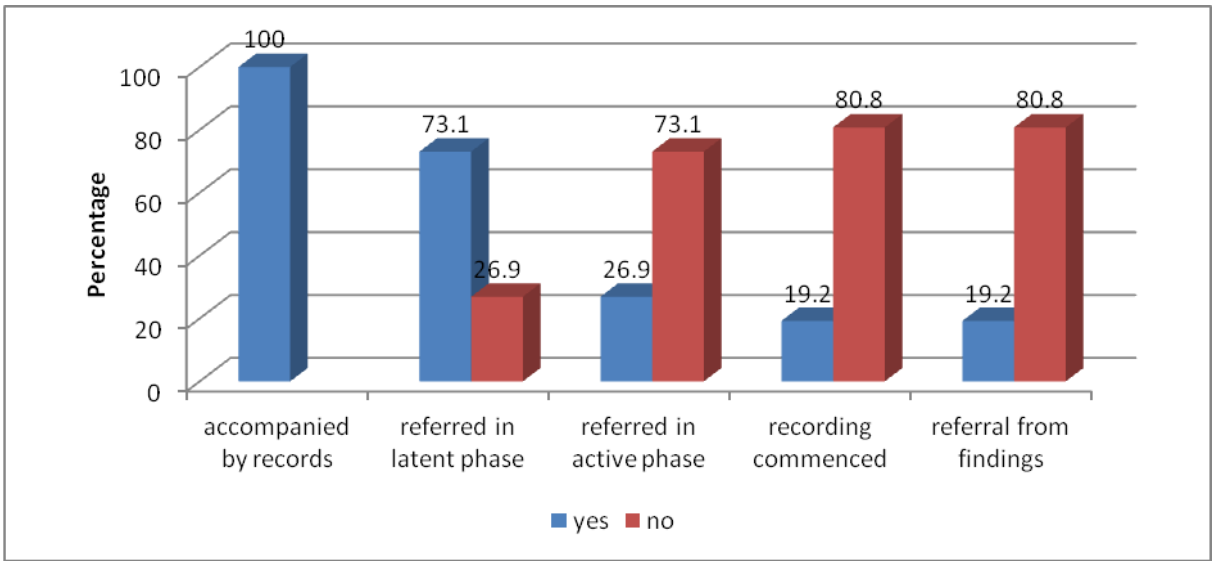

Figure 4.14 Grouped response on referral

In the above graph a picture is given on referral and all the related information on referral as interpreted from table 4.40 to table 4.44.

4.6 SECTION B: DATA ON ADMISSION

4.6.1 Time recorded on admission

Table 4.45: Admission time

		Frequency	Percent
Valid	Recorded correctly	286	92.3
	Recorded incorrectly	7	2.3
	Not recorded	17	5.5
	Total	310	100.0

In the table above a significant majority 92.3% (n=286) recorded the admission time correctly and only 2.3% (n=7) had not recorded the time out of a total n=310.

4.6.2 Duration of labour on admission

Table 4.46: Duration of labour on admission

		Frequency	Percent
Valid	Recorded correctly	42	13.5
	Recorded incorrectly	17	5.5
	Not recorded	251	81.0
	Total	310	100.0

A significant majority 81.0% (n=251) had not recorded the duration of labour, 5.5% (n=17) had recorded incorrectly and only 13.5% (n=42) recorded correctly out of n=310.

4.6.3 Time of rupture of membranes on admission

Table 4.47: Time of rupture of membranes on admission

		Frequency	Percent
Valid	Recorded correctly	135	43.5
	Recorded incorrectly	13	4.2
	Not recorded	162	52.3
	Total	310	100.0

The majority of charts 52.3% (n=162) indicated that the time of rupture of membranes was not recorded and 4.2% (n=13) was recorded incorrectly. Only 43.5% (n=135) recorded correctly out of n=310.

4.6.4 Duration of rupture of membranes on admission

Table 4.48: Duration of rupture of membranes

		Frequency	Percent
Valid	Recorded correctly	96	31.0
	Recorded incorrectly	13	4.2
	Not recorded	201	64.8
	Total	310	100.0

A significant majority 64.8% (n=201) had not recorded the duration of the ruptured membranes on admission and 4.2% (n=13) had recorded incorrectly. Only 31% (n=96) had recorded correctly from n=310.

4.6.5 Risk factors on admission

Table 4.49: Risk factors on admission

		Frequency	Percent
Valid	Recorded correctly	222	71.6
	Recorded incorrectly	2	.6
	Not recorded	86	27.7
	Total	310	100.0

Table 4.49 showed 71.1% (n=222) recorded risk factors correctly whilst 27.7% (n-86) had not recorded and 0.6% (n=2) recorded incorrectly from a total of n=310.

4.6.6 Summary of data recorded on admission

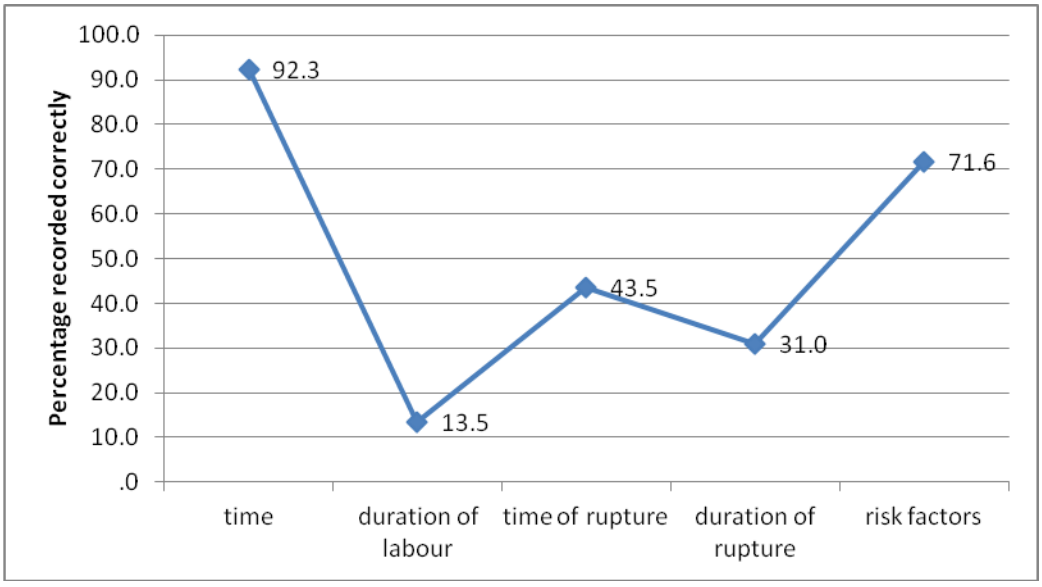

Figure 4.15 Grouped response on admission

The graph indicates the recordings which were done on the charts during admission of clients. The results were presented in the tables above from 4.45 to 4.49.

4.7 SECTION C: FOETAL CONDITION DURING ACTIVE PHASE

4.7.1 Test statistics results of Chi-square on foetal condition

Table 4.50: Test statistics results of Chi-square tests on foetal condition

	FC: heart recorded half hourly	FC: caput recorded	FC: moulding recorded	FC: fluid recorded
Chi-square	253.787[a]	329.523[a]	338.406[a]	384.181[a]
Df	2	2	2	2
Asymp. Sig.	.000	.000	.000	.000

In each case, more than expected recorded correctly. Half hourly recordings on the foetal heart at 75.8% ($\chi^2(2, N=310)=253.787$, $p<0.0005$), for moulding of the foetal head 81.9% ($\chi^2(2, N=310)=329.523$, $p<0.0005$), for caput of the foetal head 82.6% ($\chi^2(2, N=310)=338.406$, $p<0.0005$) and condition of the amniotic fluid 85.8% ($\chi^2(2, N=310)=384.181$, $p<0.0005$).

4.7.2 Summary of grouped responses on foetal condition

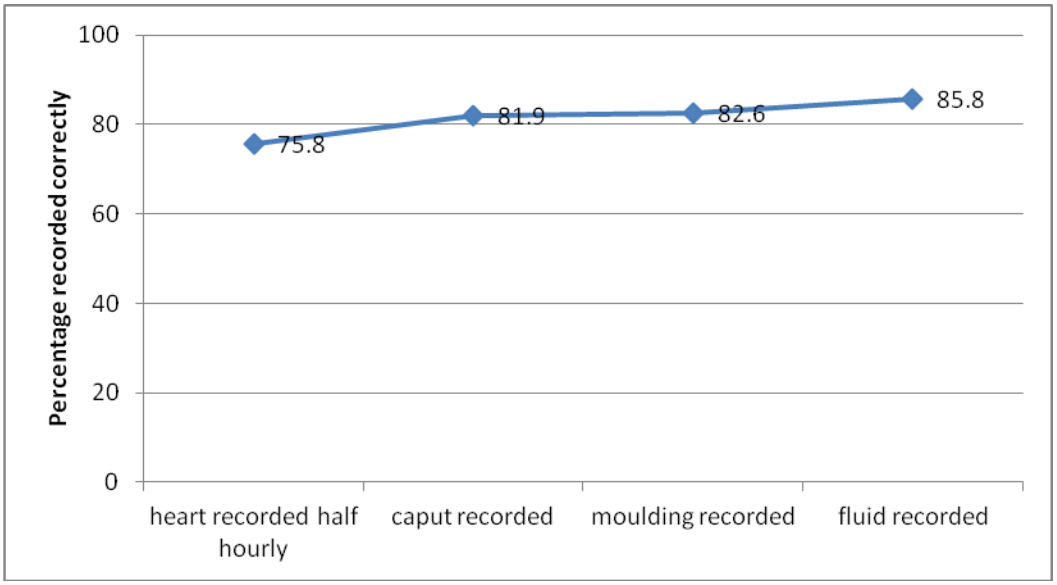

Figure 4.16 Grouped responses on foetal condition

The figure above clearly displays the recordings with regards to the foetal condition namely the foetal heart rate, caput succedaneum, moulding of the foetal head and condition of the amniotic fluid.

4.8 SECTION D: PROGRESS OF LABOUR

4.8.1 Transfer of information from latent phase to active phase

Table 4.51: Transfer of information

		Frequency	Percent
Valid	Recorded correctly	247	79.7
	Recorded incorrectly	48	15.5
	Not recorded	15	4.8
	Total	310	100.0

The table above shows that transfer of information from the latent to the active phase was done correctly 79.7% (n=247), only 15.5% (n=48) recorded incorrectly and 4.8% (n=15) had not recorded out of a total n=310.

