Quality of Care in the maternal and delivery ward in rural Nepal

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Content

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Abstract

Background

This observational study was conducted at Okhaldhunga Community Hospital (OCH) in Nepal. The study evaluates quality of care (QoC) by observing routines and procedures in the labour ward and interviewing the mothers postpartum.

Methods

Non-participating observation and semi-structured interviews were conducted, as well as examination of health records in the form of antenatal cards and partograms. ANC-cards, partograms, hygiene, interventions, cord clamping, labour support and the women's qualitative experience were compared with the guidelines provided by the World Health Organization (WHO) and relevant literature.

Results

In the parameters antenatal care-cards and partograms, choice of birth companion and discomfort relief, QoC is satisfactory compared to WHO guidelines. The intervention parameter satisfied WHO guidelines, but study observations indicate room for improvement. Efforts are required to improve routines in hygiene, delay of chord clamping, communication and privacy.

Conclusion

Overall, the maternity health services at OCH provided QoC beyond expectations for such a remote health facility. OCH provides a high standard of care, both in terms of equipment and knowledge. Although the hospital does not completely live up to WHO's gold standard in all the parameters evaluated in this study, OCH has great potential for improvement with the implementation of proper measures.

Introduction

Quality of care (QoC) is defined as the extent to which health care services provided to individuals and patient populations improve desired health outcomes. In order to achieve this, health care needs to be safe, effective, timely, efficient, equitable, and people-centred.

In a global health setting, QoC is an increasingly important issue, both because QoC is important for patient outcomes and because high QoC attracts patients to the services.

The United Nation's fifth Millennium Developmental Goal (MDG) is to reduce maternal mortality. A step in this direction is through increasing the proportion of women who deliver in health facilities. As a result, a higher proportion of cases involving maternal mortality and morbidity will take place in hospitals, rather than in private homes. Therefore, poor QoC in facilities has become a leading barrier to the goal of reducing maternal mortality.

During the fifteen years after the MDGs were adopted by the United Nations, resources have been dedicated to increase skilled birth attendance (SBA). With progress in this area, the focus has now shifted towards QoC. QoC has an impact on whether and where women seek care. Women are willing to travel further to reach a clinic that provides better QoC and has a better reputation. Improving the QoC is therefore critical to improving women's health, increasing the use of maternal health services and effective use of resources.

This study attempts to evaluate some aspects of the QoC at Okhaldhunga Community Hospital (OCH), a rural district hospital in Nepal. Different parameters of care are selected and compared to WHO's guidelines to identify potential areas of improvement.

Background

Nepal

Nepal is a country located between the Tibetan part of China in the North and India at the southern, eastern and western borders. It consists of 75% mountains, including eight of the ten highest peaks in the world. In the South, near the Indian border, lies Terai from 180 to 360 meters above sea level. Variations in elevation and the subtropical latitude makes the climate vary from subtropical monsoon conditions in the Terai to an alpine climate in the mountains. Above 6.000 meters, the temperature is always below freezing level.

Okhaldhunga Community Hospital located in centre. Photo: Fredrik Skår.

Nepal has never been colonized, but has been influenced by India and Great Britain throughout the years. Run as a monarchy for centuries, a multiparty parliamentary system was established in 1991. A rebellion to remove the constitutional monarchy in 1996, led by the Maoist party, resulted in a civil war that lasted for 10 years. Mass protests by all the major political parties followed, finally leading to the 12-point agreement in 2005 where the "parties pledged to work towards democracy, peace, prosperity and social advancement and ending autocratic monarchy" (1). A harsh natural environment, political instability and low income has made Nepal one of the least developed countries in the world.

According to WHO's World Health Statistics in 2015, Nepal has a population of 27,8 million. This makes it the world's 50th most populous country (2). With an area of 147.180 square kilometres, Nepal has 191 inhabitants per square kilometre (3). As of today, 23,7% of the population is below the poverty threshold. 57% of those over 15 years-of-age can read and write, which is a positive development from past statistics (4). Life expectancy is 69 years, 70 for women and 68 for men (3).

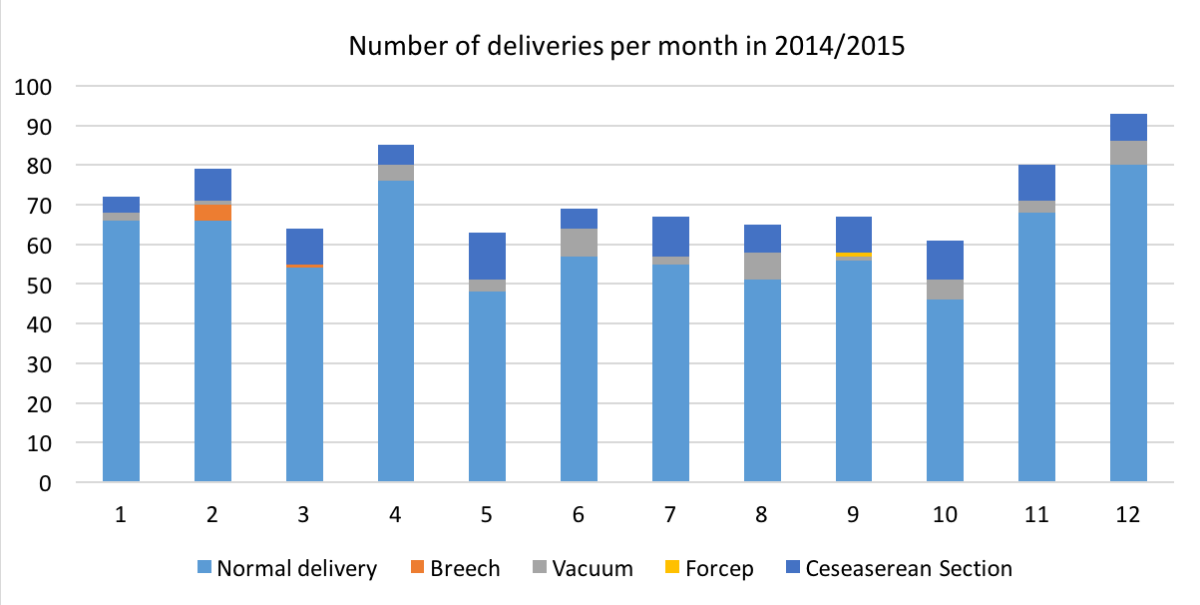
Like other developing countries, Nepal has transitioned into a period with decreasing mortality, but the birth rate is still relatively high. Population growth rate is currently 1,3% (4). This development has resulted in an increasing younger population, where 35% are under the age of 15. In comparison, 19% of Norway's population is in the same age group. Only 8 % of Nepal's population is over 60 years, Norway has 22% (4). The median age in Nepal in 2015 was 22 years. Increased survival has resulted in a gradual change in prevalence of different diseases, with an increase in non-communicable diseases in addition to the communicable diseases, thus creating a double burden. Non-communicable diseases as cause of death have now surpassed communicable diseases.

Okhaldhunga and Okhaldhunga Community Hospital

The district of Okhaldhunga is located in the North East of Nepal and has a population of approximately 160.000. The village of Okhaldhunga is located in the heart of the district, at about 1500 meters above sea level. At the border of this village, The United Mission to Nepal (UMN), an international missionary organization, has built the hospital Okhaldhunga Community Hospital (OCH). It covers the district's population, but also some of the neighbouring districts, resulting in a total patient population of 250.000 people. Officially, the hospital contains only 32 beds, but it expands its capacity to approximately 50 beds when needed. In 2016/2017, a new hospital will open, increasing the amount of beds and modernising the hospital.

Birth statistics at OCH

According to data collected at OCH, appendix A, 864 women gave birth at OCH in 2014. The total number of births in the population that the hospital covers is unknown, but the hospital estimates that approximately 50% give birth there. These numbers are similar to national statistics (5). The diagram below shows an overview of normal and operative deliveries taken place per month in the Nepali calendar [appendix A]. Of the 864 deliveries, 95 resulted in a Caesarean section (CS) (11%). Only one woman died in association with the delivery.



Staff

Because many health workers and others emigrate to other countries for better salary and conditions (also called brain drain), there is a huge demand for doctors in the country. OCH has one permanently employed doctor who is a missionary from UMN, Dr. Erik Bøhler. In addition, there are doctors completing part of their residency in a general practice specialty from three different hospitals. The purpose of the residency program is to educate doctors who can run a district hospital.

There are 15 so called nurses at the hospital, of which five have completed their nursing education. The rest are health care workers and "nurse aids". The latter do not have any formal nursing education, but many years of clinical experience within health care.

To become a midwife in Nepal it is not required to have nursing education. Those with a two-year education to become a health care worker and plenty of clinical practice are often referred to as midwives. These can later go on to become nurses or skilled birth attendants (SBAs). From now on, midwives will be used as a description for all of these workers.

Facility/conditions

OCH is a hospital in which the corridors are outside with door openings instead of insulated doors into the different wards. This, combined with its location 1600 meters above sea level, causes the temperatures inside the delivery room to reach five degrees Celsius in January. There is one small gas oven in the room that sometimes does not function or is turned on too late in the course of the delivery to make a difference. During night shifts, the oven is moved to the shift room, which potentially delays heating in the delivery room if a woman goes into labour. The oven increases the temperature up to approximately ten degrees Celsius, but the women remain exposed from their waist down and are often very cold. Many women wear a hat and socks, but often request blankets. However, appropriate body temperature of the newborn is ensured with a heating lamp above the neonatal bed where the baby is placed instantly. In addition, the newborn is wrapped in blankets and dressed in a hat to prevent heat loss. Equipment for deliveries and potential complications is available. Ultrasound and a handheld Doppler facilitate surveillance of the foetus.

Mother Waiting Home

Okhaldhunga is a unique hospital in that they have a Mother Waiting Home (MWH) accommodating women who travel from distant areas to stay at the hospital before delivery. In 2014, half of the women who gave birth had stayed at the MWH beforehand [appendix A]. Every day, the mothers are taught about labour, post-natal care, breastfeeding, nutrition and vaccination. The staff also arranges classes and discussions about ethics, how to handle complicated family situations, violence at home and future family planning. This is intended to benefit the woman and her family, as well as the local women in the villages through word of mouth upon return.

Birth companion

OCH is one of the few hospitals in Nepal where husbands are allowed to attend deliveries. Not only because it is a mission hospital with a more liberal hospital policy, but because the expectant mother home provides information about the husband's role during delivery and postnatal care. The staff encourages the husband to play an active role in order to help maintain their wives' emotional well-being. Traditionally, women have been assisted during

childbirth by a female friend, one of their in-laws or a neighbour. According to a qualitative study conducted at a public hospital in Kathmandu (6), they found that "The husband's presence inside the delivery room is culturally discouraged because there is a belief that his presence will make labour pain worse and prolong the labour".

The most prominent barriers to male involvement in maternal health include low levels of knowledge, social stigma, shyness/embarrassment and job responsibilities (6). Presence at the hospital is a time cost for the patient party. This reflects cost of time spent in the hospital that otherwise could have been used for generating income or taking care of duties at home. Time cost is a major factor for both the women and family members who choose to come to the hospital, especially husbands who often are the main source of income. This is a barrier for many men in poor families who are prevented from taking part in the delivery.
(6)

Maternal mortality

According to WHO (7), 289.000 women died of maternal causes in 2013, which means a daily death rate of 800 women. 99% of these deaths happen in developing countries, highest in the Sub-Saharan Africa and the South of Asia. The risk of dying during pregnancy in a developing country is 23 times higher than in a developed one (7). The risk largely depends on wealth and urbanization, both within and across countries.

