WHO recommendations

non-clinical interventions to reduce unnecessary caesarean sections

Web annex 4:

CERQual evidence tables

The guideline recommendations are available at
http://www.who.int/reproductivehealth

WHO/RHR/18.23

© World Health Organization 2018

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; https://creativecommons.org/licenses/by-nc-sa/3.0/igo).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition". Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

Suggested citation. WHO recommendations non-clinical interventions to reduce unnecessary caesarean sections. **Web annex 4:** CERQual evidence tables. Geneva: World Health Organization; 2018 (WHO/RHR/18.23). Licence: CC BY-NC-SA 3.0 IGO. Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.
Sales, rights and licensing. To purchase WHO publications, see http://apps.who.int/bookorders. To submit requests for commercial use and queries on rights and licensing, see Http://www.who.int/about/licensing. Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.
General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement. The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters. All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

This publication forms part of the WHO recommendations non-clinical interventions to reduce unnecessary caesarean sections. It is being made publicly available as supplied by those responsible for its development for transparency purposes and information, as required by WHO (see the WHO handbook for guideline development, 2nd edition (2014).

TABLE 1. WOMEN'S AND COMMUNITIES' VIEWS OF EDUCATIONAL INTERVENTIONS TARGETED AT THEM TO REDUCE UNNECESSARY CAESAREAN SECTION

STUDIES CONTRIBUTING TO REVIEW FINDING	METHODOLOGICAL LIMITATIONS	COHERENCE	ADEQUACY	RELEVANCE	CERQUAL ASSESSMENT	EXPLANATION OF CONFIDENCE IN THE EVIDENCE ASSESSMENT
Benefits and harms of educational interventions						
Women and communities like learning new information about birth: The content and design of interventions opened up new ways of thinking about vaginal and caesarean birth for women and communities. Women described how educational interventions informed them about risks and benefits of vaginal birth and caesarean section that were hitherto unknown. Some women were surprised by the actual number of caesareans performed and the risks associated with them. Interventions brought issues of risk to the fore and forced pregnant women in particular to think through more clearly what mattered to them.						
1–12	Minor concerns regarding methodological limitations in 5 of 12 studies.	Minor concerns about coherence as several studies also found new information increased anxiety.	No or very minor concerns regarding adequacy with rich data, from all 12 included studies.	Moderate concerns regarding relevance as 11 studies from high-income countries.	High confidence high-income countries and moderate confidence for whole review population.	12 studies with minor methodological limitations. Rich data from 7 countries across 3 geographical regions with highest rates of unnecessary caesarean section. No or very minor concerns about coherence.
Communication of new knowledge and/or support is empowering for women: Learning risks were small, or what labour actually entails, enabled some women to feel more prepared and more confident to labour, especially where information about physiological processes was combined with emotional support. Pregnant or recently delivered women described how they had used information to gain control in the pursuit of informed decision-making; either by using the information to inform more meaningful dialogue with health professionals, or to justify a pre-existing preference for either birth method.						
1–7, 9, 10	Minor concerns regarding methodological limitations in 3 of 9 studies.	Minor concerns regarding coherence as review finding cogent with the different ways women described interventions gave them new confidence and control. But not all women felt this.	Minor concerns regarding adequacy with sufficiently rich data, from 9 of 12 included studies.	Moderate concerns regarding relevance as 8 studies from high-income countries.	Moderate confidence.	9 studies with minor methodological limitations. Sufficiently rich data from 7 countries across 3 geographical regions with highest rates of unnecessary caesarean section. No or very minor concerns about coherence.

<table>
<tr><td colspan="7">Women desire emotional support alongside the communication of facts and figures about childbirth: Women perceived the choice between vaginal birth and caesarean section as “huge”, with far-reaching consequences for health and wellbeing. Pregnant women in particular described needing emotional support alongside information about the risks and benefits of birth methods. In tandem with interventions women described additional emotional support from husbands, health professionals and doulas.</td></tr>
<tr><td>1, 3–6, 8, 10</td><td>Minor concerns regarding methodological limitations in 2 of 7 studies.</td><td>No or very minor concerns about coherence. Data similar within and across studies.</td><td>Moderate concerns regarding adequacy with fairly rich data from 7 of 12 studies.</td><td>Moderate concerns regarding relevance as all 7 studies from high-income countries.</td><td>Moderate confidence.</td><td>7 studies with minor methodological limitations. Fairly rich data from 5 countries (United Kingdom, the United States of America (USA), Australia, Norway and Taiwan [China]). 6 of the 7 studies involved pregnant or post-natal women faced with the gravity of actual decision-made.</td></tr>
<tr><td colspan="7">Some information can provoke fear: Some women and communities found intervention content alarming. Childbirth education video content was described as too gory by a few nulliparous students. Some pregnant women said the use of computer or DVD decision-aids for vaginal birth after caesarean (VBAC) increased their anxiety. Use of a decision-aid, combined with follow-up by a midwife helped mediate pregnant women’s concerns about risk in one study. While midwives failing to listen to women’s concerns and forcing them to birth vaginally compounded fears in another.</td></tr>
<tr><td>1, 3–6, 10, 12</td><td>Minor concerns regarding methodological limitations in 2 of 7 studies.</td><td>Minor concerns regarding coherence as fear and anxiety is reported at different levels of interpretation across different studies.</td><td>Moderate concerns regarding adequacy with fairly rich data from 7 of 12 studies.</td><td>Moderate concerns regarding relevance as all 7 studies from high-income countries.</td><td>Moderate confidence.</td><td>7 studies with minor methodological limitations. Fairly rich data from USA, United Kingdom, Taiwan [China] and Norway. Minor concerns about coherence.</td></tr>
<tr><td colspan="7">Barriers and facilitators</td></tr>
<tr><td colspan="7">Educational interventions are only one component informing women’s and communities’ views and decision-making: Women describe being exposed to a multiplicity of information sources in their pre-, present- and post-pregnancy trajectories. Some women using decision-aids describe them as “a starting point”; a springboard for seeking more information. Learning from the birth stories of family and friends was widespread. Information was also actively sought in the media and from the Internet, while face-to-face interactions with health professionals were viewed as the most important influence on actual birth method.</td></tr>
</table>

1–3, 5–10, 12	Minor concerns regarding methodological limitations in 5 of 10 studies.	Minor concerns regarding coherence with studies demonstrating how multiple sources of information impact how women perceive the benefits of an intervention.	Minor concerns regarding adequacy with sufficiently rich data from 10 of 12 studies.	Moderate concerns regarding relevance as 9 studies from high-income countries.	Moderate confidence.	10 studies with minor methodological limitations. Fairly rich data 7 countries across 3 geographical regions with highest rates of unnecessary caesarean section. No or very minor concerns about coherence with the other 2 studies not attending to this issue.
Women want multiple modes and formats of educational interventions: Women and communities had wide-ranging views on appropriate language use, figures and tables to communicate information across formats. While many could see the benefits of computer-based interventions, ease of use was problematic for some and pregnant women in particular still desired hard copies of information to revisit and discuss with family members and healthcare professionals. Some concern was expressed about the confidentially of information in online decision-aids. Video content was largely welcomed as it facilitated the visualisation of positive, actual birth experiences.						
1–6, 11	Minor concerns regarding methodological limitations in 1 of 5 studies.	Moderate concerns about coherence as contributory data is largely limited to the level of description. Data similar across studies.	Moderate concerns regarding adequacy with rich data from 5 of 12 studies.	Moderate concerns regarding relevance as all 5 studies from high-income countries.	Moderate confidence.	7 studies with minor methodological limitations. Data from 3 countries (United Kingdom, USA, Taiwan [China]) across three geographical regions. Moderate concerns about adequacy and coherence.
Intervention content is most useful when it complements clinical care, is consistent with advice from health professionals and provides a basis for more informed, meaningful dialogue with care providers: Some women and communities experiences of interventions suggest they raised more questions than they answered and created a need for additional dialogue with health professionals to discuss issues raised, fears evoked, and revisit birth plans. While some pregnant women described themselves as “desperate” for such conversations, other women were dissatisfied when their expectations went unmet because conversations were too brief, their views were not listened too, the health professional was unknown to them, and/or gave inconsistent advice.						
1, 2, 5, 6, 8, 10–12	Minor concerns regarding methodological limitations in 3 of 8 studies.	No or very minor concerns regarding coherence. Data similar across studies.	Minor concerns regarding adequacy with sufficiently rich data from 8 of 12 studies.	Moderate concerns regarding relevance as 8 studies from high-income countries.	Moderate confidence.	8 studies with minor methodological limitations. Data from 4 countries across 3 geographical regions. No or very minor concerns about coherence.

