Assessment of care in labour in a delivery ward in Gulbarga, India

FÖRFATTARE	Therese Bramer Evelina Tordsson
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HANDLEDARE	Marie Berg
EXAMINATOR	Helena Wigert

Institutionen för Vårdvetenskap och hälsa

Sahlgrenska akademin

GÖTEBORGS UNIVERSITET

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Evelina Tordsson & Therese Bramer

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ABSTRACT

Background: Complications during pregnancy and childbirth are one of the leading causes of disability and death among women of reproductive age in developing countries, and approximately one fifth of the maternal deaths worldwide occur in India. The outcome for mother and child is strongly related to the access of health-care and the way care in labour is carried out, and WHO states that a skilled birth attendant is the single most effective way to make deliveries safe. The way care during labour is carried out and what is considered a "normal birth" varies a lot between different regions and the guidelines for how deliveries should be managed in the best way are constantly changing as new evidence arises and more research is done. The aim of this study is to assess how care in normal labour is managed in a delivery ward in Gulbarga, India.

Method: A non-experimental cross-sectional study was performed during a five week period. Data was collected through a questionnaire that was completed by the birth attendants after each delivery. The questionnaire consisted of a measurement tool for care in normal birth, the Bologna Score, and additional questions regarding labour management and outcome for mother and baby.

Results: According to the Bologna Score, the maximum score of five indicates that labour has been managed in an evidence-based way. The mean Bologna Score in this study was 0,72 points. The low scores were a result of that no women gave birth in a non-supine position in this setting and that the use of a partograph and early skin-to-skin contact was rarely practised. More than half of the women in this study had a high-risk pregnancy and in 73 percent of the deliveries one or more augmentations were used. The prevalence of caesarean section and artificial stimulation of labour was significantly higher in the obstetrical primiparous women than in the multiparous women.

Conclusions: The findings in this study indicate that care in labour in this setting is managed according to scientific evidence to a low extent. However there are limitations in the usefulness of the Bologna Score as the reliability and validity of this measurement tool for care in labour can be questioned as it consists of few variables that not always accurately measure what it is intended to measure.

Keywords: maternal health, normal birth, Bologna Score, care in labour.

SAMMANFATTNING

Bakgrund: Komplikationer under graviditet och förlossning är en av de vanligaste orsakerna till att kvinnor i reproduktiv ålder i utvecklingsländer blir fysiskt handikappade eller avlider, och en femtedel av alla fall av mödradödlighet inträffar i Indien. Utfallet för mamma och barn är starkt relaterat till tillgången på sjukvård och hur förlossningen handläggs. Världshälsoorganisationen (WHO) betonar att utbildad personal som biträder kvinnan vid förlossningen är det effektivaste sättet att minska mödradödligheten i världen. Hur förlossningen handläggs och vad som betraktas som "normal förlossning" varierar mellan olika platser och riktlinjerna för handläggandet är under ständig utveckling i takt med att ny forskning presenteras och implementeras. Syftet med studien är att undersöka hur normalförlossning handläggs på en förlossningsavdelning i Gulbarga, Indien.

Metod: En icke-experimentell tvärsnittsstudie genomfördes under en femveckors period. Data samlades in via en enkät som fylldes i efter varje förlossning av den person som biträtt kvinnan. Enkäten bestod av ett mätinstrument för handläggandet av normalförlossning, Bologna Score, samt bakgrundsfakta och frågor angående utfall och interventioner.

Resultat: Enligt Bologna Score innebär den maximala poängsumman fem att förlossningen har handlagts i överrensstämmelse med vetenskap och beprövad erfarenhet. Medelvärdet av Bologna Score i studien var 0,72 poäng. De låga poängen i denna studie var ett resultat av att samtliga kvinnor förlöstes liggande plant på rygg och att användandet av partogram samt praktiserandet av tidig hud mot hud kontakt var sällsynt. Mer än hälften av kvinnorna hade en hög-risk graviditet och i 73 procent av förlossningarna användes en eller flera interventioner. Kejsarsnittsfrekvensen och andelen kvinnor som fick värkförstärkande läkemedel under förlossningen var signifikant högre hos de obstetriska förstföderskorna än hos omföderskorna.

Konklusion: Resultaten indikerar att handläggandet av förlossningarna i låg utsträckning baserades på vetenskap och beprövad erfarenhet. Det finns dock begränsningar i användbarheten av Bologna Score då reliabiliteten och validiteten hos detta mätinstrument kan ifrågasättas eftersom det består av få mätvariabler som inte säkert mäter det de är avsedda att mäta.

Nyckelord: mödrahälsa, normal förlossning, Bologna Score, förlossningsvård.

CONTENTS

INTRODUCTION

Childbirth is considered a life-changing event for most women and families all over the world, but childbirth is also associated with great risks, and in severe cases disability and even death for mother or child. The maternal mortality ratio in some developing countries is as high as 450 maternal deaths per 100 000 live births compared to 9 per 100 000 in some developed countries. The outcome is strongly related to the access to health-care and the way care during labour is carried out (1). Guidelines for how deliveries should be managed vary between regions and are constantly changing as new evidence arises and is implemented in the health care (2).

The World Health Organization (WHO) states that the main tasks for the caregivers during labour are; supporting the woman, her partner and family during labour, observing the labouring woman, monitoring the baby during and after birth, detecting risk factors and problems, performing minor interventions such as amniotomy and episiotomy and referral to a higher level of care if risk factors or complications develop (3).

The overall goal for the care in normal birth is to achieve a healthy mother and child using the least possible number of interventions compatible with safety (3). Which of all deliveries that can be considered as “normal” is a matter of discussion and there are several different definitions of the concept “normal birth” (4).

WHO saw a need for monitoring and evaluating how normal birth is managed within a given population which resulted in the construction of a scoring system called the Bologna Score. The tool was developed and proposed at an international meeting in Bologna in January 2000. Bologna Score is based on the perception that normal birth should be demedicalized, based on the use of appropriate technology and evidence, and involve women in decision making (5).

As care in normal birth is a main working field for the Swedish midwife we find it interesting to study how normal birth is managed in a specific setting. When the opportunity arose to study care in labour at the Basaveshwar Teaching Hospital in Gulbarga, India, we decided to use the Bologna Score as it consists of indicators that focuses on both the medical and psychosocial care of the labouring woman.

We believe that the Bologna Score will be an informative and useful quality indicator for care in normal birth that enlightens the management of labour in a wider perspective than maternal and perinatal mortality and morbidity rates.

MATERNAL HEALTH

Globally

WHO adopted the Millennium Development Goals in 2000 and one of the goals is to reduce the maternal mortality ratio by three quarters between 1990 and 2015 and to achieve, by 2015, universal access to reproductive health. To meet the goal, WHO promotes skilled care at every birth and has developed training for midwives (6).

Maternal mortality ratio (MMR) is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy and is received by dividing the number of maternal deaths per 100 000 live births (7). Every year, nearly 600 000 women worldwide between the age of 15 and 49 die due to complications from pregnancy and childbirth and 99 percent of the maternal deaths occur in developing countries. It is estimated that up to 80 percent of these deaths are possible to prevent. In developing countries the MMR varies between 240 and 730 depending on the region and the numbers are twenty times higher than in developed countries where 8-17 maternal deaths occur per 100 000 live births (2).

The four major reasons for maternal deaths are; severe bleeding, infections, hypertensive disorders (eclampsia) and obstructed labour (1). The life time risk of dying from pregnancy related complications for a woman in developing countries is one in 75 compared to one in 7 300 in developed countries. Maternal deaths are not only related to a country's economic wealth. Low social status of girls and women is considered a fundamental determinant of maternal mortality (2).

There are several difficulties for women in developing countries that are related to pregnancy and childbirth. Girls and women generally have limited access to economic resources, less opportunity for basic education, heavy physical work, poor nutrition that contributes to poor maternal health and poor pregnancy outcome, less ability to make decisions and unplanned childbirth (2).

The low utilization of essential obstetric services in developing countries is another contributing factor related to problems during pregnancy and childbirth (2).

In India

WHO estimates that 536 000 maternal deaths occur globally each year and 136 000 of them takes place in India. India's population is estimated to over a billion and the population growth is 21 percent per decade. According to the Family-welfare Statistics in India, the maternal mortality ratio was estimated to 301 maternal deaths per 100 000 live births in 2003 (8). Even though there has been a big decrease in the maternal mortality nationwide the last decades, an international expert group has estimated the MMR to be 1,5 times higher than the reported numbers. If this estimation is correct, that would result in a MMR of 450 per 100 000 (8).

Due to geographical vastness and sociocultural differences, the MMR varies between the different states of India. The status of women is generally low in India, but exceptions are seen in the southern and eastern states. Female literacy is only 54 percent and most women lack the power to make decisions including decisions to use maternal health services. The two states with the highest MMR are Uttar-Pradesh and Rajasthan where the highest birth rates also are found. In Uttar Pradesh 700 maternal deaths occur in 100 000 live births while the southern states, Kerala and Tamil Nadu, have a MMR of 66 respectively 88, which is comparable with MMR in middle-income countries (8).

The major reason for maternal death in India is haemorrhage, that causes 38 percent of all maternal deaths and 60 percent of all pregnant women are anaemic. The most prominent cause of bleeding is postpartum haemorrhage. Other causes of maternal death are sepsis, abortion, hypertensive disorder and obstructed labour. The high numbers of death due to sepsis and obstructed labour may be related to the high number of home-deliveries (8).

Of all deliveries in 2006, 39 percent were conducted in an institution, and 48 percent of the total numbers of deliveries were attended by health personnel. The numbers of institutional deliveries were strongly correlated to the educational and economic status of pregnant women. Only 18 percent of the illiterate mothers had institutional deliveries compared to 86 percent of mothers with twelve or more years of education. Similar differences were observed in the use of skilled attendant at birth and use of postnatal care. This reflects the public systems inability in reaching out to the poor and illiterate women. Most increase in the number of institutional deliveries is seen in the private sector, where about half of the institutional deliveries take place (8).

NORMAL BIRTH

Definition

The reason to define what is considered to be a normal birth is due to the increasing use of medical technology and interventions such as epidural anaesthetics, Oxytocin infusion, electronic foetal monitoring and caesarean section over the last 25 years in the labour care. These constant changes cause the need to define which of these interventions that can be considered a part of the normal birth process (9).