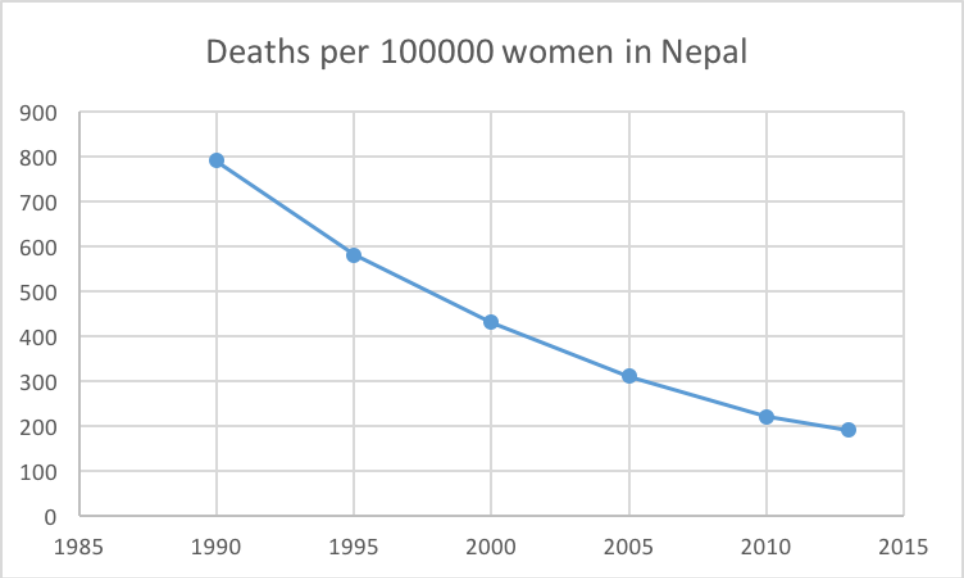
WHO lists major complications that account for nearly 75% of all maternal deaths (7):
- severe bleeding (mostly bleeding after childbirth)
- infections (usually after childbirth)
- high blood pressure (BP) during pregnancy (pre-eclampsia and eclampsia)
- complications from delivery
- unsafe abortion

These complications can be avoided by giving women adequate antenatal care, skilled care during labour and care after the baby is born. Therefore, the issue has been adopted as one of the eight Millennium Development Goals (MDGs). These are goals derived from The United Nations Millennium Declaration, signed in September 2000, which commits world leaders to combat poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women. Each MDG has targets set for 2015 and indicators to monitor progress from 1990 levels. Several of these relate directly to health (8). The goals concerning maternal health are:
- Target 5.A. Reduce the maternal mortality ratio by three quarters, between 1990 and 2015
- Target 5.B. Achieve universal access to reproductive health by 2015

A systematic analysis published in the Lancet (9) finds that only 16 countries will achieve the goal of reducing maternal mortality rates (MMR) by three quarters. As of 2013, the decline is only 45% (7). This is a step in the right direction, but reducing MMR further is achievable. Only one third of women in low-income countries have the recommended four antenatal care visits and 68% receive skilled care during childbirth in 2012 compared to only 56 % in 1990 (10). The United Nations have also brought maternal health into the sustainable development goals (SDGs) and postulated that by the year 2030 MMR should be less than 70 per 100 000 live births (11).

Maternal Mortality in Nepal

Even though maternal mortality in Nepal has decreased over the past 25 years, it is still high compared to the rest of the world. In 2013, maternal mortality in Nepal was estimated to 190 per 100 000 women giving birth, while in 1990 it was 790 per 100 000 (3). The government issued short- and long-term strategies in 2006 to ensure maternal health by increasing capacity of education programs for SBAs. They were then deployed to the districts to obtain recognition as health professionals from the local communities. It also formulated a national delivery policy free-of-charge (7). In spite of these efforts, only 56% of women in Nepal gave birth with a SBA present in 2014 (5).



Quality of Care (QoC)

Quality is subjective, and thus there are multiple definitions that provide the basics. According to the Institute of Medicine (IOM) (12), QoC is defined as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes, and are consistent with current professional knowledge. The IOM definition is complex, but focuses on three key components of quality: clinical, interpersonal and contextual. In IOM's report from 2001 (12), the key components are described as:

- *Safe* – delivering health care which minimizes risks and harm to service users, including avoiding preventable injuries and reducing medical errors.
- *Effective* - providing services based on scientific knowledge and evidence-based guidelines.
- *Patient-centred* - providing care which takes into account the preferences and aspirations of individual service users and the cultures of their communities.
- *Timely* - reducing delays in providing/receiving health care
- *Efficient* - delivering health care in a manner which maximizes resource use and avoids wastage
- *Equitable* - delivering health care which does not vary in quality because of personal characteristics such as gender, race, ethnicity, geographical location and socioeconomic status.

Types of QoC-measures

QoC is a multi-dimensional concept. A framework is therefore required, including important domains of measurement and pathways to achieve the desired health outcomes. These are used to identify the action points to improve QoC (10).

Although agreement about the need for quality improvement in health care is almost universal, the means of achieving effective improvement in overall care is not well understood. Avedis Donabedian was a pioneer in the field of health-care quality and developed a basic framework for quality-improvement efforts.

Donabedian defined the health care triad of structure, process and outcome (13). Structure refers to the physical and organizational characteristics where health care occurs. Process refers to the care delivered to patients (for example services or treatments). Outcome refers to the effect of health care on the status of patients and populations.

Since this model was proposed in 1988, WHO and others have developed and applied this model by using for instance different elements from the provision and experience of care provided in the facilities integral to maternal care.

According to a WHO report from 2015 (10), "Building on these developments, the framework conceptualizes QoC for maternal and newborn health by identifying domains of QoC which should be targeted to assess, improve and monitor care. Health systems create the structure which enable access to quality care and allows for the process of care to occur along two important and interlinked dimensions of provision and experience of care."

Based on this framework, QoC for pregnant women in facilities requires competent and motivated human resources and the availability of essential physical resources. In addition, evidence-based practices for routine and emergency care, information systems with adequate record keeping, and functional referral systems between levels of care are also required. The patient's experience of care includes firstly effective communication. A woman and her family should feel that she understands what is happening, what to expect and what her rights are. Secondly, she should receive care with respect and dignity. Thirdly, she should have access to the social and emotional support of her choice. (10).

Why is QoC important?

With increased use of health services, a higher proportion of avoidable maternal mortality and morbidity takes place in facilities. Therefore, poor QoC in facilities has become a leading barrier to the MDG of reducing maternal mortality.

A WHO report from 2015 (10) about QoC for pregnant women and newborns states that "QoC during childbirth in health facilities reflects the available physical infrastructure, supplies, management, and human resources with the knowledge, skills and capacity to deal with pregnancy and childbirth… Research shows that it is necessary to go beyond maximising coverage of essential interventions to accelerate reductions in maternal and perinatal mortality and severe morbidity" (10).

During the first fifteen years after the MDGs were adopted, resources have been dedicated to increase SBAs. With progress in this area, the focus has now shifted towards QoC. WHO's

goal changed in 2015 to a vision of a world where every pregnant woman receives quality care throughout pregnancy, birth and postnatal period (10).

QoC has an impact on whether and where women seek care. According to WHO report from 2015 (10) “Perspectives of women, their families and communities, on the quality of maternity care services influence decisions to seek care and are essential components for creating a demand for and access to quality maternal and newborn services.” Women are willing to travel further to reach a clinic that provides better quality care and that has a better reputation. Improving the QoC is therefore critical to improving women's health, increasing the use of maternal health services and using the resources effectively (14).

Choice of Scientific Method

QoC Assessment

The concept of QoC is normative. To measure the QoC, standards are required to objectify observations. Quality of clinical and contextual care can be evaluated using evidence-based guidelines. However, creating standards for interpersonal care respecting patient's preferences, needs and values – is more difficult due to subjectivity.

According to WHO's practical guide "Care in Normal Birth" (14), QoC in a normal birth is manyfold:

- Support of the woman and her patient party during labour, delivery and the period after
- Observation of the woman and foetus, to monitor the progression of labour and detect risk factors / problems early
- Performing minor interventions if indicated
- Taking appropriate action if there are complications

The QoC is also reliant on having sufficient equipment and qualified caregivers. The aim of high quality is to maintain a healthy mother and child throughout labour.

In 2009 WHO Europe created an assessment tool for perinatal health care to identify areas for improvement: "Quality of hospital care for mothers and newborn babies" (QoMNC) (15). Among other things, the assessment tool can be used in a single facility for a pilot program of quality improvement. This is contrary to using the assessment as a country-wide tool assessing all or a sample of hospitals, to monitor the current situation and possible improvements. Although this assessment tool is created by WHO Europe, the items included to evaluate the quality are flexible, by allowing the assessors to add or delete priorities and adapt to the hospital/country's local needs and resources. QoMNC is based on WHO international guidelines, outlined in "Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for essential practice» (16).

The QoMNC assessment tool and WHO general guidelines are quite extensive. Therefore, this paper focuses on selected areas of interest based on plausible parameters to assess at OCH.

To evaluate QoC at OCH, the parameters chosen should reflect the available resources at the OCH labour ward as well as WHO's gold standard for care in normal births.

The following parameters were therefore selected:

Selected parameter	Description and grounds for selection
ANC-cards	The use of antenatal care-cards (ANC-cards), or other forms that document care before birth, to monitor pregnancy and detect early complications. ANC prepares the woman (and father) for their role as parents and links the family with the health system from an early stage, increasing the likelihood of using a SBA and good health in the future. (17)
Partogram	The use of partograms to monitor labour, detect early complications in labour and when to intervene. WHO recommends its use as a necessary tool in management of labour (18).
Hygiene	The hygienic routines among staff and maintaining sterile equipment. Good hygiene is important to prevent nosocomial infections.
Interventions	Interventions such as oxytocin, episiotomies and CS. To prevent mother and newborn morbidity and mortality when complications occur.
Cord clamping	Time of cord clamping. Delay can prevent iron deficiency anaemia, which is a problem in developing countries where iron sources can be sparse.
Labour support and the women's qualitative experience	To improve women's health and increase the use of maternal health services it is important to support them and ensure a good experience by choice of birth companion, discomfort relief, patient communication and privacy.

The selected parameters above are also included in WHO guidelines, with the exception of interventions such as oxytocin and CS.

To measure the selected parameters, the study has adopted parts of WHO guidelines as listed below:

Parameter	**Guideline**
ANC-cards (16)	Use the pregnancy status and birth plan chart to ask the woman about her present pregnancy status, history of previous pregnancies, and check her for general danger signs.

Partograms (15)	• Partogram is used.
	• Partogram is properly recorded and placed at the bedside.
	• Following data are properly measured and recorded:
	  • Patient information
	  • Foetal hearth rate
	  • Moulding
	  • Cervical dilatation
	  • Descent of head
	  • Time
	  • Uterine contractions
	  • Oxytocin, drugs, intravenous (IV) fluids
	  • Maternal BP, temperature, pulse, urine
	• The use of partogram supports labour management interventions.
	• Partogram information is collected, recorded and interpreted by the midwife.

Hygiene (15, 16)	Use of gloves
	• Wear sterile or highly disinfected gloves when performing vaginal examination, delivery, cord cutting, repair of episiotomy or tear, blood drawing.
	• Wear clean gloves when:
	  • Handling and cleaning instruments
	  • Handling contaminated waste
	  • Cleaning blood and body fluid spills
	• Wear gloves; cover any cuts, abrasions or broken skin with a waterproof bandage; take care when handling any sharp instruments (use good light); and practice safe sharps disposal.
	• Wear a long apron made from plastic or other fluid resistant material, and shoes.