<table>
<tr><td colspan="7">Interventions met with suspicion: Organisation of care, communication of information and actual choices available. Some women and communities believed intervention content favoured health professionals' hidden agendas to promote whichever method of birth was favoured by them or the hospital or health system in which they work. In two geographical regions pregnant women used metaphors of conflict ("fight on your hands", "armed with information") in the pursuit of their choice of birth method. Other women questioned the exclusion of information about homebirth, excessively high caesarean section rates, and why doctors aren't publically accountable for the number of caesarean sections performed if they are "cutting on women" unnecessarily.</td></tr>
<tr><td>1–6, 8–10, 12</td><td>Minor concerns regarding methodological limitations in 4 of 10 studies.</td><td>Moderate concerns about coherence as insufficient exploration of suspicion in contributory studies. Data strikingly similar across studies.</td><td>Minor concerns regarding adequacy with fairly rich data from 10 of 12 studies.</td><td>Moderate concerns regarding relevance as 9 studies from high-income countries.</td><td>Moderate confidence.</td><td>10 studies with minor methodological limitations. Data from 7 countries across 3 geographical regions. Moderate concerns about coherence.</td></tr>
<tr><td colspan="7">Women's attitude towards involvement in decision-making: Some women have a strong desire to be involved and to exert control in the decision-making process; others are less certain of their role and value some involvement; while others still are reluctant for any involvement and want qualified health professionals to make the decision for them. The success of any intervention to reduce unnecessary caesarean section is dependent upon pregnant women being open to a role in decision-making and some degree of uncertainty surrounding preference for caesarean section.</td></tr>
<tr><td>2, 3, 5, 6, 8–12</td><td>Minor concerns regarding methodological limitations in 4 of 9 studies.</td><td>Minor concerns about coherence. Data similar within and across studies, only variation in degree of involvement women report.</td><td>Minor concerns regarding adequacy with rich data from 10 of 12 studies.</td><td>Moderate concerns regarding relevance as 8 studies from high-income countries.</td><td>Moderate confidence.</td><td>9 studies with minor methodological limitations. Data from 7 countries across 3 geographical regions. Minor concerns about coherence.</td></tr>
<tr><td colspan="7">Values and preferences</td></tr>
<tr><td colspan="7">Acknowledgement of previous birth (or life) experience is an important step in decision-making about future birth method. While previous experiences are important in attitude formation they do not necessarily equate to subsequent preference for delivery method. Across study settings many women and communities valued vaginal birth as natural and a meaningful life experience for women, with fears associated with labour and vaginal birth (pain, uterine rupture) not insurmountable. Few women categorically preferred caesarean section. Some women who had previous experience of caesarean section were particularly keen to avoid it.</td></tr>
</table>

1–3, 5–10, 12	Minor concerns regarding methodological limitations in 5 of 10 studies.	No or very minor concerns regarding coherence. Data similar within and across studies.	Minor concerns regarding adequacy with data from 10 of 12 studies; richest data from European settings.	Moderate concerns regarding relevance as 9 studies from high-income countries.	Moderate confidence.	10 studies with minor methodological limitations. Data from 7 countries across 3 geographical regions with richest data from European settings. Minor concerns about coherence.
Importance of information in educational booklets, workshops and decision-aids being woman-centred (including the realities of 'body work' in labour): Across settings and education formats, women and communities offered suggestions of what was missing from interventions. They wanted to know more about VBAC and homebirth, what a midwife does, maternity entitlements, the social and emotional impact of caesarean birth, and the "body work" vaginal birth entails. Women also felt vaginal birth could be presented in a more positive way by acknowledging it as an experience. They also wanted information framed in ways women could more easily relate to; for example, many women desired to learn about birth from other women's experiences; some women wanted information about interventions that was personalised.						
1, 2, 4–12	Minor methodological limitations in 4 of 11 studies.	No or very minor concerns regarding coherence. Data similar within and across studies.	Minor concerns regarding adequacy with rich data from a range of settings, contexts and sub-populations.	Moderate concerns regarding relevance as 10 studies from high-income countries.	High confidence high-income countries and moderate confidence for whole review population.	11 studies with minor methodological limitations. Data from 6 countries across 3 geographical regions. Very minor concerns about coherence.
Experiences of interventions and actual birth method						
Women described pregnancy as an inherent time of uncertainty and transformation of thought about birth method: While some women described being very sure about their preferred method of delivery prior to or early in the current pregnancy, many of these same women later changed their minds following experience of an intervention or in response to evolving circumstance. Educational interventions played an important role in helping women prepare for any eventually and to reconcile the benefits of their actual birth method when it did not correspond to their preference.						
2, 5–7, 9–10, 12	Minor methodological limitations in 2 of 5 studies.	No or very minor concerns regarding coherence. Data similar within and across studies.	Moderate concerns regarding adequacy with rich data from Westernised settings (Europe and the Americas).	Moderate concerns regarding relevance as 5 studies from high-income countries.	Moderate confidence.	7 studies, 4 of which had very minor methodological limitations. Data from Europe and the Americas only. Very minor concerns about coherence.

References

Cleeton ER. Attitudes and beliefs about childbirth among college students: results of an educational intervention. Birth. 2001:28(3):192–201. doi: 10.1046/j.1523-536x.2001.00192.x.

Shorten A, Chamberlain M, Shorten B, Kariminia A. Making choices for childbirth: development and testing of a decision-aid for women who have experienced previous caesarean. Patient Educ Couns. 2004:52(3):307–13. doi: 10.1016/S0738-3991(03)00106-X.

Wang HH, Chung UL, Sung MS, Wu SM. Development of a web-based childbirth education program for vaginal birth after C-section (VBAC) mothers. J Nurs Res. 2006:14(1):1–8. doi: 10.1097/01.JNR.0000387557.19071.b3.

Emmett CL, Murphy DJ, Patel RR, Fahey T, Jones C, Ricketts IW et al. Decision-making about mode of delivery after previous caesarean section: development and piloting of two computer-based decision aids. Health Expect. 2007;10(2):161–72. doi: 10.1111/j.1369-7625.2006.00429.x.

Farnworth A, Robson SC, Thomson RG, Watson DB, Murtagh MJ. Decision support for women choosing mode of delivery after a previous caesarean section: a developmental study. Patient Educ Couns. 2008;71(1):116–24. doi: 10.1016/j.pec.2007.11.020.

Frost J, Shaw A, Montgomery A, Murphy DJ. Women's views on the use of decision aids for decision making about the method of delivery following a previous caesarean section: qualitative interview study. BJOG. 2009;116(7):896-905. doi: 10.1111/j.1471-0528.2009.02120.x.

Milne J, Gafni A, Lu D, Wood S, Sauve R, Ross S. Developing and pre-testing a decision board to facilitate informed choice about delivery approach in uncomplicated pregnancy. BMC Pregnancy Childbirth. 2009;9:50. doi: 10.1186/1471-2393-9-50.

David S, Fenwick J, Bayes S, Martin T. A qualitative analysis of the content of telephone calls made by women to a dedicated 'next birth after caesarean' antenatal clinic. Women Birth. 2010;23(4):166–71. doi: 10.1016/j.wombi.2010.07.002.

Basso JF, Monticelli M. Expectations if pregnant women and partners concerning their participation in humanized births. Rev Lat Am Enfermagem. 2010;18(3):390–7. doi: 10.1590/S0104-11692010000300014.

Ramvi E, Tangerud M. Experiences of women who have a vaginal birth after requesting a cesarean section due to fear of birth: a biographical, narrative, interpretative study. Nurs Health Sci. 2011;13(3):269–74. doi: 10.1111/j.1442-2018.2011.00614.x.

Shorten A, Fagerlin A, Illuzzi J, Kennedy HP, Lakehomer H, Pettker CM et al. Developing an Internet-decision aid for women choosing between vaginal birth after cesarean and planned repeat cesarean. J Midwifery Womens Health. 2015;60(4):390–400. doi: 10.1111/jmwh.12298.

McCants BM, Greiner JR. Prebirth education and childbirth decision-making. Int J Childbirth Educ. 2016;31(1):24–7; McCants BMH. The impact of prebirth education on childbirth decision making [unpublished thesis]. Minneapolis, MN: Walden University, 2015.