According to the WHO, a normal birth is defined as; *"spontaneous in onset, low risk at the start of labour and remaining so throughout labour and delivery and that the infant is born spontaneously in the vertex position between 37 and 42 completed weeks of pregnancy. After birth mother and infant are in good condition"*. In WHO's definition of normal birth it is made clear that for example caesarean section and pre-term labour is not considered normal. On the other hand it's not clear if a delivery where epidural anaesthetics or Oxytocin infusion is used still can be considered as a normal birth (3).

Another definition of normal birth made by the British Royal College of Midwives and the Royal College of Obstetricians and Gynaecologists states that; "*Normal delivery is a measurement of the process of labour and not outcome. The "normal delivery" group includes women whose labour starts spontaneously, progress spontaneously without drugs, and who give birth spontaneously*" (10).

The society of obstetricians and gynaecologists of Canada joint policy statement on normal childbirth uses the following definition of normal birth; *"A normal birth is spontaneous is onset, is low-risk at the start of labour and remains so throughout labour and birth. The infant is born spontaneously in vertex position between 37 and 42+0 completed weeks of pregnancy. Normal birth includes the opportunity for skin-to-skin holding and breastfeeding in the first hour after birth"* (11).

Both the British and the Canadian statements are in agreement to exclude induction of labour, spinal analgesia, general anaesthesia, forceps or ventouse, caesarean section and episiotomy from the concept normal birth. There are a few differences between the definitions. For example the British definition of normal birth excludes epidural analgesia while the Canadians consider epidural analgesia as a part of normal birth (10).

In our thesis we will refer to the definition of normal birth made by the WHO.

The concept of normality

The concept of "normality" in labour and delivery is not standardised or universal and has been a matter of debate over many years. Recent decades have seen a rapid expansion in the development and use of practices designed to start, augment, accelerate, regulate or monitor the physiological process of labour. The aim of these interventions has been to improve outcomes for mothers and babies, and sometimes of rationalising work patterns in institutional birth. In developed countries questions are increasingly raised about the value or desirability of such high levels of interventions that are practised (3).

The concept of normality can vary over time and between different cultures due to changes in perceptions and norms within a society. In a global perspective, home delivery may be defined as normal while in Sweden delivery in hospital is considered normal (9). The concept of normality may vary according to different midwifery and obstetric cultures and depends on how the word normal is interpreted (4).

There is a debate of what terminology to use when describing the birth process. There is a difference between natural and normal birth. A natural birth is defined as a delivery without medical technology. If a normal birth would be defined as a natural birth, less than 10 percent of all deliveries in Sweden would be considered normal. Beside the concepts “normal” and “natural”, the concepts “low risk” and “high risk” are used to classify childbirth. These concepts are changeable and can vary throughout pregnancy and delivery. Therefore there is a need to continuously reconsider these concepts (9). The term “normal” has the disadvantage of often meaning usual or most common. To use normal birth as a term may also imply that other births are abnormal which can lead to feelings of guilt for some women and health care professionals (4).

THE BOLOGNA SCORE

The Bologna Score tool is constructed to measure both attitudes and practises in care in labour and is based on the WHO’s guidelines for how care in normal birth should be managed. The tool aims to assess how many births that start as “normal” and how vaginal birth is managed according to a number of evidence-based factors (5).

The Bologna score was created with the intention to be used in both developing and developed countries with the overall aim to identify and support areas of good practise in normal birth wherever in the world it occurs. The constructors of the Bologna Score, Chalmers and Porter request that field testing is needed to translate Bologna Score into practise and furthermore they encourage researchers to evaluate and refine the tool after use in different settings (5).

The Bologna Score measures which labours are managed as if they are normal as opposed to complicated as well as it give the observer a sense of how normal labour is managed within a given population. The Bologna Score consists of three indicators. Indicator A investigates the requirements for a safe delivery and is defined as the percentage of women attended by a skilled attendant in labour. Indicator B is used to estimate the number of women falling outside the scope by measuring the percentage of women with induced labour or undergoing elective caesarean section. By using indicator A and B together it is possible to calculate the percentage of the overall pregnant women that will start a normal labour and then do further analysis (5).

Indicator C strives to measure the management of normal labour and consists of five key measures; presence of a companion at birth, use of a partograph, absence of augmentation as for example external pressure on the fundus or emergency caesarean section, use of non-supine position for birth and skin-to-skin contact of mother and baby for at least 30 minutes within the first hour after birth. (5). When using the Bologna Score each delivery is assessed and one point is given for every affirmative answer to the five questions in indicator C. The maximum score is five, which is supposed to indicate that birth is managed according to the best available evidence for care in normal birth (12).

The Bologna Score has so far been tested in two settings. In 2008, Sandin-Bojö and Kvist used the Bologna Score in a prospective cross-sectional study in Sweden including 35 maternity units. The findings indicated that according to the Bologna Score, care in labour was managed in accordance to scientific evidence to a limited degree and that there were large differences in the management of labour among the maternity units. The mean Bologna Score was 3,73 for the whole sample and 3,81 for those deliveries that was judged as low-risk at start of labour. Presence of a companion, use of partograph and skin-to-skin contact was the items that to a great extent was given an affirmative answer and consequently also high points on the Bologna Score. Absence of augmentation such as use of Oxytocin, fundal pressure and caesarean section and non-supine position at birth were the items that were not affirmed to the same extent. The variable that was least often affirmed was non-

supine position for birth. The authors found the Bologna Score to be user friendly and a good quality indicator for intrapartum care (12).

As a part of a master thesis by Andersson and Yngfors in 2008, the Bologna Score was implemented during a five week period in two maternity clinics in the Democratic Republic of Congo. According to the Bologna Score, care in labour in the two settings was not based on the best available evidence. The maximum score of five was not achieved for any deliveries included in the study and the mean Bologna Score was 1,95. None of the women had a companion at birth and all women gave birth in a supine position. Andersson and Yngfors found the tool to be a good quality indicator even though, in the African culture, some questions were interpreted in different ways than they were intended to be. The Bologna Score was found to be a short and easy indicator for the quality in care but failed to describe in what way care in labour is carried out (13).

CARE IN LABOUR

After establishing a working definition of "normal birth" in 1985, WHO identified the most common practices used throughout labour and established a number of norms of good practice for the conduct of non-complicated labour and delivery. The practises where classified into different categories depending on whether they were considered useful, harmful, used inappropriately and practises for which insufficient evidence exists. The useful practises are for example; use of the partograph for monitoring progress of labour, non-supine position in labour and early skin-to-skin contact between mother and child. Practices such as routine intravenous infusion in labour and routine use of supine position during labour are examples of harmful practises (3).

Examples of practices that are frequently used inappropriately are; liberal or routine use of episiotomy and electronic foetal monitoring. The practises for which insufficient evidence exists includes fundal pressure and early clamping of the umbilical cord and these practises should be used with caution until there is further research done. WHO also emphasizes that the psychosocial care for women in labour is essential and should be based on a holistic perspective that encourages family-centred care that involves women in decision making (3). In the following text these practises and areas in care in labour will be further described.

Skilled Birth Attendant

WHO defines a skilled attendant as *"an accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained in the skills needed to manage normal uncomplicated pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns".* Historical and observational evidence indicates that skilled care at birth reduces the risk of maternal mortality. Industrialized countries halved their maternal mortality ratios in the early 20th century by providing professional midwifery care at childbirth (14).

Approximately 60 million annual births occur outside of health facilities, and most of these childbirths take place without a skilled birth attendant. The intrapartum related deaths occur almost entirely in low- and middle income countries, yet coverage of skilled birth attendance is lowest in countries with the greatest neonatal mortality rates, maternal mortality ratios, and stillbirth rates. To achieve Millennium Development Goals 4 and 5 that strives to reduce child mortality and improve maternal health, there is a need to reduce intrapartum related deaths by increasing coverage of skilled birth attendance. This is particularly important for the 60 million home births each year, and to improve the quality of obstetrical and perinatal care (15).

Wealth is one of the strongest determinants of skilled birth attendant use, with the poor being at a disadvantage. It is estimated that about half of the deliveries in India are assisted by skilled health personnel. With the objective to identify individual factors that determine the use of skilled birth attendants in India, data was collected from a population-based survey. There were significant differences in the use of skilled delivery care among the urban and rural populations in India and there were several financial, social, regional and cultural barriers to skilled birth attendant use. The authors found that the use of skilled attendants was more common amongst the younger women, those with higher levels of education and those belonging to higher economic groups. A significantly higher proportion of women living in urban areas used skilled attendants at birth compared to the women living in rural areas (16).

The use of skilled attendants was also depending on the religious faith of the women and skilled attendants were most uncommon among Muslim women. It was also observed that the proportion of births attended by skilled personnel differed significantly depending on the caste of the women, with the lowest rates among the schedule tribes and in the socially and economically disadvantaged communities. Furthermore, the use of skilled birth attendants was more common amongst primiparous women, women with fewer children, those who had previous history of termination of

pregnancy and amongst women who had received antenatal care services (16).

The partograph

The partograph is a tool used for observing the woman and monitoring the baby during labour and it is also a method for recognizing and predicting abnormality through comparison with an ideal progress (17). It is a graphical record of cervical dilatation in centimetres measured against duration of labour in hours (18). The partograph can be used to assess the progress of labour and to identify when interventions are necessary. Research has shown that using the partograph can be highly effective in reducing maternal complications caused by prolonged labour such as postpartum haemorrhage, sepsis, uterine rupture and infant complications such as anoxia, infections, and death. The use of a partograph has also shown to reduce the need for operative interventions (18).

The partograph is also used for monitoring the descent of foetal head, uterine contractions, foetal heart rate, membranes and liquor. Additionally, the partograph can be used to monitor maternal conditions such as pulse, blood pressure, temperature and the use of drugs. The partograph is an inexpensive effective tool that can be used in a variety of different settings, both in developed and developing countries (18).

A review from 2008 including five studies assessed the effect on perinatal and maternal morbidity and mortality when using a partograph. Labour management when using a partograph was compared with labour management where no partograph was used. There was no significant difference in rate of caesarean section, instrumental vaginal delivery or Apgar score less than seven at five minutes between the group that implemented the partograph and the group without partograph. An exception was the one study carried out in a low-resource setting (Mexico) that showed a lower caesarean section rate when using the partograph. In this study early intervention had a positive effect on the caesarean section rate. Based on this review the authors regard that it is not possible to recommend the introduction of partograph as a routine use. However, the partograph is frequently used in both high- and low-income settings as it gives a good overview of labour progress and is easy to use (19).

