

## Operations Research Study 2:

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# Availability and Quality of Caesarean Section (CS) and Vaginal Deliveries in Northeast Syria (NES)

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## الدراسة الثانية

### توافر و جودة الولادات القيصرية والولادات المهبلية في شمال شرق سوريا

A Summary is provided in Arabic (Pages 4 Short Summary, Pages 10-12 Full Summary)  
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## Short Summary

This study investigated the high rate of Caesarean Sections (CS) and low uptake of vaginal births in Northeast Syria (NES). A mixed methods approach was used, including operating theatre register reviews, a knowledge attitudes and practice (KAP) survey among obstetrician-gynaecologists, and focus group discussions (FGD) with midwives and women.

The average facility -based CS rate was 44% across 4 hospitals, with the commonest indication being one or more previous CS. Many CS are done for conditions for which vaginal birth may be possible such as one-previous CS, post maturity and oligohydramnios. Patient and family expectations, security concerns, and infrastructure inadequacies are seen as important factors contributing to a high CS rate. Clinical practices such as antibiotic use for CS and postoperative care need improvement.

Reasons for choosing CS included perceived safety for mother and baby, ability to plan birth, and the need to avoid pain and suffering. Younger women and those with no previous experience of vaginal birth are more likely to choose a CS as a preferred mode of delivery than older women. Both women and midwives emphasized the need for improved labour rooms environments, including cleanliness, privacy, and availability of pain relief options. Companionship during labour was desired but often not permitted. Fear and anxiety surrounding vaginal birth were common among women participants.

Recommendations to address high CS rates include developing agreed-upon CS indications, monitoring and reviewing CS rates at healthcare facilities, enforcing laws against malpractice, educating healthcare providers and communities regarding the need for postoperative care after CS as well as the advantages of vaginal birth, enhancing healthcare facility readiness for vaginal birth, and promoting evidence-based clinical CS and vaginal birth practices. Practical recommendations were developed to promote safe childbirth practices and reduce unnecessary CS.

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## ملخص قصير

بحث هذه الدراسة في ارتفاع معدل العمليات القيصرية وانخفاض الاقبال على الولادات المهبلية في شمال شرق سوريا. واستخدم نهج مختلط الأساليب، بما في ذلك استعراض سجلات غرف العمليات، ودراسة استقصائية للمعارف والمواقف والممارسات بين أطباء التوليد وأمراض النساء، ومناقشات المجموعات المتخصصة مع القابلات والنساء.

كان متوسط معدل العمليات القيصرية القائم على المرافق الصحية 44% عبر 4 مستشفيات، مع الاستطباب الأكثر شيوعاً هو عملية قيصرية سابقة واحدة أو أكثر. يتم إجراء العديد من حالات القيصرية لحالات قد تكون الولادة المهبلية ممكنة مثل سوابق قيصرية واحدة، حمل مديد وقلة السائل الأمنيوسي. ينظر إلى توقعات المرضى وأسرهم، والمخاوف الأمنية، وأوجه القصور في البنية التحتية على أنها عوامل مهمة تساهم في ارتفاع معدل العمليات القيصرية. تحتاج الممارسات السريرية مثل استخدام المضادات الحيوية للقيصرية والرعاية بعد العملية الجراحية إلى تحسين.

تضمنت أسباب اختيار القيصرية: السلامة المتصورة للأم والطفل، والقدرة على التخطيط للولادة، والحاجة إلى تجنب الألم والمعاناة. النساء الأصغر سناً وأولئك الذين ليس لديهم خبرة سابقة في الولادة المهبلية هم أكثر عرضة لاختيار القيصرية كطريقة مفضلة للولادة من النساء الأكبر سناً. أكدت كل من النساء والقابلات على الحاجة إلى تحسين بيئة غرف الولادة، بما في ذلك النظافة والخصوصية وتوافر خيارات تسكين الألم. وجود المرافق أثناء المخاض مرغوب ولكن في كثير من الأحيان غير مسموح بها. كان الخوف والقلق المحيطان بالولادة المهبلية شائعين بين المشاركات النساء.

وشملت التوصيات لمعالجة معدلات العمليات القيصرية المرتفعة تطوير استطببات متفق عليها للعملية القيصرية، ومراقبة ومراجعة معدلات العمليات القيصرية في مرافق الرعاية الصحية، وإنفاذ القوانين ضد سوء ممارسة المهنة، وتثقيف مقدمي الخدمات الصحية والمجتمعات فيما يتعلق بالحاجة إلى رعاية ما بعد الجراحة بعد العملية القيصرية وكذلك مزايا الولادة المهبلية، وتعزيز استعداد مرافق الرعاية الصحية للولادة المهبلية، وتعزيز ممارسات العملية القيصرية السريرية والولادة المهبلية القائمة على الدليل. تم تطوير توصيات عملية لتعزيز ممارسات الولادة الآمنة والحد من العملية القيصرية غير الضرورية.

## Contents

Summary .....	6
الدراسة الثانية .....	10
Background .....	13
Research Questions Developed .....	15
Methods .....	16
Results.....	18
A. Operating Theatre Register Review.....	18
B. KAP Survey for Obstetrician-Gynaecologists .....	20
Opinions on CS Rate and Factors affecting CS Rate .....	21
Clinical Practice – Indications for CS and Peri-partum Hysterectomy .....	23
Clinical Practice - Peri-operative Care .....	24
Complications after Caesarean Section .....	25
C. Focus Group Discussions .....	26
Mode of Delivery and Decision Making .....	26
Reasons for CS and factors affecting this .....	28
What is needed to support Vaginal Birth .....	31
Discussion and Implications for Policy and Practice .....	37
Recommendations Formulated .....	37
Supplementary Tables and Figures .....	43

## Summary

### Background

Programme reports indicate that there are a large number of Caesarean Sections (CS) carried out at healthcare facilities operating in the NES with a comparative low rate of vaginal births. For NGO-supported healthcare facilities reporting to the Health Working Group (HWG – NES), the facility-based CS rate was between 24%-31% during 2022 and 2023. However, there are additionally many private hospitals in NES which mainly provide CS services with limited or no availability of care for vaginal births but for which no data are available. We sought to explore factors that contribute to the high rate of Caesarean Section (CS) and low uptake of vaginal birth in NES.

### Methods

A mixed methods approach was used including: 1) an Operating Theatre Register Review including all CS conducted over a consecutive 14-day period at 4 Hospitals regarding type and indication for CS (n=342), 2) a Knowledge Attitudes and Practice (KAP) Survey among Obstetrician- Gynaecologists (n=40), and, 3) Focus Group Discussions (FGD) with midwives (5FGD) as well as with women of different ages and experiences (15FGD) including a) women pregnant with their first pregnancy and planning for birth, b) women who had previously had one or more vaginal births, c) women who had previously had one or more CS, d) women who had a CS as well as a vaginal birth, and, e) grandmothers. Both rural and urban sites were included. Quantitative data were analysed using simple descriptive statistics and qualitative data were analysed using a thematic framework approach with identification of illustrative quotes.

### Findings

#### Operating Theatre Register Review

Per year there are 10,975 vaginal births, 8,633 CS conducted at the 4 Hospitals with an average CS rate (number of CS/total number of births) of 44% (range 33.1% - 63.8%). Only 2 Hospitals routinely distinguish between an emergency and elective (planned) CS. For the 342 CS reviewed, the 3 commonest indications were: a) 2 or more previous CS, b) 1 previous CS, and c) post maturity and/or oligohydramnios. Overall, 75.1% (257/342) of all CS were for 'previous CS' with 35.4% of these (91/257) for 1 previous CS for which a trial of labour could in principle have been conducted. Other potentially 'unnecessary' indications included placental calcification, 'presumed post maturity' and elective CS for cephalo-pelvic disproportion without trial of labour.

#### Knowledge Attitude and Practice (KAP) Survey

40 obstetrician-gynaecologists returned the survey (50% response rate). 99% had 1 place of work - NGO-supported Hospital (41.9%), Private Hospital (37.2%), or a Public (LHA) Hospital (20.9%).

45% of obstetrician-gynaecologists (of which most working in an NGO-supported hospital) performed more than 50 CS per month.

87.5% of obstetrician-gynaecologists consider the CS rate in NES as being too high. Multiple factors are considered to contribute to this. The 3 commonest categories are a) patient and family culture and expectations, b) the security situation necessitating a planned birth, and c) insufficient and poor infrastructure, environment, and practices to be able to support normal birth. When considered as single factors, financial incentives for the obstetrician-gynaecologist were the fourth most common reason mentioned.

Knowledge of absolute and relative indications for CS was very good but there are some aspects of clinical practice that will require change. Up to 85% of obstetrician-gynaecologists prescribed 7-14 days of antibiotics (in 25% multiple antibiotics are prescribed) at time of CS whereas only prophylactic antibiotics are required. Wound infection is the commonest complication possibly over-diagnosed and/or the result of poor surgical technique or lack of sterile zones in operating theatres. Postoperative care is minimal with 85.5% of women discharged home within 12 hours after a CS with 17.5% discharged within 4 hours after the operation.

### **Focus Group Discussions (FGD)**

#### Who decides mode of delivery?

Across all groups of women there was a clear consensus that the obstetrician-gynaecologist makes the decision if the CS is for medical reasons. The opinion of the midwife is sometime sought but her role is very limited, and she acts mainly as an adviser. All groups of women reported that opinions are also sought from and/or provided by the wider family (mother, mother-in-law, sister), peers (other women who had given birth), neighbours and friends. The husband has an important role in decision making - in some cases he is considered the main decision maker and in NES it is the husband who signs a consent form for a CS. However, in the majority of the FGD discussion focused on the husband as one of the decision-makers, and a decision around mode of delivery is taken mostly in discussion with the husband, the woman herself and the obstetrician-gynaecologist. A minority view was that it is the woman who *'tells her husband what she needs'* and they *'reach agreement'*. Women living in more urban settings are more likely to decide the mode of delivery by themselves after consultation with an obstetrician-gynaecologist compared to women who live in rural areas. Grandmothers reported that at the time of delivery they relied more on the husband and family and had less of a voice in the decision-making process themselves compared to younger women who are more likely to say they decide for themselves based on experiences of their peer group and through information obtained via social media.

### Reasons for CS rather than Vaginal Birth

There is consensus that more women are delivering by CS than previously. Reasons for this – other than medical need – include that this is because of ‘*less suffering and pain*’ and with ‘*the baby next to me when I wake up*’. Other reasons given include that a CS can be planned (as opposed to waiting for labour to start), is safe for the baby (although complications are known) and is generally affordable. In all FGD it was agreed that only minority of women may have limited access to CS including those with less financial resources and/or living in rural or remote areas. Young pregnant women who have not yet given birth generally consider having a CS as ‘*normal*’ or ‘*the best*’ and may see multiple obstetrician-gynaecologists rather than a midwife during their pregnancy especially in urban areas. In contrast, older women and women who have had successful vaginal births were often of the opinion that vaginal birth is better if there are no medical contraindications or risks to the foetus, but understand that this comes with a lot of ‘*pain and suffering*’ when compared to giving birth by CS.

### What is needed to support vaginal birth in NES

There is consensus among both women and midwives that the current labour room environments need to be significantly improved. There was concern about the generally poor infrastructure, lack of equipment, drugs and basic consumables needed. Women emphasized the need for a clean and welcoming environment, bathrooms and toilets for patients, and a place for relatives to rest or stay. Privacy is important, using barriers or screens if single-room occupation is not possible. Women are clear about the role of the midwife and/or doctor who is expected to have a good attitude, be experienced, know how to support a woman through labour and birth and know when to refer if required. Many women had experienced or had heard of others’ experiences regarding poor professional behaviour and attitude from midwives. Midwives agree this is a problem but often feel disrespected and undervalued themselves. Midwives report being understaffed, unsupported, working long shifts, and having a heavy workload.

Other than paracetamol, women generally have not heard of the option and/or have not received any pain relief during labour and birth. Midwives are not experienced in giving e.g., Pethidine and have multiple concerns and misconception regarding giving this during labour as well as are often simply not allowed to provide this. None of the women in the FGD had ever heard anyone who had received Pethidine (or other pain relief medication) and were ‘*amazed*’ that this could be available considering this a potential ‘*game changer*’. Companionship during labour and birth is seen by both groups as definitely needed and good for women but it became apparent in FGD that this is currently ‘*not possible*’ or ‘*not allowed*’. Vaginal birth is generally associated with fear, anxiety, and risk. Midwives agree women require more information regarding childbirth and awareness should be raised regarding vaginal birth as a positive alternative to a CS.

### Discussion and Recommendations

This study focusses on CS and vaginal birth and examines the perceptions and experiences of women, practices of obstetrician-gynaecologists and midwives. The findings of this study were shared and discussed with a wide group of stakeholders. This led to the development of recommendations to improve practice including to address issues related to the high CS rates, indications for CS, quality of care during and after CS, regulation of medical practice, raising awareness, improving conditions for vaginal birth, and enhancing access to healthcare facilities. Specifically, these include the need to:

- Develop a list of agreed indications for CS, monitor and review CS rates and indications regularly.
- Enforce laws against malpractice and monitor adherence to CS agreed indications for elective and emergency CS.
- Ensure correct antibiotic use, and postoperative care for women who have a CS.
- Educate healthcare providers and communities about the risks of CS and benefits of vaginal birth.
- Improve healthcare facility readiness to support vaginal birth including with infra-structure, equipment, drugs, and an enabling environment.
- Promote evidence-based vaginal birth practices, support midwives to provide respectful maternity care facilitate the use of pain-relief and companionship during labour and birth.
- Increase availability of services for obstetric and newborn care including referral pathways to improve access and reduce the need for CS because of security concerns.

For each recommendation challenges and proposed approaches and practical solutions are provided to improve maternity care, reduce unnecessary CS, and promote safe childbirth practices across NES.

## الدراسة الثانية

### توافر و جودة الولادات القيصرية والولادات المهبلية في شمال شرق سوريا

#### ملخص

##### خلفية

تشير تقارير البرنامج إلى أن هناك عدداً كبيراً من العمليات القيصرية التي يتم إجراؤها في مرافق الرعاية الصحية العاملة في شمال شرق سوريا مع معدل منخفض نسبياً من الولادات المهبلية. بالنسبة لمرافق الرعاية الصحية المدعومة من المنظمات غير الحكومية التي تقدم تقاريرها إلى مجموعة العمل الصحية (NES - HWG)، تم الإبلاغ عن معدل العمليات القيصرية القائم على المرافق بين 24% - 31% خلال عامي 2022 و 2023. ومع ذلك، هناك أيضاً العديد من المستشفيات الخاصة في شمال شرق سوريا التي تقدم بشكل أساسي خدمات العمليات القيصرية مع توفر رعاية محدودة أو معدومة للولادات المهبلية ولكن لا تتوفر بيانات عنها. سعينا لاستكشاف العوامل التي تساهم في ارتفاع معدل الولادة القيصرية وانخفاض الاقبال على الولادة المهبلية في شمال شرق سوريا.