TABLE 2. **HEALTH PROFESSIONALS' VIEWS OF INTERVENTIONS TARGETED AT THEM TO REDUCE UNNECESSARY CAESAREAN SECTION**

STUDIES CONTRIBUTING TO REVIEW FINDING	METHODOLOGICAL LIMITATIONS	COHERENCE	ADEQUACY	RELEVANCE	CERQUAL ASSESSMENT	EXPLANATION OF CONFIDENCE IN THE EVIDENCE ASSESSMENT
Beliefs about birth: Across high income countries (HICs) and middle-income countries (MICs) health professionals reported varying beliefs about birth. These included a common approach to birth shared by obstetricians and midwives who valued the physiological process and worked effectively as a team to make it happen (recognising it as an empowering process for women and only intervening when medically necessary), to labour and vaginal birth as a fatally flawed physiological process with CS the preferable means to an end. This dichotomy of beliefs reflected competing ideologies of birth and shaped the importance individuals attached to CS rate reduction. In MIC, while some obstetricians who preferred CS made reference to perinatal mortality and morbidity gains, this was not the experience of the few female, Chinese obstetricians who actually had CDMR, nor the preference of Iranian obstetricians who expressed concerns about having to deal with co-morbidities caused by previous CSs. Beliefs were influenced by professional training, personal experience, and practice setting.						
1, 3, 5–12, 14–16	Minor concerns regarding methodological limitations in 8 studies and moderate to significant concerns in 5 of 13 studies predominantly from MICs.	Minor concerns about coherence, with higher confidence in HIC and MIC, with no data reported to support this review finding in low-income countries (LICs).	Minor concerns regarding adequacy with rich data from Iran, China, Nicaragua, USA, Canada, Finland, Sweden, The Netherlands, Germany, Italy, Ireland, Australia and United Kingdom.	Moderate concerns regarding relevance with 7 studies from HIC, 6 MIC, and none from LIC contributing to this review finding.	Moderate confidence.	13 studies with minor to significant methodological limitations. Rich data from 14 countries across 4 geographical regions, high- and middle- income levels, and high and low CS rates. Reasonable level of coherence with uncertain confidence in low-income countries.
Beliefs about what constitutes necessary and unnecessary CS: Some health professionals reported CS rates as determined by factors beyond their control (i.e. uncertain obstetric history, unfolding obstetric circumstance and clinical indications), but between health professionals there was no clear consensus as to what they believed to be clinical indications across time (i.e. breech), place (i.e. availability and access) and parity (i.e. women with a previous CS). Some senior doctors and midwives expressed concerns that less experienced staff are more likely to perform CS based on vague indications and spoke favourably about wanting junior staff to consult them more for a second opinion. Other senior staff suggested second opinion policies only work where both doctors are in attendance at the hospital. While some residents also reported wanting improved communication, they feared seeking a second opinion would negatively impact their clinical credibility and career.						

<table>
<tr><td>1, 2, 4, 5, 13, 17</td><td>Minor concerns regarding methodological limitations in 4 studies and moderate concerns in 2 of 6 studies from across resource settings.</td><td>Major concerns about coherence with contradictions in available data. It is unclear as to what extent this is because the nature and extent of life-threatening clinical indications actually differs.</td><td>Major concerns regarding adequacy with limited, thin data from different resource settings.</td><td>Minor concerns regarding relevance with 3 studies from HIC, 1 MIC and 2 LICs.</td><td>Low confidence.</td><td>6 studies with minor to moderate methodological limitations. Thin data, with major concerns about coherence across settings.</td></tr>
<tr><td colspan="7">Beliefs about the evidence-base surrounding caesarean section: Health professionals' views about research evidence varied. Most health professionals recognised that guidelines represent the national or international evidence-base, which sensitised them to reflect on their practice, providing a potential mechanism for change. Most health professionals wanted more evidence of transferability to their own practice context, particularly in MIC and LIC contexts, where audit was not common. Not all health professionals believed available evidence to be valid, applicable to their practice, or feasible to implement, and spoke about keeping-up-to-date with the latest evidence as challenging. Across resource settings obstetricians and midwives expressed concerns about evidence of risks associated with CS as incomplete. Some health professionals who valued guidelines were also very clear they took other factors into account in actual decision-making (i.e. interpersonal relationships, patient's unique characteristics).</td></tr>
<tr><td>1, 2, 4, 5, 9–11, 14, 15, 17</td><td>Minor concerns regarding methodological limitations in 6 studies and moderate concerns in 4 studies.</td><td>Minor concerns about coherence with clear patterns identified across studies. Less confidence in LICs.</td><td>Moderate concerns regarding adequacy with thick data from HICs and MICs, but very thin, limited data from LICs.</td><td>Moderate concerns regarding relevance with 6 studies from HIC, 3 from MIC, and only one LIC study contributing to this review finding.</td><td>Moderate confidence.</td><td>10 studies with minor to moderate methodological limitations. Rich data from across 3 geographical regions but limited data from LICs. High coherence across HICs and MICs. Uncertain confidence in LICs.</td></tr>
<tr><td colspan="7">Fear of blame and recrimination (including medico-legal concerns): Across HIC, MIC and LICs health professionals reported fear of litigation as an important influence on their low threshold for performing CS (although no-one had actual experience of litigation in LIC). Predominantly in North America health professionals described medico-legal concerns as an underlying factor in non-compliance to guideline recommendations. Across urban and rural settings with or without 24-hour obstetrical and anaesthesia coverage, obstetricians and midwives weighed up the balance of professional identity risk with not intervening, a poor outcome ensuing and a medico-legal case against them. Also in North America some obstetricians were opposed to second-opinion policies because of the difficulties in medico-legal responsibilities that could ensue. In North America, some European countries and Africa, midwives and obstetricians expressed concerns about threats to their professional identity and career prospects posed by internal audit and feedback. A few health professionals welcomed guidelines as providing a defendable basis for their practice, while other midwives and obstetricians were undeterred in their commitment to intervene only when necessary.</td></tr>
</table>

<table>
<tr><td>1, 2, 5–7, 11, 13, 15</td><td>No concerns regarding methodological limitations in 6 studies and minor to moderate concerns in 2 studies.</td><td>Moderate concerns about coherence as fear of blame is a cogent finding across studies but the influence of actual experience of litigation on preference for CS is unclear in MICs and HICs, and no actual experience in LIC.</td><td>Moderate concerns regarding adequacy with fairly thick data from USA, United Kingdom, Iran, Nicaragua, and Tanzania.</td><td>Moderate concerns regarding relevance with 8 studies from HIC (4), MIC (3), and LIC (1) contributing to this review finding.</td><td>Moderate confidence.</td><td>8 studies, with no to moderate methodological limitations. Rich data from 5 countries. Moderate coherence.</td></tr>
<tr><td colspan="7">Value attached to financial rewards associated with CS: Some health professionals were outspoken about the economic incentives for CSs, particularly in private healthcare facilities. This included doctors in Tanzania, Iran, China and Nicaragua, as well as midwives in Iran and the USA. Some doctors considered CS to involve more work, which justified the payment; others blamed the system, while others still reported personally valuing this extra income. Some doctors, and midwives, were critical of insufficient monetary reward to staff labour and vaginal birth by comparison.</td></tr>
<tr><td>2, 5–7, 10, 11, 13, 17</td><td>Minor concerns regarding methodological limitations in 5 studies and moderate concerns in 3 studies.</td><td>No or very minor concerns regarding coherence. Data similar within and across countries, setting, and resource context.</td><td>Moderate concerns regarding adequacy with adequate data from 5 countries and thick data from 2 countries, both MIC.</td><td>Minor concerns regarding relevance with 8 studies from 3 HICs, 4 MICs and 1 LIC.</td><td>Moderate confidence.</td><td>8 studies with minor to moderate methodological limitations. Rich data predominantly from MICs. High coherence.</td></tr>
<tr><td colspan="7">Preferences for CS as convenient: Health professionals valued both the scheduling CS offers and the lesser time commitment it entails compared with labour and vaginal birth. Some health professionals described how CS was convenience for women too (for the same reasons), although others recognised while CS might be more convenient for them, it is not what every woman wants.</td></tr>
<tr><td>5, 6, 8–11, 13</td><td>Minor concerns regarding methodological limitations in 4 studies and moderate concerns in 3 studies.</td><td>Minor concerns regarding coherence with data similar within and across countries, setting, and resource context.</td><td>Moderate concerns regarding adequacy with adequate data from 5 studies and rich data from 2 studies.</td><td>Moderate concerns regarding relevance with 2 studies from HICs, 4 from MICs and 1 from a LIC.</td><td>Moderate confidence.</td><td>7 studies with minor to moderate methodological limitations. Fairly rich data from 2 studies and convenience a theme in a third. High coherence.</td></tr>
</table>