Episiotomy (16)	• Episiotomy is not routinely performed (only if foetal distress/operative delivery). • Anaesthesia is given for episiotomy. • Episiotomy/tears are repaired with local anaesthesia.
Cord clamping (19)	Umbilical cord clamping (not earlier than 1 min after birth) is recommended for improved maternal and infant health and nutrition outcomes.

Labour support and the Women's Qualitative Experience (15, 16)	• Provide a supportive, encouraging atmosphere for birth, respectful of the woman's wishes. • Family members allowed to remain with women constantly during labour and birth.

Birth Companion (16)	• Encourage support from the chosen birth companion throughout labour.
	• Describe to the birth companion what she or he should do:
	  • Always be with the woman.
	  • Encourage her.
	  • Help her to breathe and relax.
	  • Rub/massage her back, wipe her brow with a wet cloth, do other supportive actions.
	  • Give support using local practices which do not disturb labour or delivery.
	  • Encourage woman to move around freely as she wishes and to adopt the position of her choice.
	  • Encourage her to drink fluids and eat as she wishes.
	  • Assist her to the toilet as needed.

Discomfort relief (16)	• Suggest change of position.
	• Encourage mobility, as comfortable for her.
	• Encourage companion to:
	  • massage the woman's back if she finds this helpful
	  • hold the woman's hand and sponge her face between contractions
	• Encourage the woman to walk around freely during the first stage of labour.
	• Support the woman's choice of position for each stage of labour and delivery.

Patient communication (16)	• Explain all procedures, seek permission, and discuss findings with the woman. • Keep her informed about the progress of labour. • Praise her, encourage and reassure her that things are going well. • Suggest change of position. • Encourage mobility, as comfortable for her.
Privacy (15)	• Ensure and respect privacy during examinations and discussions. • Ensure a private place for the examination and counselling. • Ensure, when discussing sensitive subjects, that you cannot be overheard. • Organize the examination area so that, during examination, the woman is protected from the view of other people (curtain, screen, wall).

General method

The objective of this study was to evaluate the QoC at OCH. The selected methods for data collection should support the goal of the enquiry.

Several different methods can be used to complement each other. Examples are observation, interviews, questionnaires, testing and past records. In this study, a combination of observation of routines and procedures in the labour ward, semi-structured interviews of postpartum mothers and health records such as ANC-cards and partograms were selected.

Parameter	**Selected methodology (observation, semi-structured interviews or health records)**	**Quantitative vs qualitative**
ANC-cards	Health records	Quantitative
Partograms	Observation and health records	Quantitative and qualitative
Hygiene	Observation	Quantitative and qualitative
Interventions	Observation	Quantitative
Cord clamping	Observation	Quantitative
Labour support and the women's qualitative experience	Observation and semi-structured interviews	Quantitative and qualitative

In "Social science methods for research on sexual and reproductive health" (20), WHO describes that "Observation involves systematically watching people and events to find out about behaviour and interaction in natural environments. Direct observation can be applied in a structured manner to the analysis of specific situations and interactions. In the present context, such structured observational techniques are most useful for investigation of client-provider interactions."

Clinic-based observation differs from participant observation in that the observer's aim is to be as neutral and unobtrusive as possible, without interfering with the environment. Even though the presence of an observer is likely to cause some changes in behaviour, it is not easy to maintain artificial standards of behaviour over longer periods. This initial contamination is unlikely to persist when the clinic staff becomes used to and comfortable with the presence of an observer.

Detailed method

During our four-week stay at OCH in January 2014, we focused on different routines in the delivery room, how unexpected complications were handled, in addition to women´s own experience in labour. We wanted to get an impression of how the midwives worked in their natural environment.

Before our arrival, we exchanged emails with Dr. Bøhler discussing topics that would be plausible to base a study on at OCH. Because of the small size of the hospital and short duration of our stay, we had to focus on an event that happened frequently. We had expressed our interest in obstetrics, so he suggested focusing on normal deliveries. Our goal was to attend 30 deliveries, which would be satisfactory for a quantitative study if we supplemented it with a qualitative component. We discussed with both our supervisor, Johanne Sundby, and Dr. Bøhler about the number of deliveries needed to be included in our study to yield reliable data. As a pilot study intended to evaluate the feasibility, time and adverse events in an attempt to predict the sample size and improve upon the study design before carrying out a full scale study, this amount is acceptable (21). Dr. Bøhler briefed us on the conditions and aspects of a delivery that would be interesting to observe more closely at OCH. In addition, we discussed with Johanne about what kind of standard to compare our observations with. On this background, we prepared a list of aspects of a delivery we could observe and questions to ask the women after the delivery. These were evaluated and revised several times based on discussions with both supervisors.

We started our study the first day after our arrival at the hospital. During the daytime we stopped by the delivery room, and if there was a woman in labour, we would check in more frequently. We tried to be present for all cervical examinations and recordings on the partogram. However, if we missed out, we would have the midwives explain their findings. Only the examinations we observed were used in the qualitative component of our study with the exception of partogram recordings.

We stayed in the guest house, located a one-minute walk from the delivery room. This made us very flexible and increased the likelihood of making it on time to attend all deliveries. Contrary to staying up all night on shifts, we gave our phone number to the midwives on call and asked them to contact us if a woman in labour came in or if one who was already in labour was progressing towards delivery. If there was one or more women who were in labour during our final check up before bed, we would both stay up. This was because we both wanted to attend all deliveries to improve the accuracy of our observations. However, if for example the woman was a primigravida and less than five centimetres dilated, we would ask the midwives to call us when she was eight centimetres. Throughout our stay, we connected better with the midwives, which improved the likelihood of them calling us.

If we had not already recorded our observations from the ANC-card, we would do this when a woman came for her first check-up after labour had started. We asked the midwives when we had questions about symbols, language and penmanship. We recorded our observations on our checklist. A blank copy of this checklist can be found in appendix B.

After attending all cervical examinations possible during the active phase of labour, we remained in the delivery room so we could observe the whole second and third stage of labour. During this time, we would stand in the background and observe, trying not to intervene. We tried to record our observations outside the delivery room immediately after labour, but sometimes we would take quick notes on a pad or communicate them with each other discreetly inside.

If two deliveries took place simultaneously, we were forced to observe one each. However, since both delivery beds were in the same room without curtains, we were in most cases able to “swap over” and both of us observe in the most critical periods (for example when

carrying out essential hygienic routines, the head was crowning, cord clamping, potential complications etc.).

In some cases, for example when there was a multipara, labour progressed very quickly and we either observed only the last stage of labour or the first couple of cervical examinations (to observe hygienic routines, record ANC and partogram). These observations were still included in our study, despite being incomplete.

Observation of Deliveries

During our stay, we spent as much time as possible in the labour ward/delivery room to gain first hand information by direct observation. We had prepared a detailed checklist to record our observations. Part of the checklist was organized to easily record observations as checks or numbers. For instance, the parameters included on the ANC-card and seconds passed from delivery till the cord was clamped. In the first case, a list of the standard parameters and tests was prepared and a check was entered for those observed on the ANC card. In the latter case, the delay was timed and different time intervals were ticked. This type of structured observation yielded quantitative data. As a supplement, we observed the more qualitative aspect of client-provider interaction. With this method, our focus was both what was said and done as well as non-verbal behaviour.

After having observed a few deliveries, the checklist was modified to accommodate realistic and plausible observation parameters. For instance, we added simple observations such as whether local anaesthesia was used and if an episiotomy was carried out. Since the duration of the labour process can vary greatly, we were not always able to attend the whole active stage of labour. This gave us differing amounts of time to reflect upon and record our observations. In addition, some of the women ended up with a CS after many hours without progress. In these cases, we were unable to observe all our checkpoints.

We wanted our results to reflect how the midwives work on a daily basis in their natural environment. We therefore refrained from bringing the chart into the delivery room so that the midwives would not feel as if they were being evaluated. The midwives were informed that we were at the hospital to observe and learn, not evaluate. If we asked questions, they were intended to confirm our observations, not question their routines. We spent waiting time asking the midwives and doctors about their backgrounds. This was a useful way to get an impression of the different levels of qualification and experience, in addition to how the midwife/birth attendant education is organized in the district communities in Nepal.

Semi-structured interviews with the mothers

To learn about the women's motivation, beliefs, values and background, a semi-structured survey interview was performed. This combined aspects of a structured survey and an in-depth interview. Standardized questions were specified in advance on an interview questionnaire. We did not collect the women's medical history, only the opinions of receiving care. The questions, which are found in appendix C, were intended to get an impression of the mother's experience during the delivery and her stay at the hospital.

After having observed a delivery, we interviewed the mothers either the same or following day with the help of an interpreter. The interpreter was a 23-year-old Nepali woman who had

grown up in Okhaldhunga and now studied journalism in Kathmandu. She was available during our whole stay at most times of the day, which enabled us to interview the majority of the women, independent of the time of their departure after the delivery. She had some experience translating from previous students who had conducted studies at OCH. We recorded the interviews by taking field-notes during the interview, but wrote them out after the interview while we still remembered key facts and phrases, as well as non-verbal reactions.

Before arriving at the hospital, we had compiled a list of topics based on our study's objective and discussed them with our supervisor in Norway and the head doctor at the hospital. After receiving input, we prepared a first draft of the questionnaire, and conducted pilot interviews. The culture in Nepal is different from ours. We therefore found it challenging to find understandable and adequate questions to fit the local situation. Several of the questions we asked had to be modified, either because the mothers were hesitant to answer or because they did not understand. These first couple of pilot interviews helped us get an impression of the kinds of questions that were worthwhile including and how to formulate them in an appropriate manner. Some questions were completely omitted, others were edited based on the response from the women. We included the answers from the pilot interviews in the study, even though these responses were not as elaborate.

Our goal was to obtain comparable data from the respondents by minimising the variability of the interview situation. This required the questions to be asked and formulated in an as similar manner as possible in each interview and that social and geographical setting of interviews be similar. The majority of the interviews were conducted bedside in the labour ward, to increase the likelihood of their participation. This was also the only suitable location. Most often the patient party (mother, sister, mother-in-law, sometimes even the father) were present, in addition to other patients who were laying in nearby beds with their patient party.

After having prepared the interpreter beforehand, we asked the questions directly to the women in English to ensure an as accurate as possible translation and use of culturally suited words. As we adapted to the situation, there were slight differences between the interviews. We therefore asked additional questions when we had made certain observations during the delivery. However, our questions were made as basic and standard as possible. Some women who were asked to participate did not have time to be interviewed, but none refused to join the study. The interviews lasted from 10-25 minutes and the women were informed beforehand that the information they gave was anonymous.

Health Records

To obtain data about antenatal care and documentation of labour progress, we evaluated ANC records the women carried, in addition to the partograms used during labour.

ANC card

The patients themselves are responsible for safekeeping of their own ANC card and bringing it to the hospital at OCH. Even though the ANC records were in different forms and quality, we extracted more or less the same information to ensure comparability. A copy of the hospital's ANC-card can be found in appendix D. Many of the women in the study had incomplete data, but they were not excluded from the study. We obtained these records by asking the midwives and then carried out a secondary data analysis. When the delivery had happened in a hurry or it was forgotten and the midwives had not received the records, we

asked the women if they were keeping them with their personal belongings or if they had forgotten them at home. We chose to evaluate number of antenatal visits, type of document, symphysis-fundus measurement (SF-measurement), auscultation of heart and lungs, BP, protein in urine, oedema, haematocrit (HCT) and syphilis test. HIV-test was not included because it was not part of the standard tests.