##### المنهجية

تم استخدام نهج مختلط الأساليب بما في ذلك: (1) مراجعة سجل غرفة العمليات بما في ذلك جميع العمليات القيصرية التي أجريت على مدى 14 يوماً متتالية في 4 مستشفيات فيما يتعلق بنوع واستطباب العملية القيصرية، (2) مسح المواقف والممارسات المعرفية بين أطباء التوليد وأمراض النساء، و (3) مناقشات المجموعات المتخصصة مع القابلات وكذلك مع النساء من مختلف الأعمار والخبرات بما في ذلك (أ) النساء الحوامل بحملهن الأول ويخططن للولادة، (ب) النساء اللواتي سبق لديهن ولادة مهبلية واحدة أو أكثر، (ج) النساء مع سوابق عملية القيصرية واحدة أو أكثر، (د) النساء اللاتي لديهن ولادة قيصرية وكذلك ولادة مهبلية، و (هـ) الجدات. تم تضمين كل من المواقع الريفية والحضرية. تم تحليل البيانات الكمية باستخدام إحصاءات وصفية بسيطة وتم تحليل البيانات النوعية باستخدام نهج الإطار المواضيعي مع تحديد الاقتباسات التوضيحية.

##### النتائج

##### مراجعة سجل غرفة العمليات

في السنة، هناك 10,975 ولادة مهبلية، 8,633 عملية قيصرية أجريت في 4 مستشفيات بمتوسط معدل العمليات القيصرية (عدد العمليات القيصرية / إجمالي عدد المواليد) 44% (نطاق 33.1% - 63.8%). يميز فقط مستشفيان بشكل روتيني بين العمليات القيصرية الاسعافية والانتخابية (المخطط لها). بالنسبة ل 342 عملية قيصرية التي تمت مراجعتها، كانت المؤشرات الثلاثة الأكثر شيوعاً هي: (أ) سوابق قيصرتين أو أكثر، (ب) سوابق قيصرية واحدة، و (ج) حمل مديد و/أو قلة السائل الأمنيوسي. 75.1% (342/257) من جميع العمليات القيصرية كان الاستطباب "سوابق قيصرية" ومنها 35.4% (257/91) كان الاستطباب سوابق قيصرية واحدة حيث يمكن إجراء تجربة مخاض مبدئياً. وشملت الاستطبابات الأخرى التي يحتمل أن تكون "غير ضرورية" تكلس المشيمة و "الحمل مديد-المفترض" والقيصرية الانتخابية لعدم التناسب الحوضي الجنيني دون تجربة سابقة للمخاض.

##### مسح المواقف المعرفية والممارسة

استجاب 40 طبيب أمراض النساء والتوليد للمسح (معدل الاستجابة 50%). 99% لديهم مكان عمل واحد - مستشفى مدعوم من المنظمات غير الحكومية (41.9%)، مستشفى خاص (37.2%)، أو مستشفى عام (20.9%). 45% من أطباء التوليد وأمراض النساء (معظمهم يعملون في مستشفى تدعمه المنظمات غير الحكومية) يجرون أكثر من 50 عملية قيصرية شهرياً.

87.5% من أطباء التوليد وأمراض النساء يعتبرون أن معدل العمليات القيصرية في شمال شرق سوريا مرتفع للغاية. تعتبر عوامل متعددة مساهمة في هذا. الفئات الـ 3 الأكثر شيوعاً هي (أ) ثقافة وتوقعات المريض والأسرة، (ب) الوضع الأمني الذي يستلزم الولادة المخطط لها، و (ج) البنية التحتية والبيئة والممارسات الضعيفة وغير الكافية لتكون قادرة على دعم الولادة الطبيعية. وعند النظر إلى الحوافز المالية لطبيب التوليد وأمراض النساء كعوامل منفردة، فإنها السبب الرابع المذكور الأكثر شيوعاً. كانت معرفة الاستطبانات المطلقة والنسبية للعمليات القيصرية جيدة جداً ولكن هناك بعض جوانب الممارسة السريرية التي تتطلب التغيير. ما يصل إلى 85% من أطباء التوليد وأمراض النساء وصفوا مضادات الحيوية لمدة 7-14 يوماً (في 25% يتم وصف مضادات الحيوية المتعددة) عند إجراء عملية قيصرية في حين أن المضادات الحيوية الوقائية هي فقط المطلوبة. انتان الجرح هو الاختلاط الأكثر شيوعاً الذي قد يتم تشخيصه بشكل مفرط و/أو نتيجة لسوء التقنية الجراحية أو عدم وجود مناطق معقمة في غرف العمليات. رعاية ما بعد الجراحة ضئيلة مع خروج 85.5% من النساء إلى المنزل في غضون 12 ساعة بعد العملية القيصرية مع خروج 17.5% في غضون 4 ساعات بعد العملية.

### مناقشات المجموعات المتخصصة

#### من يقرر طريقة الولادة؟

في جميع فئات النساء، كان هناك إجماع واضح على أن طبيب التوليد وأمراض النساء يتخذ القرار إذا كانت العملية القيصرية لأسباب طبية. ويطلب رأي القابلة في بعض الأحيان ولكن دورها محدود جداً، ودورها الأساسي لتقديم النصيحة. وأفادت جميع فئات النساء بأن الآراء تلمس أيضاً و/أو تُقدّم من الأسرة الأوسع نطاقاً (الأم، والحماة، والأخت)، والأقربان (النساء الأخريات اللاتي وضعن مولودهن)، والجيران والأصدقاء. يلعب الزوج دوراً مهماً في صنع القرار - في بعض الحالات يُعتبر صانع القرار الرئيسي وفي شمال شرق سوريا يكون الزوج هو الذي يُوقّع على نموذج موافقة على العملية القيصرية. ومع ذلك، ركزت معظم مناقشات المجموعات المتخصصة على الزوج باعتباره أحد صانعي القرار، ويتم اتخاذ قرار بشأن طريقة الولادة في الغالب بالمناقشة مع الزوج والمرأة نفسها وطبيب التوليد وأمراض النساء. كان رأي الأقلية هو أن المرأة هي التي "تخبر زوجها بما تحتاجه" و "يتوصلان إلى اتفاق". ومن الأرجح أن تقرر النساء اللاتي يعشن في مناطق حضرية أكثر طريقة الولادة بأنفسهن بعد التشاور مع طبيب أمراض النساء والتوليد مقارنة بالنساء اللاتي يعشن في المناطق الريفية. ذكرت الجدّات أنهن في وقت الولادة كن يعتمدن أكثر على الزوج والأسرة وكان لديهن دور أقل في عملية صنع القرار بأنفسهن مقارنة بالنساء الأصغر سناً اللاتي من المرجح أن يقررن بأنفسهن بناء على تجارب مجموعة أقرانهن ومن خلال المعلومات التي تم الحصول عليها عبر وسائل التواصل الاجتماعي.

#### أسباب اختيار العملية القيصرية فضلاً عن الولادة المهبلية

هناك إجماع على أن عدد النساء اللواتي يلدن بعملية القيصرية أكثر من ذي قبل. تشمل أسباب ذلك - فيما عدا الاستطباب الطبي - أن هذا بسبب "معاناة وألم أقل" ومع "الطفل بجاني عندما أستيقظ". تشمل الأسباب الأخرى المُقدّمة أنه يمكن التخطيط للعملية القيصرية (على عكس انتظار بدء المخاض)، وهو آمن للطفل (على الرغم من أنّ الاختلاطات معروفة) وبأسعار معقولة بشكل عام. وفي جميع مناقشات المجموعات المتخصصة، تم الاتفاق على أن أقلية فقط من النساء قد يكون لديهن وصول محدود إلى العملية القيصرية، بما في ذلك النساء ذوات الموارد المالية الأقل و/أو اللاتي يعشن في المناطق الريفية أو النائية. تعتبر النساء الحوامل الشابات اللاتي لم يُنجبن بعد أن يكون إجراء العملية القيصرية "طبيعياً" أو "الأفضل" وقد يُزرّن العديد من أطباء التوليد وأمراض النساء بدلاً من القابلة أثناء الحمل خاصة في المناطق الحضرية. على العكس تماماً، كانت النساء الأكبر سناً والنساء اللاتي لديهن ولادات مهبلية ناجحة في كثير من الأحيان يرون أن الولادة المهبلية أفضل إذا لم تكن هناك موانع طبية أو مخاطر على الجنين، ولكنهن يدركن أن ذلك يتوافق مع الكثير من "الألم والمعاناة" عند مقارنته بالولادة عن طريق العملية القيصرية.

### ما هو مطلوب لدعم الولادة المهبلية في شمال شرق سوريا

هناك إجماع بين كل من النساء والقابلات على أن بيئة غرف الولادة الحالية تحتاج إلى تحسين كبير. وكان هناك قلق بشأن ضعف البنية التحتية عموماً، والافتقار إلى المعدات والأدوية والمستهلكات الأساسية اللازمة. وشدّدت النساء على الحاجة إلى بيئة نظيفة ومرحبة، وحمامات و دورات مياه للمرضى، ومكان للأقارب للراحة أو الإقامة. الخصوصية مهمة، باستخدام الحواجز أو السواتر إذا كان شغل غرفة واحدة غير ممكن. والمرأة واضحة بشأن دور القابلة و/أو الطبيب التي يتوقع منها أن يكون لها موقف جيد، وأن تكون من ذوي الخبرة، وأن تعرف كيف تدعم المرأة خلال المخاض والولادة، وتعرف متى تُحال إذا لزم الأمر. وقد عانت نساء كثيرات أو سمعن عن تجارب الآخرين فيما يتعلق بسوء السلوك المهني والمواقف من جانب القابلات. تتفق القابلات على أن هذه مشكلة ولكنهن غالباً ما يشعرن بعدم الاحترام والتقليل من قيمتهن. وتفيد القابلات بأنهن يعانين من نقص الموظفين، وعدم دعمهن، وعملهن في مناوبات طويلة، وعبء عمل ثقيل.

فيما عدا الباراسيتامول، لم تسمع النساء عموماً عن الخيار و/أو لم يتلقين أي مسكن للألم أثناء المخاض والولادة. القابلات غير متمرسات في إعطاء، على سبيل المثال، بيثيدين ولديهن مخاوف متعددة ومفاهيم خاطئة فيما يتعلق بإعطائه أثناء المخاض وغالباً لا يسمح لهن ببساطة بتقديم ذلك. لم تسمع أي من النساء في مناقشات المجموعات المتخصصة أي شخص تلقى البيثيدين (أو غيره من أدوية تخفيف الآلام) وكانوا "مندهشين" من أن هذا يمكن أن يكون متاحاً بالنظر إلى أن هذا "يغير قواعد اللعبة" المحتمل. وترى كلتا المجموعتين أن المرافق أثناء المخاض والولادة ضرورية بالتأكيد وجيد للمرأة، ولكن أصبح من الواضح في مناقشات المجموعات المتخصصة أن هذا "غير ممكن" أو "غير مسموح به حالياً". ترتبط الولادة المهبلية عموماً بالخوف والقلق والمخاطر. تتفق القابلات على أن النساء يحتجن إلى مزيد من المعلومات حول الولادة ويجب زيادة الوعي فيما يتعلق بالولادة المهبلية كبديل إيجابي للعملية القيصرية.

### المناقشة والتوصيات

تركز هذه الدراسة على العملية القيصرية والولادة المهبلية وتدرس تصورات وتجارب النساء وممارسات أطباء التوليد وأمراض النساء والقابلات. تم تبادل نتائج هذه الدراسة ومناقشتها مع مجموعة واسعة من أصحاب المصلحة. وأدى ذلك إلى وضع توصيات لتحسين الممارسة بما في ذلك معالجة القضايا المتعلقة بارتفاع معدل العمليات القيصرية، واستقطابات العملية القيصرية، وجودة الرعاية أثناء وبعد العملية القيصرية، وتنظيم الممارسة الطبية، وزيادة الوعي، وتحسين ظروف الولادة المهبلية، وتعزيز الوصول إلى مرافق الرعاية الصحية. وتشمل هذه على وجه التحديد الحاجة إلى:

- وضع قائمة بالاستقطابات المتفق عليها للعملية القيصرية، ومراقبة ومراجعة معدلات العمليات القيصرية والاستقطابات بانتظام.
- إنفاذ القوانين ضد الممارسات الخاطئة ومراقبة الالتزام بقوائم استقطابات العملية القيصرية.
- ضمان الاستخدام الصحيح للمضادات الحيوية، والرعاية بعد العملية الجراحية للنساء اللواتي لديهن عملية القيصرية.
- تثقيف مقدمي الرعاية الصحية والمجتمعات حول مخاطر العملية القيصرية وفوائد الولادة المهبلية.
- تعزيز وتحسين جاهزية مرافق الرعاية الصحية لدعم الولادة الطبيعية بما في ذلك البنية التحتية والمعدات والأدوية والبيئة المواتية.
- تعزيز ممارسات الولادة المهبلية القائمة على الدليل، ودعم القابلات لتوفير رعاية أمومة محترمة، تسهيل استخدام مسكنات الألم، والمرافق أثناء المخاض والولادة.
- زيادة توافر الخدمات لرعاية التوليد وحديثي الولادة بما في ذلك مسارات الإحالة لتحسين الوصول وتقليل الحاجة إلى العملية القيصرية بسبب المخاوف الأمنية.

لكل توصية تم تقديم التحديات والمقاربات المقترحة والحلول العملية لتحسين رعاية الأمومة، والحد من العمليات القيصرية غير الضرورية، وتعزيز ممارسات الولادة الآمنة عبر شمال شرق سوريا.

## Background

Internationally, minimum coverage standards are agreed for availability of Skilled Birth Attendance (SBA) for vaginal births and Caesarean Section (CS), and these are based on catchment population.<sup>1,2,3</sup> Geographic inclusion may vary over time, but the NES is generally considered to include two districts in Aleppo Governorate (Menbij and Ain Al Arab) as well as three other Governorates (Ar Raqqa, Al Hassakeh and Deir ez Zor). Analysis of available reports suggests that the current best estimates for the population living in the NES is around 5 million.<sup>4,5</sup>

The number of expected births can be calculated using a crude birth rate (CBR) of 24 per 1000 population providing an estimate of 120,000 births per year for a population of 5.0 million for the NES area. If a minimum rate of 15 -25% is applied for CS<sup>1,2</sup>, between 18,000-30,000 CS will be required per year.