Beliefs about women: Across the world, health professionals reported women's demand for a particular birth method as an important factor influencing rates of CS, normal vaginal delivery (NVD) and vaginal birth after caesarean (VBAC). Some health professionals believed women now value CS as a consumer choice (available in public and private healthcare settings), others attributed increasing rates to women's lower threshold for CS during labour. In HIC, MICs and one LIC (Tanzania), a few health professionals spoke about women's innate ability to labour and birth as being diminished by rising body mass index (BMI), advanced maternal age, sedentary lifestyles and "western diseases". Health professionals also perceived women as lacking in antenatal education, being influenced by their families, and the plethora of information about birth available in the media and online.						
1, 2, 4–11, 13–17	Minor concerns regarding methodological limitations in 9 studies and moderate concerns in 6 studies.	Minor concerns regarding coherence with data similar within and across countries, setting, and resource context.	Minor concerns regarding adequacy with thick data, from studies across 5 world regions, HIC, MIC and LIC resource settings.	Minor concerns regarding relevance with studies of health professionals from HICs, MICs and LICs, with a range of CS rates.	High confidence.	15 studies with no to moderate methodological limitations. Thick data from 15 countries, across 5 world regions, HIC, MIC and LIC settings with high CS rates. High coherence.
Beliefs about need for high-level infrastructures to offer safe VBAC: Health professionals in HICs who were supportive of VBAC were flexible in their interpretation of guidelines and used them and available technologies in a facilitative way. Other health professionals, predominantly from MICs and LICs, but some from HICs, expressed concerns that a lack of human and technological resource made guideline recommendations unworkable in practice. In HICs where 24-hour obstetrical and anaesthesia cover was available, some health professionals reported women were still refused a trial of labour.						
1, 2, 4–6, 9–17	No or minor concerns regarding methodological limitations in 10 studies and moderate concerns in 4 of 14 studies.	Moderate concerns regarding coherence. Variations in the data apparent within and between resource settings.	Moderate concerns regarding adequacy. Data from 5 world regions, including 17 countries, with thick data from 10 studies in HICs and MICs. Thin data from LICs.	Minor concerns regarding relevance. (No studies from China contributed to the finding but population policy 1979-2016 means not relevant).	Moderate confidence.	14 studies with no to moderate methodological limitations. Thick data from HICs and MICs. The finding may have higher confidence in settings where the level of resource is sufficient to sustain necessary CS.
Beliefs about the clinical encounter and autonomous decision-making: Obstetricians and midwives views varied as to who they thought should have the final say in the decision to perform a CS. Some health professionals accepted a woman's right to choose CS, many thought the decision should be shared, while others believed the decision could only be made by health professionals qualified to do so. Some health professionals expressed concern time constraints in practice limited their opportunities to facilitate informed decision-making. Where teams had a shared approach they reported informed decision-making did happen and irrespective of who made the final decision everyone involved was reassured by the process.						

1–3, 5–9, 11–14, 16, 17	No or minor concerns regarding methodological limitations in 9 studies and moderate to significant concerns in 5 of 14 studies.	Minor concerns regarding coherence.	Moderate concerns regarding adequacy. Thick data from 5 world regions, across 8 HICs, 5 MICs and one LIC.	Moderate concerns regarding relevance with only one study from a LIC (Tanzania).	Moderate confidence.	14 studies with no to significant methodological limitations. Thick data from HICs, MICs and one LIC. High coherence.
Organisation of care: Across the world, health professionals perceived the maternity care system as insufficiently resourced (human and material). Midwives and obstetricians reported where CS was an important source of revenue operating facilities were a priority, and facilities for labouring women were poor and inadequately staffed.						
2, 4–6, 9, 11–13, 15, 17	No or minor concerns regarding methodological limitations in 7 studies and moderate concerns in 3 of 10 studies.	Minor concerns regarding coherence.	Moderate concerns regarding adequacy. Thin data from 4 world regions, across predominantly HICs.	Moderate concerns regarding relevance.	Moderate confidence.	10 studies with no to moderate methodological limitations. Thin data from 13 countries, and thick data from Iran. High coherence.
Belief in need to reduce unnecessary CS and receptiveness to change: Across resource settings health professionals reported concerns about high CS rates and associated morbidity. In Iran and Tanzania some health professionals spoke about colleagues who performed CS for non-medical reasons as contravening medicines underlying ethical principle to do no harm. In European settings, health professionals experienced interventions targeted to reduce unnecessary CS as most acceptable where this vision was shared within and between multi-disciplinary groups. In the United Kingdom, Denmark, Norway and Sweden, health professionals from organisations that achieved success in reducing rates had positive attitudes towards critical self-reflection (including audit, second opinion and continuing medical education) and felt supported by colleagues and opinion leaders. Across resource settings health professionals acknowledged concerted action to reduce unnecessary CS as challenging, but achievable and intrinsically rewarding where there was respect, accountability, and shared responsibility to support women achieve a vaginal birth.						
1, 2, 5, 6, 9, 11–14	No or minor concerns regarding methodological limitations in 7 studies and moderate concerns in 2 of 9 studies.	Minor concerns regarding coherence with similar data across studies.	Moderate concerns regarding adequacy. Thick data from 3 world regions, and thin data from African region (1 study).	Moderate concerns regarding relevance with no included studies from China.	Moderate confidence.	9 studies with no to moderate methodological limitations. Thick data from Europe. Only one study from African region contributed to this finding. High coherence.

<table>
<tr><td colspan="7">Views about the format, content and delivery of interventions: A few health professionals spoke about the importance of the tone of guidance as facilitative of reflection, not dictatorial, judgemental or threatening, at the same time as being clear about the need for change by avoiding the use of words such as 'should', 'developmental' or 'pilot.' Some health professionals described how important it was for local opinion leaders to endorse projects, and where external facilitators were involved they are 'credible' and 'grounded', exercised cultural humility, and understand the challenges within specific practice settings. In some HICs, health professionals talked about multi-disciplinary /inter-professional team involvement meaning representatives from medicine (obstetrics, anaesthesia, paediatrics), nursing and midwifery, allied health professionals, quality, health records, and scheduling in secondary care.</td></tr>
<tr><td>2, 5, 9, 11–13</td><td>No or minor concerns regarding methodological limitations in 4 studies and moderate to significant concerns in 2 studies of 6 total studies.</td><td>Moderate concerns about coherence with similarities and contradictions in available data.</td><td>Major concerns regarding adequacy with thick data from one study from the United Kingdom. Data from 4 regions and across resource settings is thin.</td><td>Minor concerns regarding relevance with 3 studies from HICs, 2 MICs and 1 LIC.</td><td>Low confidence.</td><td>6 studies with minor to significant methodological limitations. Thick data from one study. Extent of coherence unclear.</td></tr>
<tr><td colspan="7">Reluctance to change based on lack of training, skills or experience: Some health professionals spoke about how pre-and post-registration training has ill-equipped the next generation for a reduction in CS rates as they have little experience, competency or confidence in normal labour and vaginal birth. Others reported wanting specific training on recommendations to make them more acceptable in practice. Reasons for many health professionals lack of buy-in was multifactorial (see also Organisation of care); beliefs about need for complex infrastructure; and beliefs about the clinical encounter and autonomous decision-making.</td></tr>
<tr><td>2, 4, 5, 7, 9, 11, 15–17</td><td>No or minor concerns regarding methodological limitations in 5 studies and moderate concerns in 4 studies of 9 total studies.</td><td>Moderate concerns regarding coherence with similar, but thin data across studies, and overlap with other emergent themes.</td><td>Major concerns regarding adequacy with thick data from one Iranian study. Data from 5 regions and across resource settings is thin.</td><td>Minor concerns regarding relevance with 5 studies from HICs, 3 MICs and 1 LIC.</td><td>Low confidence.</td><td>9 studies with minor to significant methodological limitations. Thick data from one study. Extent of coherence unclear.</td></tr>
<tr><td colspan="7">Dysfunctional teamwork, within the medical profession and including the marginalization of midwives: Health professionals reported dysfunctional teamwork within and between professionals as an important barrier to reducing unnecessary CS rates. Medicine's entrenched hierarchies, lack of communication between maternity and theatre staff, and difficult relationships between obstetricians, midwives and family doctors were all spoken about. Some midwives and obstetricians spoke passionately about the marginalization of midwives and their exclusion from birth as counterproductive.</td></tr>
<tr><td>2, 4–6, 9–13, 15, 17</td><td>No or minor concerns regarding methodological limitations in 7 studies and moderate concerns in 4 studies of 11 total studies.</td><td>Minor concerns regarding coherence with similar data across studies.</td><td>Moderate concerns regarding adequacy with thin data from 8 studies and rich data from 3 studies across resource settings (United Kingdom, Iran and Tanzania).</td><td>Minor concerns regarding relevance with 6 studies from HICs, 3 MICs and 2 LIC.</td><td>Moderate confidence.</td><td>11 studies with minor to moderate methodological limitations. Thick data from across resource settings. High coherence.</td></tr>
</table>

References

Kamal P, Dixon-Woods M, Kurinczuk JJ, Oppenheimer C, Squire P, Waugh J. Factors influencing repeat caesarean section: qualitative exploratory study of obstetricians' and midwives' accounts. BJOG. 2005;112(8):1054–60. doi: 10.1111/j.1471-0528.2005.00647.x.