Partograms

The partograms used at OCH were comparable to those used in Western countries based on WHO criteria as seen in appendix E. We evaluated the partograms by asking the midwife if we could first look at them by ourselves, taking notes on what had been recorded so far, and then taking a final look after the delivery had taken place to evaluate the completeness. Sometimes clarification was needed if certain values were left out or difficult to understand. We evaluated how completely the partograms were filled out, both information about the women and more importantly the progress (graph) and vitals throughout the labour process. In addition, we evaluated how actively they were used during labour. In order to evaluate the partograms, we sometimes had to ask the midwives if their decision to use for example oxytocin was based on the partogram or their own clinical opinion. We also observed whether the partogram was filled out frequently, and whether it was filled out during labour or after the delivery of the baby.

Results

This section covers quantitative and qualitative results for the selected parameters. The size and composition of the study population is also included.

Study population

The age of the 30 women giving birth in January 2014 ranged from 17 to 32. Four were of an unknown age. The median age was 21,5, whilst the average age was 22,3.

ANC-cards

13 out of the 30 women had ANC-cards with them.

Median number of ANC-visits was three times during the pregnancy. We realized after a while that some of the women had journals/records with the same information as others had in their ANC-cards. 17 out of the 18 we observed from that point and on had journals with them. This means that some of the women with ANC-cards also had journals. Out of the observed parameters, SF-measurement and BP/protein/oedema had been monitored in 26 out of 30 cases (86,7%). Auscultation of foetal heart sound and HCT-measurement were monitored for 25 out of 30 women (83,3 %). Syphilis was checked for in 23 out of 30 cases (76,7 %).

Partograms

The partograms were always brought to the delivery room, and filled out in 27 out of 30 cases. 26 of these were completed during the delivery, only one afterwards.

Hygiene

Gloves were worn by personnel in all except one of the observed deliveries, but need for improvement varied between different midwives and doctors. In the two cases where we observed doctors, it was noted that their hygiene level was poorer compared with the midwives. For example, the doctor once had to check the anal sphincter tone after a tear. He placed a clean glove over the one he had already used for a vaginal exam, but after the tone was evaluated to be normal, he did not take the contaminated glove off before going on to suturing. There was an unwritten rule that elbows were to be used to push away the women's thighs etc. when using sterile gloves. Elbows alone were used in three out of 30 cases, while elbows in combination with either wrists or hands were used in ten. Wrists alone were used in two cases and together with hands in three. In nine cases, only one glove was used, or it is unknown whether they used elbows, wrists or hands. In the seventeen cases where it was preferable to change gloves, it was only done in four. A couple of the midwives found techniques to avoid changing gloves, for example by using the glove wrapper to hold the foetal heart rate monitor.

The sterile equipment was packed in a package together with sterile sheets and placed on a trolley at the beginning of every delivery. It was not opened until the active phase, but often this phase could be prolonged and the equipment was exposed to contamination. This was

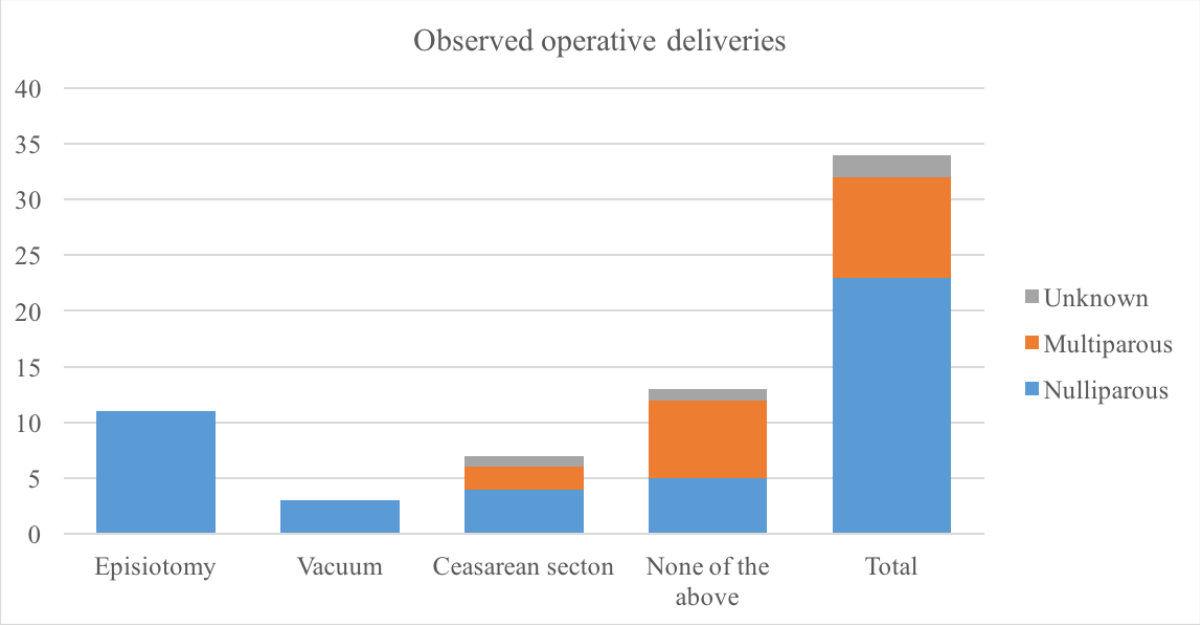
often solved by putting a clean sheet over the trolley. There were times when the trolley was placed so close to the delivery bed that the woman's feet touched it. A used catheter was frequently placed on the trolley together with unused equipment, instead of in the sink behind the midwife. Sterile equipment stayed sterile in 15 out of 26 cases. Two cases are unknown.

Gloves were not always changed before starting to suture tears or episiotomies. The midwives used sterile equipment and other assistants gave them suture thread in a sterile manner, but it got contaminated by the dirty gloves.

There was a safe disposal for sharp objects routinely in use. Medical personnel had aprons available if necessary. These were predominantly used for every delivery. The main apron section was made of cotton and not washed after each delivery. There were plastic aprons available, used on random occasions. These were seldom cleaned.

Intervention

Oxytocin was a frequently used intervention, used in 19 out of 30 cases. Six cases are unknown. The section in the partograms for oxytocin had notes for almost all the women. An episiotomy was performed in 11 of 30 cases (36%). In seven of these cases, the patients were given anaesthesia before the procedure. CS were performed in 7 of the 30 observed cases. Of these seven, four were nulliparous and two multiparous. Three women went through a vacuum extraction, but one of these had a CS afterwards. More than one intervention was performed on some women. Only 13 went through labour without any instrumental intervention (see diagram below).



Cord clamping

Of the 23 women we observed with vaginal delivery, three newborns had the umbilical cord around their necks and the cord was clamped immediately. Of the remaining 20 women, all cords were clamped within a timespan of zero to 50 seconds after delivery. The median time was 14 seconds after delivery, while the average time was 19,8 seconds. One case was not

timed. We did not time the cord clamping after a CS because they cut the cord directly after delivery in every case.

Labour support and experience of care

Birth Companion

The women who had stayed at the waiting home with their husbands were usually the ones to have their husbands present during labour. These women all said it was a positive experience and that they felt well taken care of both emotionally and physically. We were told that at OCH, the midwives themselves were allowed to control who was to be present in the delivery room. Therefore, those who were more of the traditional kind sent their husbands out, even though some of these women wanted him there. In some cases, it was the mother or mother-in-law who made decisions and the women obeyed their elder.

The majority of women in our study had one or several family members and/or close friends present. The mother-in-law was as common as the woman's own mother. In the deliveries where the husband was present, he had gotten time off from work and was more flexible.

Patient Party	Number of women
Husband	5
Mother-in-law	5
Mother	5
Other relatives/friends	7
No one present	4
Unknown to researchers	5

Discomfort Relief

In addition to vaginal examinations and listening for the foetal heart sound, the midwives would make sure the women were properly cared for unless the family wanted to accommodate these needs. This included fetching water, juice and tea, giving physical comfort by holding/stroking their hands and back, and removing clothing as needed. When a seemingly inexperienced family member was present, including the husband, the midwives would often encourage the companion to assist with these comforting measures. If the women had stayed at the MWH, they would be encouraged to use the breathing and pushing techniques they had learned during their stay. If the women were not prepared beforehand, it would be harder to instruct them since they had no previous knowledge or training. They would nevertheless be encouraged when to push and for how long.

The midwives would also help the women obtain a suitable position by placing pillows under their backs and helping them move further up in the bed. During first stage of labour they would encourage the women to walk around freely rather than immobilize them. However, when the women had arrived in the delivery room for active stage, they would not give information about different kinds of positions, for instance standing upright with support, squatting or other options for each stage of labour and delivery. Thus, the women really did not have a choice as to how they would like to give birth. Besides following normal procedures and what is most convenient for the midwives, this can be explained by the

limited space in the delivery room and that the women either do not want to be rude and object or do not know of other and possibly better positions.

Patient Communication

Explaining labour progress verbally

The fact that OCH had a MWH laid a good foundation for those who had spent several days there and in turn seemed to make communication during labour easier. This was particularly useful for primigravidae, who were not familiar with the situation other than what they had been told by family members. Another benefit was that the women had gotten to know several of the staff members and therefore felt safe from the beginning of labour. They were informed about when to seek medical help and prepared for the long wait. Even though the same midwives were not necessarily present during the whole labour, some would stop by and spend time encouraging these women. They had a better understanding of how the hospital worked, in comparison to women who arrived the same day as delivery and had no time to adjust to the new environment.

After the women had been examined upon admission, there was in general good contact between the midwife and woman. However, this depended on how much activity there was in the ward, the woman's amount of pain and whether the woman's family could adequately take care of her needs. The midwives would give psychological support by motivating and confirming that they were in a safe place where any complications can be taken care of.

There were, however, differences between the midwives. The majority had a calm tone and would make great effort to comfort the women, but others could at times have a more agitated tone as if they were annoyed by the women's complaining of the pain and not doing as they were expected. This was hard to judge since the Nepali language in general has an upbeat and quicker flow. The women who had stayed at the waiting home seemed in general more prepared and comfortable. Since they had attended lessons about the labour process - how and when to push, breathe and what to expect of discomfort, they had a pre-existing understanding of the labour process and therefore an easier time following instructions.

When there were two or more women in the active stage at the same time, it was a big challenge for the midwives to provide good enough care to all of them. For example, when both beds in the delivery room were occupied by two women pushing, there was a third woman crawling on all fours in the ward begging for help. She was given a bed in the minor surgical room and was not yet fully dilated, therefore the midwives were unable to comfort her while simultaneously delivering two babies. The third woman was clearly desperate and not given enough information, as there was no capacity to help her. She was treated in a strict manner, as if she was an impatient child who could not wait her turn. It should be noted that this was an exception from the usual. When the two woman giving birth had delivered, the third woman was of course given full attention.

One of the most serious deviations from the staff's usual caring attitude was when a woman giving birth was pushing in an inefficient way by squeezing her neck downwards instead of using abdominal pressure. The midwife and doctor who were present commented that the woman's facial expression was amusing, causing them to start laughing. When interviewing the woman postpartum, she did not complain about her treatment initially, but when asked directly about the incident she was clearly upset about the staff´s behaviour. This shows complete lack of respect for the patient in addition to poor communication. Instead of turning

her into a farce, the midwife could instead have instructed her how to push. Although this was an exception from our other observations, the doctors talked "over" the patients' heads often, excluding them from discussions of findings and treatment.

Explaining procedures and information about labour progress
Since the majority of the women giving birth were primigravidae, the active phase of labour was often prolonged and therefore needed to be induced by the use of IV oxytocin. Both the partogram and the midwives' clinical experience were used to evaluate when this became necessary. The women were rarely kept informed that the purpose of the IV is to strengthen the contractions. Less than half of the women in the study resorted to assuming that the IV was given to either speed up the labour process or provide them with more energy. In addition, some of the women were completely unaware of why they were administered an IV. In other words, they had to speculate and assume the IV was given to help them.