The health system in NES has three main levels – Primary Health Care Centres (PHC) at which outpatient care is provided including Antenatal and Postnatal Care, Comprehensive PHC (CPHC) at which SBA and Basic Emergency Obstetric and Newborn Care (BEmONC) is also expected to be provided and Hospitals which are expected to provide the full continuum of care as well as both SBA and Comprehensive Emergency and Newborn Care (CEmONC) including CS. A healthcare facility mapping conducted in March 2022 indicated that there were 24 hospitals, 14 CPHC and 100 PHC in place and supported by international and national NGOs across the NES.<sup>4</sup> Of these 7 CPHC and 13 PHC provide SBA, and 10 hospitals provide SBA as well CS. In addition, there are

Overall, applying the international guidelines for minimum coverage, the number of Hospitals is in principle adequate with a minimum of 10 required able to provide Comprehensive EmONC for the population size. However, the majority of existing health care facilities are not fully functional and are only able to provide certain components ('signal functions') of EmONC.

For example, there is no central blood transfusion service in NES with a blood bank in Raqqa which supplies all healthcare facilities in Raqqa area, a blood bank in the East of Deir ez Zor

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<sup>1</sup> UNICEF, World Health Organization, United Nations Population Fund. Guidelines for monitoring the availability and use of obstetric services. New York, N.Y.: United Nations Children's Fund; 1997.

<sup>2</sup> WHO, UNFPA, UNICEF, AMDD. Monitoring Emergency Obstetric Care - a Handbook. Geneva, Switzerland: WHO 2009. Available at: [http://whqlibdoc.who.int/publications/2009/9789241547734\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241547734_eng.pdf) Or [Monitoring emergency obstetric care : a handbook \(who.int\)](#)

<sup>3</sup> The Partnership for Maternal, Newborn and Child Health. Essential Interventions, Commodities and Guidelines for Reproductive, Maternal, Newborn and Child Health. 2011, Geneva, Switzerland.

<sup>4</sup> EF Situation Analysis Maternal and Newborn Health (MNH) – Availability and Functionality of Healthcare Facilities in Northeast Syria (NES) March 2021 – Report prepared by N van den Broek

<sup>5</sup> ISRAF - Identifying and Scoping options for Health Systems' Resilience and stewardship to improve Access and Financial Sustainability – The Health Care Delivery System in Northeast Syria - Report by UPP July 2023

supplying healthcare facilities in the Governorate, one small blood bank in a Hospital in Kobani, a blood bank in Menbij supplying surrounding healthcare facilities and blood banks in

Hassakeh and Quamishli (controlled by the Syrian Government). Blood is generally free except from Syrian Government controlled blood banks.<sup>6</sup>

Only 7 of the 14 CPHC were able to provide SBA with at least 36-40 required to be able to provide SBA and Basic EmONC for this size population. There are in principle up to 100 PHC in place across the NES region of which 13 record a small number of births per month (<10).

Geographical distribution of healthcare facilities is not equitable with more healthcare facilities (especially Hospitals) situated in large urban centres. Lack of transport as well as ‘out of pocket’ expenses are reported barriers for women’s access to timely healthcare at time of birth and/or when complications occur, especially in more remote areas.

Caesarean sections are effective in saving maternal and infant lives, but only when they are required for medically indicated reasons. At population level, CS rates higher than 10% are not associated with reductions in maternal and newborn mortality rates.<sup>7</sup> A population-based CS rate (Number of Caesarean Section births/total number of births in the population) is not available for NES. Birth certificates are obtained for most of the newborn babies in NES through the Syrian Government with no central register in NES and no contemporaneous data on number of births (live births and stillbirths) in NES.

Programme reports indicate that there are a large number of Caesarean Sections (CS) carried out at healthcare facilities operating in the NES with a comparative low rate of vaginal births. For NGO-supported healthcare facilities the facility-based CS rate was reported as 24% overall for 2022 (with 44,929 vaginal births and 14,190 CS) and 31.2% for the months January to April 2023 (9,160 vaginal births and 4,162 CS).<sup>8</sup> As the population attending for care at NGO supported hospitals may be referred for Emergency Obstetric Care, these rates cannot be extrapolated to the population as a whole.

However, whereas care at NGO-supported healthcare facilities is free, there are numerous private hospitals providing mainly CS – including elective CS – with limited capacity to support vaginal birth. By July 2023 there were more than 60 private hospitals functioning in the NES area.<sup>5</sup> Anecdotally, CS are also performed at private houses (with no formal operating theatre and

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<sup>6</sup> Information per April 2024

<sup>7</sup> WHO 2021 <https://www.who.int/news/item/16-06-2021-caesarean-section-rates-continue-to-rise-amid-growing-inequalities-in-access>

<sup>8</sup> Data from NES Health Working Group Dashboard – Monthly Health 4Ws Indicators – updated May 2023

equipment in place). The number of CS conducted in NES is not recorded centrally and private healthcare is not regulated.

Delivery services (Skilled Birth Attendance for vaginal births) are available at CPHCs and Hospitals across the NES with some Hospitals acting as central referral National- or dedicated Maternity-Hospitals. In some cases, PHC also take deliveries although this is not recommended.<sup>4</sup> Some midwives may have private clinics at which women can attend for vaginal delivery. Finally, a small number of women may deliver at home under the care of a visiting midwife. There are no Traditional Birth Attendants (TBA) active except perhaps in very remote areas and the majority of women living in NES access care for vaginal birth at a healthcare facility or private clinic.

There is little documented evidence on experiences and perceptions of women and health care providers in the NES regarding either vaginal birth or CS. Anecdotally, CS can be seen as ‘the safest’ or ‘the best’ by women and their families and/or by obstetrician-gynaecologists. In some cases, reasons given include security concerns and lack of safe transport especially during nighttime. Midwives support vaginal birth but may not be involved in the decision-making process surrounding mode of delivery. Midwives are however the main cadre providing antenatal care. Several reports have emerged regarding ‘unnecessary Caesarean Sections’ being carried out in an ‘unsafe environment’ in an unregulated healthcare environment and post-conflict setting. Anecdotal evidence suggests women are discharged often after only a few hours following a CS with no postnatal follow up or care in place. Similarly, conditions for ‘normal’ vaginal birth are not considered optimal with poor infrastructure in labour rooms, companionship during labour and birth not supported, pain relief not offered, labour and birth not monitored (e.g., using a partograph) and a weak referral system.

The Objective of this study is to explore factors that contribute to a high CS rate and low uptake of vaginal births in NES with a view to developing recommendations for improving the quality of care provided at birth for women living in NES.

## Research Questions Developed

We sought to explore:

- Factors that contribute to a high rate of Caesarean Section and low uptake of vaginal birth in NES

### Main Research Questions

- What are the main reasons for delivery by CS for women in NES?
- What is the current practice, and which changes in practice are needed to support evidence-based decision making and care for CS as mode of delivery
- Who are the main decision makers when regarding mode and place of delivery?

- What are the experiences and perceptions of women, their families and healthcare providers regarding place and mode of delivery?
- What changes are needed at healthcare facility level to improve the availability and quality of Skilled Birth Attendance for vaginal births?

## Methods

A mixed methods approach was used including A) a Register Review, B) a Knowledge Attitudes and Practice (KAP) Survey and C) Focus Group Discussions (FGD).

Register review - A retrospective review of operating theatre registers was conducted using a pre-designed checklist to collect information on type of CS (Emergency or Elective) and Indication for CS (or no indication provided) with data obtained from theatre registers from 4 Hospitals which were selected based on patient load and interest to participate in the study (opportunistic selection and including the largest Maternity Hospital in NES). All included healthcare facilities are under the management of an international or national NGO. At each site all CS conducted during the previous 2 weeks (from start date of data collection) were reviewed.

A KAP survey was conducted among obstetrician-gynaecologists. A preliminary list of contact details for 50 obstetrician-gynaecologists was available. Snowballing technique was then used to reach as many obstetrician-gynaecologists across the NES as possible. The KAP survey included questions on place of work (NGO or Private) and practice (indications for CS, complications, care during and after CS) as well as opinion on CS rates and decision-making regarding mode of birth.

### Focus Group Discussions (FGD)

A total of 20 FGD were conducted with women and midwives at healthcare facilities (including CPHC, Hospitals, rural and urban sites, a camp site). 15 FGD were conducted with women of different ages and experiences including a) women pregnant with their first pregnancy and planning for birth (3 FGD), b) women who had previously had one or more vaginal births (3FGD), c) women who had previously had one or more CS (3FGD), d) women who had a CS as well as a vaginal birth (3FGD), and e) grandmothers (3FGD). In addition, 5 FGD were conducted with midwives. Both rural and urban sites were included. Women were invited to a FGD through community outreach via Community Health Workers and during attendance at a healthcare facility (e.g., for antenatal care). Midwives from Hospitals and CPHC were be invited to participate at a time that suited them outside of their working hours. Topic Guides were developed to guide the discussions (*available on request*). Topics included exploration of who the main decision maker are regarding mode of delivery (CS or vaginal birth), opinions on the CS rate in NES, the reasons for choosing a CS rather than a vaginal birth and factors that might affect this including

socio-economic status and education whether living in rural or urban settings. Women were asked about previous experiences of vaginal birth and/or CS, perceptions and understanding of what is needed to support vaginal birth, their opinions on what needs to be improved at healthcare facilities to support vaginal birth, and their opinions regarding pain relief and companionship during labour and birth.

### Data collection and storage

For the theatre register review, at each participating Hospital 2 midwives and a focal point were trained in the collection of data. Register Review tools were piloted at one of the participating hospitals – clarification of language was needed only. A paper-based data collection system was used to extract information from operating theatre registers. Data was collected by 2 midwives at each site and checked by the focal point. Completed data forms were transferred by phone to the central office. Phone images were deleted by the sender and receiver after receipt was acknowledged.

The KAP survey was administered using Kobo Toolbox.<sup>9</sup>

FGD were supported by a Facilitator and a Note taker. With participants' consent FGD were recorded. Recordings were manually transcribed (in Arabic) and both notes and transcripts were then translated into English.

All quantitative data (Register review and KAP survey) were checked and cleaned by a dedicated research assistant. Both quantitative and qualitative data were stored as central password protected data bases.

### Sample size

Based on the number of CS and Normal Vaginal Deliveries supported annually at participating site we expected to be able to obtain information for a minimum of 250 CS for a 2-week review across the sites. There are an estimated 150 obstetrician-gynaecologists working in the NES. We expected between 75-100 obstetrician-gynaecologists to complete the KAP survey. We estimated that 20 FGD would be needed to reach saturation. (15 with women and 5 with midwives).

### Data Analysis

Descriptive data analysis was used to summarise the findings for the operating theatre register review and KAP survey. For qualitative data (FGD) all transcripts and notes were read independently by three researchers with key themes identified. Using a thematic framework analysis approach summaries were built, and illustrative quotes identified.

### Ethical considerations

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<sup>9</sup> KoboToolbox - <https://www.kobotoolbox.org>

For the Operating Theatre Register Review, names of patients were not recorded with only date of CS recorded. Data collection forms were destroyed (shredded or burnt) and phone images deleted after data were received and all checks were completed at the central office. Names of healthcare facilities were coded in the database. Permission was obtained for data extraction from the Health Coordinator of each Hospital.

For the KAP survey no information was obtained that could be used to identify or locate the respondents. An explanation of the study was included in the invitation which was sent out by WhatsApp or email. A consent box was included in the questionnaire form.

For FGD all participants were given an explanation regarding the purpose and nature of the study and provided signed consent. General characteristics of FGD participants were recorded at the start of each session by the Note taker and are presented in aggregated format with no person identification or location data recorded for any of the participants.

All data (quantitative and qualitative) were entered and stored using a dedicated password protected computer.

The funding agency was not involved in the design and conduct of the study. Midwives completing the register review were compensated with 40\$ for each site. The KAP survey was completed voluntarily. Participants of FGD were offered tea and light refreshments and transport costs where needed.

## Results

### A. Operating Theatre Register Review

Data were obtained from 4 large Hospitals providing Maternity Care in the NES regarding number of births and CS provided per year (Table 1- data for last 12 months or extrapolated).

**Table 1:** Number of Caesarean Sections (CS) and normal vaginal deliveries (NVD) per year per site, CS Rate, and number of available CS reviewed per site.

Hospital	Number of CS included in analysis	Number of Normal Vaginal Deliveries (NVD) (per year)	Number of CS (per year)	Total number of births (per year)	CS Rate (Number of CS/ total number of births)
1.	114	8,033	3,983	12,016	33.1%
2.	138	1,734	3,039	4,773	63.7%
3.	60	549	966	1,515	63.8%
4.	30	659	645	1,304	49.5%
<b>Total</b>	<b>342</b>	<b>10,975</b>	<b>8,633</b>	<b>19,608</b>	<b>44.0%</b>

For each Hospital all CS conducted and recorded within a 14-day period were analysed (for the period 28.8.23 to 14.10.23 - Supplementary Table 1). Regarding the workload, CS were performed on all days of the week in larger hospitals (1 and 2), during 11/14 days in Hospital 3 and in 7/14 days in Hospital 4. Days on which CS were not performed included mainly the weekends (Friday, Saturday, Sunday). In total 342 CS were reviewed (Table 1)

The number of CS performed for which there was no indication recorded in the theatre book was nil. Not all sites routinely distinguish between an emergency and elective (planned) CS – 1 site did not record this (Hospital 2), and one labelled all CS as emergency (Hospital 4).

For the two hospitals where this is available the proportion of emergency CS out of all CS was 22.8% (Hospital 1) and 51.9% (Hospital 3)

Indications for CS were obtained from the register and grouped by category (Table 2, Supplementary Table 2)

Detailed information was provided in operating theatre registers for 3 of the 4 hospitals including with usually more than 1 reason/indication provided to describe the case. The three top ranking indications (in order) are 2 or more previous CS, 1 previous CS and post maturity and/or oligohydramnios.