Chaillet N, Dubé E, Dugas M, Francoeur D, Dubé J, Gagon S et al. Identifying barriers and facilitators towards implementing guidelines to reduce caesarean section rates in Quebec. Bull World Health Organ. 2007;85(10):791–7. doi: 10.2471/BLT.06.039289.

Chen Y, Lu W, Zhang YF. Informed choice and autonomy of decision making on caesarean section in China. Matern Child Health China. 2008;23:89–92.

Wanyonyi SZ, Mukaindo AM, Stones W. Perspectives on the practice of vaginal birth after caesarean section in East Africa. East Afr Med J. 2010; 87(8):335–9.

Yazdizadeh B, Nedjat S, Mohammad K, Rashidian A, Changizi N, Majdzadeh R. Cesarean section rate in Iran, multidimensional approaches for behavioral change of providers: a qualitative study. BMC Health Serv Res. 2011;11:159. doi: 10.1186/1472-6963-11-159.

Cox KJ. Providers' perspectives on the vaginal birth after cesarean guidelines in Florida, United States: a qualitative study. BMC Pregnancy Childbirth. 2011;11:72. doi: 10.1186/1471-2393-11-72.

Liu L, Tao FB, Huang K. Qualitative study on affecting factors of continuing increasing in caesarean section rate in rural area. Mod Prev Med. 2010;37(20):3865–6.

Wang N, Ding Y. Reasons for obstetric medial staff choosing cesarean section for themselves in the absence of medical indications: a qualitative study. J Nurs Sci. 2013;28(6):39–41.

Dunn S, Sprague AE, Fell DB, Dy J, Harrold JA, Lamontagne B et al. The use of a quality indicator to reduce elective repeat caesarean section for low-risk women before 39 weeks' gestation: the Eastern Ontario experience. J Obstet Gynaecol Can. 2013;35(4):306–16. doi: 10.1016/S1701-2163(15)30957-9.

Lotfi R, Tehrani FR, Dovom MR, Torkestani F, Abedini M, Sajedinejad S. Development of strategies to reduce cesarean delivery rates in Iran 2012-2014: a mixed methods study. Int J Prev Med. 2014;5(12):1552–6.

Colomar M, Cafferata ML, Aleman A, Castellano G, Elorrio EG, Althabe F et al. Mode of childbirth in low-risk pregnancies: Nicaraguan physicians' viewpoints. Matern Child Health J. 2014;18(10):2382–92. doi: 10.1007/s10995-014-1478-z.

Marshall JL, Spilby H, McCormick F. Evaluating the 'focus on normal birth and reducing caesarean section rates rapid improvement programme': A mixed method study in England. Midwifery. 2015;31(2):332–40. doi: 10.1016/j.midw.2014.10.005.

Litorp H, Mgaya A, Mbekenga CK, Kidanto HL, Johnsdotter S, Essén B. Fear, blame and transparency: obstetric caregivers' rationales for high caesarean section rates in low-resource setting. Soc Sci Med. 2015;143:232-240. doi: 10.1016/j.socscimed.2015.09.003.

Lundgren I, Limbeek E, Vehvilainen-Julkunen, Nilsson C. Clinicians' views of factors of importance for improving the rate of VBAC (vaginal birth after caesarean section): a qualitative study from countries with high VBAC rates. BMC Pregnancy Childbirth. 2015;15:196. doi: 10.1186/s12884-015-0629-6.

Lungren I, Healy P, Carroll M, Begley C, Matterne A, Gross MM et al. Clinicians' views of factors of importance for improving the rate of VBAC (vaginal birth after caesarean section): a study from countries with low VBAC rates. BMC Pregnancy Childbirth. 2016;16(1):350.

Foureur M, Turkmani S, Clack DC, Davis DL, Mollart L, Leiser B et al. Caring for women wanting a vaginal birth after previous caesarean section: A qualitative study of the experiences of midwives and obstetricians. Women Birth. 2017;30(1):3–8. doi: 10.1016/j.wombi.2016.05.011.

Melman S, Schreurs RHP, Dirksen CD, Kwee A, Nijhuis JG, Smeets NAC et al. Identification of barriers and facilitators for optimal cesarean section care: perspective of professionals. BMC Pregnancy Childbirth. 2017;17(1):230. doi: 10.1186/s12884-017-1416-3.

TABLE 3. NON-CLINICAL INTERVENTIONS TO REDUCE UNNECESSARY CAESAREAN SECTION TARGETED AT ORGANIZATIONS, FACILITIES AND SYSTEMS: QUALITATIVE SYNTHESIS OF STAKEHOLDERS' VIEWS

STUDIES CONTRIBUTING TO REVIEW FINDING	METHODOLOGICAL LIMITATIONS	COHERENCE	ADEQUACY	RELEVANCE	CERQUAL ASSESSMENT	EXPLANATION OF CONFIDENCE IN THE EVIDENCE ASSESSMENT
Values and preferences						
Apathy to change is rooted in the interdependency of the overall structure and complexity of health-care systems: Across the world, in high-income countries (HICs), middle-income countries (MICs) and low-income countries (LICs), stakeholders reported resistance to change rooted in the belief that the reasons for caesarean section rates are a hugely complicated series of events, including both clinical and non-clinical factors.						
9–11, 17, 18, 20–23	Minor concerns regarding methodological limitations in 8 studies and moderate concerns in 1 study.	Moderate concerns regarding coherence with different facets of complexity reported in papers but this variation is explained by very different systems.	Major concerns about adequacy with few thick data (from 1 HIC) and thin data (from 2 MICs and 5 LICs). Ten countries in total (European, Americas, Eastern Mediterranean, Western Pacific, and African regions).	Moderate concerns about relevance with 5 studies highly relevant and 4 of medium relevance to reducing unnecessary caesarean section (CS).	Low confidence.	9 studies with minor to moderate methodological limitations. Only thin data from across 5 geographical regions with only moderate coherence.
Concerns about the culture of intervention in childbirth: In HICs and MICs, some stakeholders reported how the medicalization of childbirth can devalue it as a physiological process. Where interventionist organizational cultures were acknowledged as a problem, midwives and obstetricians talked about how it limited their opportunities to fulfil their role optimally, and for women to experience normal pregnancy and childbirth.						
1, 2, 5, 9, 10, 14, 15, 17, 18–20, 24, 25	No or minor concerns regarding methodological limitations in 13 studies.	Minor concerns regarding coherence with data similar within and across studies. Only variation in degree of concern.	Minor concerns about adequacy with thick data, from 4 geographical regions, 8 countries, 5 MICs and 3 HICs. No LICs.	Minor concerns about relevance, with 12 of 13 studies highly relevant.	Moderate confidence.	13 studies with no or minor methodological limitations. Thick data from 4 geographical regions. High coherence. Studies from only MICs and HICs. No LICs. Uncertain confidence in LICs.