Because our translator was not present during labour and delivery, we had to rely on information we received in interviews with the women the following day.

Information about oxytocin	**Number of women**
Yes, the right information	5
Yes, but the wrong information	4
No info	7
Not asked	3
Unknown from answer	2

Other relatively normal complications such as first and second degree tears were routinely sutured. Since staff began suturing immediately, women were rarely informed as to why. Additionally, the women were usually too exhausted to pay much attention to what was happening to them. The women who received episiotomies were not informed about the technical procedure. We observed that some of the midwives seemingly preferred to cut when the women were unprepared to avoid delay. When vacuum was used on one of the women, she claimed she did not receive information, but it is uncertain if her mother-in-law was informed and consented without consulting the woman. When CS was indicated, the women were informed, even though one woman mentioned she would have liked more information.

Privacy
The delivery room at OCH contained two beds, a medical equipment cabinet, a sink, a gas heater and a newborn table with a warming lamp. A window connected the delivery room to the operation room for quick handling of the newborn after a CS. There was a door opening to the staff/report/medicine room and a door to the outside corridor. There were curtains in front of the door opening to avoid full view of the labour and all other procedures and conversations taking place in the delivery room. This had only been installed recently when the staff realized that both patients and patient party could look directly into the delivery room when contacting the staff. However, this curtain was not always properly closed. The door facing the outside corridor, which was intended for the use of the woman's patient party,

had the benefit of opening halfway and with a lock. This ensured that no one could barge into the room without first consulting the midwives.

Delivery room at OCH. CS performed in neighbouring room, as seen through the window. Photo: Fredrik Skår.

The greatest breach of privacy was that there were no curtains between the two beds that were only a meter apart. The women were not protected from view of onlookers. In the most extreme case, when two women were giving birth at the same time, the other woman's husband would pay more attention to the neighbouring bed, rather than taking care of his own wife. The lack of space in the delivery room was the reason for such circumstances, but the midwives did not always intervene to prevent these kinds of incidents. For example, the number of people in the room that were not necessary staff was often too many and consent to their attendance was not usually obtained.

Privacy was not respected during discussions with the patient and amongst the doctors. This was a common factor for the whole hospital since there was not enough space or capacity to have private conversations. Most consultations, including those discussing sensitive subjects, would be in the presence of family members, staff and within earshot of other patients and their patient party. For example, when a woman with a history of pre-eclampsia in earlier pregnancies became eclamptic, she had to undergo an acute CS giving birth to a very premature baby that did not survive more than a day. The staff thought it would be wise for the husband to be sterilized because of the high risk of this severe complication repeating itself. However, the husband and his parents did not want to carry this out because all their children were girls and they wanted a boy. This became a topic that was gossiped about between the staff in the maternity ward. Because other patients and their families were present, the personal conversation was not kept private.

There were big cultural differences regarding the use of cell phones compared to western culture. Ten years ago, the only phone in the village was located in the radio tower. However, nearly every person, no matter income, acquired a phone over the last two years. High as this prevalence may be, most homes did not have electricity for more than three hours a day, which made the hospital's 24-hour electricity a practical place to charge one's phone. In western culture there are certain norms about when it is accepted to talk and use cell phones.

For instance, using the silent mode in meetings and hospital settings. In Nepal, it was normal for patients and their party to use their phones during hospital consultations, which became apparent when a woman answered her phone while her sister was giving birth. It did not seem as if the women viewed this as disrespectful, while in a western culture this would be frowned upon.

Discussion

The discussion begins with an analysis of the study population composition before reviewing the selected parameters. The study aims to compare the observed parameters with the gold standard guidelines provided by WHO. For parameters not included in WHO guidelines, the results are compared to relevant literature on appropriate standards. Next, the relevance of this study for reproductive health care in Nepal is discussed, followed by a review of the chosen methodologies.

Study population

In this birth study, the age span of the observed women was wide and the majority was younger women. In 2011, the median maternal age at first birth was 20,1 (22). Because the majority of women in our study were primigravidae, this correlates with our findings. Similar to other developing countries, Nepal's women traditionally have children early and take care of the family and household as their main occupation.

Some of the younger women had relatives who had given birth at the hospital and were thus encouraged to do the same. Others were scared about the dangers of childbirth and wanted to give birth in a place where they could receive help if it was needed. This could be a natural change through generations, in which women gradually have become more used to the hospital as an institution for health care. Over the years, many women have given birth safely at OCH and have spread the word to their friends and relatives.

The older women in our study were multiparas and had suffered from complications in the past. This inclined them to choose to give birth at the hospital to receive professional care should something occur.

There were also emergency cases of women starting labour in other locations, for instance at a Health Post, requiring transfer to the hospital because of complications. These women were usually multiparas who had given birth without any problems earlier, so they had initially decided not to come to the hospital.

According to Dr. Bøhler, approximately 50% of the women in the district gave birth at the hospital. There is a general assumption that women of higher socioeconomic status are more likely to give birth with a SBA present. These women are also less likely to live in rural areas. Because, the national rate is 56 % and a large part of the population with higher socioeconomic status live in bigger cities such as Kathmandu, it should be expected that the rate is lower at OCH. The hospital runs a project to increase awareness about benefits of contacting the districts Health Posts. This could contribute to a higher number of women giving birth with a health care worker present. Currently, the hospital also pays families 1000 Nepali Rupees to give birth at the facility. Unfortunately, birth statistics for the entire district or neighbouring districts were unavailable.

ANC-cards

The fact that there were both governmental and local hospital ANC-cards, in addition to journals/records from the hospital with information about antenatal care, made information from ANC-cards more complicated to identify. OCH used the hospitals' own ANC-cards, but sometimes also information recorded in the patients' journals. On the other hand, it is unclear

if the same information was recorded in both cards. Patients themselves are responsible for taking care of their own ANC-card and bringing it to the hospital. Therefore, compliance varied greatly. The women seemed to be aware of what the cards were, but not always what they contained and how they were used at the hospital. On the other hand, the midwives did not always ask to see them, which potentially may cause the women to question the cards' significance and fail to understand the importance of bringing their card to the hospital.

In Norway, the recommended number of antenatal controls is eight. There are no such national recommendations in Nepal, but WHO recommends a minimum of four focused visits. The median number of visits in our study was only three. The reason why so few attend visits is manifold. Traditionally, women in Nepal have given birth at home. Staff members mentioned situations where women were scolded for wanting to give birth at the hospital. Another issue was loss of income for relatives. Many of the patients lived far away from the hospital and had to walk back and forth with their patient party. This could cause the family to lose income for one or more days. The women going for visits were also likely to bring a relative, resulting in an even greater time cost.

The results in our study are not representative for all women in Nepal since the data is based on women giving birth at a hospital. Only 56 % of Nepali women give birth with a health worker present. It is unlikely that women who give birth at home go to many ANC-visits at the hospital or a Health Post.

SF-measurement, BP and observation of oedema are the most cost efficient examinations in an ANC-visit. They require simple and readily available equipment. On the other hand, auscultation of foetal heart sound, HCT-measurement and syphilis testing takes longer and depends on access to advanced and expensive equipment and laboratory access. Therefore, it is more likely that SF-measurement, BP and oedemas are prioritized in the first examinations.

Syphilis was the least frequent examination performed according to the ANC-card requirements. In South East Asia the prevalence of Syphilis is 1,3% and the incidence is 3,2 per 1000. Due to the high risk of vertical transmission, the early syphilis test is an important part of antenatal care. The reasons why our study revealed lower numbers of Syphilis examinations could be that patients were tested on a previous occasion or the test may not have been available at every Health Post. There may also be a lack of documentation, failure of the health worker to record the result or the language barrier preventing us from interpreting the information in the ANC-cards correctly.

HIV testing was completely omitted from all ANC-cards observed in this study. This violates WHO guidelines. The prevalence of HIV among the population between 15 and 49 years in Nepal is 0,2 % and the number of AIDS related deaths is 3251 (5). Since testing for HIV is relatively expensive, it can be argued that the cost benefit is low. However, knowledge about HIV among the younger population is only 35%, which could mean that many women are unaware that they are carriers and may therefore transmit the virus to their partner and unborn child.

One suggestion for improvement could be to use the government issued ANC-cards rather than local hospital journals. This would collect all data in one place and reduce the likelihood of overseeing information. In addition, the hospital journals were handwritten while the government ANC-cards contained checkboxes that were easier to interpret.

Partograms

Dr. Bøhler emphasized the importance of the use of partograms. According to him, he had informed the midwives to be meticulous in their completion of the partograms. They were supposed to be filled out before and during the delivery, not after. Some parameters were checked more often than others, for instance the strength and time of contraction compared to foetal heart rate. The foetal heart rate was documented at significantly greater time intervals. We observed that the measurement often took place, but ended up undocumented because midwives failed to record them in writing. In general, the timing of measurements was random.

In unexpected situations where the partograms were even more important, the midwives seemed to forget to record their findings and actions. In general, decisions to intervene came from clinical judgement. The partograms were never the sole cause for intervention.

There were a few cases where we received another woman's documents when we asked to see a certain woman's partogram. This happened because the partograms were unorganized, placed on chairs and different shelves in the delivery room. It is uncertain if this caused the collected data to be recorded incorrectly, but it is a possibility.

To improve the use of partograms, the routines should be more specific. For instance, since there are usually two midwives present in the delivery room, one could be responsible for recording information on the partogram and preparing the equipment, while the other midwife conducts the examinations. To avoid mixing up the partograms, they should also be in close vicinity to the women to whom it belongs. In addition, the partograms should be used more actively in the decision-making process when considering the use of intervention.

Hygiene

There was a significant number of midwives and doctors who did not change gloves when appropriate. The amount of clean gloves available to the staff at the hospital were sufficient, and there were no regulations to how many you were supposed to use.

The number of staff members present was usually sufficient to avoid contamination by assigning one staff member to sterile procedures and another for non-sterile tasks. However, there were different routines among the staff members. Some correctly stood with their hands in front of them when wearing gloves to avoid contamination. Others were fixing for instance curtains and gas heaters with their gloves on. Because waiting periods could be long, midwives often stood uninterrupted by the woman for a long time. This prevented them from remembering they had gloves on. When something then happened that required their attention, they may not have had the time to change gloves, which at that point were contaminated.

A possible explanation of the variation in the midwives' hygiene could be their different backgrounds. As described in the introduction, a midwife first becomes a midwife and then applies to nursing school if she wishes to. This means that the midwives do not necessarily have knowledge about general health subjects that are taught in nursing school. They may therefore believe that gloves are used as means to protect themselves from human body fluids, and not necessarily the patient from the external environment and infection. In addition, it was not clear whether all staff was aware of the concept of sterility. This could

explain why some midwives used techniques to avoid changing gloves, but ended up contaminating them to a lesser degree. The attitude towards hygiene could also be explained by a lack of staff monitoring.

To refresh and improve the staff's knowledge, one could arrange a class about hygiene and implement better routines. For instance, there are always two midwives present in the delivery room. It is therefore possible to delegate certain tasks that are unsterile to one midwife while the other one remains sterile.

It is difficult to understand why the doctors had poor hygienic routines in some of the cases we observed. One could theorize that they were under time pressure and did not have as much experience delivering babies. They are called for during emergencies and interventions. When they are expected to act quickly, it may easily affect the doctors' priorities. Even though the doctors have had courses in obstetrics, they have not had the same amount of practice as the midwives. This could make them less familiar with the specific hygienic routines during a delivery.