Up to 75.1% of all CS are done for one or more previous CS with 35.4% of these (91/257) done for 1 previous CS and the rest for 2 or more (up to 6) previous CS. For some cases of CS with indication 1 previous CS, additional indications were provided (Hospital 1 and 4) which included breech presentation, premature rupture of membranes (PROM), post maturity, 'full term', 'failure to dilate at full term' or 'previous CS done more than 12 months ago'. These might also permit a trial of labour and/or induction of labour. In two hospitals an elective CS for 1 previous CS was always recorded as having additional indications suggesting that trial of labour was considered.

However, CS after 1 or more CS are frequently done as an 'emergency' rather than elective or planned CS even when there is no indication that the woman was in labour or that there was a complication e.g., for 'high blood pressure', scar pain.

Hydrocephalus was recorded as an indication in 3 cases. CS was required for 3 cases for a stillbirth as there had been 2 or more previous CS performed.

Almost all CS for previous 2 or more CS are correctly done as an elective CS (planned) except if women who are in labour in Hospital 1 but in other settings these were also frequently recorded as 'emergency CS'.

Similarly, CS for breech (not specified) or transverse lie as well as for a 'precious pregnancy' (after infertility or in older women) were generally done as an emergency rather than elective CS.

CS for ‘post-maturity’ included recorded indications of ‘41 GW’ and/or oligohydramnios, placental calcifications or simply ‘at term’.

For the category ‘other’ the majority (8/14) were for previous anterior and posterior colporrhaphy and 2 were recorded as for tubal ligation.

None of the following indications were recorded in this sample; pre-eclampsia, placenta accreta spectrum, placenta praevia and cord prolapse.

**Table 2: Indications for CS performed obtained from Theatre Registers**

Indication	Hospital				Total	Ranking
	1	2	3	4		
<b>1 previous CS</b>	26	44	15	6	<b>91</b>	<b>2</b>
<b>2 or more previous CS</b>	59	66	33	8	<b>166</b>	<b>1</b>
Failure to Progress in Labour	4		1	1	6	7
Cephalo-Pelvic Disproportion (CPD)		1		3	4	9
Breech Presentation	1	1		4	6	7
Transverse/Oblique Lie	1		3		4	9
Multiple pregnancy		2			2	11
Foetal Distress	4	2		1	7	6
foetal Macrosomia		2			2	11
<b>Abruptio Placenta</b>	11				11	<b>5</b>
<b>Post-term pregnancy and/or oligohydramnios</b>	2	13	1	5	<b>21</b>	<b>3</b>
Premature Rupture of Membranes (PROM)	1		1	1	3	10
Precious pregnancy	1	2	2		5	8
<b>Other</b>	4	5	4	1	14	<b>4</b>
<b>Total</b>	<b>114</b>	<b>138</b>	<b>60</b>	<b>30</b>	<b>342</b>	

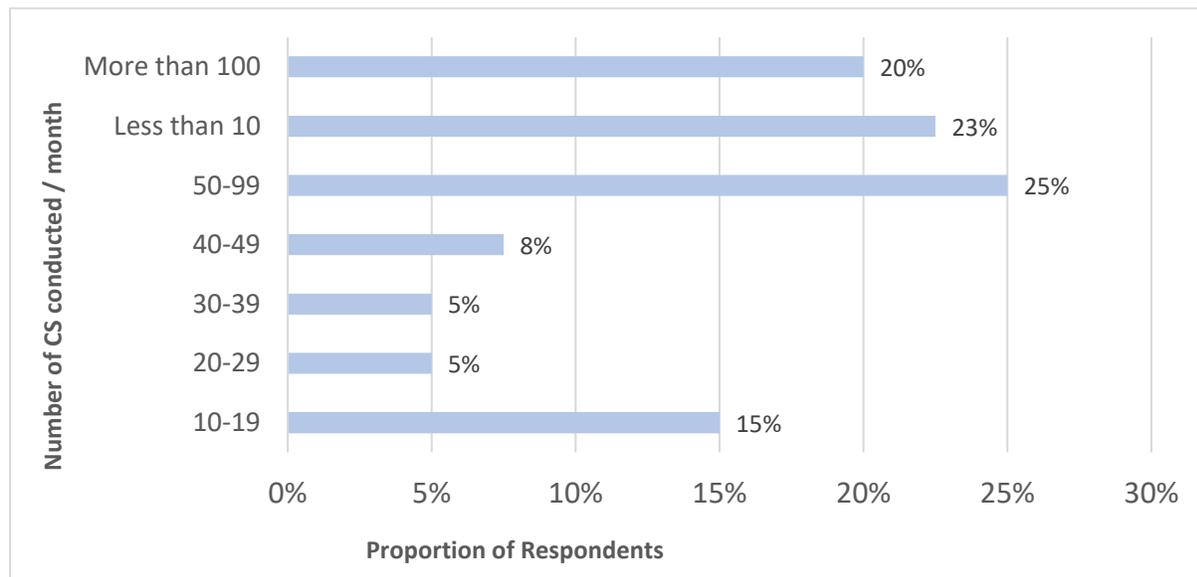
## B. KAP Survey for Obstetrician-Gynaecologists

A total of 80 obstetrician-gynaecologists were approached directly (50) or via snowballing (30) with 40 responses received (50% response rate). Of these 28 were male (70%) and the rest female (12, 30%). Respondents main place of work was an NGO-supported Hospital (41.9%, 18/40), a Private Hospital (37.2%, 16/40) and a Public (LHA) Hospital (20.9%, 9/40)). Only 3 (<1%) obstetrician- gynaecologists worked in 2 places simultaneously (NGO-private; NGO-public and Public-Private healthcare facilities). Respondents were from across the NES and based across the

Governorates (17 Raqqa, 9 Deir-ez-Zor, 5 Quamishli, 4 Hassakeh, and the rest in Kobane, Menbij or other area)

Just under half of all respondents performed more than 50 CS per month (18/40;45%). (Figure 1) Obstetrician- gynaecologists conducted more than 100 CS per month worked either in an NGO-supported or Public Hospital rather than in a private clinic.

**Figure 1: Number of Caesarean Sections performed per month**



**Opinions on CS Rate and Factors affecting CS Rate**

The majority (87.5%, 35/40) of obstetrician-gynaecologists agreed that the CS rate is too high. However, 5 (of which 4 worked in a private hospital setting) were unsure or did not agree that the CS rate was too high. The main decision maker for an Emergency CS was considered to be the obstetrician-gynaecologist alone (92.5%, 37/40) with 3 obstetrician-gynaecologists indicating that the midwife or patient or patient’s family were also a key decision maker. For an elective CS a smaller proportion of obstetrician-gynaecologists considered they were the main decision (57.5% (23/40)) with the decision seen as being made together with the patient or her family (6 respondents) or with the patient and midwife (1). The patient and/or her family was considered the main decision maker in case of an elective CS by 17.5% (7/40) obstetrician-gynaecologists. The midwife was seen as the main decision maker by a minority (2/40).

Respondents were asked to rank up to 5 factors (out of 18) that might contribute to the CS Rate in NES. The majority thought there were multiple factors contributing to the CS rate with 72.5% (29/40) ticking 5 factors. When underlying reasons are categorised, the most frequently recorded factors were related to the patient and family culture and expectations, the security

situation, and poor conditions for normal birth. When considered as single factors, financial incentives were the fourth commonest reason (out of 18). (Table 3)

**Table 3: Factors contributing to the CS Rate in NES**

Factors contributing to the CS Rate in NES	Count	Ranking
<b>Patient and Family culture</b>	<b>48</b>	<b>1</b>
Caesarean section is seen as the best for women	28	
Cultural and social norms among women and their families	20	
<b>Security Situation in NES</b>	<b>42</b>	<b>2</b>
Danger of transport/movement for the patient during the night	16	
Danger of transport/movement for the obstetrician-gynaecologist at night	13	
Security situation in NES	13	
<b>Related to conditions for Normal Vaginal Delivery</b>	<b>31</b>	<b>3</b>
Shortage of midwives	10	
Women are not given pain relief during labour and birth	11	
Midwives are not trained well	4	
Women are not allowed to have a companion at time of birth	3	
Labour rooms are not well equipped	1	
The quality of services for normal delivery is poor	2	
<b>Central Regulation</b>	<b>25</b>	<b>4</b>
No active Professional Association	10	
No checks on my practice	10	
No central Regulating Authority	5	<b>5</b>
<b>Financial</b>	<b>16</b>	
Financial incentive for me	14	
Poor salary in public service	2	

Obstetrician- gynaecologists were provided with a list of possible indications for CS and asked to judge if these were ‘absolute indications’ or not. There was a variety of opinion amongst obstetrician-gynaecologists with no clear consensus. Indications such as cord prolapse, placental complications (abruptio, praevia), failure of labour to progress including for cephalo-pelvic disproportion (CPD) were the most reported (but by only 10-15% of respondents). In contrast some indications such as one previous CS and multiple pregnancy, breech presentation, patient desire was also considered as ‘absolute’ indications but by 1 respondent each only.

Most obstetrician-gynaecologists (62.5%, 25/40) felt there are unnecessary CS being carried out with the main reasons for this given as patient and family desire (11/40), ability to earn more money in a shorter time (9/40) as well as CS being done unnecessarily for placental calcification (5/40), oligohydramnios (4/40) and for women who had had only 1 previous CS (5/40) (Supplementary Table 3)

### Clinical Practice – Indications for CS and Peri-partum Hysterectomy

Obstetrician-gynaecologists were asked to report on the 3 commonest indications for Elective and Emergency CS in their own clinical practice. The commonest reasons for an Elective CS were: 1) Previous CS (2 or more), 2) Breech presentation (any) and, 3) Patient desire. Of note was that cephalo-pelvic disproportion (without trial of labour) is a frequently reported indication for elective CS. (Table 4, Supplementary Table 4)

For an Emergency CS the commonest indications were: 1) Abruptio Placenta or Antepartum Haemorrhage, 2) foetal distress including cord prolapse, and 3) Previous CS (2 or more)

In total the commonest indications are Previous CS (2 or more), Foetal distress and Abruptio Placenta. Indications for having to conduct a hysterectomy at time of CS (peripartum hysterectomy) was overwhelmingly placental complications – bleeding (86/94 responses; 91.5.9%) followed by 2 or more previous CS (3/94; 3.2%).

**Table 4: Most frequent Indications for Elective and Emergency CS as reported for Obstetrician-gynaecologists’ clinical practice.**

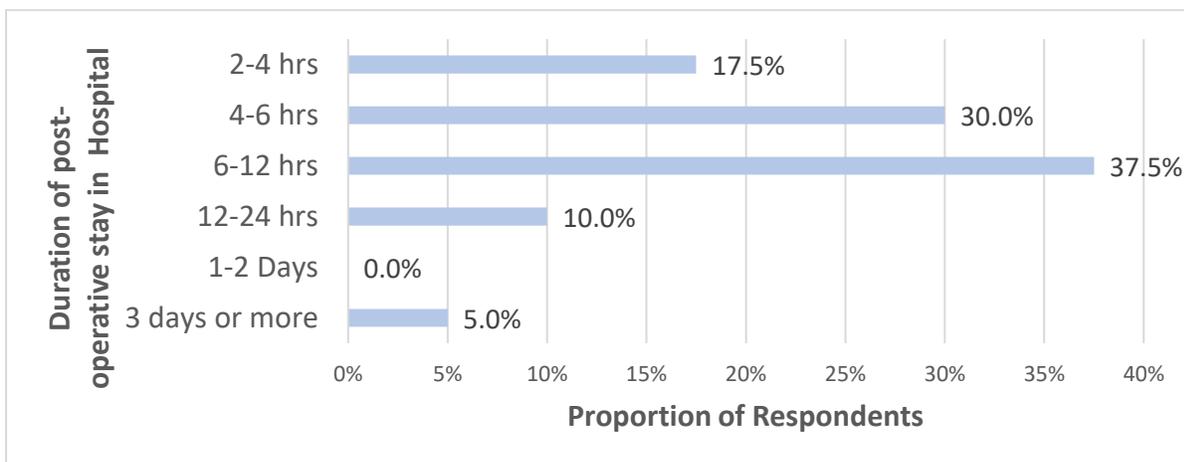
Indication for CS	Elective CS		Emergency CS		Total	
	N	Ranking	N	Ranking	N	Ranking
1 previous CS	8		7		15	
<b>2 or more previous CS</b>	26	<b>1</b>	12	<b>3</b>	38	<b>1</b>
Failure to Progress in Labour			9	<b>4</b>	9	
<b>Cephalo-Pelvic Disproportion (CPD)</b>	12	<b>5</b>	6		18	<b>4</b>
<b>Breech Presentation</b>	15	<b>2</b>	1		16	<b>5</b>
<b>Transverse/Oblique Lie</b>	13	<b>4</b>	2		15	
Multiple pregnancy	2				2	
<b>Foetal Distress and Cord Prolapse</b>			32	<b>1</b>	32	<b>2</b>
<b>Abruptio Placenta or APH</b>			28	<b>2</b>	28	<b>3</b>
Placenta Praevia	6		3		9	
Placenta accreta spectrum	1		2		3	
Post-term pregnancy and/or oligohydramnios	3		1		4	
(Pre)-eclampsia	1		8	<b>5</b>	9	
Premature Rupture of Membranes (PROM)	1				1	
Precious pregnancy	6				6	
Patient desire	14	<b>3</b>				
Other	1		2		3	
<b>Total</b>	<b>108</b>		<b>113</b>		<b>221</b>	

### Clinical Practice - Peri-operative Care

Regarding postoperative care provided to women with CS, only 5.0% (2/40) of all obstetrician-gynaecologists reported that women would stay for 3 or more days at the healthcare facility for postnatal care after a CS.

The majority 85.5% (34/40) discharged patients within 12 hours post-operatively and 17.5% (7/40) would do so within 4 hours of completing a CS. (Figure 2)

**Figure 2: Duration of Postoperative Stay after Caesarean Section**

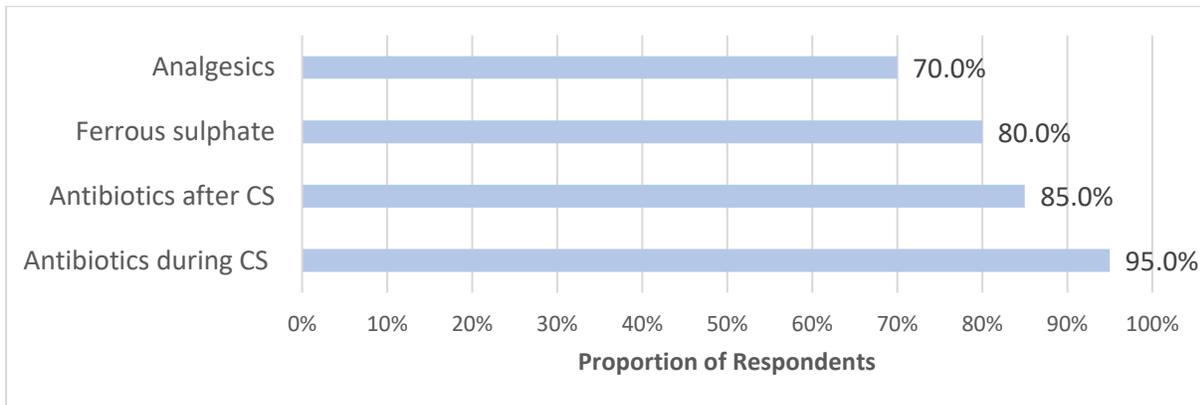


A total of 38 of the 40 (95%) of respondents give antibiotics during CS and 34 (85%) in addition give antibiotics after the CS most commonly for 7 or more days (22/34; 64.7%).