4.8.2 Dilatation of the cervix recorded two to four hourly

Table 4.52: Dilatation of the cervix

		Frequency	Percent
Valid	Recorded correctly	276	89.0
	Recorded incorrectly	18	5.8
	Not recorded	16	5.2
	Total	310	100.0

Correct recording of dilatation of the cervix two to four hourly was at 89% (n=276), recorded incorrectly at 5.8% (n=18) and not recorded 5.2% (n=16) from n=310.

4.8.3 Effacement of the cervix recorded two to four hourly

Table 4.53: Effacement of the cervix

		Frequency	Percent
Valid	Recorded correctly	155	50.0
	Recorded incorrectly	12	3.9
	Not recorded	143	46.1
	Total	310	100.0

Only 50% (n=155) recorded effacement of the cervix two to four hourly correctly, 46.1% (n=143) did not record and 3.9% (n=12) recorded incorrectly out a total of n=310.

4.8.4 Contractions recorded half-hourly

Table 4.54: Contractions recorded

		Frequency	Percent
Valid	Recorded correctly	249	80.3
	Recorded incorrectly	38	12.3
	Not recorded	23	7.4
	Total	310	100.0

Most recordings 80.3% (n=249) were done correctly for half-hourly contractions, 12.3% (n=38) done incorrectly and 7.4% (n=23) not recorded from a total of n=310.

4.8.5 Descent of the foetal head recorded two to four hourly

Table 4.55 Descent of foetal head recorded

		Frequency	Percent
Valid	Recorded correctly	267	86.1
	Recorded incorrectly	24	7.7
	Not recorded	19	6.1
	Total	310	100.0

Descent of the foetal head was recorded two to four hourly correctly at 86.1% (n=267), recorded incorrectly at 7.7% (n=24) and not recorded at 6.1% (n=19) out of the total of n=310.

4.8.6 Summary of grouped responses on progress of labour

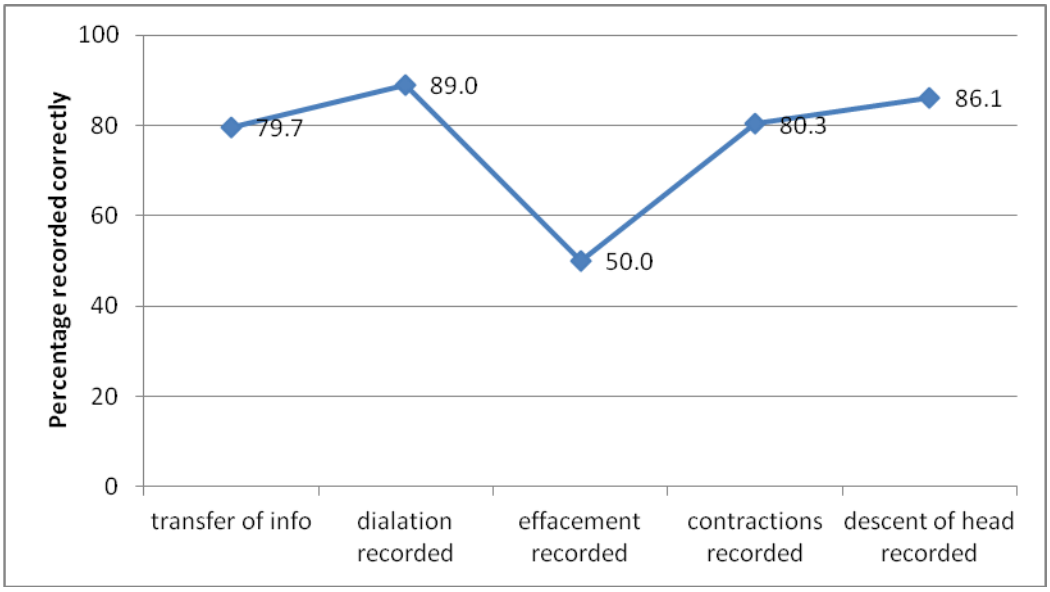

Figure 4.17 Grouped response for recording progress of labour

The above graph depicts the percentage of correct recordings done on the partograph with regards to the progress of labour, which includes transfer of information from the latent to the active phase, dilatation of the cervix, effacement of the cervix, contractions and descent of the head.

4.9 SECTION E: MATERNAL CONDITION

4.9.1 Pain relief during labour

Table 4.56: Pain relief

		Frequency	Percent
Valid	Recorded correctly	73	23.5
	Recorded incorrectly	1	.3
	Not recorded	236	76.1
	Total	310	100.0

Only 23.5% (n=73) recorded pain relief correctly. The vast majority did not record pain relief 76.1% (n=236) and 0.3% (n=1) recorded incorrectly from a total n=310.

4.9.2 Pulse recorded hourly

Table 4.57 Pulse recorded

		Frequency	Percent
Valid	Recorded correctly	247	79.7
	Recorded incorrectly	20	6.5
	Not recorded	43	13.9
	Total	310	100.0

Pulse rate was recorded correctly 79.7% (n=247) in most charts, recorded incorrectly in 6.5% (n=20) charts and not recorded in 13.9% (n=43) from a total n=310.

4.9.3 Blood pressure recorded hourly

Table 4.58 Blood pressure recorded

		Frequency	Percent
Valid	Recorded correctly	265	85.5
	Recorded incorrectly	17	5.5
	Not recorded	28	9.0
	Total	310	100.0

Most charts indicated that blood pressure was recorded correctly 85.5% (n=265), 5.5% (n=17) was recorded incorrectly and 9.0% (n=28) was not recorded from a total of n=310.

4.9.4 Temperature recorded two to four hourly

Table 4.59: Temperature recorded

		Frequency	Percent
Valid	Recorded correctly	205	66.1
	Recorded incorrectly	31	10.0
	Not recorded	74	23.9
	Total	310	100.0

The majority of charts showed that that temperature was recorded correctly 66.1% (n=205), 10%9 (n=31) of charts were recorded incorrectly and 23.9% (n=74) were not recorded from a total of n=310.

4.9.5 Urinary output recorded two hourly

Table 4.60: Urinary output recorded

		Frequency	Percent
Valid	Recorded correctly	157	50.6
	Recorded incorrectly	62	20.0
	Not recorded	91	29.4
	Total	310	100.0

About half the number charts indicated that urinary output was recorded correctly 50.6% (n=157), 20% (n=62) was recorded incorrectly and 29.4% (n=91) was not recorded from n=310.

4.9.6 Urine tested for protein, blood and ketones

Table 4.61: Urine tested

		Frequency	Percent
Valid	Recorded correctly	128	41.3
	Recorded incorrectly	59	19.0
	Not recorded	123	39.7
	Total	310	100.0

Less than half of the charts showed that urine testing recording was done correctly 41.3% (n= 128), 19% (n=59) was recorded incorrectly and 39.7% (n=123) was not done from a total of n=310.

4.9.7 Summary of recordings on the maternal condition during labour

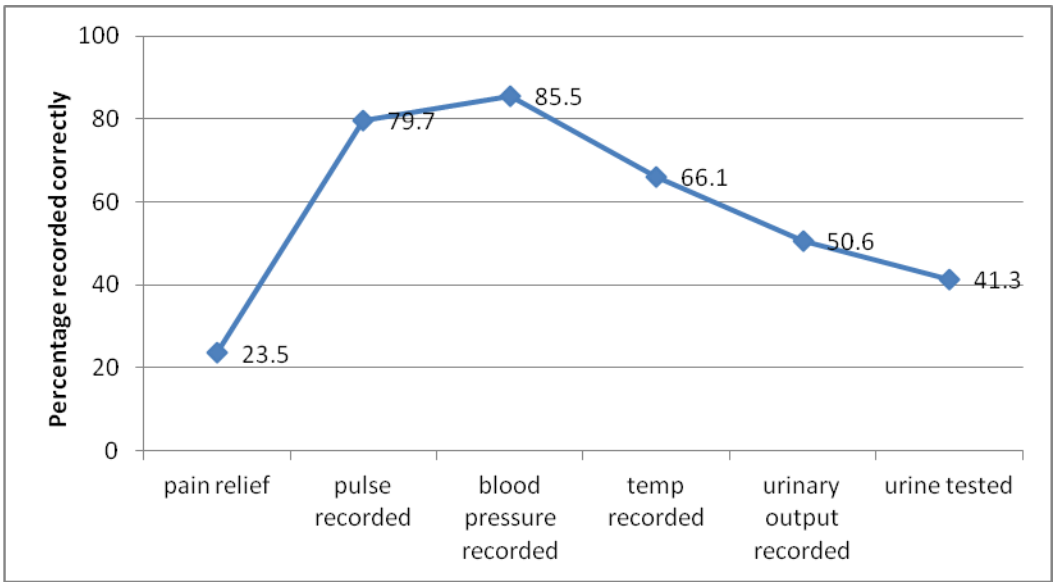

Figure 4.18 grouped response on maternal condition

The graph above shows clearly the percentage of recordings done correctly with regards to the mothers conditon, as seen in table 4.56 to table 4.61.

4.10 SECTION F: ACTION TAKEN FOR ANY ABNORMAL FINDINGS ON THE PARTOGRAPH

4.10.1 Action taken for abnormal foetal heart

Table 4.62: Abnormal foetal heart

		Frequency	Percent
Valid	Yes	25	8.1
	No	1	.3
	N/A	284	91.6
	Total	310	100.0

Only 8.1% (n=25) indicated that action was taken but a significant majority of charts indicate that it was not applicable 91.6% (n=284) from n=310.

4.10.2 Action taken for caput succedaneum found to be excessive

Table 4.63: Caput succedaneum that was excessive

		Frequency	Percent
Valid	Yes	4	1.3
	No	1	.3
	N/A	305	98.4
	Total	310	100.0

Very few charts 1.3% (n=4) indicated that action was taken for caput succedaneum but the majority of charts 98.4(n=304) were not applicable from a total of n=310.

4.10.3 Action taken for moulding found to be excessive

Table 4.64: Moulding that was excessive

		Frequency	Percent
Valid	Yes	6	1.9
	No	1	.3
	N/A	303	97.7
	Total	310	100.0

Most charts showed not applicable 97.7(n=303) to moulding that was excessive and only 1.9% (n=6) showed that action was taken from a total of n=310.