Despite the availability of gloves, the midwives may have been aware that the hospital was on a tight budget and influenced them to be more cautious regarding the use of many pairs of gloves. The fewer gloves used contributed towards assisting the hospital in its financial situation. This attitude could contribute to a midwife choosing to keep her gloves on while doing other things that could cause contamination.

The sterile equipment was as described routinely covered with a sterile sheet. Sometimes the sheet was opened because there were no other tasks to keep them occupied. This should be avoided by waiting to open the package until the head is about to crown. Catheters and the women's feet contributed to the most severe cases of contamination. Catheter contamination could easily be prevented by leaving the catheter in the sink or in a bowl on the trolley intended for disposable material.

Interventions

OCH has the means to take action if there is a case of serious prolonged labour. As a result, almost two thirds of the women in our study received oxytocin during labour. The criterion for administering oxytocin was prolonged labour, but how they came to this decision was unclear. In some cases, they checked the partograms, but they were not always filled out with this information. Most midwives had many years of experience in the field, so they could have acted solely on this knowledge. However, they did, usually consult with other midwives before administering oxytocin. The study reveals that oxytocin may have been used by default, rather than on indication.

An episiotomy was performed in one third of the deliveries in the study. WHO recommends a restrictive use of episiotomies (23). An Uptodate review (24) shows that a restrictive use limits the rate of perineal trauma, but that there are some inconclusive studies about different outcomes. Despite the small size of our study population, four women did not receive local anaesthesia during episiotomies. In all observed cases, the need for an episiotomy was never urgent enough to proceed without anaesthesia.

In 2007 the rate of CS in south central Asia was 5,8 % (25). In 2014, the CS rate at OCH was 11%, while it was 23% in January 2014. We do not have enough data to reach any definite

conclusions, but we observed high numbers compared to the norm. The total number of deliveries at OCH was 864 in 2014. This gives an average of 72 deliveries per month. The observation of 30 deliveries in the month of January could imply that there are fewer deliveries during the winter. This could be due to the low temperatures in the month of January and how this affects where the women chose to give birth. During the winter they are less inclined to travel many days in the cold, especially if they have had an uncomplicated pregnancy and have no known risk factors. Therefore, the women who decide to come to the hospital may be in a group who already has a higher probability of ending up with a CS, thus explaining the high CS rate. However, the birth rate at OCH varies greatly. Upon our return from the hospital, we were informed that 12 deliveries had occurred the day after our departure.

The hospital was run by missionaries, but there were doctors from different universities in India and Nepal completing part of their residency to become general practitioners. Some had been working there for a couple months, others several years. They were all interested in surgery, and could therefore be more eager to do a CS than to wait. The fact that they had a well-equipped operating theatre next door to the delivery room could make this an easier choice.

Another reason could be that the women giving birth at the hospital had a greater risk of complications. For example, their mothers may have had a disproportionate pelvis or preeclampsia. If complications occur while giving birth at home, there is a high risk of mortality for both the mother and child. This could make these women believe they are predisposed to the same complications as their mothers and therefore be more inclined to give birth in a hospital.

The rate of complications in hospitals may not be representative, since many of the women who choose to give birth there are already in a risk category. Women in a low-risk group, who have not been encouraged by friends or relatives, will most likely follow tradition and give birth at home.

High rates of CS are not necessarily positive. WHO published a report in 2015 stating that CS-rates over 10-15 % do not contribute to a decrease in rates of maternal, neonatal or infant mortality. Since a CS can cause permanent and serious complications and death, particularly when the facility does not have the proper equipment for conducting the procedure, WHO states that “every effort should be made to provide caesarean sections to women in need, rather than striving to achieve a specific rate” (26). WHO suggests the Robson Classification to compare countries and see if there is a significant difference in indications for the procedure. In a small hospital like OCH, there is probably a lack of resources to perform this classification and report results to health authorities.

The dark figures of intervention necessity are potentially very high. Since only 56% of women give birth with a skilled birth attendant present, there are no statistics available for the actual need for CS. MMR in Nepal is estimated to 190 per 100,000. The greatest number of women who die in childbirth are those who give birth at home and are therefore in most need of interventions.

Cord clamping

There were no cases of emergency resuscitation during our stay at OCH. Therefore, the urgency to clamp early due to asphyxia was never present. After speaking to the midwives, we found that most of them remembered what was taught about delayed cord clamping in an internal education at the hospital. However, they did not seem to follow through during deliveries. For instance, after having observed the procedure we asked one of the midwives how long she waited before clamping the cord. In her answer, she exaggerated the actual time. There may be several reasons for this; stress in the interview situation, incorrect perception of time passed, or wanting to give an answer that would please us rather than the correct answer. The fact that the room often was cold, especially at night, could be a factor that contributed to the early clamping procedure. The midwives usually placed the baby under the heat lamp right away and then continued with the rest of the procedures in the third stage of labour. They also seemed eager to take the baby onto the bed under the heating lamp to aspirate saliva from the infant's nose and mouth, even if the baby had a full Apgar score.

Studies show that there were different routines for cord clamping worldwide. UpToDate (27) describes the minimum duration of delay to be at least 30 seconds in preterm births and at least one minute in term births. WHO's guidelines (19) state that "umbilical cord clamping (not earlier than 1 min after birth) is recommended for improved maternal and infant health and nutrition outcomes". There are no significant differences in postpartum haemorrhage between groups with early or delayed cord clamping, nor is there a difference in the effect of cord clamping time on the use of manual removal of the placenta, need for blood transfusion or the length of third stage of labour. In addition, there was no difference in mortality between infants, both term and preterm, with early or delayed cord clamping time. However, there is a 39% reduction in the need for blood transfusion with delayed cord clamping in preterm babies. For term infants, the only difference is that they are more likely to receive phototherapy for hyperbilirubinemia if they have had a delayed cord clamp, but also less likely to have iron deficiency at the age of 3-6 months of age (19).

This study did not uncover what knowledge the midwives had acquired from internal education on cord clamping and whether they are aware of the benefits of a delayed clamping. A lecture about why delayed cord clamping is important could contribute to enhancing knowledge about the subject, thereby making it easier to remember the importance of delayed clamping. A group assignment to practice while timing the procedure could also be beneficial.

Labour support and experience of care

In 2015, Bohren M.A. *et.al.* published a systematic review of the mistreatment of women during childbirth in health facilities globally" (28) in PLOS One Medicine. The review takes a thematic synthesis approach to gather qualitative evidence from 65 studies across 34 countries. The findings are organized into the following themes: physical abuse, sexual abuse, verbal abuse, stigma and discrimination, failure to meet professional standards of care, poor rapport between women and providers, and health conditions and constraints.

Several of these themes can be applied to our study and provide insight to how OCH is doing in a global perspective. Although there were major differences when it came to staffing and poor care, there were many similarities regarding the health systems' conditions and constraints.

Birth Companion

Even though it is extremely rare for a hospital in Nepal to break with tradition and allow the husband to be present, there should be clearer rules for presence in the delivery room. The midwife should not be the one to decide whether the husband is allowed to be present. As the MWH is expanding capacity and women spread the word to their friends and family, the hospital will probably see an increase in women's request to have their husband present. This request should not be denied by midwives with more traditional views. Presence of the husband could be encouraged through internal education where this topic is discussed to present different perspectives.

In contrast to OCH, where even husbands were allowed to be present during delivery, the PLOS review (28) showed that women across the world were often prohibited from having a companion of their choice during delivery. This is often official hospital policy in the countries studied in the review. OCH, on the other hand, is a unique hospital with a liberal view on the husband's role during delivery. It is therefore difficult to compare with other developing country hospitals.

Discomfort relief

Lack of supportive care was another trend in PLOS systematic review. According to the review, "women often felt that they did not receive the time and attention from health workers to make them feel supported and adequately cared for" (28). At OCH, women were dependent on birth companions for emotional support, but the midwives often stepped in during the second stage of labour. OCH had a sufficient staff number to have two midwives assigned to the labour room at all times. Since there was usually only one delivery taking place at a time, both midwives could attend to this woman. The only exceptions were when they had to care for several women simultaneously, which made adequate emotional support a challenge.

In the review, women from some of the countries studied stated that when "expectations of a supportive environment during a facility-based childbirth were not met, they may be less inclined to deliver in a facility in future births" (28). It seemed as if the women at OCH did not have high expectations, but were extremely grateful for the help they did receive, leaving them with an overall positive experience. This may create a spiral of increasing QoC. The women's experiences surpass their low expectations. While expectations increase, so does the reputation of the hospital. In turn it becomes even more difficult to deliver on expectations of high QoC. This confirms the significance of QoC and the implications it has for future health care decisions.

The PLOS review found that some women preferred to deliver in positions other than the supine and "resented that health workers forced them to deliver in undesirable birth positions or humiliating positions" (28). Even though we did not directly ask the women we interviewed if they wished to give birth differently, they were not presented with a choice. However, at OCH it was the facilities rather than the health workers' experience that prevented women from freedom to choose position. The size of the delivery room and experience of the midwives limited the women from moving around and assuming more comfortable positions during the second stage of labour. However, this did not seem to bother any of the women. Instead, they simply accepted what was provided and appeared grateful regardless of how much care they actually received.

Patient communication
In general, the midwives were very caring and attentive to the women's needs. This was dependent on the woman's patient party present to care for the basics.

Ideally, all women should stay at the MWH in preparation for the delivery to receive information. Because many women arrive directly at the hospital with contractions, they should be kept more informed during the delivery by perhaps providing a midwife from the MWH to give them quick lessons of what to expect and how to handle the different stages of labour.

Verbal abuse did not occur at OCH during our stay. Despite the harsh tone of some of the midwives, it was usually the mother or mother-in-law who would yell or make judgmental or accusatory comments. However, we did not have a translator present in the delivery room, so this was difficult to evaluate.

Some of the midwives could have softened their tone, but this is dependent on personality and difficult to change. Information about invasive procedures should be presented more clearly to the women. Even though they were in a non-receptive state, it is still important to give clear information and receive consent from the patient.

The communication between doctors and patients is an area in need for improvement. This was a trend we observed on the morning rounds as well, where the doctors would talk over the patients' heads, disregarding both their need for privacy and information. Despite cultural differences with a greater hierarchy between doctors, midwives and patients, essential information should be provided to the patients.

Communication between the women and staff during deliveries is a problem not only in Nepal, but in many countries where there is a socioeconomic gap between the educated health workers and extremely poor patients. This complicates communication due to differing perceptions and interpretations of important matters. For example, if a mother-in-law has done something her way her entire life, that is the way it should be done no matter what the midwives say. If the family members are very active, they often override the midwives and hinder good communication. Household members are authoritative figures and greatly influence decision-making, both at home and during childbirth.

Failure to meet professional standards of care was an area that both OCH and the PLOS findings had in common. According to the review, "when faced with labour complications, women believed that adequate explanations from health care workers were imperative to fully comprehend the situation, but these explanations were rushed, if provided at all" (28). In addition, women were given medication or procedures without knowing their purpose. Although the women we interviewed in Nepal informed us that they did not always know why different procedures were carried out, they did not seem to care for the explanation. The review gave the general impression that women felt "left in the dark and dissatisfied" (28). In contrast, the women at OCH were often satisfied no matter how lacking information they received. This difference could be explained by the biases in our interview setting where interview objects were "eager to please".

Privacy

Similar to OCH, the review also found that lack of privacy was an issue, both in terms of the physical and verbal barriers such as medical history and private information. According to the review, women were exposed to staff, other patients and their families due to the "lack of curtains to separate them from other patients, the lack of curtains on the outside windows and the doors that were left open" (28).