Antibiotics provided are most commonly Cephalosporins (19/49;38.8%), Metronidazole (10/49;20.4%) or Penicillin (10/49; 20.4%) with 10 (25%) obstetrician-gynaecologists reporting they give more than 1 type of antibiotic for routine CS. (Figure 3)

80% prescribe ferrous sulphate after a CS most commonly for 1-3 months (21/40; 52.5%) and 70.0% (28/40) prescribe analgesics. Other prescriptions include laxatives, vitamins and in some cases 'anti-oedema' medication or an 'antispasmodic'.

**Figure 3: Antibiotics and other Drugs prescribed for Caesarean Section**

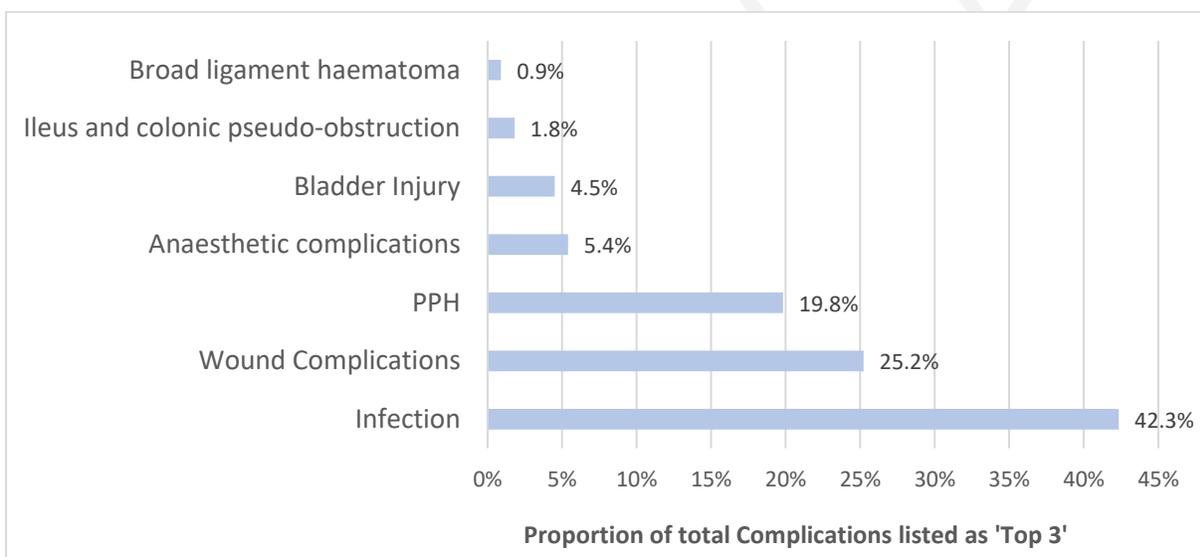


### Complications after Caesarean Section

The 3 commonest complications following a CS which obstetrician-gynaecologists recorded were; infection with a score of 47/120 (wound infection 33, puerperal infection /endometritis 14); wound complications 28/120 (dehiscence 11, haematoma 10, serosa 10) and postpartum haemorrhage 22/120 (atonic uterus 17, other 5).

However, complications including anaesthetic complications, bladder injury and postoperative ileus were also listed among the top 3 complications recorded. (Figure 4)

**Figure 4: Most frequently reported complications after Caesarean Section**



### C. Focus Group Discussions

In total 20 FGD were conducted including 15 FGD with 118 women, and 5 FGD (small) with 12 midwives. (Table 5)

**Table 5: Characteristics of Participants in Focus Group Discussions (FGD)**

FGD number	Number of Participants	Characteristics
<b>Women who had previously given birth or pregnant</b>		
FGD 4,9,18	21	Women who had not yet delivered but were pregnant and preparing for birth
FGD 5, 12,20	24	Grandmothers who had delivered and had daughters who had also given birth (vaginal or CS birth)
FGD 1,11,15	25	Women who had given birth by vaginal delivery only (no CS)
FGD 2,8,16	24	Women who had given birth by CS only (no vaginal birth)
FGD 3,10,19	24	Women who had given birth both by vaginal and CS birth
<b>Total</b>	<b>118</b>	
<b>Midwives</b>		
FGD 6,7,13,14,17	12	Midwives working in a variety of settings including at a large and small hospitals, rural and urban settings.
<b>Total</b>	<b>130</b>	

Key themes that emerged were – decision making regarding mode of delivery, the role of the midwife, reasons for choosing a CS or vaginal birth, views on what is needed to support vaginal birth including regarding availability of pain relief and companionship during labour and birth, the environment of the labour room and behaviour of staff. The results are presented by theme with illustrative quotes provided by identified theme (Tables 6-8 and Supplementary Table 5)

#### Mode of Delivery and Decision Making

Across all groups of women there was a clear consensus that the obstetrician-gynaecologist makes the decision if the CS is considered to be for medical reasons. The opinion of the midwife is sometime sought but her role is very limited – she acts as an adviser in cases where she is consulted and women ‘hear her’ if she is well respected and known to be knowledgeable and skilled. Women who had a vaginal birth generally relied more on the midwife than women who had only given birth by CS. A midwife’s reputation is based on women’s knowledge or hearsay of cases that the midwife has managed previously with either good outcomes (*timely referral for CS if needed, knowing when a woman can deliver vaginally or needs a CS, successful vaginal delivery supported with a caring attitude*) or adverse outcome (rupture of uterus, stillbirth).

All groups of women reported that opinions are sought and/or provided by a variety of people including the wider family (mother, mother-in-law, sister), peers (other women who had given birth), neighbours and friends. The husband has an important role in decision making - in some cases he is considered the main decision maker but, in the majority of cases he is part of the decision-making process, most commonly together with the woman herself and the obstetrician-gynaecologist. The role of the woman's own mother is generally on par with that of the husband. A minority view was that it is the woman who *'tells her husband what she needs'* and they *'reach agreement'*. The husband is also the one who has to sign the consent form for a CS (or other surgery).

Women who live in more urban settings are more likely to report that they themselves make a decision regarding mode of delivery after consultation with an obstetrician-gynaecologist compared to women who live in more remote or rural areas. Older women (i.e. grandmothers) report that at the time of delivery they relied more on the husband and family and had less of a voice in the decision-making process themselves.

Younger women are more likely to rely on and have heard stories of others (friends, sisters, *'everyone has an opinion'*) regarding what the advantages or disadvantages of a CS might be, and they also get information via social media. Younger women who are pregnant but have not yet delivered have limited or no discussion with the midwife during ANC – no mention was made of birth plans – nor discussion with their mothers. The majority of *'stories heard'* are from their peers (sister, friend). Some would seek advice from multiple obstetrician gynaecologists before deciding and/or seek out an obstetrician who would agree to conduct a CS.

There were some examples of women reporting that they had questioned the obstetrician-gynaecologist's decision and had gone on to have a different mode of delivery than was advised e.g. vaginal delivery instead of CS after an unpleasant experience (pain) and complications with a previous CS. Younger women also reported sometimes seeing several obstetrician-gynaecologists before deciding where to deliver and with whom.

Midwives realise that the whole community has influence on the decision regarding whether a CS or vaginal birth is needed or *'best'*. Culture and tradition play a role and in particular the husband's and family-in-laws' beliefs. Midwives see their own role as *'to examine and provide advice'* and realise that a woman will follow their advice if she *'trusts'* the midwife, the midwife is *'knowledgeable and experienced'*. Overall, the consensus was that women *'follow the doctor more'* with the role of the husband seen as important as *'he has to sign'* (the consent form), but the decision lies with the woman herself - *'the patient has the final say'*. In general, midwives do think more *'education'* is needed and it is important *'to raise awareness'*.

**Table 6: Illustrative Quotes - Mode of delivery and Decision Making**

Illustrative Quotes - Decision Making Mode of Delivery
<b>FGD with Women</b>
<p>Mother, mother-in-law, aunts, relatives, friends will participate in decision making (Grandmothers, FGD20)</p> <p>Doctor will ask signature from the husband, no operation if there is no signature. (Grandmothers, FGD20)</p> <p>Sometimes we go to the Midwife, and she tries, and, in the end, we will go to the doctor. (Grandmothers, FGD 5)</p> <p>It is my decision, my husband will not go against it, regarding the choice mode of delivery. (Women who had both vaginal birth and CS, FGD 3)</p> <p>The doctor knows the patient’s condition better than anybody, and the patient know what her condition is, so the husband should not interfere in her decision making to go for a CS. (Women with previous CS, FG2)</p> <p>I am consulting the gynaecologist, I did not visit a midwife, never. (Primigravida FGD4)</p>
<b>FGD with Midwives</b>
<p>Some pregnant women listen to midwives’ advice, and some do not. (FGD14)</p> <p>The community around her is more effective on her decision making. (FGD13)</p> <p>Some listen to midwives, and some do not. Some are convinced by the midwife's words, but the doctor remains first. (FGD13)</p>

**Reasons for CS and factors affecting this**

Older women (grandmothers) recognised that times had changed and there were now many more CS than normal births even though they had more commonly had vaginal birth sometimes un-supported and on their own. They consider the CS rate too high and think reasons for this include availability, wish ‘to avoid pain’, avoid waiting for labour and going through labour and having an ‘easy’ CS. This also prevents damage to the perineum ‘preserving the body’. There is some discussion regarding whether younger women no longer have enough physical strength to cope with vaginal birth.

Among primigravida who have not yet given birth the consensus is that a CS *'is better'* because *'you go to sleep and the baby is next to you when you wake up'*. Only a small minority report that vaginal birth is better but there is a lot of pressure from peers and in the community generally that lead to *'fear of vaginal birth'* and a belief that *'CS is best'* and this is therefore more commonly chosen as mode of birth – *'doctors advise it, and women ask for it'*. There were anecdotal stories of women who had severe haemorrhage and in one FGD young women knew of a maternal death that had occurred. At the same time there is a realisation that women marry early are in fact *'not knowledgeable'* and perhaps not making an informed choice.

Except among younger women, there is consensus that the CS rate is higher than it was before, and that CS is more common than vaginal birth. Women who had previously had vaginal births (only) felt that vaginal birth was no longer *'promoted'* either in the general community or by medical staff and there was frequent mention of CS being *'the trend now'*.

Grandmothers thought a CS would be a preferred mode of delivery for those *'with money'* and there was sometime mention among women that obstetrician-gynaecologists were *'greedy for money'*. Most women do not think socio-economic status or education are important reasons for choosing a CS or not. Lack of money to pay for a CS is only rarely mentioned as a reason for choosing a vaginal birth, at the same time, there is some recognition that wealthier groups and those living in urban areas can more easily access CS.

Among women who had both vaginal births and CS there is good knowledge that a vaginal birth is not always possible (for medical reasons) and there are risks associated with this perhaps especially for the baby during labour and birth (hypoxia and later handicap were mentioned). However, there is consensus that CS is also associated with complications including a longer recovery period. A vaginal birth is considered better if there are no contra-indications, but the associated *'pain and suffering'* are good reasons why women may choose to deliver by CS if they can.

Midwives are knowledgeable about the medical indications for a CS but realise that there are several important (non-medical) reasons for the high CS rate in NES. One such reason is because a CS is done under anaesthesia and *'takes less time'* compared to labour and birth which take time and are painful (especially given that women are not provided pain relief). Women also *'fear'* that vaginal birth may be associated with adverse outcome such as a stillbirth. Midwives report that younger women *'chose CS now'* and this mode of delivery is promoted and supported especially in the private sector where it is *'rare'* to have support for vaginal birth (because there is no labour room and/or the obstetrician-gynaecologist advises to conduct a CS). *'Cosmetic reasons'* relate to having an undamaged perineal area and *'because the husband asks for this'*.

Midwives consider that the CS rate is too high especially in urban areas (and in private hospitals) and among the wealthier population groups. There is agreement that ‘*wrong messages*’ are being conveyed about childbirth and cite a ‘*lack of awareness*’ in the community as a problem that needs to be addressed. Some midwives recommended especially focussing on primigravida and younger women because once they have a CS ‘*all her births will be CS afterwards*’.

**Table 7: Illustrative Quotes - Reasons for Caesarean Section and factors affecting this.**

Illustrative Quotes – Reasons for CS and Factors affecting this
<b>FGD with Women</b>
No pain, they are preserving their bodies, and they can go home. (Grandmothers, FGD 20)
If she has money, she can choose a CS. (Grandmother, FGD 5)
Fear of vaginal birth, while in CS you will wake up and your baby is beside you. (Primigravida, FGD 9)
Because I sleep comfortably and wake up to find the child next to me ... and do financial reasons matter? (Primigravida, FGD4)
In my community, everyone is going towards CS. (Primigravida, FGD 9)
Vaginal birth is better; however, I see more women are going for CS. (Primigravida, FGD 4)
She is married young with little knowledge, and her peers advise her to do CS and to fear NVD, so she does CS. (Primigravida, FGD 18)
Fear, trend, and early marriage are the reasons behind the doing CS. (Women with previous vaginal births, FGD 11)
Money will not affect mode of delivery, but rich people will not go to public hospital. (Women with previous vaginal birth, FGD1)
Most of the deliveries in private hospitals are CS. But those of us who tried both a vaginal birth and CS know that vaginal birth is better. (Women with both vaginal birth and CS, FGD 10)
I will go to the surgery room and get anaesthesia, and I wake up and my baby is next to me without any pain. (Women who have had a CS only, FGD2)
Greediness of doctors to gain money through CS (Women who had CS only, FGD 8)

When you go to hospital and see all the women who are suffering to give birth naturally, you say to yourself let me just do CS and be done in 10 minutes (Women who had CS only, FGD 8).