4.10.4 Action taken for liquor that was stained with meconium

Table 4.65: Meconium stained liquor

		Frequency	Percent
Valid	Yes	28	9.0
	No	3	1.0
	N/A	279	90.0
	Total	310	100.0

Only 9.0% (n=28) charts showed that action was taken on meconium stained liquor and the majority 90% (n=279) was not applicable from a total of n=310.

4.10.5 Action taken on liquor that was blood stained

Table 4.66: Blood stained liquor

		Frequency	Percent
Valid	Yes	3	1.0
	N/A	307	99.0
	Total	310	100.0

Almost all charts 99% (n=307) indicated not applicable for blood stained liquor and only 1% (n= 3) showed that action was taken from a total of n=310.

4.10.6 Action taken for less than two contractions in ten minutes

Table 4.67: Less than two contractions in ten minutes

		Frequency	Percent
Valid	N/A	310	100.0

A total of 100% (n=310) recordings indicated not applicable for less than two contractions in 10 minutes.

4.10.7 Action taken for greater than five contractions in ten minutes

Table 4.68: Greater than five contractions in ten minutes

		Frequency	Percent
Valid	N/A	310	100.0

A total of 100% (n=310) recordings indicated not applicable for more than five contractions in TEN minutes.

4.10.8 Action taken for incomplete effacement of the cervix by 7cm of dilatation

Table 4.69: Cervix not fully effaced by 7cm of dilatation

		Frequency	Percent
Valid	Yes	5	1.6
	N/A	305	98.4
	Total	310	100.0

Majority of charts indicated not applicable for the cervical effacement by 7cm of dilatation and 1.6% (n=5) indicated action was taken from a total of n=310.

4.10.9 Ineffective cervical dilatation by not dilating at a rate of 1cm per hour

Table 4.70: Cervix not dilating at a rate of 1 cm per hour

		Frequency	Percent
Valid	Yes	18	5.8
	N/A	292	94.2
	Total	310	100.0

Only 5.8% (n=18) indicated that action was taken for ineffective cervical dilatation and the majority 94.2% (n=292) indicated not applicable from a total of n=310.

4.10.10 Presenting part remains undescended for two hours

Table 4.71: Presenting part remains undescended for 2 hours

		Frequency	Percent
Valid	Yes	17	5.5
	N/A	293	94.5
	Total	310	100.0

Few charts 5.5% (n=17) showed that action was taken for undescended presenting part and the majority 94.5% (n=293) indicated not applicable out of a total of n=310.

4.10.11 Action taken for abnormal maternal pulse

Table 4.72: Maternal pulse exceeds 100 beats per minute or falls below

		Frequency	Percent
Valid	Yes	4	1.3
	N/A	306	98.7
	Total	310	100.0

A significant majority 98.7% (n=306) indicated not applicable for the maternal tachycardia, and 1.3% (n=4) took action from a total of n=310.

4.10.12 Action taken for abnormal maternal blood pressure

Table 4.73: Maternal blood pressure exceeds a systolic of 140mmHg and a diastolic of 90mmhg or falls below

		Frequency	Percent
Valid	Yes	7	2.3
	No	1	.3
	N/A	302	97.4
	Total	310	100.0

A significant majority 97.4% (n=302) indicated not applicable for raised maternal blood pressure and only 2.3% (n=7) took action for abnormal blood pressure from a total of n=310.

4.10.13 Action taken for abnormal maternal temperature

Table 4.74 Maternal Temperature exceeds 37.8 ºC or falls below 35ºC

		Frequency	Percent
Valid	Yes	2	.6
	N/A	308	99.4
	Total	310	100.0

Almost all charts 99.4% (n=308) indicated not applicable for temperature exceeding 37.8 ºC or falling below 35ºC and only 0.6% (n=2) said yes action was taken out of a total of n=310.

4.10.14 Action taken for abnormal urinary output

Table 4.75: Urinary output is less than 30mls per hour

		Frequency	Percent
Valid	Yes	2	.6
	No	1	.3
	N/A	307	99.0
	Total	310	100.0

The majority of charts (99%, n=307) indicated not applicable for urinary output that was less than 30mls per hour and only 0.6% (n=2) indicated that action was taken out of a total of n=310.

4.10.15 Action taken for proteins present in the urine

Table 4.76: Protein present in urine

		Frequency	Percent
Valid	Yes	5	1.6
	No	1	.3
	N/A	304	98.1
	Total	310	100.0

A total of 98.1% (n=304) indicated not applicable for protein present in urine and only 1.6% (n=5) said yes that action was taken from a total of n=310.

4.10.16 Action taken for ketones present in the urine

Table 4.77: Ketones present in urine

		Frequency	Percent
Valid	Yes	4	1.3
	No	1	.3
	N/A	305	98.4
	Total	310	100.0

A total of 98.1% (n=305) indicated not applicable to ketones present in the urine and only 1.3% (n=4) said yes action was taken from a total of n=310.

4.10.17 Action taken for sugar present in the urine

Table 4.78: Sugar present in urine

		Frequency	Percent
Valid	Yes	3	1.0
	N/A	307	99.0
	Total	310	100.0

A total of 99% (n=307) indicated not applicable for sugar present in the urine and only 1.0% (n=3) said yes action was taken from a total of n=310.

4.10.18 Action taken for cervical dilatation that falls below the alert line

Table 4.79: Cervical dilatation falls below the alert line

		Frequency	Percent
Valid	Yes	22	7.1
	N/A	288	92.9
	Total	310	100.0

Few charts 7.1% (n=22) indicated that action was taken for cervical dilatation that falls below the alert line and the rest was not applicable 92.9% (n=288) out of a total of n=310.

4.10.19 Action taken for cervical dilatation that reaches the action line

Table 4.80: Cervical dilatation reaches the action line

		Frequency	Percent
Valid	Yes	18	5.8
	N/A	292	94.2
	Total	310	100.0

Few charts 7.1% (n=18) indicated that action was taken for cervical dilatation that reaches the action line and the rest was not applicable 94.2% (n=292) out of a total of n=310.

4.10.20 Summary of abnormal findings on the partograph that required action

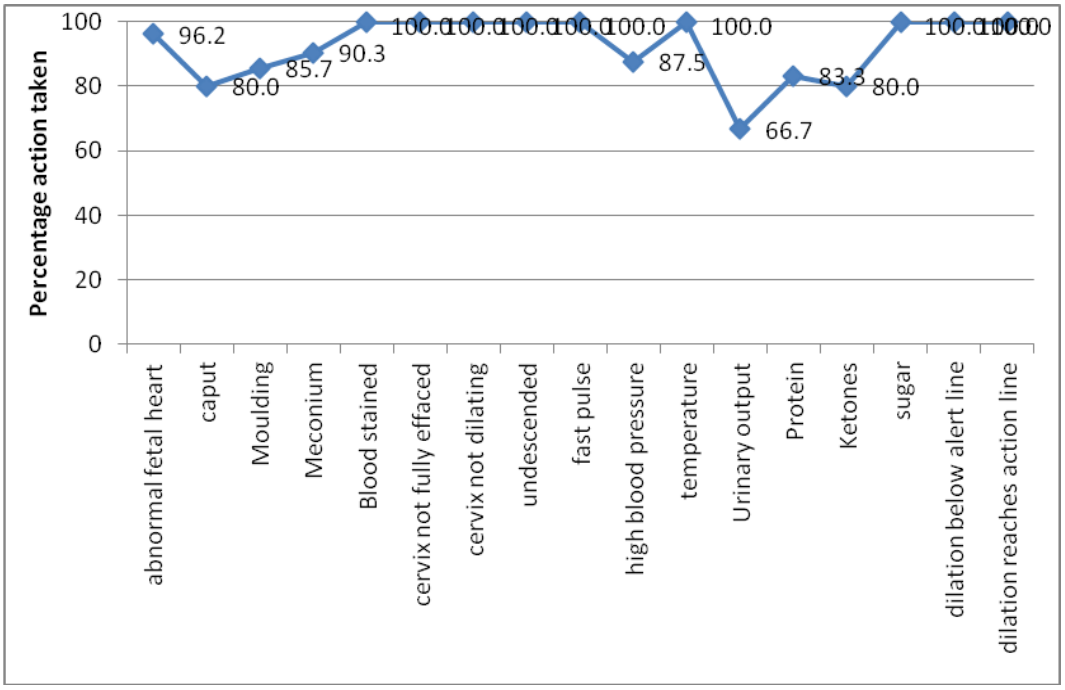

Figure 4.19 Grouped analysis on any action taken for abnormalities found on the partograph

The above graph gives a picture of any abnormalities that would have been detected on the partograph and appropriate action taken as indicated by table 4.62 to table 4.80.

4.11 SECTION G: COMPLETION OF DELIVERY

4.11.1 Type of delivery

Table 4.81: Type of delivery indicated

		Frequency	Percent
Valid	Recorded correctly	288	92.9
	Recorded incorrectly	4	1.3
	Not recorded	18	5.8
	Total	310	100.0

A significant majority 92.9% (n=288) recorded type of delivery correctly, 1.3% (n=4) recorded incorrectly and 5.8% (n=18) did not record from n=310.

4.11.2 Apgar scoring done

Table 4.82: Apgar scoring done

		Frequency	Percent
Valid	Recorded correctly	292	94.2
	Recorded incorrectly	8	2.6
	Not recorded	10	3.2
	Total	310	100.0

Apgar scoring was indicated correctly by a significant majority 94.2% (n=292), while 2.6% (n=8) recorded incorrectly and 3.2% (n=10) did not record from n=310.

4.11.3 Duration of labour

Table 4.83: Duration of labour calculated correctly

		Frequency	Percent
Valid	Recorded correctly	226	72.9
	Recorded incorrectly	67	21.6
	Not recorded	17	5.5
	Total	310	100.0

Duration of labour calculated correctly was recorded correctly on most charts 72.9% (n=226), 26.6% (n=67) recorded incorrectly and 5.5% (n=17) did not record from n=310.

4.11.4 Time of birth indicated

Table 4.84: Time of birth indicated

		Frequency	Percent
Valid	Recorded correctly	255	82.3
	Recorded incorrectly	6	1.9
	Not recorded	49	15.8
	Total	310	100.0

More charts 82.3% (n=255) indicated that time of birth was indicated correctly, 1.9% (n=6) recorded incorrectly and 15.8% (n=49) did not record from a total of n=310.