Support during labour

Throughout labour and delivery the woman's physical and emotional well-being should be regularly assessed. The assessment of the woman's well-being also includes attention to her privacy during labour, respecting her choice of companions and avoiding the presence of unnecessary persons in

the labour room (3). Several factors affect the mother's experience of childbirth, but one of the most prominent factors is the support given during labour. Support can be given by the partner, family members, friends, doulas or hospital staff. Continuous support means the woman is having a supportive person by her side throughout the major part of the delivery (20).

In a review where 16 trails were included the authors assessed the effect of continuous one-to-one intrapartum support compared with the usual care given to the mothers and their babies in those settings. Women who had continuous support during labour were more likely to have a slightly shorter labour and to have a spontaneous vaginal birth. Furthermore they were less likely to use analgesia or to report dissatisfaction with their childbirth experience. Continuous support had greater benefits when the provider did not belong to the hospital staff, when the support began early in labour and in settings where epidural analgesia was not routinely available (21).

Birth position

WHO states that women in both first and second stage of labour can adopt any position they like, while preferably avoiding long periods lying supine. None-supine position includes kneeling, standing, sitting and squatting. Women should be encouraged to experiment with what feels most comfortable and should be supported in their choice (3).

A review with the objective to assess the benefits and risks of the use of different positions during second stage of labour showed that supine position is unfavourable for both mother and baby. When the mother was placed in a supine position there was a risk of vena-cava syndrome, which is a result of obstruction of the inferior vena-cava that can lead to fall in blood pressure of the mother and foetal hypoxia and distress. The benefits of non-supine position were shortening of second stage of labour, small reduction in assisted deliveries, less episiotomies, fewer women reporting severe pain during second stage of labour and fewer abnormal foetal heart rate patterns. On the other hand the incidence of perineal tearing was increased when giving birth in a none-supine position. Haemorrhage more than 500 ml was also more likely to occur in non-supine position compared to laying down (22).

Interventions

Operative deliveries

Most deliveries will result in spontaneous vaginal delivery but in some cases additional assistance is required to deliver the baby. Operative delivery is defined as any procedure undertaken to facilitate

the delivery of the baby. These procedures may include caesarean section, use of forceps and vacuum-assisted delivery (23). The caesarean section rate varies among countries and the rates are increasing in many parts of the world (24). The biggest increase is seen in developing countries as patients wealth is raising and medical facilities improves (2).

An Asian survey done by the WHO in 2007-2008 compared the caesarean section rate among nine Asian countries. The highest numbers were seen in China with a caesarean section rate of 46 percent and the lowest rates were found in Cambodia and in India where the rates ranged from 15 to 18 percent (25). In Europe the caesarean section rate ranges from 14 percent in the Netherlands to 38 percent in Italy (26).

Unequivocal indications for caesarean section are for example; placenta praevia or transverse lie. However, the majority of the operations are carried out for ambiguous indications such as; dystocia and foetal distress. Caesarean section is a major operation with great benefits, but also with risks for both mother and baby. The practice of caesarean section differs between obstetricians and the societies in which they practice. The number of caesarean sections also depends on other factors such as socio-economic status of the women, financial considerations and women's expectations (24).

When there is an indication for hasten the delivery of the baby, instrumental vaginal delivery may be an option instead of caesarean section. The indications for instrumental delivery can be either related to the mother (inefficient contractions, lack of co-operation of the mother, heart or lung disease) or the baby's condition (foetal hypoxia) (27). Included in the term "instrumental vaginal delivery" are the use of forceps and vacuum extraction. There are few absolute indications for instrumental delivery and the rate differs between regions and countries. Different care practises such as companionship in labour and the use of upright birth position can lower the rates of instrumental delivery (28). Instrumental vaginal delivery is practised worldwide and the rates vary from 1.5 percent of all deliveries in some countries up to 15 percent in other countries (2). In Europe instrumental delivery rates range from less than three percent of all deliveries in Ireland to more than 12 percent in Portugal and Spain (29).

There is evidence that instrumental deliveries increase the maternal morbidity, including perineal pain at delivery, pain in the immediate postpartum period, perineal lacerations, haematomas, blood loss and anaemia, urinary retention, and long-term problems with urinary and faecal incontinence (30). In an American review including over 50 000 vaginal deliveries the rates of third and fourth

degree perineal lacerations were higher in the vacuum-assisted (10%) and forceps deliveries (20%) compared to the spontaneous vaginal deliveries (2%) (31).

Episiotomy

If the mother or foetus shows signs of distress, or if progress has ceased during the second stage of labour it may be an indication for an intervention to hasten the delivery by episiotomy, instrumental delivery, or both. Even though episiotomy was introduced without strong scientific evidence of its effectiveness it has become one of the most commonly performed surgical procedures in the world (24).

Episiotomy was earlier considered to lower the risk of third-degree perineal tearing. Recent studies have shown that the risk of third-degree tear of perineum is not reduced in countries where episiotomy is performed by routine (32). A review including eight studies compared the effects of routine episiotomy to restrictive episiotomy and found that restrictive episiotomy resulted in less severe perineal trauma, less suturing and fewer healing complications. There were no differences between the two groups regarding severe vaginal/perineal trauma, dyspareunia, urinary incontinence and pain. The only disadvantage shown in the restrictive use of episiotomy was an increased risk of anterior perineal trauma (anterior vagina, labia, urethra and clitoris). Based on this review there is evidence to support the use of restrictive episiotomy (33).

Fundal pressure

Fundal pressure involves application of pressure on the fundus of the uterus that should be applied gently on the uterine fundus. It is important to avoid direct downward pressure on the maternal spine because it could cause direct vena-cava compression and maternal hypotension. Gentle firm fundal pressure is sometimes used to guide the foetal head into the pelvis if foetal station is high when artificial rupture of the membranes is indicated. Another indication for fundal pressure are times when the foetal head is crowning, maternal pushing efforts are insufficient and the foetal heart rate is alarming suggesting that hastening of birth is indicated. In this case fundal pressure may be the quickest option for birth, but a careful analysis of risks and benefits is required based on the individual clinical situation (34).

There is no published scientific evidence that fundal pressure is an appropriate or safe technique to shorten the second stage of labour. In fact, very little is written about fundal pressure in the literature except for cases of shoulder dystocia. If a shoulder dystocia is identified, fundal pressure should be avoided. Fundal pressure in this circumstance will likely further impact the anterior

shoulder, delay birth, and increase the chances for foetal injury. It is suggested that fundal pressure can contribute to neurological and orthopaedic injuries in the foetus. Cord compression caused by the mechanical forces of fundal pressure can lead to foetal hypoxemia and asphyxia. Application of fundal pressure has been reported to increase the risk of maternal perineal injuries such as third- and fourth-degree lacerations and anal sphincter tears. Other maternal injuries and complications reported include pain, hypotension, respiratory distress, abdominal bruising, fractured ribs, and liver rupture (34).

In a review with the aim to determine the benefits and adverse effects of fundal pressure in the second stage of labour, the authors found that evidence regarding the safety for the baby and the effects on the maternal perineum are inconclusive. Further research is required to study the effect of fundal pressure as no evidence is available on beneficial or harmful effects of manual fundal pressure. However the result is only based on one trial where fundal pressure was applied using an inflatable belt as the trials describing manual fundal pressure were excluded for methodological reasons (35).

Artificial rupture of membranes and artificial stimulation of labour

Artificial rupture of membranes (ARM) can be used to induce labour if the cervix status is favourable and the presenting part is fixed in the pelvis. After the ARM the foetal heart needs to be auscultated to make sure that the foetus can handle the stress caused by the increased intrauterine pressure. There is a risk of the women developing chorioamnioitis as a result of an ascending infection from the genital tract and the risk increases with the time elapsed between ARM and delivery of the baby. Therefore it is common practice to start an Oxytocin infusion within a few hours after ARM if labour is not established (36).

The synthetic form of Oxytocin is Syntocinon and it is a powerful uterotonic substance (36). When labour fails to progress, Oxytocin is administered to augment contractile effort to enable labour to progress to a normal vaginal delivery as Oxytocin has been demonstrated to increase the frequency and intensity of uterine contractions. When using an Oxytocin infusion the foetal heart and uterine activity should be monitored to avoid risk of hyperstimulation and hypertonic uterus that can endanger the health of mother and baby (37).

Active management of third stage of labour and postpartum haemorrhage

Postpartum haemorrhage (PPH) occurs during the third stage of labour and is most likely to happen during or after separation of the placenta. The most common causes of haemorrhage are; uterusatoni, vaginal tears, retention of placenta or membranes and coagulation disorder. Postpartum haemorrhage is one of the main causes of maternal mortality, both in developed and in developing countries (38). The prevalence of malnutrition, anaemia, inadequate antenatal and intranatal care and lack of blood transfusion facilities are contributing factors to the prevalence of PPH, especially in developing countries (2). Primary postpartum haemorrhage is defined as a blood loss of more than 500 ml in the first 24 hours after birth. Secondary postpartum haemorrhage is defined as abnormal bleeding from 24 hours after birth until six weeks postpartum (39).

The management of the third stage of labour may influence the incidence of haemorrhage and the amount of blood lost and different management has been discussed. Expectant management of the third stage of labour means allowing the placenta to deliver spontaneously or aiding by gravity or nipple stimulation. Active management involves administration of prophylactic Oxytocin before delivery of the placenta, and usually early cord clamping and cutting, and controlled cord traction of the umbilical cord (38).

A review including five trials conducted in hospital settings in three high-income countries compared the effectiveness of active versus expectant management of the third stage of labour. There were no maternal deaths or severe postpartum haemorrhages (more than 2500ml) reported in the studies. Active management led to a reduction in severe primary postpartum haemorrhage greater than 1000ml. However, active management resulted in a lower average birth weight for the babies. This result was probably related to a decrease in the placental transfusion at birth because of the early cord clamping that was made within thirty seconds after birth in all the studies. Active management also increased the incidence of afterpains, need for postpartum analgesia and an increased number of women having to return to the hospital because of bleeding (40).

The prevalence of postpartum pain and discomfort in relation to the administration of Oxytocin was studied in a labour ward in Angola. There was no significant difference in postpartum pain experienced by women with active management of labour compared to the women who did not receive active management of labour. The authors found that postpartum pain increased with parity and during breastfeeding but that Oxytocin was not found to increase pain and discomfort for the women (41).