**FGD with Midwives**

What we suffer from most in the region is a lack of health awareness. (FGD17)

The number of CS is higher than normal, especially in private hospitals. (FGD14)

Pregnant women do not wait until it is time to give birth and go to the doctor to decide on a CS. (FGD14)

Fear of the child’s death during labour because there are women who lost one or two babies and went to do a CS because of fear for their child. (FGD14)

The reason is cosmetic, specially nowadays, the perineum becomes deformed due to the episiotomy sutures, so they go for a CS. (FGD14)

Most of all, fear, and pain. (FGD13)

Anaesthesia, she hears from her sister or neighbour, you take anaesthesia and sleep, and the stomach opens. She does not feel pain or anything, (FGD13)

Lack of progress, sometimes a defective foetus, history of CS, twin or breech presentation, cord prolapse, history of foetal death, pre-eclampsia, placental abruption, bleeding in the patient. (FGD6)

In general, especially in private hospitals, the number of caesarean sections is abnormal. It is impossible for them to give birth naturally. It is rare for one or two to be delivered. (FGD6)

Wrong messages are being conveyed about childbirth (FGD7)

**What is needed to support Vaginal Birth**

Among primigravida there is limited knowledge of what is needed to support vaginal birth and none of the participants had visited a labour ward in preparation for birth and most frequently responded ‘*don’t know*’. The facilitators in all groups had to provide prompts to suggest what might be needed to support vaginal birth.

Companionship (especially by their mother) was generally considered ‘*good*’ and something young women would want with a few worried this could be ‘*embarrassing*’ and or not clear about

the role of a companion *'to support'*. Providing pain relief during labour is seen as good but would not necessarily lead to a reduction in CS according to younger women.

Women who had one or more previous vaginal births are very clear about what is needed in a labour room and how services should be organised. They expect (but have experiences other than this) that all equipment and medication should be present. Specific mention is frequently made that this should include suction equipment and oxygen for the baby, as well as an incubator if needed. Blood and IV fluids should be available for women who need this as well as *'all medicines needed'*. Equipment mentioned include a birthing chair, ultrasound scan (*'a modern one'*) all delivery instruments

The environment must be *'clean and fresh'* include bathroom and toilet areas and take into account the need for privacy (*'a barrier between beds', 'single room'*), heating is needed in winter and cooling in summer. Mention was frequently made of the (absence of and) need for a wheelchair or (sometimes) stretcher. All groups (except primigravida) stressed the need for improving the environment for relatives who come with the patients so that they have *'blankets', 'somewhere to stay'*.

Women who had previous vaginal birth and/or a CS agreed that **companionship** (from someone chosen by the woman herself which would be a mother or sister) was seen as *'much needed', 'for support', 'a very good thing'*, but generally *'not allowed'*. Some grandmothers were however not sure how this would work

Providing women with **pain relief** and companionship during labour and birth is considered by women important and would increase the number of women who chose a vaginal birth.

Grandmothers were generally not aware of the option of pain relief such as Pethidine during labour and birth (only paracetamol) and did not know of anyone who had received this. The majority recall labour as being *'torture'* and they had often given birth alone and unassisted but said *'but now it is rare, women go to hospital for delivery'*.

Staff needs were mentioned in some groups (women with previous CS and VD) and included an obstetrician-gynaecologist as well as a paediatrician *'to check the baby', 'instead of trainees'*. Some groups (women with previous VD and CS and grandmothers) said a *'female doctor'* was preferred. However, women who had vaginal births before considered that *'the most important thing is the attitude of midwives'*

All midwives reported that there are shortages of equipment, drugs, furniture, supplies for the baby and absence of a generally supportive infra-structure and that this contributes to low vaginal births.

There is consensus among midwives that companionship during labour is good for the patient if the patient chooses the companion. There are also concerns regarding how this would work to not cause *'disturbance of our work'*.

Most midwives were *'against'* the use of Pethidine. Some midwives did not know about it, some did know about it but are against it because of *'side effects'* and *'consequences'*. Some misconceptions and concerns include that *'it is bad for the baby'*, *'women can have an allergy or overreact'* to Pethidine, it can *'delay delivery'*, can cause *'bleeding from the uteri'* and *'tearing'*. Midwives are of the opinion that it is possible to use and is occasionally used in private hospitals, but it is never used in public hospitals, and this would be difficult because *'more staff and monitoring is needed'*. Midwives also mentioned that in order for them to be able to start using Pethidine they would need *'an anaesthetist to be present'*, more midwives to be able to *'monitor'*, a *'delivery protocol'*.

All midwives agreed that *'proper behaviour'* is important with *'no screaming'*, *'no bad words'* and that a midwife needs *'patience'*.

Midwives don't always feel well treated themselves (lack of respect, long working hours, high workload, low salaries, doctors being absent, lack of training) and see this as a reason why they might not be nice to the patients. They agree that *'emotional and mental support'* is needed for patients including a nice and welcoming approach and attitude with a *'smiley face'*.

Midwives agree it is important to provide more and better health education regarding vaginal birth if this is to increase. Most midwives would support giving women who had attended for vaginal birth a gift and some NGOs had done this before with good success.

**Table 8: Illustrative Quotes - What is needed to support vaginal birth in NES.**

Illustrative Quotes – Reasons for CS and Factors affecting this
<b>FGD with Women</b>
<b>Labour room environment</b>
As for me I have no idea because I did not go inside. (Primigravida, FGD18)
About the labour room, I did not hear about it, and I did not ask. (Primigravida, FGD 4)
We should use curtains because ladies get shy. (Grandmothers, FGD 12)
There should be a labour chair, air-conditioning and fans, sheets, a wheelchair to move the pregnant lady, all medical equipment, even an ultrasound scan. (Women with previous vaginal birth, FGD1)
There were no screens, no cleaning, no care, and no sterilization. (Women with previous vaginal birth, FGD 11)

There is no privacy between patients when giving birth. (Women with previous CS, FGD2)

Bathrooms are for medical staff only and were not clean, there should be a toilet in the waiting area. (Women with previous vaginal birth, FGD1)

A wheelchair for the pregnant women when she gets to the hospital and elevator. (Women with previous CS, FGD2)

Availability of drug and medicals supplies as well as clothes for the patient and baby after she gives birth. (Women with previous CS, FGD 16)

### **Regarding needs for Relatives**

We need to provide a place for the lady's relatives outside, a waiting area to sleep while they are waiting. (Primigravida, FGD 18)

Only chairs and a place to sit in is better than the street. (Women with CS and vaginal birth, FGD 10)

A room for the family of the patient for moral support. (Women with previous CS, FGD 16)

### **Regarding Companionship**

For me, I will feel shy and embarrassed if the companion comes inside the labour room. (Primigravida, FGD 4)

The most important thing is companionship with the pregnant lady, she will feel mentally comfortable. (Grandmothers, FGD12)

Women would like it. (Women with previous vaginal birth, FGD15)

I am with the companionship idea; it will help me mentally. (Women with previous vaginal birth, FGD1)

A family member of the patient to be with the patient when get birth to support and comfort the patient. (Women with previous CS, FGD2)

This is difficult and impossible, and it is not allowed. (Women with previous vaginal birth, FGD11)

It is essential to let companionship in, when I entered, I was alone screaming, and they did not give me attention. (Women with previous vaginal birth, FGD 19)

### **Regarding pain relief**

They will surely feel happy if they are comfortable. (Grandmothers, FGD5)

Giving birth without pain, this is the best thing. (Grandmothers, FGD5)

This drug (pain relief) will make NVD better than CS. (Grandmothers, FGD 20)

There is no such thing as labour without pain!?! (Women with previous vaginal birth, FGD 11)

If this is possible, labour without pain, everyone will go to vaginal birth. (Women with previous vaginal birth, FGD 19)

For pain relief during labour, everyone will be happy, a vaginal birth brings ladies to the edge of death. (Women with previous vaginal birth and CS, FGD 3)

We heard of it last year, but it is not available (Women with CS and NVD, FGD10)

### **Regarding staff and staff behaviour**

I went to the maternity hospital, the treatment was bad, even they hit us, with no care. Even the medical treatment was not good. (Primigravida, FGD 18)

There should be a good doctor to take care of her and her baby. (Grandmother, FGD 12)

Sweet tongue, good behaviour and treatment, no shouting on the pregnant woman. (Grandmothers, FGD 20)

We are feeling afraid because of the inappropriate speech in the delivery room. (Women with previous vaginal birth and CS, FGD 3)

The midwives' behaviour should be nice, some of them are acting bad with us. (Women with previous vaginal birth and CS, FGD 10)

They leave the patient alone and drink coffee, which will leave the patient in a very bad state without the doctor being aware. (Women with previous CS, FGD 16)

### **What is needed to support NVD**

Labour with no pain, a companion, proper treatment from staff, taking care of mother and baby are needed to encourage NVD. (Primigravida, FGD 18)

We can support with food baskets, clothes for babies, and nutrition for mother and child. (Women with previous vaginal birth, FGD 11)

Availability of both doctor and midwife consistently during giving birth. (Women with previous CS, FGD 8)

A comfortable and clean environment for the patient. (Women with previous CS, FGD2)

### **FGD with Midwives**

#### **Labour room environment**

A complete modification is required, first for the equipment, for the labour table and birthing tools. (FGD14)

Awareness programs, advice, visit the health centre and encourage natural childbirth and explain everything about childbirth. (FGD13)

#### **Regarding Companionship**

Companionship during childbirth, although it has a negative impact on us as a midwife, it supports the patient. (FGD7)

#### **Regarding Pain relief**

To improve vaginal birth, painkillers are needed to overcome the pain. (FGD7)

#### **Regarding staff and staff behaviour**

Our only hospital is in a bad and tragic situation. People have become hesitant to visit it and turn to home birth or to the facility, and our facility was not equipped with a 24-hour staff. (FGD17)

Improving the manner of midwives and staff is the most important thing, without offensive words and screaming in the woman's face. (FGD13)

#### **What is needed to increase NVD**

Good healthcare and experienced medical staff at the place of birth and painless birth will increase the percentage of NVD. (FGD17)

Awareness programs, advice, visit the health centre and encourage natural childbirth and explain everything about childbirth. (FGD13)

Increasing health centres so that the service is available. (FGD13)

## Discussion and Implications for Policy and Practice

Following a dissemination workshop with all participating stakeholders, the following recommendations were developed:

### Recommendations Formulated

#### 1. Caesarean Section Rate

- Record the number, type and indications for all CS and the number of vaginal births at all healthcare facilities. Conduct periodic review of CS rate and indications for elective and emergency CS at each healthcare facility and identify reasons for ‘unnecessary’ CS
- Send medical teams periodically to healthcare facilities to discuss CS rates and identify if these can be reduced and how.

#### 2. Indications for CS

- Develop and agree a list of absolute and relative indications for CS in NES disseminate via HWG and RMNCH sub WG to all HCF providing CS in NES (in English and Arabic)
- Adopt evidence-based clinical guidelines and practice conditions for which vaginal birth can be an alternative to CS including for:
  - o trial of labour after (only) one previous CS,
  - o indications for vaginal birth in case of breech presentation and possibility of external version
  - o indications for vaginal birth in case of twin pregnancy,
  - o significance, assessment for and management of oligohydramnios
  - o induction of labour for post-term pregnancy.
- Ensure the partograph is used to monitor labour and birth, as it helps guide the midwife and obstetrician towards the correct management and reduces unnecessary referrals for CS.

Challenges	Solutions
<ul style="list-style-type: none"> <li>- Medical staff do not follow practice based on scientific evidence</li> <li>- Lack of continuing medical education</li> </ul>	<ul style="list-style-type: none"> <li>- Improve staff access to training and updates</li> <li>- Hold at least one medical conference per year with the participation of both doctors and midwives</li> </ul>

#### 3. Improve the Quality of Care during and after CS

- Ensure skilled staff carry out the CS and can identify and manage complications correctly
- Introduce and ensure implementation of correct use of antibiotics - prophylactic antibiotics given at time of CS and no additional antibiotics are prescribed unless clearly indicated.

- Improve the standards for operating theatres including regarding sterility and IPC
- Ensure women receive comprehensive postoperative care after CS including a minimum postoperative stay of 24-48 hours. This will further require:
  - o A postnatal ward/ are with sufficient beds to admit mothers after CS.
  - o Provide incentives (e.g., a gift) to women who stay for 24 hours or more after CS
  - o Raise awareness for the need to stay at least 24 hours after CS for postoperative postnatal care and highlight the value of this.
  - o Equip hospital accommodation rooms in a way that ensures privacy of the woman and her baby, place for companions and relatives including with the possibility of providing them with meals.

Expected Challenges	Proposed Solutions
<ul style="list-style-type: none"> <li>- Poor adherence to sterility standards and conditions</li> <li>- Failure of patients and their families to stay in the hospital after CS for the period recommended by doctors</li> <li>- Lack of skills among staff to diagnose and manage postoperative complications in the mother or baby</li> </ul>	<ul style="list-style-type: none"> <li>- Train staff on Infection Prevention Control (IPC) protocols.</li> <li>- Make posters available and display visibly on IPC including in the operating theatre</li> <li>- Hire a special person in charge of IPC</li> <li>- Continuous medical training on postoperative complications for mother and baby</li> <li>- Display posters and make clinical guidelines available</li> <li>- Explain to staff the importance and necessity of keeping the patient for as long as needed and possible under medical observation to diagnose any complications and effect timely management.</li> </ul>

#### 4. Improve Regulation of Medical Practice

- Effective health management is needed to enforce laws with penalties against malpractice and improve accountability including for overuse of (unnecessary) CS and for complications that may result after poor quality CS being conducted.
- Organisations could form a coordination group to support officials in each sector/organisation to check and review medical documents periodically.
- Proposals that support accountability may also be made to responsible health authorities in the region.
- Develop a unified list of CS indications at the level of NES and communicate with the existing health authorities to develop laws to apply this list in all healthcare facilities:

- Through meetings with specialists in the field of RMNCH to develop a list that is in line with international evidence
  - Meet with Health Authorities and discuss the development of laws to monitor compliance with the list
  - Establish special follow-up committees to implement and evaluate the correct application of this list
- Enact mandatory laws and procedures to monitor obstetrician-gynaecologists' adherence to clinical indications for CS.
  - Increase supervision and follow up by experienced technical supervisors

Expected Challenges	Proposed Solutions
<ul style="list-style-type: none"> <li>- Inability of NGOs to control practices outside their organization</li> <li>- Lack of capacity within NGO sector to activate the accountability system internally</li> <li>- The absence of specialised committees that enact and follow-up the application of laws</li> <li>- Lack of competent technical supervisors</li> <li>- Weak control over private hospitals which provide the largest number of CS (compared to the public sector or the sector managed by NGOs)</li> </ul>	<ul style="list-style-type: none"> <li>- Coordination meetings with the Health Administration to put forward draft proposals aimed at improving the situation</li> <li>- Building the capacity of the administrative team, including reviewing files and supervising case management which is within the tasks of the Medical Officer supervising the facility.</li> <li>- Increase the number and expertise of technical supervisors in RH.</li> <li>- Increased oversight of private hospitals</li> <li>- Form Technical Committees within LHA that work on enacting and following up the application of laws and regulations governing the work of the obstetrician-gynaecologist.</li> </ul>

### 5. Raise Awareness and correct Misinformation

- Focus on raising awareness of the benefits of CS if this is needed and the disadvantages of CS if this is not needed (medically indicated) and encourage vaginal birth wherever possible
- Provide more information about the benefits of a well-supported vaginal birth when this is possible for the woman and her baby including psychologically, physically, and financially.
- Provide more education/information to parents regarding the complications of CS including increased risk of puerperal infection, risks of anaesthesia and others.
- Increase awareness of the need for comprehensive postoperative care after CS including postoperative stay in the healthcare facility (rather than immediate discharge home)

**a. Raise awareness within the healthcare facility:**

- As part of antenatal care (ANC), during the third trimester, a special session should be included for each pregnant woman to develop a birth plan, including: method of birth, place of birth, transportation, and access to the healthcare facility. During this session, the benefits, and potential disadvantages of vaginal birth and/or CS are discussed in relation to the woman's condition and previous obstetric history. Common misconceptions and myths regarding CS should be discussed and any misinformation can be corrected.