<table>
<tr><td colspan="7">Valuing of human-to-human care during childbirth (including emotional labour, companionship and advocate for woman): In HICs and one MIC, women reported welcoming labour support from doulas or midwives. Health professionals talked about the importance of partner support and one-to-one midwifery/nursing care in HICs where these were available to many women. In MIC settings, the value of labour support was recognized but availability was limited by too few midwives and inadequate facilities for partners to accompany women during labour.</td></tr>
<tr><td>1, 2, 5, 9, 10, 14, 15, 17, 18–20, 24, 25</td><td>No or minor concerns regarding methodological limitations in 11 studies, 3 moderate concerns.</td><td>Moderate concerns regarding coherence with some data similar within and across studies, but also some variation, in part explained by negative attitudes of staff or unmet preferences of women.</td><td>Minor to moderate concerns about adequacy with thick data from 4 geographical regions, including HICs and MICs. No LICs.</td><td>Minor concerns about relevance, with 11 of 13 studies highly relevant.</td><td>Moderate confidence.</td><td>13 studies with no to moderate methodological limitations. Thick data from 4 geographical regions. Studies from only MICs and HICs. No LICs. Uncertain confidence in LICs. Moderate coherence.</td></tr>
<tr><td colspan="7">Belief quality of care for women is compromised or enhanced by reducing unnecessary CS: In HIC and MICs, inertia to change among some health professionals was rooted in perceptions of women’s preferences for obstetric-led care and CS. Some health professionals also perceived women as lacking in antenatal preparation for labour and vaginal birth. In Canada, United Kingdom and United States in organizations where care was actively focused on the promotion of normal birth, health professionals reported positive impacts on women’s experience.</td></tr>
<tr><td>2–5, 8–10, 12, 14–21, 23–25</td><td>No or minor concerns regarding methodological limitations in 15 studies, and moderate concerns in 4 studies.</td><td>Minor concerns regarding coherence with data similar within and across studies. Only variation in degree of concern.</td><td>Minor concerns about adequacy with thick data, from 5 geographical regions, 15 countries, including LICs, but predominantly MICs and HICs.</td><td>Minor concerns about relevance, with 13 of 19 studies highly relevant.</td><td>High confidence.</td><td>19 studies with minor methodological limitations. Thick data from 5 geographical regions. High coherence, with variations in data explained by degree of concern. Studies predominantly from MICs and HICs with high CS rates.</td></tr>
<tr><td colspan="7">Strength of multidisciplinary collaboration, teamwork, communication, role demarcation and respect across maternity care system: Policy makers and practising health professionals, across HIC and MICs, reported effective teamwork as a key component to tackling unnecessary CS. Across settings, organizations with the highest CS rates reported experiencing more challenges in achieving multidisciplinary working within and between midwives and obstetricians, in organizational culture and in policy documents.</td></tr>
</table>

3, 5, 9–10, 14–21, 23–25	No or minor concerns regarding methodological limitations in 13 of 15 studies and moderate concerns in 2 studies.	Minor concerns regarding coherence, with similar data within and across studies.	Minor concerns about adequacy, with thicker data from HICs and MICs, but some from LICs. Data from across 5 geographical regions.	Minor concerns about relevance, with 13 of 15 included studies highly relevant.	High confidence.	15 studies, most with minor methodological limitations. Some very thick data from HICs and MICs. Data from all resource settings and 5 geographical regions. High coherence.
Attitudes towards risks, benefits and organizational rates of CS: In HIC and MICs, health professionals had varying attitudes towards the value of CS. Some claimed a lack of awareness of any ill-effects of CS or their facility's CS rate, others acknowledged their rates were high and risks existed but considered them "ignorable", while some expressed specific concerns about anaesthetic risks, surgical complications, increased recovery time, cost and longer-term consequences for women. Women in Ghana were aware that access to a health insurance scheme that gave them free maternity care could benefit them if they needed a CS, but also that this led to an increase in CS rates and increased morbidity for some women.						
1, 2, 5, 9, 10, 15–19, 22, 24	No or minor concerns regarding methodological limitations in 11 of 12 studies and moderate concerns in 1 study.	Minor concerns regarding coherence, with similar data within and across studies, and with variations explained by underpinning beliefs about CS or vaginal birth (health professionals' review).	Minor concerns about adequacy, with some thick data from across 5 geographical regions, HICs, MICs and LICs.	Minor concerns about relevance, with 10 of 12 included studies highly relevant.	High confidence.	12 studies with minor methodological limitations. Some thick data from across 5 geographical regions. High coherence.
Attitudes towards in-practice use of best-evidence: In HICs, attitudes towards evidence varied. In some organizational cultures, evidence was embraced as part of the drive for continuous quality improvement whereas, in others, the quality of evidence underpinning programmes was questioned and/or organizations were selective in their use, particularly of evidence for midwifery-led care models. In MICs, the desire for practice to be evidence-based was commonly discussed but felt not to be achievable in practice because of system limitations (resource, culture of intervention).						
3, 5, 10, 15, 17, 18	No or minor concerns regarding methodological limitations in 5 studies, moderate concerns in 1 study.	Moderate concerns regarding coherence, with some similar data within and across studies, but variations in how to conceive what is evidence and how it is used.	Moderate to major concerns in adequacy. Thin data, 3 studies from HICs (Canada, United Kingdom) and 3 MICs (Iran, Lebanon and Nicaragua).	Minor concerns about relevance, with all studies highly relevant.	Low confidence.	6 studies, most with no or minor methodological limitations. Data thin and from only HICs and MICs. Moderate coherence.

<table>
<tr><td colspan="7">Equity</td></tr>
<tr><td colspan="7">Fee exemption/reduction policies as mediators of access to necessary and unnecessary CS: Across a number of studies, fee-reduction policies were associated with a variable effect on appropriate use of CS dependent on local philosophies of maternity care; inter-professional and interpersonal relationships; staff motivation to work with women or with the organization, or simply for an income; and the expectations and demands of local women, families and communities. The unintended consequences of an increase in CS subsequent to reducing fees included longer-term iatrogenic damage to women's health that was not covered by fee exemption.</td></tr>
<tr><td>6, 7, 11, 21–23</td><td>Moderate concerns about methodological limitations, with 2 very high-quality studies, 3 moderate-quality and 1 poor-quality study.</td><td>Moderate concerns regarding coherence, with similar data within and across some studies.</td><td>Moderate concerns about adequacy, with some thick data. All studies from LICs where fee exemption or reduction policies exist.</td><td>Moderate concerns about relevance, with all included studies of medium relevance.</td><td>Moderate confidence (in LIC and MIC settings where fee exemption or reduction polices exist).</td><td>6 studies with no to major methodological limitations. All studies from LICs. Some thick data. Moderate coherence.</td></tr>
<tr><td colspan="7">Health insurance reform as a mediator of access to necessary and unnecessary CS: Implementation of strategies to limit indications for CS accepted by insurance companies in Iran were met with scepticism about the power of insurance companies, with concerns that women who need a CS may no longer get one, and an increase in misreporting of indications for CS to satisfy amended insurance criteria. Insurance reform in China was not believed to be as influential on CS rates as women's views of the advantages of CS.</td></tr>
<tr><td>8, 10, 12, 13</td><td>Moderate concerns about methodological limitations, with 1 high-quality study, 3 moderate-quality studies.</td><td>Major concerns regarding coherence, with too few studies to assess across studies.</td><td>Major concerns about adequacy, with 3 studies from China with thin data and 1 study from Iran with thick data. All studies from MICs.</td><td>Moderate concerns about relevance, with one study highly relevant and 3 of medium relevance.</td><td>Very low confidence.</td><td>4 studies with no to moderate methodological limitations. Major concerns about adequacy of data (thickness and spread). Too few studies contributed to this review finding to assess coherence.</td></tr>
<tr><td colspan="7">Acceptability</td></tr>
<tr><td colspan="7">Shifts to standardize care were widely desired but not universally acceptable in practice: Across HICs and MICs, many health professionals reported a desire for more standardized tools in the form of guidelines, care pathways, screening tools and audit. There were discrepancies between what policy-makers said existed and clinicians said they were aware of. Where interventions were implemented, they were variously received as legitimizing existing good practice and supportive of clinical judgement; empowering for midwives faced with pressure from obstetricians against a shift from medical to midwifery-led care; or actively resisted, with their formulation challenged (in terms of their evidence base or tick-box approach), and experienced as constraining of clinical judgement. The burden of tools (information technology and other) to audit and record standardized processes, and the time this took away from direct, hands-on care, was also noted.</td></tr>
</table>