A study made in the state of Rajasthan, India, assessed the predictors of maternal death among 6197 women who gave birth during one year. The maternal mortality ratio in the study group was 519 per 100 000 live births. The analysis of the medical causes of death revealed that postpartum haemorrhage was the chief cause of maternal death and alone accounted for one fourth of the total maternal deaths (42).

Skin-to-skin care

Early skin-to-skin contact begins ideally immediately after birth and means that the naked baby in placed on the mother's bare chest covered across the back with a warm blanket. A review including thirty studies compared early skin-to-skin contact with traditional hospital care with the objective to assess the effects of early skin to skin contact (STSC) on breastfeeding, behaviour, and physiological adaptation in healthy mothers and new-borns. The result indicated that babies placed skin-to-skin after delivery interacted more with their mothers, stayed warmer, and cried less. Babies were more likely to be breastfed, and to breastfeed for longer if early skin-to-skin contact was initiated (43).

A study was made in a resource-poor community of rural Uttar Pradesh, India with poor access to quality health care. The study assessed the acceptability of skin-to-skin care (STSC) within the community. A culturally appropriate communication program designed to encourage evidence-based newborn care including adoption of STSC was presented to pregnant women through community-based workers. The study showed that high rates of hypothermia in the babies (<36,5C) were found in the Indian rural homes, especially during the winter months. The incidence of hypothermia in this study was 38 percent in home-delivered babies (44).

STSC was rapidly and enthusiastically embraced in the area. Reasons for acceptance were that the mother in this way felt capable of protecting the baby from evil spirits, and that the baby was more satisfied. Another reason for successful implementation of STSC was that the mother even though she was advised to practise STSC for as long as possible she was given the freedom to adapt the practice of STSC to her lifestyle (44).

The barriers for acceptance of the method were fear of hurting the baby through disturbance of the umbilical cord, weakness and postpartum pain of the mother and uncomfortable position during hot summer months (44).

CULTURAL ASPECTS ON CHILDBIRTH

Research in a different cultural setting requires the researcher to be aware of the cultural impact of the variables that are being studied. The care given in a specific setting is not an isolated phenomenon but exists within a culture that is shaped by economic, political, religious, psychological and biological conditions. Culture also differs within the same ethnic or social group because of differences in age, gender, political association, class, religion, ethnicity and personality. (45). Culture is defined as the behavioural pattern and conceptual views on life of a group of people and has an effect on people's attitudes, actions and believes and is in constant change depending on changes in the society (46).

All over the world the strongest cultural traditions and rituals surrounds the most important stages in life, such as conception, birth, the passage from adolescence into adulthood, marriage, reproduction and death (46). Most cultures and individuals recognise childbirth as a transforming life event and pregnancy and birth are still marked by formal rites of passage in many societies around the world. In high-resource societies many of the formal rites are no longer practised. In the modern society childbirth is governed by institutional guidelines that defines the way birth should be conducted, who should be present and even the type of physical experiences the women should undergo (47).

Traditional practises in developing countries are changing rapidly together with social and economic development and the ”medicalization” of birth. In some cases this medicalization fits in with certain traditional concepts. For example it is described how many women in Tamil Nadu, south India were insisting on having their labour induced and accelerated by Oxytocin even though this increased their pain in childbirth. The reason was that this pain, known as “vali” was said to increase the women's level of “sakti” that means female regenerative power. Enduring a greater pain resulted in greater “sakti” (48).

THE MOTIVE FOR OUR STUDY

The way care in labour is managed by health care professionals have altered throughout the last decades and between different cultures. What is considered a normal birth and how it should be managed according to the best available evidence are matters of discussion within the obstetric profession (3).

In order to get at general view of how normal birth is managed in a specific setting, the WHO developed a measurement tool named “Bologna Score” (5). The tool has so far to our knowledge been tested in two different settings. In the year of 2008 Sandin-Bojö and Kvist used the Bologna Score to asses care in normal birth in Sweden (12) and in the same year Andersson and Yngfors used the Bologna Score in the eastern part of DR Congo (13). The Bologna Score has not yet been tested in any Asian setting and therefore we find it interesting to get a view of how care in normal labour is carried out at a labour ward in Gulbarga, India.

OBJECTIVE

The objective of this study was to assess how care in normal labour is managed at Basaveshwar Teaching and General Hospital in Gulbarga, India.

METHOD

STUDY DESIGN

A prospective cross-sectional study was performed at Basaveshwar Teaching and General Hospital in Gulbarga, India, during five weeks in October and November 2010. The study design was non-experimental and the data was collected through a questionnaire. The study was carried out as a survey with the aim to collect information regarding the birth attendant’s actions, knowledge, intentions, opinions and attitudes to care in normal birth. Survey research was suitable for obtaining our objective as it is widely flexible and can be applied to many populations and focus on a wide range of topics (49).

Quantitative research within the positivist paradigm focuses on the objective and quantifiable data and strives to make generalizations about the studied reality. Because of the belief in an objective reality the researcher seeks to be objective and independent from those things being researched. Therefore it is of great importance for the researcher to hold his/her values separate from the research. Quantitative research collects empirical evidence systematically by using formal instruments to collect the information needed, for example questionnaires (49). Our ambition was that using a questionnaire as a measurement tool would be an adequate way of getting an overview of how normal birth is managed within the population that we chose to study.

THE QUESTIONNAIRE

The questionnaire used in our study consisted of two parts, the Bologna Score and additional questions, and contained variables with nominal, ordinal or ratio level of measurement. The Bologna Score is described in an earlier section (page 5-7).

Additional questions

In addition to the Bologna Score our questionnaire consisted of background variables and some study specific questions on labour management and outcome. Both background variables and the study specific questions were first developed by Sandin-Bojö and Kvist in their study; "Care in labour: A Swedish survey using the Bologna Score" (12). Andersson and Yngfors further developed the additional questions before using the questionnaire in DR Congo in 2008. The question about use of epidural anaesthesia was removed and four study specific questions were added regarding whether an episiotomy was performed, if the mother and baby were well after birth and if there was a postpartum bleeding exceeding 500 ml. Andersson and Yngfors used the same background variables as Sandin-Bojö and Kvist but added questions about the woman's age and the child's date of birth (13).

The additional questions used in our study were developed out of the questions used by Andersson and Yngfors. The questions regarding the baby's date of birth, smoking habits, weight end length of the mother, civil status and Apgar score were excluded from our questionnaire as we presumed that these variables would be hard to receive information about. The questions regarding low-risk high-risk and augmentations (question C3 in the Bologna Score) was found hard to use in Andersson and Yngfors study and was therefore remade before using them in our questionnaire (13).

The questions regarding parity and active versus latent phase of labour were reconstructed and reformulated to be more user-friendly. We added questions regarding the woman's level of education, access to maternity health care, and if any interventions were done to prevent postpartum bleeding. The other additional questions used were; age of the woman, gestational week, episiotomy, condition of mother and baby, postpartum bleeding, and if the delivery was judged as normal or not. Our developed questionnaire is shown in Appendix 3.

DATA COLLECTION

Our study was carried out between the 12th of October and the 25th of November 2010 in Basaveshwar Hospital, Gulbarga, India. The method used was convenience sampling that refers to that the most conveniently available participants were included in the study (49). Our intention was that all deliveries that took place in Basaveshwar Hospital during the time period for the data collection would be included in the study. All the birth attendants that were on duty in the labour room during the time period were asked to fill in a questionnaire after each delivery before the woman left the labour ward. The birth attendant could be any person that conducted the deliveries.

Before participating in the study, the personnel were given both verbal and written information and were asked to fill in a written consent form. The information for research participants and the consent form are shown in appendix 1 and 2. The total number of participants was ten birth attendants. Seven out of ten participants were doctors under education to become obstetricians and three participants were student doctors. The questionnaires were collected two times a week and thereafter kept in a safe place. During the data collection period we were present in the labour room in the day time six days a week to answer any questions regarding the study and the questionnaire. A questionnaire was filled in for 135 of the total 202 deliveries that took place during the data collection period.

Pilot study

Before initializing the main study a pilot study was carried out during the 12th and 13th of October 2010. The purpose of the pilot study was to test and evaluate the comprehension of the questions to see if any changes were needed before the main study began. The pilot study included nine questionnaires. All questionnaires were completed and the participants did not mention any language barriers or difficulties in understanding the meaning of the questions. The answers were compared with the patient files to detect possible misinterpretations of the questions. To our knowledge, all of the questionnaires included in the pilot study were filled in correctly. After the pilot study there were two changes made in the questionnaire. The definition of anaemia was changed as the Indian definition is different compared to the Swedish. In the question about obstetrical risk factors the term “chronic diseases” were erased and was instead formulated as “did the woman have any other obstetrical risk factors”.

DATA ANALYSIS

For processing and analysing the collected data the statistical program Statistical Package for Social Sciences (SPSS) version 18,0 were used. The variables in this study were either dichotomies or multiple response variables and the answers were coded with numbers to enable a statistic analysis. The data was systematically analysed and presented through descriptive statistics. A Pearson Chi-Square test was used to compare the differences in use of augmentation between primiparous women and multiparous women. The level of significance used when interpreting the result of the Chi Square test was 0,05 which means that a p value $\leq 0,05$ is statistically significant.

SETTING

Gulbarga is located in the state of Karnataka, in the southern region of India and the city has a population of 483 615 people (50). The total number of deliveries in Gulbarga district was 91 289 and the maternal mortality ratio was 102 per 100 000 live births in 2009. The infant mortality ratio (0-1 years) during this time period was 17 per 1000 live births (statistics from Mr Solomon, social worker in Gulbarga). Basaveshwar Hospital is run by the Hyderabad Karnataka Education Society (H.K.E.S) and was founded in 1989. It started functioning in 1990 and it is a private hospital with 820 beds. Along with routine teaching, training and obstetrics and gynaecology services, the department of obstetrics and gynaecology includes high risk antenatal care, postnatal care, neonatal intensive care unit, cancer clinic and family planning services (51).