4.11.5 Gender of child

Table 4.85: Gender of child indicated

		Frequency	Percent
Valid	Recorded correctly	298	96.1
	Recorded incorrectly	2	.6
	Not recorded	10	3.2
	Total	310	100.0

Most charts 96.1% (n=298) showed that the gender of the child was recorded correctly, 0.6% (n=2) recorded incorrectly and 3.2% (n=10) did not record from n=310.

4.11.6 Condition of the perineum indicated

Table 4.86: Condition of the perineum indicated

		Frequency	Percent
Valid	Recorded correctly	300	96.8
	Recorded incorrectly	2	.6
	Not recorded	8	2.6
	Total	310	100.0

A total of 96.8% (n=300) indicated that the condition of the perineum was recorded correctly, 0.6% (n=2) recorded incorrectly and 2.6% (n=8) did not record from n=310.

4.11.7 Blood loss post-delivery

Table 4.87: Blood loss indicated post- delivery

		Frequency	Percent
Valid	Recorded correctly	282	91.0
	Recorded incorrectly	3	1.0
	Not recorded	25	8.1
	Total	310	100.0

The majority of charts (91%, n=282) recorded blood loss post-delivery correctly, 1.0% (n=3) recorded incorrectly and 8.1% (n=25) did not record from n=310.

4.11.8 Condition of the placenta

Table 4.88: Condition of the placenta indicated

		Frequency	Percent
Valid	Recorded correctly	293	94.5
	Recorded incorrectly	6	1.9
	Not recorded	11	3.5
	Total	310	100.0

Recordings on the condition of the placenta showed a majority (94.5%, n=293) had recorded correctly, 1.9% (n=6) recorded incorrectly and 3.5% (n=11) did not record from n=310.

4.11.9 Summary of recordings on completion of delivery

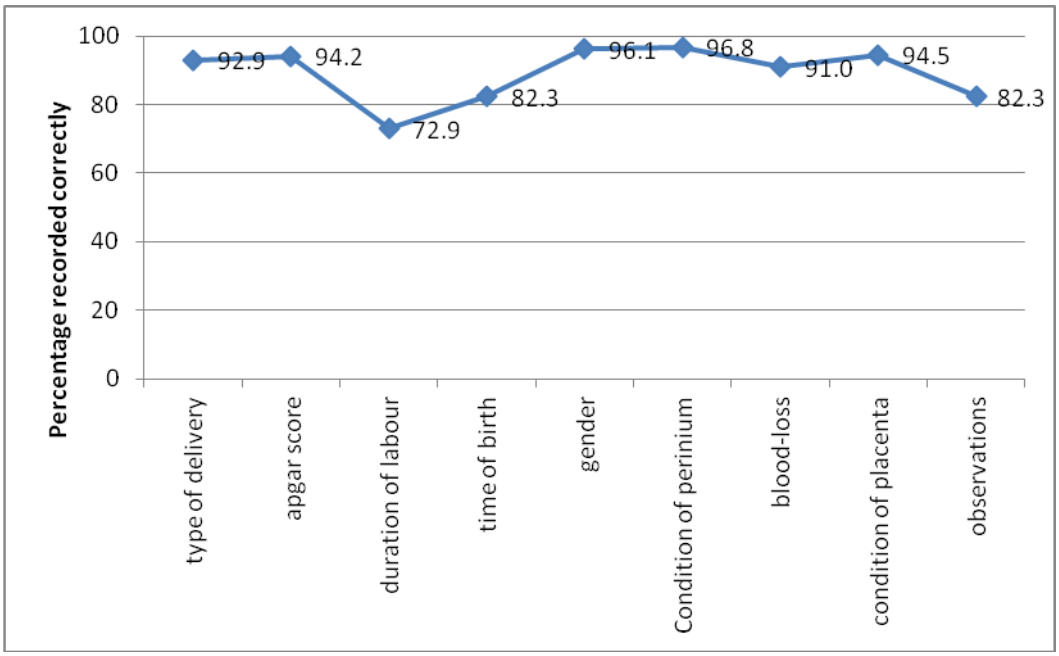

Figure 4.20 Grouped response on complication after birth

The graph above gives a good picture on the percentage of correct recordings that was found from the retrospective audits on the partograph for the completion part of the delivery.

4.12 CONCLUSION

In this chapter results from phase 1 and phase 2 of data collection were presented. In the next chapter a detailed discussion will ensue on the results.

CHAPTER 5

DISCUSSION OF RESULTS

5.1 INTRODUCTION

The intention of this chapter is to discuss the most important findings in relation to the research objectives and the theoretical framework discussed in Chapter 2. Literature is used where necessary to expound on findings that emerged from data analysis.

5.2 OBJECTIVES AND THEORETICAL MODEL

In chapter 1, objectives were set that gave direction to the study. The objectives of the study were to:

- Assess midwives' knowledge and competence on the use of the partograph during labour.
- Establish if there is organisational support for the use of the partograph.
- Identify factors that affect the use of the partograph by midwives.

The framework guiding this study was Donabedian's conceptual model on quality care, which focused on the utilisation of the partograph as an evaluating system. In phase 1 the participants filled in the questionnaire, with the questions revolving around the objectives above. In phase two, the partograph charts were audited to corroborate findings obtained from the questionnaires.

5.3 MIDWIVES QUESTIONNAIRE AND RETROSPECTIVE ANALYSIS

5.3.1 Distribution of midwives working in the labour ward

The findings revealed that 46.2% midwives worked in the labour ward and therefore work directly with the partograph. Women were transferred to the labour ward once they reached the active phase of labour. Women are expected to be monitored on the partograph to show progress of labour as well as foetal and maternal condition. A slightly higher distribution of midwives (53.8%) worked in all the other maternity wards and had indirect contact with the partograph. They were also expected to analyse the partograph in retrospect to establish if there were any significant happenings during labour that would influence the management of the mother and baby post-delivery. Those midwives working in the antenatal wards usually monitored woman in the latent phase and then transferred them to the labour ward when the cervix reached 4cm of dilatation. Groeschel and Glover (2001: 26) reported that in large hospitals the latent phase was not documented. The findings of the study that was conducted by Lavender and Malcolmson (1999 cited in Groeschel and Glover 2001: 26) further revealed that midwives did not believe in documentation of the latent phase and found it to hold little clinical value. These findings were supported by Magon (2011: 2) that Philpott's initial partograph or partogram did not depict the latent phase probably because Philpott did most of his work on African women, who were admitted in the active phase of labour. The findings in the study done by Tayade and Jadhao (2012: 260) concluded that the modified WHO partograph significantly improved the outcome of labour in both maternal and neonatal perspectives and therefore recommended that it should be used in all maternity units.

5.3.2 Years of experience

The study findings showed that 33% of participants working in the midwifery units had less than two years experience. Bivariate results showed that the more experienced participants had significantly better responses to the

knowledge questions than those with less experience. In the study that was conducted by Opiah, Ofti, Essien and Monjok (2012: 130-131), the results of the study showed a significant relationship between experience and knowledge of the partograph. Those with more years of experience scored higher percentages, and therefore in the researcher's opinion the midwife required time to get used to the partograph. Watson (1997: 358-359) indicated that unless a midwife learns from experience the learning would not be adequate, and further stated that experience should be based on qualitative assessment instead of quantitative assessment. Quantitative would be based on time whereas qualitative would be based on the amount of learning that took place such as the quality of experience, pre-service and in-service training. On the other hand, in the study done by Fawole et al. (2008: 27-28), experience compared to the use of the partograph did not show any consistent trend.

5.3.3 Usage of the partograph in the labour ward

The results of the study revealed that 100% of participants were familiar with the partograph. This response is expected, since participants would have used a partograph at some stage of their training or during their work experience. A significant number of participants (97%) also indicated that partographs were available in the labour wards. Since the newer designs of the maternity carrier cards are more like booklets and include a partograph, it is always available. A few clients who were foreigners had cards without a partograph, and that situation posed a challenge. To overcome this challenge, the foreign clients were usually given South African maternity cards with their notes clipped in. The same situation applied to clients that came in as non-clinic case or from private practitioners. It was noted that partographs were mostly available in the labour ward, therefore this refutes the findings from some research done in Nigeria which stated that non-availability of the partograph led to underutilisation of the partograph (Fawole et al. 2008; Opiah et al. 2012). The results in this study were supported by a study conducted by

Ogwang et al.(2009: 533), which showed that partographs were available in all health units. The findings in this study showed that the National Department of Health had given much support to the midwives in making partographs available in the labour ward in the four public hospitals in the uMgungundlovu District.

5.3.4 Reasons for non-usage of the partograph

Although a significant majority of participants declared that the partograph was ‘always’ used, there were those participants that detailed some reasons for non-use of the partograph. Clients that came in ‘fully dilated’ or ‘head on the perineum’ were indicated by the greater number of responses. Some of the participants indicated ‘early labour/latent labour’ for non-use of the partograph during labour. This related to many studies that were discussed previously that the modified partograph without the latent phase supported better documentation, less operative interventions and better labour outcomes for the parturient woman (Groeschel and Glover: 2001, Magon: 2011, Tayade and Jadhao: 2012).

Staff shortages, busy departments and limited resources were also listed as reasons for non-usage of the partograph. Researchers from other studies also indicated that busy departments, staff shortage and limited resources played a huge role in the under-utilisation of the partograph (Nyamtema et al. 2007; O’Brien et al. 2011; Opiah et al. 2012) whilst Fatusi et al. (2007) stated ‘lack of time’ as a reason for not completing partographs. Having stated above the factors for non-usage of the partograph, one can conclude that it leads to sub-optimal use of the partograph and affects the quality of the use of the partograph during labour. This could hinder early detection of complications and timely intervention that are the most important activities to prevent perinatal mortality and morbidity (Nyamtema, Urassa, Massawe, Massawe and Lindmark; Ogwang et al. 2009; Yisma et al. 2013).

5.3.5 Updates, need for in-service training and availability of policy on the use of partograph

A significant majority of participants (95.4%) replied that they had training on the partograph. This finding was supported by the fact that every qualified midwife was exposed to the partograph training during their midwifery course. The student midwife personally does fifteen deliveries, which entails monitoring the parturient woman on the partograph as one of the core practical outcomes for qualification as a midwife/accoucheur (South African Nursing Council 1997: 3). With the need for updates and in-service training, there were no significant differences in the selection of responses but more than half of the participants (54.3%) stated that they did not receive any in-service training.