At OCH, the conditions were to some extent worse since there was no door or proper window in the labour ward. There were several breaches of privacy that could easily have been avoided by being more aware and respectful of the women's basic rights in their vulnerable position. Even though the limited space made it difficult to keep everyone's medical information private to the same degree as a larger and modern hospital, the staff members could still have shown more understanding and move discussions to a different place or lowering their voice when discussing sensitive subjects.

However, the examinations in the delivery room gave somewhat more privacy because the breach was limited to only the woman in the other bed with her patient party. In the review, women in low- and middle-income countries felt that exposure during labour and physical exams "particularly during this vulnerable time, was undignified, inhumane, and shameful" (28).

During our stay at OCH, they were already in the works of building a new hospital with a much larger delivery room. This will allow for curtains or screens between the beds and shield women from view of others. This occasion could perhaps be appropriate to introduce focus on protecting patient privacy.

Relevance of health care in Nepal

In comparison to other countries in the developing world, Nepal still has a long way to go before most women have the option of delivering at a facility or in the presence of a SBA. OCH has been working to decrease the threshold for making the trip to the hospital by eliminating the medical expenses and establishing the MWH.

However, there is still a long way to go in achieving the same percentages of SBA-deliveries as developed countries. Parallel to building roads and local promotion of hospital services, QoC should be a priority. In order to reach out to distant communities, it is of great importance that the women have a positive experience at the hospital so that they can inform their friends and relatives.

The PLOS review examines the impact on future care-seeking behaviours, late attendance to facilities and desire for home birth. "Prior experiences and perceptions of mistreatment, low expectations of care provided at facilities, and poor reputations of facilities in the community eroded many women's trust in the health system and may impact their decision to deliver in a health facility in the future" (28). This may apply to the women at OCH as well, even though we did not ask the women directly. The close association between the women's experience at the hospital and future health-seeking attitude confirms the importance of QoC. The likelihood of a woman getting in touch with the hospital early in her next pregnancy or when in need of medical attention, is presumably a partial result of her previous experience with the health care system.

OCH is a pioneer hospital in the fields of family and maternal education and is more liberal than most hospitals and institutions in developing countries. If other hospitals can learn from local experiences at OCH and bring this back to their own hospitals, OCH can assist the development of new methods that break with old birth routines currently preventing high QoC. For instance, women who have had a positive experience with their husband present during the delivery, will tell their friends and family who then may wish to do so as well. This can create a positive spiral that may help traditional midwives change their views, in addition to spreading this practice to the institutions where the residential doctors and midwives later move on to work.

Discussion of Method

The number of subjects in this study was too small to draw any general conclusions. However, as this study only is a small pilot study, the selection is acceptable.

Observations

We missed some deliveries because the midwives did not call us while we were sleeping. This may be because either the midwives forgot to call us or labour progressed more quickly than expected. Some of the midwives may have been afraid to wake us, even though we asked them to call no matter what the time was. In addition, the midwives had to call us on an external line from the hospital, which was more expensive. This could have been avoided by one of us staying awake on shifts.

The observations were conducted from an outsider's point of view, both with preferences for modern western medicine. In some of the deliveries, we assisted by either carrying out the cervical examination, delivering the baby or the placenta ourselves. However, we would do exactly as we were instructed. The timing of cord clamping would not be affected as the baby was immediately handed over to a midwife who would take care of the baby. When one of us assisted, the other one could observe other aspects of the delivery which were not influenced. Whoever was observing would be responsible for timing and observing hygienic procedures. On the other hand, we could not completely eliminate the effect of our presence and active participation. Thus our results from these deliveries were influenced to some degree.

It was difficult to evaluate how well the women were informed about the labour process and the need for intervention. This was based on the women's recounting of their experience the day after, which may have been clouded by all the impressions they had received over the past 24 hours. In some cases, we asked the midwives to translate when they had talked to the woman, especially if they had just received an IV for oxytocin. However, since we were not present throughout the whole labour process, we do not know if they were given information beyond what we observed.

It was challenging to evaluate if some of the midwives' seemingly agitated tone was perceived in that way by the women delivering, or if this tone is normal when Nepali women are instructing and taking charge.

We did not eliminate any of the deliveries from our study unless they went directly to CS without having had any cervical examinations or use of a partogram. If they had an ANC card, they would still have been included in the total, as well as the total number of CS.

Interviews

There are several potential biases that may have decreased the reliability of our results.

Firstly, we had no means to evaluate the quality of our interpreter's skills. She was able to communicate with us in basic English, but her ability to directly translate our questions is uncertain. Some information was probably also lost in translation and it was difficult for us to obtain other information during the interviews than what we got through the interpreter. We also found it strange that her translations of the women's answers were short compared to their answers in Nepali. Our translator explained that many of the women would repeat themselves, but it is uncertain if the interpreter was actually able to translate the complete answer due to lack of language skills. During one interview, a social worker listened in on our interview and told us that we had missed out on many points that the woman made in her answer. In addition, we did not have another staff member to quality proof the translation from English to Nepali. This could have been mitigated by a third person present in some of the interviews to check if the interpreter's translations were correct. Despite several discussions with our translator regarding the formulation of our questions and tailoring them to conditions and culture, we had to trust her judgement if she chose to pose the questions differently.

Secondly, the questions were developed by us in Norway before arriving in Nepal. At the time, we had little insight in the cultural setting of rural Nepal and OCH. However, we revised the questionnaire several times with help from both our supervisors. In addition, we modified the questions upon arrival at OCH and after conducting pilot interviews. Still, it is possible that the patients could have misunderstood some of the questions due to cultural differences we were unaware of.

Thirdly, another weakness of the study is that the interviews were not recorded on tape. We relied solely on our memory and field notes, thus opening the possibility that we left out information from the interview. In addition, we were dependent on time immediately after every interview to record and discuss our notes. This was not always possible, for example if a new delivery was taking place.

Fourthly, the interpreter's subjective qualities, as well as our own, had some influence on the interview situation. This could be factors like education, gender, caste and experience. Men have a higher status in Nepali culture. In addition, Nepali women generally tend to be more reserved. However, since our subjects were all women and the interpreter was a young woman who had grown up in Okhaldhunga, the probability of bias was low. We could have benefited from an interpreter with better English language skills. The medical background of both interviewer and interpreter may also have influenced answers towards a more positive attitude to modern medicine.

Fifthly, the location of the interviews added a bias to the interviews. Although the women requested to be interviewed in bed with their relatives and other patients around, we noticed that onlookers influenced their answers. They would often turn to either the mother or sister for the answer, or giggle or smile, hesitating to answer. Some of the questions were sensitive, especially if we asked about an incident that happened during the delivery. We found more

often that if the mother-in-law or another elder were present, they would not complain about anything. This was also the case for women who had been treated in a disrespectful manner in a western perspective. This could have been avoided by interviewing the subjects somewhere else or asking relatives to leave, but many of these women were busy learning how to breastfeed or packing up to leave. Several interviews would have been impossible if we had demanded a more formal setting.

A sixth bias that was difficult to avoid was the "eager to please"-tendency. This is especially true for rural areas in Nepal. It is a cultural norm for women to be thankful and happy no matter the circumstances. Most were very reluctant to elaborate when confronted with negative experiences. We tried to ask the questions in different ways, but even when we confronted them about specific events, most would smile and act as if it never happened. Although some women came forward with concerns and comments about their treatment, no one directly complained about the care they had received. According to the PLOS review, women were displeased with the “inability to express their opinions about treatment and services rendered during childbirth” (28), The women provided reasons such as “fearing unfair treatment or discrimination if they complained, women being unaware of their rights as patients, fear of facility closure, and a lack of redress or accountability mechanism for lodging complaints” (28). Only one woman we interviewed at OCH complained about her treatment. This shows either that the majority of women were scared of voicing their thoughts or they were in fact satisfied. Perhaps the women were grateful because they were unaware of their rights as patients. In addition, most of the women at OCH already knew of someone who had given birth at the hospital, reducing fear of discrimination if they complained. The bias could have been reduced by conducting the interviews in a different setting and perhaps by clarifying that answers were anonymous and participation in the study would not affect future treatment at the hospital.

Lastly, the conducted pilot interviews were included in our study. Since the interviews were qualitative rather than quantitative, this did not influence any of our figures, but rather provided more answers from women on which to base our analysis.

Conclusion

The purpose of this study was to evaluate QoC at Okhaldhunga Community Hospital in rural Nepal and whether QoC satisfied the WHO guidelines.

The woman's freedom of choice in birth companion and the emotional support provided by the midwives at OCH lived up to WHO guidelines. In these parameters, OCH performs better than the norm in Nepal. Additionally, OCH offers easy access to operative deliveries, thereby increasing desired health outcomes and improving QoC at the hospital. The use of interventions also satisfied WHO guidelines. However, the rate of interventions is higher than recommended by WHO.

Both ANC-cards and partograms were filled out adequately, but the midwives did not use them as a supportive tool throughout the delivery process. OCH should integrate the ANC-card and partogram in hospital routines, facilitating easier interpretation when intervention is required.

Other parameters still have greater potential for improvement. Compared to WHO guidelines, hygiene, delay of chord clamping, patient communication and privacy are below satisfactory level. In general, hospital education and increased awareness among staff can help improve QoC in these parameters. This implies staff exposure to ideals of quality care and constant quality assurance. In addition, knowledge about hygiene and delay of chord clamping is needed to implement better routines to secure good health in both the mother and child.

To improve women's qualitative experience of labour, women need to be empowered with better knowledge about what she can expect and demand at the hospital, such as politeness, dignity, confidentiality, privacy and good technical care. Word of mouth between friends and relatives complemented with courses at the MWH and health posts can increase knowledge among women.

The likelihood of a woman approaching a hospital in her next pregnancy is influenced by her previous experiences with the health care system. The close association between a woman's experience at the hospital and future health-seeking attitude confirms the importance of QoC.

Overall, the maternity health services at OCH provided QoC beyond expectations for such a remote health facility. OCH provides a high standard of care, both in terms of equipment and knowledge. Although the hospital does not completely live up to the WHO's gold standard in all the parameters evaluated in this study, OCH has great potential for improvement with the implementation of proper measures.

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Appendices

Appendix A

Nepal uses a different calendar system from the western calendar. This system is based on old Hindu traditions and is called Vikram Samvar or Bikram Samvat. The months in this calendar begin approximately halfway into the western months, and they are currently in the year 2071/2072.