The labour department consists of three rooms. One “waiting room” used for women in latent phase, one “recovery room” used for postpartum care and the “labour room” where the deliveries take place. The waiting room and the recovery room have 3 beds each and the labour room has six beds. There are doctors, midwives, nurses and “aimas” (helpers) working in the labour ward and the doctors are the ones responsible for managing and conducting the deliveries. The nurses and midwives only conduct deliveries in absence of a doctor. In every shift two to four doctors, two nurses, one midwife and one helper are posted in the labour ward. Next to the labour room there is an operation theatre where caesarean sections, tubectomies and other obstetrical and gynaecological operations are performed. The labour room is equipped with one vacuum extractor, forceps, one resuscitation table for newborns, oxygen and the most commonly used drugs for care in labour. The hospital is also equipped with a neonatal intensive care unit and a blood bank.

Basaveshwar Teaching and General Hospital is a private institution and the charge for a vaginal birth is 1000-1500 INR (150-250 SEK). A caesarean section costs about 3000 INR and with the medicines included the total fee is 5000 INR (830 SEK). Patients under the poverty line i.e. 30 000 INR income a year (5000 SEK) get free health care during labour for the first two children. The woman is also paid a certain amount of money when she chooses to give birth in hospital. All women that are about to give birth have free access to ambulance transport. These are ways for the government to increase the number of women having an institutional birth (verbal information from health-care personnel at Basaveshwar Hospital).

In 2009 the total number of deliveries in Basaveshwar Hospital was 3167 and the number of caesarean sections was 1150 which resulted in a caesarean section rate of 36 percent. The number of maternal deaths were 26 (0,8% of all deliveries) and the main causes for maternal death was eclampsia, sepsis, postpartum haemorrhage, pregnancy induced hypertension, unsafe abortion and ectopic pregnancy. There were eleven cases of maternal deaths caused by medical illness and the chief causes were; anaemia, acute respiratory failure and cerebral malaria (verbal information from health-care personnel and available statistics at Basaveshwar Hospital).

ETHICAL CONSIDERATION

The Law of ethical trial of research regarding people (SFS 2003:460) claims that ethical trial is not needed for studies within college education in elementary or advanced level. For this reason there was no need to apply for ethical approval at the ethical committee in Sweden before performing our study (52). Written information for research participants and a written consent form, both in English, were made and approved by the Ethical committee at the Institute of Health and Care Sciences at the University of Gothenburg.

As a guideline for the researcher the Swedish Council of Research has presented research ethical principles with the purpose to give standards for the relationship between the researcher and the participants in the study. The principles aim to balance the need for research and the respect for the integrity of the individuals. The principles are summarised into four general requirements in research; the demand to give information, the demand for consent, confidentiality and utilization (53).

In our study the participants were given both written and verbal information about the study and the participants were in this way informed about the reasons for studying care in normal birth, the purpose of the study and the procedures for data collection. The written information was provided in an information letter for research participants and a written consent form was added to the information. The participants were asked to give their written consent before taking part in the study and all participation in the study was voluntary. The questionnaires were filled in anonymously by the birth attendant. The birth attendants as well as the patients included in the study could not be identified. The participants were able to withdraw their participation at any time without giving any reason for the withdrawal.

Before initializing our study the questionnaire was introduced to our contact persons, Dr K A Abraham, director at St. Luke's Health Centre in Aurad and Mrs Monica Raleigh principal of the HKES College of Nursing in Gulbarga. The questionnaire was also presented to the medical superintendent at Basaveshwar Hospital, Dr Dilip M. Rampure who gave us permission to perform the study at the department of obstetrics and gynaecology.

Benefits and risks with the study

When performing a study in a developing country the risk for dependence between researcher and participants may be increased due to the history of colonialism and that the researcher from a Western country may be considered the stronger party. The inequality between researcher and participants can be an obstacle for the voluntary participation in the study. By communicating our role as midwifery students that are there to learn we wished to make sure that the participants did not feel supervised or controlled by our presence. It is important to avoid non-scientific use of the study results since the results reflect the employees' way of working and in a worst case scenario could be used against them by superior persons in the organization.

Other possible risks in the study could be that filling in the questionnaires takes time from the care of the mother and baby. To prevent this from happening we designed the questionnaire as user-friendly and concise as possible. By carrying out a pilot study, possible obstacles in language and design could be discovered and corrected before the real study takes place. Another way of avoiding misunderstandings regarding the study was for us to be available for any questions from the staff. Our ambition was that the Bologna Score would enable the professionals to evaluate themselves and see if the care is managed according to the best available evidence. We hoped to be able to identify strengths and possible weaknesses in the care of labouring women. Our ambition was also to contribute to enlighten the importance of the non-medical care in labour such as support during

labour, skin-to-skin care after delivery, positions in labour and use of the partograph, and to emphasize the importance of the women getting a positive experience of birth.

All in all we believed that the study would not interfere with the patient's integrity as they are not identified in the questionnaires and that the questions are not personal in the way that they could harm the patients when the study results are presented. On the other hand it was hard to predict how the questionnaire would be conceived by the hospital staff. It is possible that they would consider the study irrelevant for them in their work even if we believe that the study could be profitable for the care in labour.

RESULTS

The total number of deliveries during the period for data collection was 202. The response rate was 66,8 percent (n=135). In five questionnaires one or more of the items included in the Bologna Score were not answered and those questionnaires were therefore excluded from the study. The basis for the analysis was 130 questionnaires. The background data for all deliveries with a completed Bologna Score (n=130) are shown in Table 1.

Table 1. Background data for deliveries with a completed Bologna Score (n=130)

Background data	**No (%)**
Age (year), mean (n=130)	23,7
Obstetrical primiparous women (n=130)	69 (53,1)
Obstetrical multiparous women (n=130)	61 (46,9)
Maternity Health Care during pregnancy (n=95)	83 (87,4)
Low-risk at arrival to maternity ward (n=123)	37 (30,1)
Active phase of labour on arrival at maternity ward (n=130)	60 (46,2)
Spontaneous start of labour (n=130)	
Induction of labour (n=130)	96 (73,8)
Elective Caesarean section (n=130)	17 (13,1)
Emergency Caesarean section (n=130)	11 (8,5)
Vacuum extraction (n=130)	31 (23,8)
	12 (9,2)

INDICATOR A

Indicator A identifies the number of women assisted by a skilled birth attendant. In 99,2 percent of the 130 deliveries the woman was assisted by a skilled birth attendant and in 86,9 percent (n=113) the woman was assisted by a doctor, in 10,8 percent (n=14) by a student doctor, and in 1,5 percent (n=2) by a midwife. One woman gave birth alone at the unit.

INDICATOR B

Indicator B describes in what way the labour started. Of the 130 women with a completed Bologna Score 73,8 percent (n=96) were admitted in spontaneous labour. The number of women with an elective caesarean section was 8,5 percent (n=11), 13,1 percent (n=17) had an induction of labour and 4,6 percent (n=6) of the women were admitted for other reasons; placenta praevia (n=1), abruptio placenta (n=2), eclampsia (n=1), cephalopelvic disproportion (n=1) and polyhydramnios (n=1).

INDICATOR C

Indicator C includes the following five key measures for management of normal birth; presence of a companion, use of a partograph, absence of augmentation, non-supine position and skin-to-skin contact between mother and baby. Each of the five key measures is graded from nil to one. The maximum Bologna Score of five indicates evidence based management for women with planned vaginal birth. None of the 95 cases scored five points on the Bologna Score.

Included in this analysis of indicator C are the women who were admitted in spontaneous labour and assisted by a skilled birth attendant, consequently 95 of 130 women. The mean Bologna score was 0,72 points. The result showed that the two items “absence of augmentation” and “presence of a companion” were most frequently given affirmative answers. “Skin-to skin contact” and “use of partograph” were not affirmed to the same extent and “use of non-supine position” scored nil in all 95 cases. Frequencies are shown in Table 2.

Table 2. Items in the Bologna Score scoring one point (n=95)

Items in the Bologna Score	**No %**
Presence of a companion	n=21 (22,1)
Use of partograph	n=9 (9,5)
Absence of augmentation	n=26 (27)
None-supine position	n=0 (0)
Skin-to-skin contact	n=14 (14,7)

Of the women who were included in the analysis of indicator C, 73 percent had one or more augmentations and in one fourth of the deliveries more than one augmentation was used. The most frequently used augmentation was "artificial stimulation of labour" and "fundal pressure". Caesarean section and artificial rupture of membranes was both reported in nearly one fifth of the deliveries. The augmentation used to the least extent was vacuum extraction. Figure 1 shows the augmentations used during labour for the women admitted in spontaneous labour assisted by a skilled birth attendant.

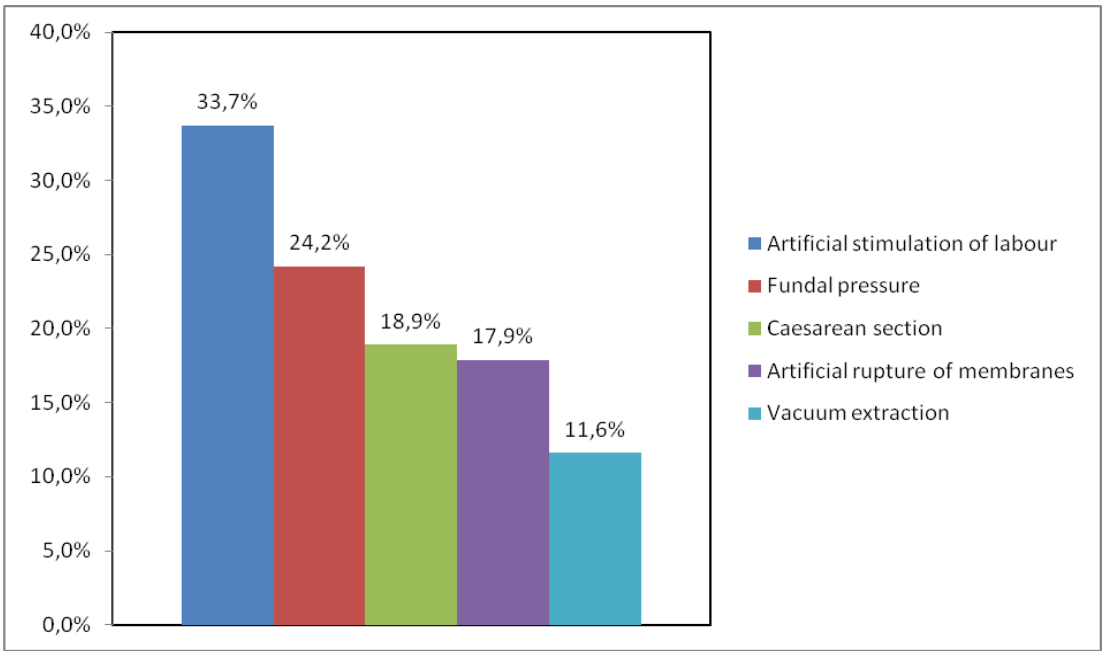

Figure 1. Augmentations used during labour among women admitted in spontaneous labour assisted by a skilled birth attendant.