Put into context this result did not apply to the general population, but was a meaningful result for the institutions used in the research. In the Kruskal-Wallis and Mann-Whitney U tests, used for cross-tabulation on frequencies of updates to diagnostic knowledge, there was a significant difference in the mean rank of these scores for the various categories of update frequencies paralleled to diagnostic knowledge. Specifically, those who had updates at least once a month scored higher than those who had updates every week. Those who had updates at least once a month scored higher than those who had updates at least once every 6 months and those who had updates at least once a month scored higher than those who had updates at least once a year. In conclusion, those individuals who had updates once a month performed better on the diagnostic tests, indicating that individuals should be in-serviced monthly. Many studies recommended that regular pre-service, in-service and on the job training led to better utilisation of the partograph and therefore better outcomes for the mother and child (Fatusi et al. 2008, Fawole et al. 2008, Mathibe-Neke 2009: 44, Opiah et al. 2012; Yisma et al. 2013). It was also recommended that there should be ongoing and regular supervision, as well as the provision of guidelines and policy as mandatory for support of a

collaborative effort to reduce maternal and perinatal deaths (Yisma et al. 2013: 6). Regular partograph audits to be implemented as recommended by Nyamtema et al. (2008: 40) will support proper completion of partographs.

The majority of the participants (83.2%) indicated that they had a policy on the partograph in their department. This result was favourable as compared to the study that was done by Ogwang et al. (2009: S33) which indicated that guidelines/protocols were not available in all the health units. In South Africa, those institutions with internet and intranet are able to download many policies available from the National Department of Health. There are many programmes such as Essential Steps in Managing Obstetrical Emergencies (ESMOE), Campaign on Accelerated Reduction of Maternal and Child (CARMMA), Program for Appropriate Technology in Health (PATH) and Strategic plan by MNCWH 2012-2016, that can be downloaded from the intranet. All the above programmes advocate the use of the partograph during the intrapartum period to reduce maternal and child mortality and morbidity. Although 46.7% of participants had stated that they received updates and in-service, a significant majority of participants (99.5%) still wanted to be updated and in-serviced on the use of the partograph. The findings of the study that was conducted by Ogwang et al. (2009: S33-S34) revealed that participants, although they had received formal training on the use of the partograph while at school, still desired in-service training to develop confidence in using the partograph.

5.3.6 Different categories of health care workers sufficiently trained to use the partograph

In South Africa only midwives and doctors are sufficiently trained to use the partograph. The participants were of the opinion that traditional birth attendants are not sufficiently trained to use the partograph, as only 10.2% of participants stated that traditional birth attendants are capable of using the

partograph. This thinking was consistant with the views of Yazbek (2012: 344) where it was stated that traditional birth attendants are an important resource in the community and their roles cannot be denied in resource –poor environments. This author further stated that training of traditional birth attendants in better perinatal care practices was one of the most promising interventions found to reduce perinatal mortality to reach the two key targets of the MDGs. Studies such as those conducted by Fatusi et al. (2008) and Fawole et al. (2008) refer to a category of staff known as Community Health Extension Workers, who were individuals with minimal education who had received some basic formal training in conducting labour and deliveries. These individuals were employed in the PHCs and provided maternity care. They are useful in the clinics where there is a lack of staff. Fatusi et al. (2008: 44) was of the opinion that to help lessen the burden on trained categories of staff all health care workers, irrespective of their professional status, could be trained to use the partograph, followed by regular monitoring. The majority of participants (60.6%) stated that PHC nurses were trained to use the partograph. Staff nurses were not trained to use the partograph and were incapable of taking care of a woman in labour, yet only 43.7% responded correctly that staff nurses cannot use the partograph. Notably, the majority (70.4%) agreed that doctors are trained to use the partograph.

In this study midwives were asked questions to check if they are capable of making a diagnosis on the partograph. A significant majority of participants responded correctly to the questions asked on making a diagnosis on the partograph. The findings revealed that midwives were aware that diagnoses of prolonged labour, obstructed labour, poor progress of labour, inefficient uterine action, suspected foetal distress, abnormal foetal heart, satisfactory progress of labour, need for augmentation of labour, need for caesarean section, and dehydration in the mother, could be diagnosed on the partograph. These distinctive responses proposed that midwives were capable of making such diagnoses. The findings in this study reputed some findings and compared favourably to other studies done in and out of South

Africa. The Johannesburg study of Mathibe-Neke (2009: 44) reported that there was substandard use of the partograph, which included the inability to identify complications and therefore delays in referral once complications occur which reputed the current findings. Opiah et al. (2012: 130) on the other hand showed findings in Nigeria that were consistent with current findings where participants had a good knowledge about the partograph but still made sub-optimal use of the partograph.

5.3.7 A tool for implementing safe motherhood and preventing maternal and new-born morbidity and mortality

A significant majority of the participants (90.9%) were in agreement that the partograph was a tool for implementing safe motherhood. A Wilcoxon signed ranks test showed that most participants agreed that the partograph was a tool that can be used to reduce maternal and new-born mortality and morbidity, as well render efficient and quality care to the client in labour. This finding was consistent with the study done by Opiah et al. (2012: 132) where a significant percentage of participants thought that using the partograph would significantly improve the maternal and child mortality and morbidity. Other studies also indicated that midwives knew the importance of using a partograph to prevent mother and child mortality and morbidity (Fawole et al. 2008; O'Brien et al. 2011).

5.3.8 Normal progress of labour diagnosed on the labour graph

The result shows that significantly more (47.7%) selected the first response option 'the plot on the partograph should fall to the left of the alert line' for the normal progress of labour. This concedes to the fact that this option, which was chosen by the significant majority, is the correct response to the question. Since the mean dilatation rates during active labour in a multigravida is at 1.5cm per hour, and in a primigravida at 1cm per hour (World Health Organisation 2002), the 'X' which is used to plot should fall to the left of the

alert line. During the retrospective analysis of the partograph charts in phase two, correct recording of cervical dilatation was assessed and the score was 89% showing that midwives value this aspect of the partograph. Other studies also had findings similar to the one in Dar es Salaam and Uganda, where cervical dilatation was the best monitored observation (Nyamtema et al. 2007; Ogwang et al. 2009).

5.3.9 Knowledge questions for plotting on the partograph

The study revealed that a large percentage of participants were knowledgeable about the characteristics of contractions, being the frequency and duration. This study refuted findings of other studies where the participants' knowledge about frequency and duration of a normal contraction was poor (Fawole 2008: 28). Yisma et al. (2013: 6) revealed that the actual recording of contractions was done poorly as two thirds of partographs reviewed did not record contractions. The majority of participants (92.9%) also knew that progress of labour was assessed by the degree of cervical dilatation and descent of the presenting part unlike the response that was obtained by Fawole et al. (2008: 28) where participants displayed gross deficiencies in knowledge about the normal characteristics during labour. A substantial majority of participants (71.6%) also agreed that labour was prolonged when it lasted more than twelve hours. According to the first WHO partograph or composite partograph, labour becomes prolonged in the latent phase if it lasted more than eight hours, and becomes prolonged in the active phase if the cervix dilated at a rate of less than 1cm per hour (Tayade and Jadhao 2012: 256). Most studies that advocate for the use of the modified partograph that excludes the latent phase, calculate duration of labour as twelve hours (Tayade and Jadhao 2012: 259). These calculations did not apply to the composite graph since the calculation of total duration of labour included the latent phase as well as the active phase, which equalled 18 hours. In South Africa only the composite partograph is used. Therefore, labour is prolonged if it goes beyond 18 hours.

5.3.10 Referral of clients from PHC and CHC clinics

The findings of this study showed that 78.7% of participants agreed that the partograph acted as a referral tool. This was consistent with the views of the Fistula Care and Maternal Health Task Force (2012: 1) where it was stated that the partograph was used to transfer clients to a higher level facility and alerted providers on the need for intervention. In their study in Indonesia, Fahdhy and Chongsuvivatwong (2005: 301) also agreed that the partograph increased the referral rate from the maternity home to the hospital. The partograph was therefore used successfully for referral. This is in contrast to the findings revealed in the retrospective analysis that was done on completed charts during phase two. Most of the referrals that were received at the various institutions (80.8%) from PHCs and CHCs had not commenced partograph recordings. This created problems for the receiving hospital since there was no recording of what had transpired in the interim whilst the client was waiting for transport. Studies done also revealed that the partograph was poorly used in the peripheral health facilities (Fawole et al. 2008; Opiah et al 2012). This opens up avenues for further research to be done at the CHCs and PHCs on the usage of the partograph. The recent release of 2011-2012 interim report on maternal deaths showed that institutional maternal mortality rate(iMMR) decreased for district, regional and tertiary hospitals but rose for CHCs for 2011 and 2012 combined reported maternal deaths in the tenth interim report (National Committee for Confidential Enquiry into Maternal Deaths 2013: 3).

5.3.11 Data on admission

The charts that were retrospectively analysed showed that significantly more recordings (92.3%) had correct admission times and the name of the patient since the maternity case record has the client's name on the cover. On the down side, a very low number of charts audited (13.5%) showed that duration of labour on admission was calculated and recorded correctly. This indicates that this aspect was still incorrectly done and has major implications for the

client, as prolonged labour can easily be missed out. Findings in the study done by Nyamtema et al. (2007:40) showed similar trends where it was reported that the majority of the partographs that were audited had no records of duration of labour. These researchers also stated that sub-optimal documentation of parameters on the partograph reduces timely intervention for complications, which was the core purpose of using the partograph. Results of the current study showed sub-optimal documentation with the following parameters: 52.3% and 64.8% of charts did not record the time of rupture of membranes and duration of ruptured membranes respectively, putting the patient at risk. According to the latest maternity case record guidelines (Department of Health 2008: 17) duration of labour and duration of the rupture of membranes must be recorded as it can explain why some complications occur, such as prolonged rupture of membranes that leads to puerperal sepsis and prolonged labour to postpartum haemorrhage. Risk factor was the only parameter that was recorded correctly in most of the charts (71.1%).