- Hold seminars and workshops for healthcare providers to stimulate and support more vaginal births.

- Make brochures and advertisements promoting vaginal births and disseminate these.

**b. Raise awareness outside the healthcare facility:**

- Group sessions should be conducted during home visits to the community. Health teams should discuss childbirth, provide evidence-based information about both vaginal birth and CS, discuss common societal concepts and correct mistakes.

Expected Challenges	Proposed Solutions
<ul style="list-style-type: none"> <li>- Work pressure and the large number of patients do not allow enough time for the midwife to provide counselling and raise awareness. Note this could be done as a group session.</li> <li>- The healthcare provider lacks evidence-based guidelines and sufficient information to deliver a good counselling session</li> <li>- There may not be community acceptance for Community Health Team Sessions</li> <li>- weak confidence of parents in the capabilities of healthcare providers regarding ability to advice on the correct mode of delivery</li> </ul>	<ul style="list-style-type: none"> <li>- (re)Determine the number of patients assigned to each midwife according to the context</li> <li>- Allocate a specific hour of the day for counselling sessions and preparing clean delivery kits to be provided during the session, which encourages women to attend</li> <li>- Increase staff efficiency by building capacity and providing appropriate and simplified guidance</li> <li>- Provide in-kind gifts to women attending the session and use interactive means and entertaining and simplified ways to present ideas</li> <li>- Disseminate various awareness raising messages including using posters and social media.</li> <li>- Build trust between the woman and her family and between healthcare providers and the community through continuous communication</li> </ul>

## 6. Improve Conditions for Vaginal Birth

- Improve healthcare facility readiness for vaginal birth including ensuring the right infrastructure, human resources, equipment, drugs, and consumables are in place (according to standardised checklists).
- Provide a safe and comfortable environment inside the labour ward/area including enough space with the ability to offer privacy and suitable space and furnishings for relatives to wait and rest.
- Increase the number of trained midwives and ensure they are qualified and competent to carry out vaginal birth and are well supported to do this via enabling policies and workplace regulations including:
  - o Ensure the shift pattern is suitable - reduce shift to 12 hours maximum
  - o Allow midwives to administer Pethidine and other forms of pain relief during labour
  - o Permit and facilitate companionship in those healthcare facilities that are not overcrowded.
  - o Re-emphasize the need for respectful maternity care, a supportive and encouraging attitude to women during and after labour and birth.
  - o Provide printed clinical guidelines and visible algorithms in the labour ward/area.
  - o Provide continuous training on evidence-based respectful maternity care
- Ensure the labour rooms are clean; IPC protocols are in place and followed.
- Make the environment more welcoming, there is heating in winter and air-conditioning/cooling in summer, blankets and sheets are available including in the waiting areas for relatives.

Expected Challenges	Proposed Solutions
<ul style="list-style-type: none"> <li>- Absence of even the basic infrastructure at healthcare facilities including necessary equipment and/or medicines</li> <li>- The current policies of organisations do not allow trained midwives to provide certain medications such as painkillers (including Pethidine) during labour and birth.</li> <li>- According to some policies companions are not allowed to enter the labour room</li> <li>- There is lack of clear and approved guidelines from the organization.</li> </ul>	<ul style="list-style-type: none"> <li>- Periodic use of a dedicated checklist to ensure that the facility is at least 80% ready to receive women for birth.</li> <li>- Raise the idea of expanding the midwife’s tasks with technical officers and seek to achieve this</li> <li>- Identify gaps and develop action plans to improve the quality of service using customized tools and consecutive trainings.</li> <li>- Adopt an agreed standard duration of postpartum observation after vaginal birth</li> <li>- Adopt and distribute printed updated clinical practices and guidelines to all facilities</li> </ul>

<ul style="list-style-type: none"> <li>- Healthcare providers do not provide information and/or are not empowered to provide information on vaginal birth</li> <li>- Lack of knowledge among doctors regarding how to do a vaginal birth and what to do when complications occur.</li> </ul>	<ul style="list-style-type: none"> <li>- Introduce financial rewards for conducting vaginal births for medical staff (including midwives and doctors).</li> <li>- Introduce motivational achievement awards e.g. a weekly or monthly competition for the highest number of vaginal births for the midwives in the department.</li> <li>- Allow companionship inside the delivery room and ensure supporting policy is in place.</li> </ul>
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### 7. Improve Access to Healthcare Facilities

Lack of availability of a healthcare facility nearby and/or security problems are factors that lead women and their families to choose a CS to avoid the risk of a vaginal birth at an unsafe or inopportune time.

- Map services for all health-active organizations and identify gaps when starting new projects to ensure that most women can reach a nearby centre
- Map and strengthen the referral pathway for women with complications during or after pregnancy and birth.

Expected Challenges	Proposed Solution
<ul style="list-style-type: none"> <li>- Lack of sufficient healthcare facilities</li> <li>- Lack of transportation to reach a healthcare facility</li> </ul>	<ul style="list-style-type: none"> <li>- Map services, identify areas that need to build new facilities, and avoid duplicating services in already well serviced areas.</li> <li>- Allocate an ambulance to each medical facility to receive and refer cases from neighbouring areas</li> <li>- Integrate services such as cash-for-health into health programs to cover the transport gap</li> </ul>

## Supplementary Tables and Figures

### Supplementary Table 1

Hospital	Dates included	
1	1.10.23 to 14.10.23	CS done every day
2	28.8.23 to 11.9.23	No CS done on 6,8, and 13 Sept
3	20.9.23 to 4.10.23	CS done every day
4	27.9.23 to 10.10.23	No CS on 29 and 30 Sept; No CS on 1,6,7,8,9 October

### Supplementary Table 2: Indications for Caesarean Section (Operating Theatre Register -full list)

Indication	Hospital				Total	Ranking
	1	2	3	4		
Previous 1 CS - no other information	15	37	14	1	67	2
Previous 1 CS + additional indication	11	7	1 (PROM)	5	24	5
Previous 2 CS	32	28	27	2	89	1
Previous 3 CS	18	17	5	5	45	3
Previous 4 or more CS (up to 6 previous)	9	21		1	31	4
Scar dehiscence			1		1	
Failure to Progress in Labour	4		1	1	6	10
Cephalo-Pelvic Disproportion (CPD) (including 'narrow pelvis')		1		3	4	
Breech Presentation (any)		1			1	(Total breech = 6) 10
Breech presentation (with previous CS)				2	2	
Breech in primigravida				1	1	
Breech in twins	1			1	2	
Malpresentation (including transverse lie)	1		3		4	
Multiple pregnancy (twins or triplets)		2			2	
foetal Distress	4	2		1	7	9
Macrosomia		2			2	
Abruptio Placenta	11				11	8
Post-term pregnancy and/or oligohydramnios	2	13	1	5	21	6
Premature Rupture of Membranes	1		1	1	3	
Precious pregnancy ('geriatric' patient, after infertility)	1	2	2		5	
Tubal ligation		2			2	
Other	4	3	4	1	12	7
<b>Total</b>	<b>114</b>	<b>138</b>	<b>60</b>	<b>30</b>	<b>342</b>	

**Supplementary Table 3: Reasons for Unnecessary CS**

Reasons for CS deemed unnecessary	Number of times mentioned	Proportion of responses
Patient's desire and family	11	28%
Gynaecologists can earn more money in a shorter time	9	23%
Placenta calcification	5	13%
1 previous CS (only – no trial of labour)	(6) 5	13%
Oligohydramnios	4	10%
Emergency case and the gynecologist must perform prompt CS and deliver the baby.	1	3%
Although the reason for the previous caesarean section is not repeated in the current pregnancy ( <i>same as above</i> )	1	3%
If the fetus is male after several female births	(2)1	3%
Twin pregnancy and (if the fetus is male after several female births)	1	3%
Incorrect diagnosis of cesarean section ( <i>incorrect indication for CS</i> )	1	3%

**Supplementary Table 4: Commonest reported Indications for Elective and Emergency CS**

Indication	Number for Emergency CS	Ranking	Number for Elective CS	Ranking	Total	Ranking
Patient Desire (including 1 'fear of NVD' and 1 'impatient family')			14	2	14	
Precious pregnancy ('geriatric' patient, after infertility)			6		6	
For tubal ligation			1		1	
Previous 1 CS	7		8	(5)	15	
Previous 2 or more CS	11	3	26	1	37	1
Scar dehiscence	1				1	
Failure to Progress in Labour	9	4			9	
Cephalo-Pelvic Disproportion (CPD) (including 'narrow pelvis')	6		12	4	18	4
Breech Presentation (any)	1		6		7	
Breech presentation in Primipara (1 with previous CS)			8	(5)	8	
Malpresentation (including transverse lie)	2		13	3	15	5
Multiple pregnancy (twins or triplets)			2		2	
foetal Distress	26	1			26	2
Cord Prolapse	6				6	
Bleeding (APH) – unknown cause	6				6	
Abruptio Placenta	22	2			22	3
Placenta Praevia	3		6		9	
Placenta accreta spectrum	2		1		3	
(Pre) – Eclampsia	8	5	1		9	
Post-term pregnancy ('41 GW')	1		3		4	
Premature Rupture of Membranes	1				1	
Other	1 (previous colporrhaphy)		1 (previous surgical procedure)		2	
<b>Total</b>	<b>113</b>		<b>108</b>		<b>221</b>	

**Supplementary Table 5: Illustrative Quotes from Focus Group Discussions (FGD) with Women and Midwives across NES**

Illustrative Quotes for Decision Making
<b>FGD with Women</b>
<p><b>Grandmothers</b></p> <ul style="list-style-type: none"> <li>- After the Lord, her husband, then the Doctor. (FGD 12)</li> <li>- Mother, mother-in-law, aunts, relatives, friends will participate in decision making. (FGD 20)</li> <li>- Doctor will ask signature from the husband, no operation if there is no signature. (FGD 20)</li> <li>- Sometimes we go to the Midwife, and she tries, and, in the end, we will go to the doctor. (FGD 5)</li> <li>- Regarding the pregnant woman’s voice, she has nothing to do with that, she just wants to give birth, no one substitute for doctor, doctor is above everything. (FGD 5)</li> </ul> <p><b>Women who had both vaginal birth and CS</b></p> <ul style="list-style-type: none"> <li>- It is my decision, my husband will not go against it, regarding the choice mode of delivery. (FGD 3)</li> <li>- We will not follow just MW`s opinion, but we will consult several doctors. And if she told us, you should do CS, we will go to a doctor to see his opinion. (FGD 10)</li> </ul> <p><b>Primigravida</b></p> <ul style="list-style-type: none"> <li>- My family, my uncles, and my relative in law, all said NVD is better. (FGD 4)</li> <li>- My husband will follow the doctor`s recommendation. (FGD 9)</li> <li>- Different women giving different opinion, who did NVD will prefer NVD, who did CS will prefer CS. (FGD 4)</li> <li>- I am consulting gyn, I did not visit a midwife, never. (FGD 4)</li> </ul> <p><b>Women who had vaginal birth only</b></p> <ul style="list-style-type: none"> <li>- Her mother and her husband and family in the house all will participate in the decision. (FGD 11)</li> <li>- The doctor decided to do CS, but I refused. (FGD1)</li> <li>- The pregnant lady, then her husband to decide about mode of labour. (FGD 11)</li> </ul> <p><b>Women who had CS only</b></p> <ul style="list-style-type: none"> <li>- My family preferred a vaginal birth, but I wanted CS, and because of my condition I went through with CS. (FGD2)</li> <li>- They prepared for natural birth and went to public hospital, but the hospital didn’t accept them, and so they had to go to private hospital (FGD 2)</li> <li>- The doctor knows the patient condition better than anybody, and the patient know what her condition is, so the husband should not interfere in her decision making to go CS (FG2)</li> <li>- The doctor’s decision is above all other option and opinion (FGD 16)</li> <li>- Family and relatives, friends, aunties have effect on the pregnant lady’s decision (FGD 16)</li> </ul>