ADDITIONAL QUESTIONS

Included in the following statistical presentation are only the 95 questionnaires included in the analysis of Indicator C. Information about level of education of the women was only answered in 30 percent (n=39) of the questionnaires and that question was therefore excluded. One other background variable, "maternity health care during pregnancy", was answered in 73,7 percent (n=70) of the questionnaires. Two of the study-specific items did not reach a 100 percent response rate. The response rate for the question regarding "low-risk or high risk at arrival at the maternity clinic" was 93,7 percent (n=89) and the question about "interventions done to prevent postpartum bleeding" had a response rate of 82,1 percent (n=78).

Background variables

The age of the 95 women ranged from 16 to 37 years with a mean age of 23,3 years and a median age of 23 years. Most women, 85,3 percent (n=81) were admitted in labour at a gestational age of 37-41+6 weeks and approximately half of the women had not given birth vaginally before (obstetrical primiparous women). The number of women receiving maternity health care at some point during pregnancy was 85,7 percent (n=60). A comparison between obstetrical primiparous women and multiparous women in augmentations used during labour showed that all augmentations except for ARM were more frequently used among the primiparous women. Artificial stimulation of labour and caesarean section were significantly more often used among the primiparous women than the multiparous women. Table 3 shows the augmentations used during labour in comparison between obstetrical primiparous women and obstetrical multiparous women.

Risk assessment

In the analysis of whether the women were at low- or high-risk on arrival at the maternity ward two questions (no 6 and no 8) were analysed together. Women at low risk were defined as having one foetus in cephalic presentation with a gestation age of 37+0 to 41+6weeks, normal foetal heart rate (110–150 beat/min), spontaneous labour, clear amniotic fluid, diastolic blood pressure less than 90mmHg, no previous obstetric complications (caesarean section, stillbirth, haemorrhage > 1000ml, rupture of the anal sphincter) and no present obstetrical risk factors (breech, anaemia and preeclampsia).

Table 3. Augmentation used during labour.

Augmentation	**Obstetrical primiparous women (n=51) No (%)**	**Obstetrical multiparous women (n=44) No (%)**	**p value***
Artificial stimulation of labour	n=20 (39,2)	n=9 (20,5)	0,011
ARM**	n= 9 (17,6)	n=8 (18,1)	0,946
Fundal pressure	n=15 (29,4)	n=8 (18,1)	0,203
Vacuum extraction	n=7 (13,7)	n=5 (11,4)	0,481
Caesarean section	n=14 (27,4)	n=5 (11,4)	0,023

***Pearson chi-square test (level of significance <0,05) **Artificial rupture of membranes*

On arrival at the maternity ward only 39,3 percent (n=35) of the women were considered to have a low risk pregnancy. The most common previous obstetrical complication were; caesarean section (n=8), and stillbirth (n=4). Anaemia was reported among 16,9 percent (n=15) of the women. Breech presentation was diagnosed among 9,0 percent (n=8) of the women, and 3,4 percent (n=3) were diagnosed with preeclampsia. Other obstetrical risk factors was reported among 22,1 percent (n=21) and the most common were hepatitis B, pregnancy induced hypertension and chronic heart disease. Table 4 shows background variables and study specific items for the women with spontaneous onset of labour that were assisted by a skilled birth attendant (n=95).

Table 4 Background variables and study specific items for the women included in the analysis of Indicator C (n=95).

Background variables	**No (%)**
Mean age (years) n=95	n=22 (23,3)
Gestational week n=95	
<37	n=10 (10,5)
37-41+6	n=81 (85,3)
>42	n= 4 (4,2)
Obstetrical primiparous women n=95	n=51 (53,7)
Received maternity health care n=70	n=60 (85,7)
Low-risk n=89	n=35 (39,3)
Active phase of labour n=95	n=57 (60,0)

Study-specific items

On arrival at the maternity ward 60,0 percent (n=57) of the women were judged to be in active phase of labour, i.e. had two of the following criterias; at least two contractions per ten minutes, spontaneous rupture of membranes or cervix dilated three cm or more. An episiotomy was performed in 40 percent (n=38) of the deliveries, of which 81,6 percent (n=31) were performed in the obstetrical primiparous women. Postpartum bleeding exceeding 500 ml occurred in 8,4 percent (n=8) of the deliveries. The question regarding interventions done to prevent bleeding was answered in 82,1 percent (n=78) of the questionnaires and in 64,1 percent (n=50) of these deliveries an intervention was done to prevent bleeding. The most frequently used intervention was Oxytocin that was given to 56,4 percent (n=44) of the women. Of the 44 deliveries were Oxytocin was given more than half of the women also received Misoprostol in combination. In addition to medication uterus massage was given to two women.

Both mother and baby was judged to be well after birth in 80 percent (n=76) of the deliveries. Three babies were stillborn and two women were diagnosed with intrauterine death (IUD). For the babies that was not well respiratory distress was reported in ten cases and acrania in one. The mother was judged not to be well after birth in three cases and the reasons were need for blood transfusion (n= 2) and preeclampsia (n=1). The birth attendants judged 61,1 percent (n=58) of the deliveries as normal and consequently 38,9 percent (n=37) were judged as not normal. The reasons for judging the delivery not to be normal was specified in 36 of the questionnaires. All of the caesarean sections, breech deliveries and deliveries where vacuum extraction was done, were judged as not normal. The use of fundal pressure and episiotomy as well as the occurrence of a postpartum bleeding was never mentioned as a reason for judging a delivery as not normal. In nine of the 19 deliveries were the mother or baby was reported no to be well the delivery was still judged to be normal.

DISCUSSION

METHODOLOGICAL CONSIDERATION

Validity

In quantitative studies one overarching question is whether the research design provides valid and reliable evidence. Validity refers to degree to which an instrument measures what it is intended to measure (54).

External validity

External validity refers to the degree to which study results can be generalized to other settings or samples than the studied (49). Our study took place during a relatively short time period of five weeks. The data collected during this time might not have been representative for all the deliveries that take place during the remaining 47 weeks of the year. Basaveshwar Hospital is a private hospital that is likely to attract the slightly wealthier part of the population. It is also a teaching hospital where only doctors are managing the deliveries, which leads to that complicated cases in the region are referred to this hospital. These factors make it difficult to make general assumptions that can be applied in other settings. There was a small number of participants that filled in the questionnaires which led to that the conclusions in our study regarding the management of normal birth will be based mainly upon their way of working. The small number of participants and the fact that only 95 deliveries were included in the result might effect to what extent it is possible to make general conclusions out of the result. It is known that the participant's awareness of being part of a study might affect the accuracy of the result as it can influence them to give the answer they believe is expected instead of the actual answer (54).

Drop out

The dropout rate in our study was 33,2 percent (n=67), which is a relatively high number. A possible reason for the high dropout rate is the heavy workload for the personnel in the labour ward, especially in the evenings and night time when there were fewer people working. We noticed that there were less filled in questionnaires after a night shift than after a day shift. It is likely that us being present during the evening and nights should have increased the number of completed questionnaires as it would have reminded the personnel to fill in a questionnaire. Our absence during evenings and nights may also have made it impossible for the personnel to get answers to questions regarding the study and the questionnaire, resulting in a lower response rate. Furthermore, in emergency situations, such as emergency caesarean section and heavy bleeding, the personnel seemed less likely to fill in a questionnaire as it was not of high priority.

Many questions were asked about whether caesarean sections, deliveries with stillborn babies and breech deliveries were supposed to be included in the study as our study aims to asses care in normal labour. The prevalence of stillborn babies in the total number of deliveries (n=202) under the data collection period was 7,6 percent (n=6) compared to 3,2 percent (n=3) in the 95 deliveries that were included in the analysis of Bologna Score. This indicates that the personnel were less likely to include "complicated" deliveries in the study as the outcome of the delivery was known already when the participant filled in the questionnaire.

Reliability

Reliability refers to the "consistency" or "repeatability" of the measures and it answers the question if the same result would be achieved if the study was to be repeated. It is important to consider if the same measurements would be obtained if the instrument was used on the same people on a separate occasion (49). Therefore it is of great concern to construct a questionnaire with clear and easily understood questions. Our pilot study showed that most of the questions were interpreted in a correct way which indicates a high reliability. Anyhow, one threat to the reliability could be the questions that had to be interpreted by the participant. In our study the question regarding support during labour might have been misinterpreted because support was not defined. Some interpreted support as having a relative waiting outside the labour room and some defined support as occasional companionship during labour. None of these interpretations are in accordance to the definition intended.

The usefulness of the Bologna Score

The Bologna Score is a measurement tool for the management of normal labour the first two items (A and B) are constructed to calculate the percentage of women that have commenced what is expected to be a “normal birth” (5). By using the first two questions in the Bologna Score it is still possible that deliveries that are not considered normal according to WHO’s definition of “normal birth” are included in the further analysis. In this way preterm deliveries, twin deliveries, breech presentations, high-risk pregnancies and cases of IUD (intrauterine death) can be included in the analysis of the Bologna Score. Therefore the sensitivity and specificity of the first two items can be questioned. We believe that these two questions alone are not specific enough to select what deliveries that can be expected to be managed as normal. One way of increasing the sensitivity and specificity could be by adding a question that selects the deliveries that meets the criterias for normal birth as defined by WHO. This is especially important as the Bologna Score is based on the WHO’s definition and guidelines for evidence based care in “normal birth”.

The Bologna Score is supposed to be an indicator of effective and evidence based management of normal labour by taking in consideration five items (5). We ask ourselves if it is realistic to evaluate the management of normal labour using only five items. The first item, presence of a companion at birth, is according to Chalmers and Porter a measure of the attitude of the professionals and to what extent women are involved in the care and if evidence-based care is adopted (5). We believe it is hard to draw these conclusions out of this question alone. Reasons for not having a companion at birth may have other explanations. The health professionals may be positive to and aware of the benefits of companionship during labour, but lack of single rooms for the women in labour might

make it impossible for every woman to have a companion in respect for the other women's privacy. In a low-resource setting this item might, instead of measuring attitudes and evidence based care, only measure environmental limitations.