Following is OCH's statistic report 2071/2072
First six months:

Month	Shrawan	Bhadra	Aswin	Kartik	Mansir	Poush
New >20 years (First visit)			4			
New <20 years (4th month)			24			
Total visit	68	34		90	64	106
Fourth visit						
PNC						
Single	70	77	64	84	62	68
Multiple	2	0	0	1	1	1
Total	72	77	64	85	63	69
Normal	66	66	54	76	48	57
Complicated	6	13	10	9	15	12
Delivery	72	79	64	85	63	69
Normal delivery	66	66	54	76	48	57
Breech	0	4	1	0	0	0
Vacuum	2	1	0	4	3	7
Forcep	0	0	0	0	0	0
Ceseaserean Section	4	8	9	5	12	5
Destructive delivery	0	0	0	0	0	0
Total delivery	72	79	64	85	63	69
Women receiving PAC services	2	0	1	1	3	6
MWH admit mohter (Pregnant)	32	38	35	26	26	29
MWH admit mohter (Post natal)	0	0	0	0		0
Gravida/Parity	Shrawan	Bhadra	Aswin	Kartik	Mansir	Poush
Primi	39	42	41	65	42	44
Multi	14	23	15	13	16	18
Grand multi	19	12	8	7	5	7
Total	72	77	64	85	63	69
Maternal age	Shrawan	Bhadra	Aswin	Kartik	Mansir	Poush
Under 20yrs	14	21	15	20	18	14
20-34yrs	56	53	45	64	43	52
35+yrs	2	3	4	1	2	3
Total	72	77	64	85	63	69

Last six months:

Magh	Falgun	Chaitra	Baisakh	Jestha	Asad	Total
						4
						24
101	126	103				692
						0
						0
65	64	66	60	80		760
2	1	1	1	1		11
67	65	67	61	81	93	864
55	51	56	45	68	80	722
12	14	11	16	13	13	144
67	65	67	61	81	93	866
55	51	56	46	68	80	723
0	0	0	0	0	0	5
2	7	1	5	3	6	41
0	0	1	0	0	0	1
10	7	9	10	9	7	95
0	0	0	0	1	0	1
67	65	67	61	81	93	866
2	2	3			6	26
31	31	34	27	44	34	387
0	0	0	0	0	0	0
Magh	Falgun	Chaitra	Baisakh	Jestha	Asad	Total
44	46	43	41	40	55	542
14	14	15	15	26	18	201
9	5	9	5	15	20	121
67	65	67	61	81	93	
Magh	Falgun	Chaitra	Baisakh	Jestha	Asad	Total
22	18	9	13	10	22	196
42	44	53	43	65	64	624
3	3	5	5	6	7	44
67	65	67	61	81	93	864

Appendix B

Check-list uses during observation

	Age, primi, NRC, patient party present		
Information about woman			
ANC-card / Journal			
Filled out?		Amount of times?	
Own card brought?		If not, why?	
SF-measurement			
Auscultation			
BP, protein, edema			
Hct			
Syfilis test			
Partograph			
Used?			
Used when? (during delivery or after)			
How is it used and if not, why?			
Limit for calling doctor (in case of complication)?		**If partogram is not used actively, what is used?**	
Hygiene			
Sterile gloves			
What is carried out with gloves?			

Sterile equipment throughout delivery			
Technical Performance			
Cord clamping		*Premature delivery*	*Normal delivery*
Time?			
Placement in relation to level of introitus			
Milking			
Placenta-delivery (if not automatic)			
Handling of superficial tears and other complications			

- Relationship between birth assistant and woman
- Do they build an alliance? How so?
- Is the birth attendant encouraging, commanding or "yelling"?

Appendix C

Questions asked in the interviews

- How did you feel you were taken care of during labor?
- Did you feel safe and comfortable?
- If yes, who/what made you feel safe and comfortable?
- If no, what made you not feel safe and comfortable?
- Is there anything that you know now, you wish you knew before the labor?
- Where was your husband at the time of the delivery? If he was present, how did he help/make you feel?
- Did you receive information about procedures (ie. IV oxytocin) and in general during the delivery?

If the woman stayed at the MWH:

- What did you learn from your stay at the MWH?
- Did the NRC help you prepare for the labor?
- Do you have any suggestions for improvement for the MWH?
- Why did you come?

Appendix D

OCH ANC-card

यूनाईटेड मिसन टु नेपाल

United Mission to Nepal

Okhaldhunga Community Hospital

OKHALDHUNGA COMMUNITY HOSPITAL

Name : **Age/Sex :** **Hospital No.**

Husband/Guardian Name : **Risk Factors:**

Address : (1)

Education : (2)

Occupation : (3)

(4)

LMP : **Mens. Cycle :** **Married for:**

EDD : **Contraception :** **Quickening:**

OBSTETRIC HISTORY - G P L A

Date of brith	Gestational age	Complication during Preg.	Mode of delivery	Complecation in 3rd stage	Puerperium	Live or SB	Sex	Birth weight	Outcome

PAST HISTORY

HTN :
Heart disease :
Thromboembolism :
Kidney disease :
DM :
Operation :
TB :
Others :

Physical examination :

Ht.:
Pallor :
Wt.:
Jcterus :
BP :
Edema :

P/A
P/S

Ht of uterus :
Cx :
Presentation :
Discharge-
FHS :
Bleeding :

FAMILY HISTORY

HTN :
DM :
TB :
Multiple Pregnancy :

Duration of amenorrhoea :

Breast/Nipple
Others :
Chest :
CVS :

P/V

Uterus :
Adnexa :
Tenderness :

Examined By.

Date:_____

Investigation

Date	Blood Group /Rh	VDRL	HBsAg	HIV

Date	HCT	RBS/FBS	Platelets

TT IMMUNIZATION

Dose	Date
1st	
2nd	
3rd	
4th	
5th	

Date	Gest age	Uterine Ht.	Presentation	Relation of PP to pelvic brim	FHS	Wt. (Kg.)	BP (mm Hg)	Edema

Date	Gest age by USG	Gest age by date	Comments

Urine		Drug / Advice	F/U	Sign:
)	Sug			

Appendix E

OCH partogram

UMN

OKHALDHUNGA COMMUNITY HOSPITAL

OBSTETRIC ADMISSION RECORD

Name :

Age :

Husband's Name :

Address :

Village:..... District..... Distance to UMHT .....

I.P. No.

Yellow Card No.

Admission	Date:
	Time:

ANC:	Place	Town Clinic		Hospital	Outside	Nome
	# visits	1	2	3	4	>4

G	P	L	A

LMP :.....

LDD :.....

Gestational age : By date :

By scan :

High Risk Factors

1

2

3

4

5

Blood Group					
RPR					
Inj T.T.	1	2	3	4	5

Induction of Labour:	Yes	No

PROM	YES	Date:
		Time:
	NO	

o Indication: .....

o Prostaglandin	1	
	2	
o ARM/Syntocin		

Doctor's Plan/Note:

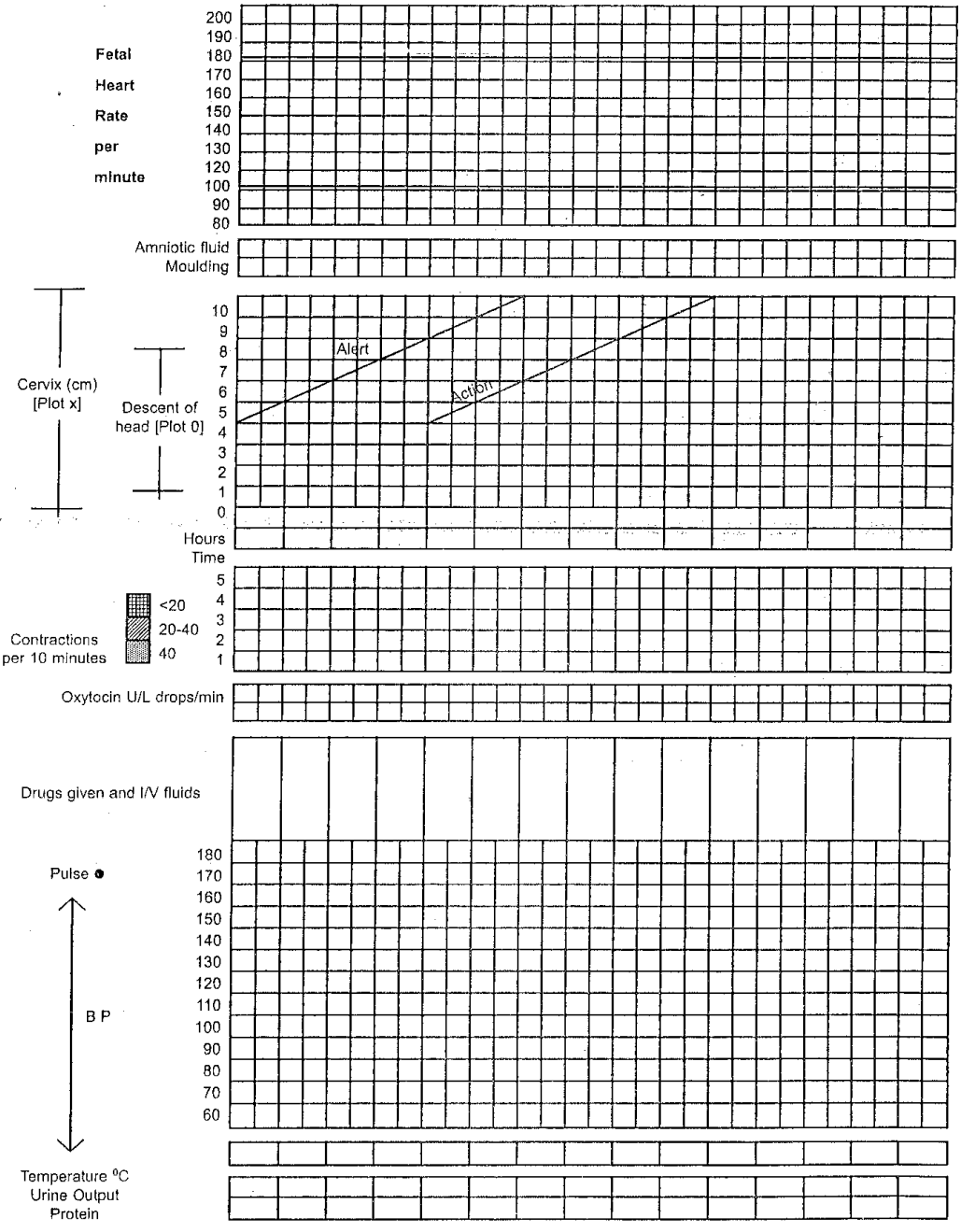
PARTOGRAPH

Hospital No. | | | | | | | |

Name: ..... **Age:** ..... **G:** ..... **P:** .....

Date of Admission: ..... **Time of Admission:** .....

Reptured mimbrance: Y/N if yes. Date..... **(time)** ..... **True labour Pain Started Date (time)** .....



Delivery:

	Outset of Labour	Membranes Reptured	Cervix Fully	Baby Born	Membrane Expelled	Duration of Labour
Date						1st Stage ..... 2nd Stage ..... 3rd Stage .....
Time						Total :

Type of Delivery :

SVD		
Vacuum		
Forceps		
Breech		
Twins		
Cesarean	ELECT	EMERG

Perineum	Intact	Epis	1st tear	2nd tear	3rd tear
Delivered by:					
Sutured by:					

Indications for operative delivery:

.....

Brief comments about delivery:

.....

Third Stage:

Oxytocic durg:

Syntocin/Ergometrine

Placenta	Complete	Incomplete	Doubtful
Membrane	Complete	Incomplete (ragged)	Retained
Check Curettage:	YES( )		

Liquor	Clear	Mild
	Meconium	Mod
		Thick

Manual Removal	of Placenta	ER	Labour Room	OR

Wt. of placenta	gms
Wt. of the baby	gms
Cord vessels	

Blood loss:	ml
B.P.	
Pluse:	

Sex: M	F	
	Twin	

Live		
Apgar	1min	5mins.

SB	Fresh	Macerated

Resuscitation:	Suction/Stimulation		Bagging		Intubation	

Abnormalities noted at delivery:

Baby Examination: **Date:**

Maturity	Face	Lungs	Back	Ms. Tone
Colour	Palate	Abdomen	Limbs	Suck
Skin	Eyes	Umbilicus	Digits	Moro
Head	Ears	Arms	Hips	
Fontanelles	Heart	Ginitalia		

Any abnormalities noticed .....

.....

Inj vitamin K	YES	NO
BabyAdmission	YES/NO	

Indication:

Signature .....

Obstetric Discharge Information

Baby; BCG given

Baby Follow up: No / Yes .....

Advice for future Antenatal Care: .....

Advice for future Delivery .....

Family planning advice given .....

Health education given : .....

Signature .....