<p><b>FGD with Midwives</b></p> <ul style="list-style-type: none"> <li>- The husband's mother is first degree, even if the patient does not agree, the husband's mother will force her to do so (FGD14)</li> <li>- The whole community contributes (FGD14)</li> <li>- Some pregnant women listen to midwives' advice, and some are not (FGD14)</li> <li>- The doctors have the first and final decision because the husband does not know the patient's condition (FGD14)</li> <li>- Consulting a doctor is sufficient. External echocardiography is only in special cases (FGD14)</li> <li>- The community around her is more effective on her decision making (FGD13)</li> <li>- Some listen to midwives, and some do not. Some are convinced by the midwife's words, but for her the doctor remains first (FGD13)</li> <li>- There are some pregnant women who are hesitant and obsessive and cannot bear the pain. They continue to visit us until the ninth month, and then they make their decision on their own. (FGD13)</li> </ul>
<p><b>Illustrative Quotes - Reasons for CS and Factors affecting this</b></p>
<p><b>FGD with Women</b></p>
<p><b>Grandmothers</b></p> <ul style="list-style-type: none"> <li>- No pain, they are reserving their bodies, and they can go home clean. (FGD 20)</li> <li>- Before we used to get tired, I gave birth to 8 children alone. I used to cut the cord by hand and put my child aside, I had four sons and four daughters. (FGD 5)</li> <li>- If she has money she can choose (CS), (FGD 5)</li> <li>- Other than medical reasons, there are some women who want a CS coz they think it is more comfortable and easier, there are those who what to have CS for the sake of speed. (FGD 12)</li> </ul> <p><b>Primigravida</b></p> <ul style="list-style-type: none"> <li>- Fear from NVD, while in CS you will wake up and your baby is beside you. (FGD 9)</li> <li>- In my community, everyone is going towards CS. (FGD 9)</li> <li>- Because I sleep comfortably and wake up to find the child next to me ... and do financial reasons matter? (FGD4)</li> <li>- NVD is better, however I see more women are going CS. (FGD 4)</li> <li>- I prefer the vaginal birth because my financial situation is not helping. (FGD 4)</li> <li>- Weak body and lack of movement lead to CS, according to elder people, so they recommend walking in the last month. (FGD 18)</li> <li>- Poor people wish for vaginal birth because CS costs money. (FGD 18)</li> <li>- Married young with little knowledge, and her peers advise her to do CS and to fear vaginal birth, so she does CS. (FGD 18)</li> </ul> <p><b>Women who had vaginal birth only</b></p> <ul style="list-style-type: none"> <li>- Fear, trend, and early marriage are the reasons behind the doing CS. (FGD 11)</li> <li>- There is a consensus that CS is more. (FGD 11)</li> <li>- There is no medical advice, nor from family regarding doing NVD, so we see more CS.</li> </ul>

- (FGD 11)
- To keep the shape of her body, early marriage, to avoid having a second wife, and jealousy. (FGD 11)
- I heard from other women that in CS no tiredness, no pain, just sleep and you will wake up next to your baby. (FGD1)
- Women choosing CS because it is easier, no torture, and at the same time for cosmetic too. (FGD1)
- Money will not affect mode of delivery, but rich people will not go to public hospital. (FGD1)
- Education will not affect, but money may affect the mode of labour. (FGD1)
- Younger age may go to CS more. (FGD1)

### **Women who have had both vaginal birth and CS**

- I kept trying for 3 or 4 days, but I cannot deliver naturally. (FGD 3)
- No pain, comfort, cosmetic, doctor's opinion, and duration of delivery are the reasons why CS is common. (FGD 3)
- To avoid vaginal birth, in which tears and complications may happen. (FGD 10)
- Most of the deliveries in private hospitals are CS. (FGD 10)
- But those of us who tried both vaginal birth and CS know that vaginal birth is better. (FGD 10)
- CS is better to protect foetus from complications and problems. (FGD 19)
- No there is no difference among people, everyone is doing CS. (FGD 19)
- The rich and educated lady will brag about doing CS and visiting famous doctors. (FGD 19)

### **Women who have had CS only**

- The pregnant woman doesn't know when she will get birth (FGD 2)
- It's painless and easier, and she is more prepared a day before CS (FGD2)
- I will go to the surgery room and get anaesthesia, and I wake up and my baby is next to me without any pain. (FGD2)
- They think CS become a trend and social acceptance among pregnant women. (FGD2)
- Women in the city have the privilege to make their decision to have CS, compared to women in rural areas who have no decision on such matter. (FGD2)
- Those who didn't have CS before will find it easier and more convenient. (FGD 16)
- Physical appearance and worries about their body after giving birth. (FGD 16)
- My brother's wife has CS, so I would like to experience it as well. (FGD 16)
- Rich people are doing CS more than others. (FGD 16)
- There is no difference between a pregnant woman on rural area or city, the doctor is doing the same job in both places. (FGD 16)
- Scared to give birth naturally because of the pain and other's experience. (FGD 8)
- Medical condition and issue with giving birth. (FGD 8)
- Greediness of doctors to gain money through CS. (FGD 8)
- Compared to giving birth naturally, which takes 15 days, CS takes 4 hours and can be completed. (FGD 8).
- Comfortable, when you go to hospital and see all the women who are suffering to give birth naturally, you say to yourself let me just do CS and be done in 10 minutes. (FGD 8)
- Uneducated and not having enough information about CS. (FGD 8).

### FGD with Midwives

- The patient's unwillingness to go into labour and her fear. (FGD17)
- The doctor wants it to end quickly. CS takes a quarter of an hour. (FGD17)
- There is a desire for the husband to decide on a CS, and there is a personal decision. (FGD17)
- When the patient has been receiving treatment for many years for the pregnancy, we maintain it by CS. (FGD17)
- What we suffer from most in the region is a lack of health awareness. (FGD17)
- The number of CS is higher than normal, especially in private hospitals. (FGD14)
- The financial aspect for the doctors. (FGD14)
- The patient does not feel pain. (FGD14)
- The pregnant women do not wait until it is time to give birth and go to the doctor to decide on a CS. (FGD14)
- Fear of the child's death during labour because there are women who lost one or two stomachs and went to a CS because of fear for their child. (FGD14)
- The reason is cosmetic: 60%, especially women during this period. The virgin becomes deformed due to the episiotomy sutures, so they go for a CS. (FGD14)
- The percentage of CS is higher than normal, it decreased the percentage of NVD. In NES we have a very high rate of CS. (FGD13)
- Most of all, fear, and pain. (FGD13)
- Sometimes according to the husband's request. (FGD13)
- Anaesthesia, she hears from her sister or neighbour, you take anaesthesia and sleep, and the stomach opens. She does not feel pain or anything (FGD13)
- Young age. Those born between 2005 and 2001 are married (FGD13)
- Marriage at the age of 35, for example, the elderly women. (FGD13)
- Lack of progress of presentation, sometimes a defective foetus, history of CS, slowness in listening, interrupted or twin breech prolapse, history of foetal deaths, preeclampsia, placental abruption, placental relapse, bleeding of the patient. (FGD6)
- In general, especially in private hospitals, the number of caesarean sections is abnormal. It is impossible for them to give birth naturally. It is rare for one or two to be delivered. (FGD6)
- One time in the private hospital, the patient was near term and the patient insisted on a CS. (FGD6)
- A city girl requests a CS more than a village girl (FGD6)
- The family's fear for the patient is the most important factor in the patient's lack of cooperation. If she is convinced that a CS is difficult. (FGD6)
- History of CS - defective delivery - preeclampsia - pelvic stenosis - diabetic patient - history of foetal death, attachment of the placenta for delivery - prolapse of the cord. (FGD7)
- Young and old, a primigravida over 36 years of age. (FGD7)
- Wrong messages are being conveyed about childbirth. (FGD7)
- Fear of natural birth, fear of the many rumours about what happened with so-and-so and that CS is better. (FGD7)
- There is also a role for material greed, frankly
- Natural birth sometimes requires 8-9 hours, which shortens the time for a CS. (FGD7)
- Fear for the foetus (FGD7)

## Illustrative Quotes – What is needed to support vaginal birth

### FGD with Women

#### Primigravida

- As for me I have no idea because I did not go inside. (FGD18)
- I don't know. (FGD9)
- What do you mean.... I would like to give birth safely and for the foetus to remain safe and healthy' (FGD4)
- I did not give birth before, so I don't know. (FGD 9)
- The willingness to bring companionship depends on the companion. (FGD 9)
- About the labour room, I did not hear about it, and I did not ask. (FGD 4)
- For me, I will feel shy and embarrassed if the companion comes inside the labour room. (FGD 4)
- Labour without pain, good reception, mental comfort, a clean place, and good service will encourage NVD. (FGD 4)
- We need to provide a place for lady's relatives outside, a waiting area to sleep while they are waiting. (FGD 18)
- I went to the maternity hospital, the treatment was bad, even they hit us, with no care. Even the medical treatment was not good. (FGD 18)
- Labour with no pain, companion, proper treatment from staff, taking care of mother and baby and needed to encourage NVD. (FGD 18)
- Gentle treatment and psychological comfort (FGD9)
- Whoever thinks of childbirth says – 'Oh Lord make it easy and smooth'. (FGD9)

#### Grandmothers

- We should use curtains because ladies get shy. (FGD 12)
- There should be a good doctor to take care of her and her baby. (FGD 12)
- The most important thing is companionship with the pregnant lady, she will feel mentally comfortable. (FGD 12)
- This is an excellent solution, regarding pain relief in labour. (FGD 12)
- In labour, female doctors are better. (FGD 5)
- This drug (pain relief) will make NVD better than CS. (FGD 20)
- Sweet tongue, good behaviour and treatment, no shouting on the pregnant woman. (FGD 20)

#### Women with previous vaginal birth only

- I gave birth six times but all of them were at home, so I don't know about a labour room. (FGD 11)
- There were no screens, no cleaning, no care, and no sterilization. (FGD 11)
- There is no such thing as labour without pain. Ladies did not hear about painless delivery.(FGD 11)
- Companionship in the labour room is difficult, impossible, and not allowed. (FGD 11)

- We can support with food baskets, clothes for babies, and nutrition for mother and child. (FGD 11)
- There should be a labour chair, air-conditioning and fans, sheets, a wheelchair to move the pregnant lady, all medical equipment, even an ultrasound scan. (FGD1)
- I am with the companionship idea; it will help me mentally. (FGD1)
- Bathrooms are for medical staff only and were not clean, there should be a toilet in the waiting area. (FGD1)
- It is much better to have female medical staff in labour, if not mandatory. (FGD1)
- We need this drug, painless labour drug. (FGD1)
- The most important thing is the midwives' psychology and good behaviour' (FGD15)

### **Women who had both a CS and vaginal birth**

- We are feeling afraid because of the inappropriate speech in the delivery room. (FGD 3)
- For pain relief during labour, everyone will be happy, a vaginal birth brings ladies to the edge of death. (FGD 3)
- The midwives' behaviour should be nice, some of them are acting bad with us. (FGD 10)
- It will be a miracle, pain relief, under doctor supervision. (FGD 10)
- We heard of it last year, but it is not available. (FGD10)
- The most important thing is cleanliness, and bathrooms conditions. (FGD 19)
- If this is possible, labour without pain, everyone will go to vaginal birth. (FGD 19)
- It is essential to let companionship in, when I entered, I was alone screaming, and they did not give me attention. (FGD 19)

### **Women who had CS only**

- There is no privacy between patients when giving birth. (FGD2)
- The staff behaviour is very tough with the patient (FGD2)
- Wheelchair for the pregnant women when she gets to the hospital and elevator (FGD2)
- A family member of the patient to be with the patient when get birth to support and comfort the patient (FGD2)
- A comfortable and clean environment for the patient (FGD2)
- Availability of drug and medicals supplies as well as clothes for the patient and baby after she gives birth. (FGD 16)
- Availability of the doctor for the newborn child and her mother as well as cloth, diapers, and food. (FGD 16)
- Ambulance in case of emergency. (FGD 16)
- Drug (pain killer) and medicine. (FGD 16)
- They leave the patient alone and drink coffee, which will leave the patient in a very bad state without the doctor being aware. (FGD 16)
- Refrigerator in the patient's room, and air-conditioning. Check up on the patient even after giving birth. (FGD 16)
- Midwives taking care of the newborn. (FGD 16)
- A room for the family of the patient for moral support. (FGD 16)
- Availability of both doctor and midwife consistently during giving birth. (FGD 8)
- Having smart midwives, with relaxed and patient mind. (FGD 8)

- Training staff and midwives on how to act with the patient during and after giving birth. (FGD 8)
- Financial support through availability of supplements and clothes for mom and her baby. (FGD 8)
- Usually, pregnant women are regretting their decision (to do vaginal birth) because of lack of privacy and stress when dealing with midwives. (FGD 8)

#### **FGD with Midwives**

- Good healthcare and experienced medical staff at the place of birth and painless birth will increase the percentage of NVD (FGD17)
- Good monitoring and provision of medications, such as vitamins, then the reassurance factor becomes present. (FGD17)
- Certainly, the increase in medical personnel with experience and certificates. Our situation is only an exercise based on experience and many interactions (FGD17)
- The treatment of the staff is very bad (FGD17)
- Our only hospital is in a bad and tragic situation. People have become hesitant to visit it and turn to home birth or to the facility, and our facility was not equipped with a 24-hour staff. (FGD17)
- The first step is psychological comfort, the most important thing we must explain to her that natural birth is better than CS. (FGD14)
- The way the patient is treated when she enters and finds a good reception. (FGD14)
- Helping the patient to walk and breastfeed after giving birth. It means psychological comfort in general, staff and assistance. (FGD14)
- Health education. (FGD14)
- A complete modification is required, first for the equipment, for the labour table, birthing tools. (FGD14)
- Awareness programs, advice, visit the health centre and encourage natural childbirth and explain everything about childbirth. (FGD13)
- Financial support when you need to go to the hospital. (FGD13)
- Increasing health centres so that the service is available. (FGD13)
- Giving vitamins and encouraging natural birth instead of CS. (FGD13)
- The doctor must be present in the hospital to support her so that she does not fear. (FGD13)
- Providing gifts to women will increase the NVD, it happened with previously with other NGOs. (FGD13)
- Improving the manner of midwives and staff is the most important thing, without offensive words and screaming in the woman's face. (FGD13)
- Psychological support, correct medical advice, the risks of CS, and education are needed to increase NVD. (FGD6)
- Smiling, good treatment, and psychological support. You see the treatment of midwives and workers, cleanliness, and good reception. You see the midwife smiling and imitating her in a good way and do not direct inappropriate words to her. This method encourages the patient. (FGD6)

- When I am treated harshly by my colleague or the administration, or I am punished for doing a job that I did not like, I will punish you for it. This will have a negative impact on the patients throughout the day. (FGD6)
- Advice and pros of natural birth and cons of CS. (FGD7)
- During childbirth companionship, although it has a negative impact on us as a midwife, it supports the patient. (FGD7)
- Painkillers to overcome the pain. (FGD7)
- The patient is guaranteed privacy and confidentiality, and the necessary equipment is provided, such as an ultrasound scan, curtains, and barriers. (FGD7)
- The person providing care for her must also have good morals and be free of nervousness. (FGD7)
- A person who reassures the family and informs them of the patient's condition every period of time. (FGD7)