The second item, use of partograph, is constructed to reflect the health care professional's skills and their awareness of the importance of objective assessment of labour progress (5). According to research there is not strong enough evidence to recommend routine use of a partograph (19). There are other ways to follow the labour progress than using a partograph that also make sure that the birth progress is followed in a skilled way. We consider that the absence of a partograph does not necessarily mean that the birth attendant neglects the importance of progress in labour. The validity of this item can therefore be questioned.

Absence of augmentation and caesarean section gives a score in the Bologna Score and should therefore indicate evidence based care in normal labour (5). We question this statement because; even if a labour starts as normal that does not mean that the need for augmentations will not occur during the labour process. In some cases it is more evidence based to use an augmentation than not to. We believe that this item fails to measure when an augmentation is unnecessary and when it is required for a safe delivery.

There are no questions in the Bologna Score regarding the condition of mother and baby after birth. Instead Chalmers and Porter thought that they would get an indirect measure of both mother and baby's condition through the question about skin-to-skin contact. Their assumption was that if the baby is placed skin-to skin it implies that both mother and baby are well (5). We believe that the mother and baby's well-being cannot be measured in this way because absence of skin-to-skin contact can have other explanations than bad health. For the above-mentioned reasons we question to what degree the Bologna Score really measures what it is supposed to measure, i.e. the management of normal labour.

Additional questions

All questions except for two had a high response rate which indicates that they were easily understood. The two questions with the lowest response rate were the questions regarding the woman's level of education and if the woman received maternity health care during pregnancy. Both questions were easily understood and answered correctly. The low response rate can rather be explained by the fact that the questionnaires were filled in after each delivery and that the participants did not always have knowledge about the woman's level of education and if she

received maternity health care. All questions except the questions about if the woman was at “high or low-risk on arrival at the maternity ward”, whether she was in “active or latent phase” and if she had any “obstetrical risk factor” were dichotomy questions. The multiple response questions made it hard to determine if the questions was completely answered or if the participant forgot to encircle more alternatives than one. One way to avoid this is to measure each variable through a dichotomy question were they only can answer yes or no.

REFLECTION OF THE RESULT

Care in labour at Basaveshwar Hospital

In none of the 95 cases a five point Bologna Score was reached. The mean value was only 0,72 points, and 52,6 percent (n=50) scored nil on the Bologna Score. The mean value is considerably lower than mean values in Sweden and in eastern DR Congo where the mean Bologna Score was 3,73 respectively 1,95 (12, 13). None of the items scored one point in all of the questionnaires, which indicates that the management of labour was not consistent in the labour ward. This might reflect a more situation based management of labour than standardized management based on guidelines.

One of the items scored nil in all cases; the question about none-supine position. The labour room was quite small and up to six women could be admitted at the same time and the room was equipped with beds set up only for gynaecological examinations. These two factors contributed to the routine use of dorsal position during labour. Another contributing factor could have been the need to provide sufficient perineal support. Many of the primiparous women had an episiotomy, which also requires dorsal position. It is not possible to tell from the result whether the adoption for a supine position for birth was a decision of the doctor or of the woman herself.

The result from our study is in accordance with the result from Andersson and Yngfors study in a low-resource setting, where dorsal position also was used in all the deliveries (13). In the study in Sweden non-supine position was largely responsible for loss of points on the Bologna Score, and only 34 percent of the women gave in birth in a non-supine position. Sandin-Bojö and Kvist further believed that the birth attendant had a great influence on the woman regarding choice of birth position (12).

The benefits from using a non-supine position are many, but resent research has also shown that the incident of perineal tearing and haemorrhage > 500 ml are more likely to occur when giving birth in one of the none-supine positions (22). The high prevalence of anaemia in low-resource settings makes it a high priority to in all ways possible avoid haemorrhage in connection to childbirth (2). Iron-deficiency is the most widespread form of malnutrition in the world. In the state of Karnataka were Gulbarga is situated, 42 percent of the women are estimated to have some degree of anaemia (50). In this study anaemia was reported in 21,5 percent of the cases (n=130), and the health care professional awareness about the high prevalence and the risks associated with anaemia might be one contributing factor to the routine use of dorsal position.

All women except one were assisted by a skilled birth attendant and the birth attendant was in all cases a student doctor or a doctor. The high prevalence of skilled birth attendant's in this study is in accordance to what could be expected when women give birth in an institution and corresponds well with the recommendations from WHO (14). In the state of Karnataka about half of the women give birth in a health facility and 59 percent are attended by health professionals. When a woman gives birth without a skilled birth attendant she might be assisted by a traditional birth attendant (dia) or a relative or friend (50).

Presence of a skilled birth attendant is the single most effective way to prevent maternal deaths (14) and the maternal mortality ratio in India would surely decrease if a higher percentage of the women had institutional births (8). Considering the fact that in 70 percent of all deliveries with a completed questionnaire, the woman was diagnosed with having a high risk pregnancy, it is even more important that these women are attended by a skilled birth attendant. In many cases the doctor was assisted by an "aima" (helper) that to our knowledge is personnel without any health-care education. The "aima" supported the women in the second stage of labour and was often the one who gave fundal pressure. We believe that this might influence the medical security of the women as fundal pressure only should be applied by a skilled birth attendant (34).

WHO states that the goal for care in normal birth is to achieve a healthy mother and child using the least possible number of interventions compatible with safety (3). During the recent decades it has been an increase in the use of interventions used during labour and questions are raised about what interventions that can be included in the term "normal birth" (9). In 73 percent of the deliveries in our study at least one augmentation was used and in one fourth of the deliveries more than one augmentation was used. Artificial stimulation of labour was the most frequently used augmentation to accelerate the birth progress, as it was given in 33,7 percent of the deliveries. WHO's guidelines

for care in normal birth states that there is no clear evidence that liberal use of Oxytocin prevents prolonged labour in normal birth, but still it is the most common augmentation used in labour in many parts of the world (3). Similar prevalence in the use of Oxytocin as an augmentation was found in Sandin-Bojö and Kvist study in Sweden (12).

The use of fundal pressure to shorten the second stage of labour is common practise in many countries. It is known that fundal pressure increases the maternal discomfort, and there is suspicion that it may be harmful for the uterus, the perineum and the foetus; however no clear research data are available and fundal pressure should therefore be used with caution (3). Fundal pressure was used in almost one fourth of the deliveries in our study and it was most frequently given to the obstetrical primiparous women were the prevalence was 29,4 percent compared to 18,1 percent of the obstetrical multiparous women. The difference between these two groups was however not statistically significant (p=0,203). Overall augmentations were more frequently used among the obstetrical primiparous women, except for the use of artificial rupture of membranes where the numbers did not differ between primiparous women and multiparous women. Statistically significant differences were found between the obstetrical multiparous women and the obstetrical primiparous women in the use of artificial stimulation of labour and the caesarean section rate.

Compared to the study in Sweden where fundal pressure was used in 97 of 1436 deliveries (6,8%) (12), the numbers in our study was considerably high as it was given to one fourth of the women. The reasons for the liberal use of fundal pressure might be due to the lack of technology available for monitoring the condition of the foetus in this low-resource setting. Not being able to monitor the condition of the foetus can lead to the need for shortening the time for pushing efforts, as it is a critical part of the delivery. In the setting for this study there was no access to continuous foetal monitoring or foetal scalp blood examination and this might explain the active approach to the second stage of labour. Without possibilities to examine the condition of the baby, the use of augmentations and caesarean section might increase as a way to ensure the health of mother and baby when risk factors or complications occur.

The caesarean section rate in our study was 18,9 percent which is a lower number compared to the statistics from 2009 where the caesarean section rate was 36 percent at Basaveshwar hospital. The difference in the number of caesarean sections might be due to the small number of deliveries included in our study. Another possible reason could be that the participants were less likely to fill in a questionnaire in a stressful situation as an emergency caesarean section.

Even though the goal in normal birth is to strive for as few interventions as possible (3) there are situations where the indication for an intervention is unequivocal. For example abruptio placenta requires a caesarean section (24). In Bologna Score you will score nil if an augmentation or caesarean section has been used regardless of the situation. We question if the use of an augmentation necessarily indicate that a normal birth has not been managed in an evidence based way?

A partograph to follow the birth progress was used in only 9,5 percent of the deliveries. This can be assumed to be due to that this study was carried out in a low-resource setting with limited resources. However, in Andersson and Yngfors study that also took place in a low resource setting, a partograph was used in almost all of the deliveries (13). WHO promotes the use of a partograph in every delivery (3), but research has shown that there is no significant difference in the caesarean section rate, instrumental deliveries or Apgar score less than seven at five minutes in deliveries were a partograph has been used compared to when no partograph was used. Based on these results it is not possible to recommend routine use of a partograph (19). Even though a partograph was not used in the majority of the deliveries in our study, the birth progress was followed carefully by frequent observations and vaginal examinations that were documented in the patient files. This causes the need to consider if the partograph is the only evidence based way to follow the birth progress.

An episiotomy was performed in 40 percent of all the deliveries and among the obstetrical primiparous women 60 percent had an episiotomy. The reason for giving an episiotomy was according to the birth attendants that episiotomies would prevent irregular perineal tearing and rupture of the anal sphincter. Episiotomies were also a way of hastening the birth and prevent dystocia in the second stage of labour. The practising of episiotomies seemed to be a part of normal birth for a primiparous woman in this culture. This approach is not in accordance to the research that has shown that restrictive use of episiotomies has been proved to cause less severe perineal trauma and fewer healing complications compared to routine use of episiotomies (33).

One fifth of the women had presence of a companion during the delivery. The companion was in most cases the woman's mother or other relative. To our knowledge the husband of the woman was never present in the labour room. This can be explained by the fact that several women gave birth in the same room and no men were therefore allowed in the room. The overall low percentage of women that had a companion during labour was explained by the personnel to be due to the lack of space and the risk of interference with the labour progress. One possible reason that some women had a companion present could be that she was the only woman at that time in the labour room.

Considering the fact that no pharmacological analgesics were available, we believe that the presence of a companion might have been a good way to help the women cope with the pain during labour as research has found that women with support during labour are less likely to use analgesia or to report dissatisfaction with their childbirth experience (21).