5.3.12 Foetal condition during active phase

Each parameter for foetal condition was recorded correctly, that was for half-hourly recording of foetal heart, for moulding of the foetal head, caput of the foetal head, and condition of the amniotic fluid. Findings suggest that midwives had no problem recording foetal condition provided that their clinical findings were correct. Fatusi (2008: 44) also concluded on the research done in Nigeria that the findings in that study compared favourably to other research as the majority, two-thirds, had recorded correctly on the partograph.

5.3.13 Progress of labour

Most aspects in the progress of labour section on the partograph were recorded correctly, that was transfer of information (79.7%), dilatation of the cervix (89%), effacement (50%), contractions (80.3%) and descent of the foetal head (86.1%), which indicated that recording of those observations were at a good standard. This refutes findings in many studies that reported sub-optimal recordings of those parameters, except for cervical dilatation as mentioned before (Fawole et al. 2008; Nyamtema et al. 2008; Ogwang et al. 2009; Yisma et al. 2013).

5.3.14 Maternal condition

The findings of this study showed that only 23.5% recorded pain relief for the client. This has major implications for psycho-emotional factors for nursing the patient in labour, as well as for physiological factors. Lack of pain relief to the client indicates that midwives are not in interested in the client's pain. It seems as though quality of care is sorely lacking since the psycho-emotional aspect is not considered. Physiologically, if the client does not have sufficient pain relief this can impede the process of labour causing it to become delayed. Tension and pain in primigravida clients cause inefficient uterine action, and as a result there is poor cervical dilatation (Dippenaar and Da Serra 2012: 419). In the study recently conducted by Adeyemo (2013: 14-15) on attitudes of midwives towards their clients, it was stated that midwives should have a positive and caring attitude to women in labour, and the midwife should use her knowledge on pain management and therefore give adequate pain relief in labour. It is quite evident in this study that pain relief was sorely neglected, and this impacted negatively on the care of the client and efficient progress of labour. According to Dippenaar and Da Serra (2012: 353) some of the potentially harmful effects of unrelieved pain on the mother and foetus are:

- An increased cardiac output up to 50% due to a raised blood pressure and an increased heart rate.
- Maternal and foetal metabolic acidosis.
- Raised adrenaline and noradrenaline (catecholamines) concentrations which can lead to abnormal uterine action and prolonged labour.
- Hyperventilation, if overdone, may reduce intervillous blood flow and result in foetal anoxia.
- Increases the demand for oxygen.
- Sever unrelieved pain lowers the pain threshold, causing an increase in the intensity of the pain.

According to researchers Christiaens, Verhaeghe and Brache (2010: 8) who conducted cross-national research on pain acceptance and pain control between Belgium and Dutch women, it was suggested that women who received more pain relief in labour were more satisfied with their labour outcome and less anxious during labour.

Recording of pulse, blood pressure, temperature and urinary output was within the normal standard. Testing of the urine/urinalysis showed that only 41.3% recorded correctly. Doing the urinalysis was important to detect increasing dehydration in the mother, which happens during prolonged labour and obstructed labour. The percentage of ketones increases as the mother becomes more dehydrated, and which further develops to acido-ketosis and then shock. As stated in the article by Neilson et al. (2003: 193), obstructed labour leads to maternal dehydration, infection, ketosis and exhaustion.

5.3.15 Application of Donabedian's Conceptual Framework

As a reminder, the conceptual framework utilised three processes namely, structure, process and outcome, to evaluate the system which was the utilisation of the partograph. The application of the model is presented in the table below.

Table 5.1 Application of Donabedian's conceptual framework to the partograph study.

Utilisation of a partograph		
Dimension	**Results of study**	**Objectives applicable**
Structure • Training	95.4% training almost every midwife exposed to partograph training.	• Good organisational support.
• Availability	Maternity carrier cards have the partograph included so 97% records showed availability of the partograph.	• Good organisational support.
• Experience	More experienced more correct usage of partograph. nineteen years and above of experience scored the best to knowledge questions compared to two years and below (86.7% and 41.4% respectively).	• Experience is a factor that affects the correct usage of the partograph. • Experience affects knowledge and competence.
Process • Updates and in-service training	Less than half of the participants (45.7%) had updates and in-service training. Almost all participants (99.5%) still had a need for updates and in-service training. Those having in-service at least once a month performed better than those having once every six months or once a year.	• Organisational support still lacking in this aspect. • Organisational support still wanting.
• Policies available	Of the participants, 82.7% agreed that policies were available. The South African government and National Department of Health have made many attempts to achieve MDGS 3, 4 and 5 by 2015. Many strategies have been put into place like PMTCT ESMOE, CARMMA, PATH and Strategic plan by MNCWH 2012 -2016.	• Good organisation support. • Increase in knowledge and competence on the use of the partograph.

• Mentorship	A large proportion of midwives (33%) had less than two years experience. This shows a necessity for mentorship. The government has put in many strategies to reduce mother and child mortality and morbidity. ESMOE training is an attempt to improve mentorship. Participants had given reasons for non-use of the partograph and some of the same reasons can be drawn as a hindrance to mentorship such as a busy department, staff shortages and limited resources.	• Organisational support lacking. • Factors which affect the use of the partograph.
Outcome • Correct recording	Many results substantiate correct recording and yet there are others that repudiate it. This can be seen from the results on the retrospective analysis. All significantly positive results as follows: *Foetal condition*: FHR 75.8%, caput 81.9%, moulding 82.6% and condition of amniotic fluid 85.8% correctly recorded. *Progress of labour*: dilatation of the cervix 89%, contractions 80.3%, descent of the head, 86.1%. *Maternal condition*: Pulse 79.7%, BP 85.5%, T° 66.1%. All significantly negative result as assessed on correct recordings: *Foetal Condition*: Rupture of membranes 43.5%, Duration of ruptured membranes 31%. *Progress of labour*: duration of labour on admission 13.5%, effacement of cervix 50%. *Maternal condition*: Pain relief 23.5%, urine tested 41.3%. The partograph available (97%) and used consistently. Results on frequencies of use: PHC 88.3%, District hospital 88.3%, Regional	• Midwives knowledge and competence.

• Consistent use • Correct decision making • Transfer tool	hospital 88.8%, Provincial hospital 88.3%. Some reasons for it not being used consistently as stated by participants can be seen in table 4.10. In most instances for decision-making, scores were mainly positive being over 80%, as seen in figure 4.8. In figure 4.19, which shows the summary of action taken for abnormalities found on the partograph, correct decision-making is difficult to assess as most of the responses were not applicable for abnormal responses. Significantly more participants are referred in the latent phase of labour (73.1%) and 26.9% in the active phase of labour. Of those referred, 80.8% had not commenced partograph recordings. Therefore the partograph was not used as a referral tool in 80.8% of cases. This result suggestspoor use of the partograph in the primary health care settings. On referral frequencies in the retrospective analysis more referrals were seen from PHCs and CHCs at 46.2% and 34.6% respectively, with a low number from district level.	• Organisational support. • Factors that hinder the use of the partograph.

In the application of Donabedian's conceptual framework to the utilisation of the partograph, a clear picture was given on the use of the partograph. Overall the partograph seems to be used at all levels of practice, but the quality of use at primary health care level is questionable. There are certain parameters which were given more focus when it came to correct and consistent recording, such as foetal condition, contractions and cervical dilatation. Other studies also show this trend, as previously discussed. The partograph is a composite tool yet certain parameters are given less importance, such as calculation of duration of labour on admission, observations like urinary output and urine testing (Nyamtema et al. 2007).

Pain relief in labour was a poorly attended aspect of labour, which shows that midwives are procedure oriented and tend to neglect the fact that clients are human beings and feel pain during labour. Their attitude to women in labour is questionable (Adeyemo 2013: 14-15). The latent phase of labour is still a contentious issue, as the modified partograph by WHO (since 2000) omits the latent phase. The study shows that this was given little clinical value, since most women are put onto the partograph at 4cm of cervical dilatation. Therefore, the latent phase is not required. On the other hand, midwives neglect the aspect of calculation of duration of labour on admission which can be an indicator for prolonged and obstructed labour. As many studies have shown, prolonged and obstructed labour contributes to the raised mortality and morbidity of mother and child (Magon 2011). Puerperal sepsis also contributes to raised mortality and morbidity yet midwives tend to neglect to record the rupture of membranes and also calculate the duration of ruptured membranes. Prolonged rupture of membranes is a risk factor for ascending infection in the mother, which could lead to puerperal infection (Neilson, Lavender, Quenby and Wray 2003).

The obstetrical departments require more experienced senior midwives since the study has indicated that this is a requirement for correct decision-making, yet the majority of allocated midwives are very junior with less than two years of experience. Proper supervision and mentorship of junior midwives are indicated for quality care of the women in labour, however this may become a challenge as the study indicated that there are certain factors that hinder care, such as the business of the department and staff shortages (Opiah et al. 2012).

5.4 LIMITATIONS TO THE STUDY

The research did not study the psycho-emotional state of the mother and attitude of midwives towards the mother in labour, although this emerged as a very important aspect as indicated by the unfavourable results on pain relief. Observation of midwives plotting on the partograph in the real work situation, as well as face-to-face interviews with the midwives was not done. Therefore challenges faced by midwives were not explored in-depth. Purposive selection of the public hospitals may have some bias as the selected hospitals were district and regional hospitals only, and midwives working in the primary health care setting were left out.

5.5 RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made with special reference to nursing education, supervision of midwives, and further research.

5.5.1 Nursing education or updates

- On-going updates and in-service should be done more regularly, at least monthly to every quarter, since the participants that benefitted most were those that had monthly in-service.

- Evaluation of education and training from the training institution on the use of the partograph, for example the curricula and strategies on teaching and evaluation.

5.5.2 Supervision of midwives

- Supervision and mentorship of midwives, especially of the newly-qualified and less experienced, should be done more vigorously since they pose the risk of incorrect decision-making due to inexperience.

- Ongoing reviews and audits on the charts combined with performance-related awards.

- Motivation of organisations to allocate the right practitioner to the right job and improve the nurse / patient ratio of care, especially in the labour ward.

5.5.3 Further research

- Ongoing reviews and audits on the charts combined with performance related awards.

- Qualitative research which includes observation, face-to-face interviews and focus groups, to identify in-depth challenges faced by midwives.

- Evaluate the utilisation of the partograph in PHC settings both quantitatively and qualitatively.