3, 5, 15–18, 20, 21	Minor concerns regarding methodological limitations in 7 studies and moderate concerns in 1 study.	Moderate concerns regarding coherence, with some variation in data across studies and settings, but explained by range of tools for standardization and range of stakeholders.	Moderate concerns about adequacy, with some thick data from 2 of 4 studies from 2 HICs, and 3 studies from 3 MICs and 1 study from 4 LICs with thin data.	Minor concerns about relevance, with all included studies highly relevant.	Moderate confidence.	8 studies with minor to significant methodological limitations. Very thin data from one LIC study. High coherence.
Importance of understanding local context, culture and existing initiatives that influence how favourable an organization, facility or system is to reducing unnecessary CS: Stakeholders' views (policy-makers, health-care managers, health professionals and women) highlighted the importance of understanding the local context in negotiating support and overcoming resistance to change. Understanding current practice patterns (including maternal request for CS), pre-existing initiatives (financial strategies and incentives, other guidelines, evidence-based practice, local audit priorities), and the importance of stakeholder involvement in the design of interventions were discussed with understanding where an organization, facility or system was currently considered as fundamental to the acceptability of an intervention.						
3, 5, 8, 10, 12, 14–21, 23–25	No or minor concerns regarding methodological limitations in 13 studies and moderate concerns in 3 studies.	Minor concerns regarding coherence, with similar data in and across studies.	Minor concerns about adequacy, with some thick data from 6 geographical regions, 12 countries and HIC, MIC and LIC settings.	Minor concerns about relevance, with 12 of 16 studies highly relevant.	High confidence.	16 studies with minor methodological limitations. Thick data from 6 geographical regions, 12 countries and all resource settings. High coherence.
Role of hospital in acceptability of interventions to reduce unnecessary CS: Type of hospital (public, private, university teaching, regional referral) and degree of autonomy over management were reported as important determinants of actual CS rates in the organization or facilities. The importance of relationships between hospitals and out-of-hospital care providers to facilitate referral if needed was also noted.						
1, 5, 6, 8–10, 18	Minor to moderate concerns regarding methodological limitations.	Moderate concerns regarding coherence, with some data similar within and across studies, but few in number.	Moderate concerns about adequacy, with some thick data, included studies from across resource settings (HICs, MICs and 1 LIC) but too few studies.	Minor concerns about relevance, with 5 of 7 studies highly relevant.	Moderate confidence.	7 studies with no to moderate methodological limitations. Thick data from MICs. One LIC study. Moderate coherence.

Professional power, roles and relationships: Where interventions challenged the balance of power between professionals' concerns within and between professional groups in practice were widespread. Stakeholders included obstetricians, midwives, family doctors and women. In organizations implementing midwife-led care (MLC) programmes there was dissatisfaction from doctors who felt their professional identity and the safety of women was compromised by relinquishing their lead professional responsibility to midwives. There was some evidence that financial strategies to reduce costs for service users might enable midwives/local skilled birth attendants to refer women to facilities/obstetricians for CS more freely.						
5, 9, 10, 14, 15, 17, 20, 21, 23–25	No or minor concerns regarding methodological limitations, with 4 studies of the highest quality and the rest of high quality too.	Minor concerns regarding coherence, with data similar within and across studies.	Minor concerns about adequacy, with thick data, from 5 geographical regions, 11 countries, 3 HICs, 3 MICs and 1 LIC.	Minor concerns about relevance, with 9 of 11 studies highly relevant.	High confidence.	11 studies with no or minor methodological limitations. Thick data from HICs and MICs with high CS rates. Thin data from LICs. High coherence.
Fears about safety of reducing CS rates and about skills and confidence to deliver normal birth among obstetricians, midwives and women: In HICs and MICs, some obstetricians and some midwives raised concerns about their professions' competency to change and deliver more women's infants vaginally, while in HIC settings with lower CS rates, midwives and obstetricians were more confident that normal birth was where midwifery's strength lay, and obstetric colleagues were well-trained to deal with complications should they arise (i.e. high-level surgical/operative skills, vaginal breech skills, and forceps skills). In MICs, decision-makers cited several advantages to vaginal birth, while physicians focused on the disadvantages favouring CS to prevent any complications arising, particularly among women who live in isolated areas with little access to specialists should they need one. A lack of confidence in normal birth on the part of women was also noted.						
1–3, 5, 8–10, 14, 15, 17, 18, 20, 24, 25	No or minor concerns regarding methodological limitations in 13 of 14 studies.	Minor concerns regarding coherence, with data similar within and across studies, and variations explained by different resource settings and/or culture (interventionist or care).	Moderate concerns about adequacy, with thick data, from 4 geographical regions, 10 countries, HICs and MICs. No LICs.	Minor concerns about relevance, with 12 of 14 studies highly relevant.	Moderate confidence.	14 studies with no or minor methodological limitations. Thick data from HICs and MICs. No data from LIC resource settings. High coherence.
Changing workloads: Across the world, all resource settings implementing interventions had consequences for everyday workloads. Insufficient resources for designated staff or for dedicated time to work towards the successful implementation of interventions was viewed negatively the world over. In the United Kingdom, MLC initiatives that made midwives the lead professional increased the workload of individual midwives (rather than putting more midwives in the system) and changed the nature of doctors' workload' by limiting their interpersonal involvement with women and making it harder for them to anticipate demand. In MICs, increasing workloads of midwives to the point where they were stretched was reported to be a factor increasing CS rates, not reducing them, as midwives came under intense pressure to free up beds.						

5, 9, 10, 14–21, 23, 24	No or minor concerns regarding methodological limitations in 11 of 13 studies. Moderate concerns in 2.	Minor concerns regarding coherence, with data similar within and across studies, where views were sought about actual interventions or their development.	Minor concerns about adequacy, with some thick data, from 5 geographical regions, 12 countries, across HIC, MIC and LIC resource settings.	Minor concerns about relevance, with 11 of 13 studies highly relevant.	High confidence.	13 studies, most with no or minor methodological limitations. Thick data from across geographical regions and resource settings. High coherence.
Feasibility						
Effective leadership, stakeholder involvement and ownership: Stakeholders reported the need for interventions to be publicly given high priority across organizations, facilities and systems (including positive media coverage) with respected, identifiable leaders at every level (both top-down and within and across professional peer-groups) to make cultural change happen. All participants with a stake in maternity care (women, obstetricians, family doctors, midwives, policy-makers, managers) reported the need for involvement in the development and implementation of interventions, with opposition often stemming from feelings of exclusion, alienation and lack of ownership. Key considerations here were the degree of resistance encountered (see also local context) without effective, sustainable leadership, overt organizational buy-in, no mandatory requirement to change, or lack of long-term accountability for CS rates. Hospitals that achieved success in reducing rates identified nursing and medical leaders who endorsed and championed the project, made change an institution-wide policy priority rather than a pilot or developmental initiative. The need for a national task force with obstetric and midwifery representation was noted in a few MICs (Chile, Iran, Lebanon).						
3, 5, 10, 11, 15–21, 23–25	No to minor concerns regarding methodological limitations in 11 studies and moderate concerns in 3 studies.	Minor concerns regarding coherence, with similar data within and across studies.	Minor concerns about adequacy, with thick data across 4 geographical regions, 12 countries, and HIC, MIC and LICs resource settings.	Minor concerns about relevance, with 11 studies highly relevant.	High confidence.	14 studies with no to moderate methodological limitations. Thick data from 4 geographical regions and across resource settings. High coherence.
Education and training that prioritizes normal birth and continuous quality improvement: Various educational needs, to implement system change and reduce unnecessary caesarean sections, were identified by stakeholders. These included better prenatal education for women and better training of health professionals in clinical skills, clinical audit and the programme content of specific interventions targeted to reduce unnecessary CS.						
3, 5, 9–11, 18–20	Minor concerns regarding methodological limitations, with 6 studies having no or minor limitations and 1 having moderate limitations.	Major concerns regarding coherence, with wide variations in training needs identified by different stakeholders (some of which were perceptions of needs of others – women, midwives, junior doctors).	Moderate concerns about adequacy, with thin data across 4 geographical regions, 6 countries, 4 studies from MICs, 3 from HICs. No LICs.	Minor concerns about relevance, with all studies highly relevant.	Low confidence.	7 studies with minor to moderate methodological limitations. Thin data from 4 geographical regions. No LICs. Uncertain coherence.