Early skin-to–skin contact (STSC) between mother and baby was only practiced in 14,7 percent of the deliveries. The low prevalence of STSC might be caused by both the mother's and the health care professional's attitudes to the practise. It is known that strong cultural traditions and rituals surrounds the most important stages in life, such as childbirth (46) and it is possible that this is one contributing factor to why STSC is not practised in this setting. Some of the personnel mentioned the warm climate as a reason for not practising skin-to-skin contact and that same reason was mentioned in a study on STSC made in Uttar Pradesh, India (44). The personnel also stated that the mother needed to rest before she could take care of the baby and that it for this reason was better to give the baby to the relatives. Many of the women in our study did not want to have their baby skin-to-skin immediately after birth and for those who might have wanted to there was no personnel available to help them out.

We believe that education and awareness about the positive effects of early skin-to-skin contact is important for increasing the prevalence of STSC. As the care given in a specific setting exists within a culture that is shaped by economic, political, religious, psychological and biological conditions such education needs to be culturally appropriate and open to the specific attitudes and traditions that might affect the implementation of the practice.

The judgment of normal birth

The definition of normal birth differs between countries and regions, but the definition made by WHO might be the most commonly used worldwide (3) and it is also what the Bologna Score is based on (5). We find it unclear if the Bologna Score is supposed to only measure the management of "normal birth" as it is defined by the WHO. In the analysis of the Bologna Score, births that according to WHO are not considered as normal can still be included. As for example breech deliveries and twin deliveries can be included and it is not likely that they will be managed as normal births and they will therefore score low points at the Bologna Score. This might be one explanation to the overall high number of deliveries in our study that had at least one augmentation. The fact that obstetrical high risk women also can be included in the analysis would reasonably also contribute to the high number of augmentations in our study as almost three out of four were classified as obstetrical high risk pregnancies.

Deliveries where episiotomies and fundal pressure was used were in most cases judged as normal deliveries. According to WHO it is not clear if these practises are included in the definition of normal birth. The fact that episiotomy and fundal pressure was frequently used makes us assume that the most common practises also will be considered to be normal as the word normal often is interpreted as the most common (4). WHO's definition of normal birth includes that both mother and baby should be in good condition after birth (3). In half of the cases where mother or baby was not in good condition after birth the birth was still considered to be normal. The exact meaning of "good condition" is not defined and is probably interpreted in different ways by different birth attendants.

CONCLUSION

There were differences in the mean Bologna Score between this study and the two previous studies that used the Bologna Score to evaluate the management of normal labour. The low scores in this study indicate, according to the Bologna Score, that the management of labour was not evidence-based to a full extent. The Bologna Score only provides information about the five items included and gives no information about what else has been done in the management of the deliveries. This makes us question the validity of the instrument, and if these five questions really are covering the content area "management of care in labour". As the Bologna Score is based on the guidelines for care in normal birth, it is a threat to the usefulness of the instrument that complicated and high-risk deliveries can be included in the analysis. It is likely that this contributed to a lower mean Bologna Score in this study as more than half of the women had a high-risk pregnancy and therefore probably were more likely to give birth with augmentations. As a suggestion the Bologna Score can be complemented with a question that selects only low risk pregnancies in the further analysis of the management.

The Bologna Score was constructed with an intention to measure both the adoption of evidence-based care, the attitude of the health care professionals and to what extent women are involved in the care. After using the Bologna Score in a low-resource setting we believe that there is a risk that the tool, instead of measuring attitudes and evidence-based care, measures environmental limitations and lack of resources. Even though the usefulness of the Bologna Score can be questioned we find it important to have an international measurement tool for care in labour. We believe that research based on the Bologna Score can be a good foundation for further discussion and analysis of care in labour in a specific setting. However, it would be valuable to complement

the Bologna Score with qualitative research on the underlying causes to why evidence-based care is not implemented in a specific setting as the local practises likely are influenced by culture, believes and customs that are related to childbirth.

Preparation of this study, data collection, and analysis of the result has been done by the authors together and the work has been equally distributed. The text was composed by both authors that have worked together throughout the whole process.

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Appendix 1.

ASSESSMENT OF CARE IN LABOUR IN A DELIVERY WARD IN GULBARGA, INDIA

INFORMATION FOR RESEARCH PARTICIPANTS
skilled birth attendants/midwives/obstetricians attending the deliveries at Basaveshwar Teaching and General Hospital in Gulbarga

BACKGROUND AND PURPOSE

The objective of the care given during childbirth worldwide is to manage the health of the mother and child at all times. Care given during labour by a qualified attendant with midwifery skills is the single most effective way to make delivery safe for mother and child. The way care during labour is carried out and what is considered a "normal birth" vary a lot between different cultures. The guidelines for how deliveries should be managed in the best way are constantly changing as new evidence arises and more research is done.

The aim of this study is to assess how care in normal labour is managed at Basaveshwar Teaching and General Hospital in Gulbarga, India. This will be assessed by using a questionnaire about the management of the deliveries. Similar studies have been done in Sweden and in Congo.

STUDY METHOD

The study will take place at the delivery ward at Basaveshwar Hospital in Gulbarga, India, over a period of five weeks during October and November 2010. This study is a part of a larger study at the University of Gothenburg, Sweden. The participation in the study requires the completion of a questionnaire about the care of each woman in labour during this time period. The person who completes the questionnaire will be the skilled birth attendant attending the specific delivery.

ETHICAL CONSIDERATIONS

The participation in the study is voluntary and the questionnaires will be completed anonymously. At any time during the study the participants can without any reason withdraw from the study. The study has been approved by the Institution of Health and Care Science at the Sahlgrenska Academy at the University of Gothenburg. During the data collection process the authors will be available for any questions regarding the study. The aim is that the questionnaire will enable the professionals to evaluate themselves and identify strengths and possible weaknesses in the care of labouring women. By discussing and analysing the care given during labour, hopefully everyone involved will be inspired to develop and learn more about giving the best care.

TO OBTAIN INFORMATION ABOUT THE RESULT OF THE STUDY

The result of the study will be presented in a report at the University of Gothenburg. For any questions please contact the authors of the study.

Best regards

Midwifery students: Therese Bramer and Evelina Tordsson
Supervisor and responsible researcher: Marie Berg, midwife, Ass Professor in Caring sciences at University of Gothenburg, Institute of Health and science. marie.berg@gu.se
Local supervisor: Monica Raleigh, Principal at H.K.E.S College of Nursing, Gulbarga.

Appendix 2.

CONSENT FORM

ASSESSMENT OF CARE IN LABOUR IN A DELIVERY WARD IN GULBARGA, INDIA

I agree to take part in the study, "Assessment of care in labour in a delivery ward in Gulbarga, India" I am aware that my participation is voluntary and that I have the ability to terminate my participation at any time.

This document will be signed in two copies. I will keep one of the copies and the other one will be kept by the midwifery students, Therese Bramer and Evelina Tordsson who are implementing the study.

_____
Place and date

_____
Name

_____
Clarification of signature

Midwifery students: Therese Bramer (bramertherese@hotmail.com) and
Evelina Tordsson (evelina_t@hotmail.com)
Supervisor and responsible researchers: Marie Berg, midwife, Ass Professor in Caring sciences at University of Gothenburg, Institute of Health and science. marie.berg@gu.se
Local supervisor: Monica Raleigh, Principal at H.K.E.S College of Nursing, Gulbarga.

Appendix 3

A questionnaire on care in labour including the Bologna Score

1. The woman's age: .....

2. Gestational week:

a *Less than 37 weeks*
b *37 - 41+6 weeks*
c *More than 42 weeks*

3. Has the woman given birth vaginally before?

a *Yes*
b *No*

4. What level of education does the woman have (circle one alternative)?

a *Illiterate*
b *Primary School*
c *High School*
d *University*

5. **Did the woman receive maternity healthcare during her pregnancy?**

a *Yes*
b *No*

6. Circle the condition/s which describes the woman on arrival at the maternity ward:

a *gestational week 37-41+6*
b *singleton pregnancy*
c *baby in cephalic position*
d *normal fetal heart rate (110-150 beats per minute)*
e *spontaneous contractions or rupture of membranes with clear amniotic fluid*
f *diastolic blood pressure < 90mmHg*
g *previous still birth*
h *previous caesarean section*
i *previous haemorrhage >1000ml*
j *previous rupture of the anal sphincter*

7. Circle the condition/s which describes the woman when entering the maternity ward:

a *at least 2 contractions per 10 min*
b *spontaneous rupture of membranes*
c *cervix dilated 3cm or more*

8. Did the woman have any of the following obstetrical risk factors (circle the correct answer/s)?

a *breech presentation*
b *preeclampsia*
c *anaemia*
d *other obstetrical risk factor*

.....

9. Was an episiotomy performed?

a *Yes, please specify the reason*

.....
b *No*

10. Was the mother and baby healthy after birth?

a *Yes*
b *No, please specify*

.....

11. Was there a postpartum bleeding exceeding 500ml?

a *Yes*
b *No*

12. Were any interventions done to prevent a postpartum bleeding?

a *Yes, please specify*

.....
b *No*

13. Do you judge this delivery as ”normal”?

a *Yes*
b *No, please specify*

.....

”Bologna Score”

A Start of labour (circle one alternative):

a *Admitted in spontaneous labour*
b *Elective caesarean section*
c *Induction of labour*
d *Other, specify the reason*

.....

B Was the woman assisted by a ?

a *Midwife*
b *Student midwife*
c *Doctor*
d *Student doctor*
e *Other, namely*

.....

C1 Was the woman accompanied by a partner/relative or significant other?

a *Yes*
b *No*

C2 Was a partograph used to follow the birth progress?

a *Yes*
b *No*

C3 Circle the augmentations used during birth:

a *artificial stimulation of labour*
b *artificial rupture of membranes*
c *fundal pressure*
d *vacuum extraction*
e *caesarean section*

C4 Did the woman give birth either; sitting, kneeling, on all fours, standing or in lateral position?

a *Yes*
b *No*

C5 Was the baby placed skin-to-skin for at least 30 minutes within one hour after delivery?

a *Yes*
b *No, less than 30 minutes*
c *No, not at all*

Therese and health care personnel at the delivery ward

Evelina, doctors and aima at the delivery ward

Basaveshwar Teaching and General Hospital

Dr Abraham and his wife Muriel

Principal and tutors at H.K.E.S College of Nursing