- Conduct a gap analysis on the continuum of care from the PHC settings to referral to a hospital.
- Examine the birthing woman's perceptions of the quality of care provided by the attending practitioners and the birthing environment.

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Appendix 1

DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

13 May 2013

IREC Reference Number: **REC 87/12**

Mrs R Singh
52 Capricorn Crescent
Orient Heights
Pietermaritzburg
3201

Dear Mrs Singh

A description of the utilisation of the partograph by midwives in the public hospitals in the Umgungundlovu District, KwaZulu-Natal

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the questionnaire has been APPROVED; you may now proceed with data collection on the proposed project.

Yours Sincerely

Dr D F Naude
Chairperson: IREC

Appendix 2a

52 Capricorn Crescent
Orient Heights
Pietermaritzburg
3201
4 February 2013

Ms M Zuma-Mkhonza
The District Manager
Umgungundlovu Health District
Pietermaritzburg
3201

Dear Madam

Re: REQUEST FOR PERMISSION TO CONDUCT STUDY

I am presently registered as a Masters student at the Durban University of Technology in the Department of Nursing. The proposed title of my study is "A Description of the utilisation of the partograph by midwives in the public hospitals in the uMgungundlovu District of KwaZulu-Natal". I hereby request permission to conduct the study in the maternity section of the purposively selected hospitals which offer maternity services, that is:

1. Appelsbosch Hospital
2. Edendale Hospital
3. Greys Hospital
4. Northdale Hospital

Data collection process will be done in two phases. The first phase will require the midwives working in the maternity wards to complete a questionnaire. During the second phase, a retrospective review of the maternity case records in labour ward will be done to assess the use of the partograph. Participation is voluntary, and informed consent will be obtained from all participants. Confidentiality and anonymity will be maintained at all times. The participants will remain anonymous and there will be no risks or discomfort to them. During the second phase, a retrospective review of the maternity case records in labour ward will be done to assess the recording on the partograph. The files will not be removed from the hospital and the researcher is the only person that will have access to the records. The researcher will also sign a non-disclosure declaration to maintain the confidentiality of the patient records. A non-disclosure declaration is attached to this letter. Please find attached also a copy of my research proposal. This research is essential to reduce maternal and neonatal mortality and morbidity rates which are on the increase in South Africa.

It would be greatly appreciated if you could forward me your response.

Yours faithfully

[redacted]

Mrs R. Singh (Researcher)
Contact Details: Cell: 084 4152072
Email: Reena.singh@hotmail.co.za

[redacted]

Dr MN Sibiya (Supervisor)
Contact details: 031-373 2606
Email: nokuthulas@dut.ac.za

Appendix 2b

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

UMGUNGUNDLOVU HEALTH DISTRICT OFFICE
OFFICE OF THE DISTRICT MANAGER
Private Bag X9124, Pietermaritzburg, 3200
Brasfort House, 262 Langalibalele Street, Pietermaritzburg, 3201
Tel.: 033-8971000,
Fax: 033-897 1078
Email.: thule.kunene@kznhealth.gov.za
www.kznhealth.gov.za

Enquiries: Mrs. N.M. Zuma - Mkhonza
Ref No: 15/16
Date: 13 February 2013

TO: **Mrs. R. Singh**
52 Capricorn Crescent
Orient Heights
Pietermaritzburg
3201

Dear Mrs. Singh

RE: LETTER OF SUPPORT TO CONDUCT A STUDY ENTITLED " A DESCRIPTION OF THE UTILISATION OF THE PARTOGRAPH BY MIDWIVES IN THE PUBLIC HOSPITALS IN THE UMGUNGUNDLOVU DISTRICT OF KWA-ZULU NATAL".

Your correspondence regarding the letter of recommendation to conduct the research proposal: ***"A DESCRIPTION OF THE UTILISATION OF THE PARTOGRAPH BY MIDWIVES IN THE PUBLIC HOSPITALS IN THE UMGUNGUNDLOVU DISTRICT OF KWA-ZULU NATAL"*** is acknowledged and refers.

I have pleasure in informing you that permission has been granted to you by the District Office to conduct research in ***"A DESCRIPTION OF THE UTILISATION OF THE PARTOGRAPH BY MIDWIVES IN THE PUBLIC HOSPITALS IN THE UMGUNGUNDLOVU DISTRICT OF KWA-ZULU NATAL".***

PLEASE NOTE THE FOLLOWING

1. Please ensure that you adhere to all policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KZN Department.
3. Please ensure that this office is informed before you commence your research.
4. The District Office will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the District Office.

Thank you

[redacted]

MRS N.M. ZUMA - MKHONZA
DISTRICT MANAGER
UMGUNGUNDLOVU HEALTH DISTRICT

Appendix 3a

52 Capricorn Crescent
Orient Heights
Pietermaritzburg
3201
4 February 2013

The Research Committee Chairperson
The Health Research and Knowledge Management Component
KwaZulu-Natal Department of Health
Private Bag X9051
Pietermaritzburg
3201

Dear Dr Lutge

Dear Sir/Madam

Re: REQUEST FOR PERMISSION TO CONDUCT STUDY

I am presently registered as a Masters student at the Durban University of Technology in the Department of Nursing. The proposed title of my study is "A description of the utilisation of the partograph by midwives in the public hospitals in the uMgungundlovu District of KwaZulu-Natal". I hereby request permission to conduct the study in the maternity section of the purposively selected hospitals which offer maternity services, that is:

- Appelsbosch Hospital
- Edendale Hospital
- Greys Hospital
- Northdale Hospital

Data collection process will be done in two phases. The first phase will require the midwives working in the maternity wards to complete a questionnaire. Participation is voluntary, and informed consent will be obtained from all participants. Confidentiality and anonymity will be maintained at all times. The participants will remain anonymous and there will be no risks or discomfort to them. During the second phase, a retrospective review of the maternity case records in labour ward will be done to assess the recording on the partograph. The files will not be removed from the hospital and the researcher is the only person that will have access to the records. The researcher will also sign a non-disclosure declaration to maintain the confidentiality of the patient records. A non-disclosure declaration is attached to this letter. Please also find attached a copy of my research proposal. This research is essential to reduce maternal and neonatal mortality and morbidity rates which are on the increase in South Africa.

It would be greatly appreciated if you could forward me your response.

Yours faithfully

[redacted]

Mrs R. Singh (Researcher)
Contact Details: Cell: 084 4152072
Email: Reena.singh@hotmail.co.za

[redacted]

Dr MN Sibiya (Supervisor)
Contact details: 031-373 2606
Email: nokuthulas@dut.ac.za

Appendix 3b

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Health Research & Knowledge Management sub-component
10 – 103 Natalia Building, 330 Langalibalele Street
Private Bag x9051
Pietermaritzburg
3200
Tel.: 033 – 3953189
Fax.: 033 – 394 3782
Email.: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

Reference : HRKM 026/13
Enquiries : Mr X Xaba
Tel : 033 – 395 2805

Dear Mrs R. Singh

Subject: Approval of a Research Proposal

1. The research proposal titled **'A description of the utilisation of the partograph by midwives in the public hospitals in the uMgungundlovu district, KwaZulu Natal'** was reviewed by the KwaZulu-Natal Department of Health.

   The proposal is hereby **approved** for research to be undertaken at Appelsbosch, Edendale, Greys' and Northdale Hospital.

2. You are requested to take note of the following:
   a. Make the necessary arrangement with the identified facility before commencing with your research project.
   b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.

3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

[redacted]

Dr E Lutge
Chairperson, Health Research Committee
Date: 21/09/2012

Appendix 4

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)
LETTER OF INFORMATION AND CONSENT

Thank you so much for agreeing to participate in this study. Below are the details of the study.

Title of the Research Study: A description of the utilisation of the partograph by midwives in the public hospitals in the uMgungundlovu District, KwaZulu-Natal

Principle Investigator/s/researcher: Mrs. Reenadevi Singh

Co-Investigator/s/supervisor/s: Prof MN Sibiya, D. Tech Nursing (Supervisor) and Mrs. ZM Zondi, Masters in Social Sciences (Co-supervisor)

Brief Introduction and Purpose of the Study: The purpose of the study is to identify those factors that affect the use of the partograph in the uMgungundlovu District of KwaZulu-Natal by midwives working in the maternity wards of the public hospitals of this area so as to improve and revitalize the use of the partograph.

Outline of the Procedures: The data collection method will comprise close ended questionnaires with a few open ended questions that will be distributed to qualified midwives working in the maternity section across four hospitals in the district. Collection boxes will be provided for the collection. You are requested not to write your name on the questionnaire to maintain confidentiality and anonymity. Any information that is provided will be kept confidential. Your responses will not bring harm against you or your job. All data obtained will be stored safely. The results of the study will be communicated to all stakeholders and copies will be available at the library of DUT.

Risks or Discomforts to the Subject: Nil

Benefits: Recommendations, based on the findings of this study may be used to improve midwives' use of partograph thus improving maternal mortality rates.

Reason/s why the Subject May Be Withdrawn from the Study: Your participation is totally voluntary and you are free to withdraw at any time without penalty.

Remuneration: There will be no remuneration offered to you.

Costs of the Study: None.

Confidentiality: Please do not write your name on the questionnaire. After data collection, your questionnaire will be kept under lock and key by the researcher for a period of 15 years and thereafter, it will be shredded.

Research-related Injury: No injuries are anticipated

Persons to Contact in the Event of Any Problems or Queries:

Supervisor: Prof. Sibiya Tel: **031 3732606 E-Mail:** nokuthulas@dut.ac.za **Co-supervisor :** Mrs Z Zondi Tel: **033 8459014 E-Mail:**zanelemz@dut.ac.za

Researcher: Mrs Reenadevi Singh Tel: **0844152072 E-Mail:** Reena.singh@hotmail.co.za or the Institutional Research Ethics Administrator, Ms L Deonarian on 031-373 2900.

Statement of Agreement to Participate in the Research Study:

I subject's full name……..,

ID number……., have read this document in its entirety and understand its contents. Where I have had any questions or queries, these have been explained to me by …….to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore, voluntarily agree to participate in this study.

Subject's name (print) ……..…

Subject's signature: Date:

Researcher's name (print) ……..…….. …….

Researcher's signature:……...……..Date:.....

Witness name (print) signature: ……... …….

Witness signature: …….....Date:…….….

Appendix 5: Questionnaire

Title: A description of the utilization of the partograph by midwives in the public hospitals of the uMgungundlovu District, KwaZulu-Natal.