Adaptive, multifaceted interventions with local tinkering acknowledged as components in success (or failure): Stakeholders' views and experiences of interventions show how they are not implemented in isolation. They are continuously and creatively negotiated on the ground in ways not easily captured or anticipated (administrator pride in revenue from increased CSs, length of time to bring about change different in different contexts). The factors that contributed to an intervention's effectiveness were often opportunistic (i.e. capitalized on other developments in other areas of the health system) and reflected a change in culture rather than adherence to a particular checklist or rigid protocol. They also had to have built-in mechanisms for multidisciplinary collaboration and communication for continuous quality improvement that were adaptive to local tinkering (i.e. women previously identified as "normal" classified as potentially "at risk", meaning the increased status of midwifery work was compromised by a reduced scope of practice in programmes for MLC or normal birth in HIC and MICs).						
2, 3, 5, 9–11, 15–17, 19, 21–24	Minor concerns regarding methodological limitations in 12 studies and moderate concerns in 2 studies.	Moderate concerns regarding coherence with similar data within and across studies at conceptual level, but variations in what is actually said and done.	Moderate concerns about adequacy, with thin data across 5 geographical regions, HICs, MICs and LICs.	Minor to moderate concerns about relevance, with 9 of 14 studies highly relevant.	Moderate confidence.	14 studies with moderate to minor methodological limitations. Thin data from 5 geographical regions and all resource settings. Moderate coherence.
Birth environment, efficiency concerns and organizational logistics: Only one included studied, from the United States, reported midwives' views and experiences of birth in a home setting on the periphery (referring in if necessary) of an organization or facility, within a wider health-care system. This study highlighted the absence of restrictions on women's movements, environmental comforts, and time limits evident in institutional settings. In the other studies contributing to this review, a lack of time, space and facilities required for labour and normal birth were widely reported across resource contexts, as was access to operating theatres as a factor in clinical decision-making. In HICs where organizations had made changes to improve the birth environment and promote normal birth, maintaining them was reported as a challenge (i.e. beds moved back in, resources for non-pharmacological forms of pain relief not prioritized). Insufficient space, insufficient staffing, lack of bathtubs, midwifery care not available for some women, and nutrition policies were commonly noted barriers. In MICs, concerns were reported that delivery rooms were shared with other women (limiting the presence of partner, family or other labour support companion), had inadequate facilities (lack of lighting, toilets, showers or baths, air conditioning), or had been changed into operating theatres to accommodate rising numbers of CSs.						
1–5, 9–11, 14, 16, 18–21, 24, 25	No or minor concerns regarding methodological limitations in 13 of 16 studies and moderate concerns in 3 studies.	Minor concerns regarding coherence, with similar data within and across studies.	Minor concerns about adequacy, with thick data from across 5 geographical regions, HICs, MICs and LICs.	Minor concerns about relevance, with 12 of 16 included studies highly relevant (14 if including those not scoped for labour support).	High confidence.	16 studies, most with minor methodological limitations. Thick data from 5 geographical regions and all resource settings. High coherence.

References

Sakala C. Midwifery care and out-of-hospital birth settings: how do they reduce unnecessary caesarean section births? Soc Sci Med. 1993;37(10):1233–50.

Campero L, García C, Díaz C, Ortiz O, Reynoso, Langer A. "Alone, I wouldn't have known what to do": A qualitative study on social support during labor and delivery in Mexico. Soc Sci Med. 1998;47(3):395–403. doi: 10.1016/S0277-9536(98)00077-X.

Attaining and maintaining best practices in the use of caesarean sections: an analysis of four Ontario hospitals. Toronto, ON: Ontario Women's Health Council; 2000.

Shelp A. Women helping women: the Somali Doula Initiative. Int J Childbirth Educ. 2004;19(4):4–7.

Kabakian-Khasholian T, Kaddour A, Dejong J, Shayboub, Nassar A. The policy environment encouraging C-section in Lebanon. Health Policy. 2007; 83(1):37–49.

[a] Witter S, Diadhiou M. Key informant views of free delivery and caesarean policy in Senegal. Afr J Reprod Health. 2008;12(3):93–111.
[b] Witter S, Drame FB, Cross S. Maternal fee exemption in Senegal: is the policy a success? Afr J Midwifery Womens Health. 2009;3(1):5–10.

Schmidt JO, Ensor T, Hossain A, Khan S. Vouchers as demand side financing instruments for health care: a review of the Bangladesh maternal voucher scheme. Health Policy. 2010;96(2):98-107. doi: 10.1016/j.healthpol.2010.01.008.

Liu L, Tao FB, Huang K. Qualitative study on affecting factors of continuing increasing in caesarean section rate in rural area. Mod Prev Med. 2010;37(20):3865–6.

Behruzi R, Hatem M, Fraser W, Goulet L, Ii M, Misago C. Facilitators and barriers in the humanization of childbirth practice in Japan. BMC Pregnancy Childbirth. 2010;10:25. doi: 10.1186/1471-2393-10-25.

Yazdizadeh B, Nedjat S, Mohammad K, Rashidian A, Changizi N, Majdzadeh R. Cesarean section rate in Iran, multidimensional approaches for behavioral change of providers: a qualitative study. BMC Health Serv Res. 2011;11:159. doi: 10.1186/1472-6963-11-159.

Mbaye EM, Dumont A, Ridde V, Briand V. [Doing more to earn more: cesarean sections based on three cases of exemption from payment in Senegal]. Sante Publique. 2011;23(3):207–19. [Article in French]

Huang K, Tao F, Bogg L, Tang S. Impact of alternative reimbursement strategies in the new cooperative medical scheme on caesarean delivery rates: a mixed-method study in rural China. BMC Health Serv Res. 2012;12:217. doi: 10.1186/1472-6963-12-217.

Zhu X, Lu H, Hou R, Pang RY. Influencing factors of natural delivery: a qualitative analysis. J Nurs Admin. 2013;13(1):3–4.

Binfa L, Pantoja L, Ortiz J, Gurovich M, Cavada G. Assessment of the implementation of the model of integrated and humanised midwifery health services in Santiago, Chile. Midwifery. 2013;29(10):1151–7. doi: 10.1016/j.midw.2013.07.001.

Cheyne H, Abhyankar P, McCourt C. Empowering change: realist evaluation of a Scottish Government programme to support normal birth. Midwifery. 2013;29(10):1110–21. doi: 10.1016/j.midw.2013.07.018.

Dunn S, Sprague AE, Fell DB, Dy J, Harrold JA, Lamontagne B et al. The use of a quality indicator to reduce elective repeat caesarean section for low-risk women before 39 weeks' gestation: the Eastern Ontario experience. J Obstet Gynaecol Can. 2013;35(4):306–16. doi: 10.1016/S1701-2163(15)30957-9.

[a] Hunter B. Implementing a national policy initiative to support normal birth: lessons from the All Wales Clinical Pathway for Normal Labour. J Midwifery Womens Health. 2010;55(3):226–33. J Midwifery Womens Health. 2010 May-Jun;55(3):226-33. doi: 10.1016/j.jmwh.2009.12.014.
[b] Hunter B, Segrott J. Using a clinical pathway to support normal birth: Impact on practitioner roles and working practices. Birth. 2010;37(3)227–36. doi: 10.1111/j.1523-536X.2010.00410.x.
[c] Hunter B, Segrott J. Renegotiating inter-professional boundaries in maternity care: implementing a clinical pathway for normal labour. Sociol Health Illn. 2014; 36(5):719-737. doi: 10.1111/1467-9566.12096.

Colomar M, Cafferata ML, Aleman A, Castellano G, Elorrio EG, Althabe F et al. Mode of childbirth in low-risk pregnancies: Nicaraguan physicians' viewpoints. Matern Child Health J. 2014;18(10):2382–92. doi: 10.1007/s10995-014-1478-z.

Marshall JL, Spilby H, McCormick F. Evaluating the 'focus on normal birth and reducing caesarean section rates rapid improvement programme': A mixed method study in England. Midwifery. 2015;31(2):332–40. doi: 10.1016/j.midw.2014.10.005.

Janani F, Kohan S, Taleghani F, Ghafarzadeh M. Challenges to implementing physiologic birth program (PBP): A qualitative study of midwives opinion in Iran. Acta Medica Mediterranea. 2015;31(7):1373–80.

Witter S, Boukhalfa C, Cresswell JA, Daou Z, Filippi V, Ganaba R et al. Cost and impact of policies to remove and reduce fees for obstetric care in Benin, Burkina Faso, Mali and Morocco. Int J Equity Health. 2016;15(1):123. doi: 10.1186/s12939-016-0412-y.

Rishworth A, Bisung E, Luginaah I. "It's like a disease": women's perceptions of caesarean sections in Ghana's Upper West Region. Women Birth. 2016;29(6):e119–25. doi: 10.1016/j.wombi.2016.05.004.

Lange IL, Kanhonou L, Goufodiji S, Ronsmans C, Filippi V. The costs of 'free': experiences of facility-based childbirth after Benin's caesarean section exemption policy. Soc Sci Med. 2016;168:53–62. doi: 10.1016/j.socscimed.2016.09.008.

Kennedy HP, Doig E, Tillman S, Straus A, Williams B, Pettker C et al. Perspectives on promoting hospital primary vaginal birth: A qualitative study. Birth. 2016;43(4):336¬45. doi: 10.1111/birt.12245.

Binfa L, Pantoja L, Ortiz J, Gurovich M, Cavada G. Assessment of the implementation of the model of integrated and humanised midwifery health services in Santiago, Chile. Midwifery. 2013;29(10):1151–7. doi: 10.1016/j.midw.2013.07.001.

© World Health Organization 2018

Some rights reserved. This work is available under the Creative Commons AttributionNonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; http://creativecommons.org/licenses/by-nc-sa/3.0/igo)