Dear Respondent,

A request is made that you kindly spare some minutes to answer the questions set out below.

The study is aimed to assess the use of the partograph in our health facilities.

Please be reassured that your responses will be treated with the utmost confidentiality.

Mark with an **X** in the appropriate space.

1. Name of the Hospital:……

2. Are you at present working in the labour ward?

Yes	
No	

3. Level of practice

District	
Regional	
Provincial	

4. Age

Less than 30yrs	**30yrs to 39yrs**	**40yrs to 49yrs**	**50yrs to 59yrs**	**60yrs and over**

5. Gender

Male	
Female	

6. Years of experience as a midwife/accoucher……

7. Have you seen a partograph before?

Yes	
No	

8. Is the partograph available in your labour ward at the present time?

Yes	
No	

9. Indicate the frequency of usage of the partograph for women in your labour ward

Always	**Often**	**Sometimes**	**Rarely**	**Never**

10. If the partograph is not 'always' used (Q9), state at least 3 reasons why every woman is not monitored on the partograph.

    10.1……

    10.2……

    10.3……

11. Have you received training on the partograph before?

Yes	
No	

12. Have you attended updates and in-service training on the use of the partograph?

Yes	
No	

13. If your answer is **yes** to the above question (Q 12) indicate the frequency of updates/training. Select ONE option only.

Every week	
At least once a month	
At least once every six months	
At least once a year	
Less than once a year	

14. Do you have a policy or standard protocol for guidance on the use of the partograph?

Yes	
No	

15. Do you think there is a need for training on the partograph?

Yes	
No	

16. Indicate whether the partograph can be used in the following areas?

	Yes	No	Don't know
16.1 In the primary health clinic			
16.2 In a district hospital			
16.3 In a regional hospital			
16.4 In a provincial hospital			
16.5 At all levels of care			

17. Indicate which of the following people are sufficiently trained to use the partograph

	Yes	No	Don't know
17.1 Traditional birth attendant			
17.2 PHC nurses			
17.3 Staff nurses			
17.4 Midwives			
17.5 Medical doctors			

18 Which of the following diagnosis can you make with the partograph?

	Yes	No	Don't know
18.1 Prolonged labour			
18.2 Obstructed labour			
18.3 Poor progress of labour			
18.4 Inefficient uterine action			
18.5 Suspected foetal distress			
18.6 Abnormal foetal heart rate			
18.7 Satisfactory progress of labour			
18.8 Need for augmentation of labour with oxytocin			
18.9 Need for caesarean section			

18.10 Dehydration in the mother			

19 The Partograph is one of the tools for implementing safe motherhood

Yes	
No	
Don't know	

20 Indicate your agreement with the following

Using the partograph….	**Strongly disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
20.1 Will reduce maternal deaths					
20.2 Will reduce maternal morbidity					
20.3 Will reduce deaths in the newborn					
20.4 Will reduce morbidity (or illness) in the newborn					
20.5 Will increase the efficiency of those attending women in labour					
20.6 Is mandatory for improved quality of care of woman in labour.					

21 In a normal progress of labour – (Select only **one** option to complete the sentence)

... the graph/plot on the partograph should fall to the left of the alert line	
... the graph/plot on the partograph should fall on the alert line	
... the graph/plot on the partograph should fall to the right of the alert line	

22. During labour:

	Yes	No	Don't know
22.1 Three contractions in every 10 minutes is normal			
22.2 Minimum duration of a strong contraction is 40 seconds			
22.3 You require 10 minutes to effectively assess adequacy of contractions			
22.4 Progress of labour is assessed by the degree of cervical dilatation and descent of the presenting part			
22.5 Labour is prolonged when it lasts more than 12 hours			

23 When do you usually enter information onto/fill in the partograph?

Indicate by choosing only **one** option.

Upon diagnosis of labour	
While the woman is still in labour	
After delivery of the baby	

24 Have you ever had cause in the past to refer a woman in labour because of information obtained on the partograph?

Yes	
No	
I don't ever use the	

25 As far as you know, have you ever received a woman in labour as a referral from another institutions because of information obtained on the partograph?

Yes	
No	

THANK YOU FOR YOUR PARTICIPATION!

Appendix 6: Record review tool

A description of the utilisation of the partograph by midwives in the public hospitals of the uMgungundlovu District, KwaZulu-Natal

Section A: Personal Data and Admission

1. State which partograph was used

Old format	
New format	

2. Is the name of the patient entered?

Yes	
No	

3. Is the patient referred?

Yes	
No	

4. If the patient IS referred, please answer the following questions (4.1 to 4.6).

   If the patient is NOT referred, skip to **Section B**

4.1 From where is the patient referred? [Select ONE option only]

Mobile clinic	PHC clinic	CHC 24hr	District hospital	Regional hospital	Provincial hospital	Private doctor	State if any other

4.2 Is the patient accompanied by maternity case records?

Yes	
No	

4.3 Is the patient referred in the latent phase?

Yes	
No	

4.4 Is the patient referred in the active phase?

Yes	
No	

4.5 Has/was the partograph recording commenced?

Yes	
No	

4.6 Was referral done due to findings on the partograph?

Yes	
No	

Section B: Data on Admission

	Recorded correctly	Recorded incorrectly	Not recorded
1.Time of admission			
2. Duration of labour			
3. Time of rupture of membranes			
4. Duration of ruptured membranes			
5. Risk factors			

Section C: Foetal condition during active phase of labour

	Recorded correctly	Recorded incorrectly	Not recorded
1. Foetal heart recorded half hourly			
2.Caput recorded 2 hourly to 4 hourly			
3.Moulding recorded 2 hourly to 4 hourly			
4.Condition of amniotic fluid recorded 2hourly to 4 hourly			

Section D: Progress of labour in active phase of labour

	Recorded correctly	Recorded incorrectly	Not recorded
1.Transfer of information from the latent to the			
2. Cervical dilatation recorded 2 to 4 hourly			
3. Cervical effacement recorded 2 to 4hourly			
4. Contractions recorded half hourly for 10 minutes			
5. Descent of the head recorded 2 to 4 hourly			

Section E: Maternal Condition during active phase of labour

	Recorded correctly	Recorded incorrectly	Not recorded
1. Pain relief as needed			
2. Maternal pulse recorded hourly			
3. Maternal blood pressure recorded hourly			
4. Maternal Temperature recorded 2 -4			
5. Urinary output recorded 2 hourly			

6. Urine tested for protein, blood and			

Section F: Action taken for the following abnormal findings and complications

In the event that one of the following abnormalities or complications arose, indicate whether any action was taken.

	Yes	No	n/a
1. Abnormal fetal heart recording			
2. Caput in excess of +++			
3. Moulding in excess of +++			
4. Fresh Meconium stained liquor			
5. Blood stained liquor			
6. Less than two mild contractions in 10 minutes in the active phase			
7. More than five strong contractions in 10 minutes in the active phase			
8. Cervix not fully effaced by 7cm of dilatation			
9. Cervix does not dilate at a rate of 1cm per hour			
10 .Presenting part remains undescended for more than 2			
11. Maternal pulse exceeds 100 beats per minute or falls below			
12. Maternal blood pressure exceeds a systolic of 140mmHg and a diastolic of 90mmhg or falls below			
13. Maternal Temperature exceeds 37. 8 ºC or falls below 35ºC			
14. Urinary output is less than 30mls per hour			
15. Protein present in urine			
16. Ketones present in urine			
17. Sugar present in urine			
18. Cervical dilatation falls below the alert line			
19. Cervical dilatation reaches the action line			

Section G: Recordings on completion of the delivery

	Recorded correctly	Recorded incorrectly	Not recorded
1.Type of delivery indicated			
2.Apgar scoring done			
3.Duration of labour calculated correctly			
4.Time of birth indicated			
5.Gender of child indicated			
6.Condition of the perineum indicated			
7.Bloodloss post- delivery indicated			
8.Condition of the placenta indicated			
9.Immediate post-delivery observations			

Appendix 7: Letter from a statistician

Gill Hendry B.Sc. (Hons), M.Sc. (Wits)

Mathematical and Statistical Services

Cell: 083 300 9896

email : hendryfam@telkomsa.net

October 2012

To whom it may concern

Please be advised that Reenadevi Singh (Student number **21218237)** who is presently studying for a Master of Technology: Nursing is consulted with me regarding the statistics needed for her study. This includes the sampling process, the instruments and the data analysis.

Yours sincerely

Gill Hendry (Mrs)

Appendix 8:

Declaration on non-disclosure of confidential information from patient records

Student number: 21237179

A description of the utilisation of the partograph by midwives in the public hospitals in the uMgungundlovu District, KwaZulu-Natal

DECLARATION

I the researcher Reenadevi Singh hereby declare that at all times will be bound by this ethical contract of maintaining confidential information accessed from patient files to myself and that at no time will disclose any patients name, diagnosis or confidential information to anyone. The anonymity of the patient will be upheld and the patient's name will not appear anywhere on my records. The patient's rights and dignity will be respected and protected at all times. I make this declaration willingly since consent from patients will not be possible as their files will be examined in retrospect and the patients concerned will not be present. The files accessed will not be removed from the hospital.

Signature:..... [redacted] ..... Date: 06/02/2013

Mrs Reenadevi Singh

Appendix 9: Permission to use a questionnaire

- Re: Research on Partograph

Dr. Fawole

Dr. Fawole
fawoleo@yahoo.co.uk

To Reena Singh

From: **bukola fawole** (fawoleo@yahoo.co.uk)
Sent: 17 January 2013 05:33:05 PM
To: Reena Singh (reena.singh@hotmail.co.za)

Dear Mrs. Reena Singh,

The response from your Ethics Committee is quite interesting.

I do hope this mail from me will be acceptable to the Committee.
We have received similar request to yours from other parts of Africa and Asia.

Kindly show a copy of this mail to your Ethics Committee that you have my permission to adapt and use the Questionnaire as you deem appropriate. I am indeed delighted that you are interested in using it.

It is my earnest wish that more research on the Partograph will contribute to reduction of stillbirths and morbidity and mortality from obstructed labour.

The very best wishes.

Dr. Bukola Fawole
Dept. of Obstetrics & Gynaecology
University College Hospital
Ibadan, Nigeria
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ofawole@comui.edu.ng
Mobile: +234.803 3182 802
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