

An overview of systematic reviews of normal labor and delivery management

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ABSTRACT

Background: Despite the scientific and medical advances for management of complicated health issues, the current maternity care setting has increased risks for healthy women and their babies. The aim of this study was to conduct an overview of published systematic reviews on the interventions used most commonly for management of normal labor and delivery in the first stage of labor.

Materials and Methods: The online databases through March 2013, limited to systematic reviews of clinical trials were searched. An updated search was performed in April 2014. Two reviewers independently assessed data inclusion, extraction, and quality of methodology.

Results: Twenty-three reviews (16 Cochrane, 7 non-Cochrane), relating to the most common care practices for management of normal labor and delivery in the first stage of labor, were included. Evidence does not support routine enemas, routine perineal shaving, continuous electronic fetal heart rate monitoring, routine early amniotomy, and restriction of fluids and food during labor. Evidence supports continuity of midwifery care and support, encouragement to non-supine position, and freedom in movement throughout labor. There is insufficient evidence to support routine administration of intravenous fluids and antispasmodics during labor. More evidence is needed regarding delayed admission until active labor and use of partograph.

Conclusions: Evidence-based maternity care emphasizes on the practices that increase safety for mother and baby. If policymakers and healthcare providers wish to promote obstetric care quality successfully, it is important that they implement evidence-based clinical practices in routine midwifery care.

Key words: Childbirth, evidence-based practice, intrapartum care, labor, overview of systematic reviews, quality improvement

INTRODUCTION

Giving birth is a life-changing event, and the care that a woman receives during labour has the potential to affect her both physically and emotionally the short and longer term.^[1] The World Health Organization (WHO) states that the aim of intrapartum care is achieving a healthy mother and child using the least possible number of

interventions consistent with safety.^[2] Despite the scientific and medical advances for management of complicated health issues, the current maternity care setting has increased risks for healthy women and their babies.^[3] There are worries all over the world that non-evidence-based interventions and practices during labor and delivery remain the standard practice.^[4] So, there remains a widespread underuse of beneficial practices, overuse of harmful or ineffective practices, and hesitancy about the effects of insufficiently, inadequately evaluated practices.^[5] Therefore, improving the quality of maternity care in both developed and developing countries is an important part of attempts made to decrease maternal and neonatal mortality and morbidity.^[6] One of the best approaches for quality improvement of care in clinical environments with limited resources is application of evidence-based standards for management of spontaneous vaginal births.^[7,8] Evidence-based labor and delivery management apply the best available research on the safety and effectiveness of special practices to help decide on maternity care and achieve the best possible outcomes in mothers and newborns.^[5] It is essential that obstetricians and midwives who provide care during labor ensure that intrapartum care is evidence-based clinical practice^[9] A large number of studies of maternity care interventions have been published. It is obvious that systematic reviews

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Submitted: 12-May-14; Accepted: 16-Dec-14

of individual studies were needed to evaluate, summarize, and bring together available studies in a single place.^[10] The objective of the overview of reviews is to summarize multiple intervention reviews for the identification of the effects of two or more interventions for a single situation in relation to health issues.^[11] In obstetric care, many interventions are complex, containing a number of different components which may have an effect on the impact of the interventions in healthcare settings.^[12] Several Cochrane and non-Cochrane systematic reviews have assessed different types of interventions for normal labor and delivery management. We intend to summarize their results for decision-makers, such as clinicians, policymakers, or informed consumers, in an overview of systematic reviews. This overview will serve as a user-friendly “digest” by evaluating and synthesizing current evidence which will allow the reader a quick overview of different interventions used most commonly for normal labor and delivery management.

MATERIALS AND METHODS

The present overview of systematic reviews was done in accordance with the Preferred Reporting Items of Systematic Reviews Meta-Analyses (PRISMA) guidelines for reviews of clinical trials.^[13]

Search strategy

A literature search of online databases (PubMed, Web of Science, Google Scholar, and Cochrane Library) through March 2013 was performed. An updated search was performed in April 2014 in Cochrane Library. We translated the search strategy for each database plus each management aspect (e.g. early admission, early rupture of membranes) using the appropriate controlled vocabulary as applicable. The search was limited to systematic reviews of clinical trials. We also reviewed the reference lists of identified publications for additional pertinent reviews. No language restrictions were imposed. The titles and abstracts were obtained and the decision process for eligibility was followed. Full text was obtained of all eligible reviews and those whose eligibility could not be discerned from reading the abstract.

Eligibility criteria

Twenty-three systematic reviews of randomized or quasi-randomized controlled trials were considered for inclusion in this overview of systematic reviews on the management of normal labor and delivery in the first stage of labor.^[14-36] The participants in these reviews were limited to low-risk, healthy women with an uncomplicated pregnancy, with a singleton gestation in vertex presentation, entering spontaneous labor, and having a gestational age of 37–41 weeks. We considered aspects of interventions used for management of normal labor and delivery in the

first stage of labor. Each aspect of labor and delivery was reviewed separately. We have used systematic reviews that included interventions with placebo/no treatment or with a different intervention.

Data extraction

We extracted data on systematic reviews (the first author's last name, year of publication, number of papers included in the review, methodological details, midwifery intervention, outcome measured, and results). For each review, the data were independently extracted by two investigators (MI and EZ), and if their evaluations differed, the discrepancy was resolved by discussion.

Quality assessment

It is important to consider the type of evidence included in reviews, i.e. was the review restricted to randomized trials only or other types of studies included, and also to assess how well the review was conducted methodologically. As such, a two-stage process was employed: Firstly, the level of evidence was graded and secondly, the methodological quality was assessed. All eligible reviews were assessed using a measurement tool for the assessment of multiple systematic reviews (AMSTAR). AMSTAR is an 11-item tool to assess the methodological quality of systematic reviews that has been internally and externally validated and has been found to have good reliability.^[37] The 11 items were assessed for each review and the total number of positive answers for each was documented. The reviews were then divided into the following categories: High quality: 9 or more positive answers; intermediate quality: 5–8 positive answers; and low quality: 4 or less positive answers. Two authors (MI and EZ) independently performed quality assessment. Disagreements were resolved by discussion or consultation with a third individual (MJ).

Judgments about the quality of the primary studies were taken from the respective systematic reviews. We assessed the Cochrane reviews using the domain-based evaluation for assessment of risk of bias.^[38] For non-Cochrane systematic reviews, we have summarized the methods used to assess methodological quality, including details regarding the tools used and the dimensions assessed, e.g. sequence generation, allocation sequence concealment, blinding, incomplete outcome data, etc.

Data synthesis

We have presented characteristics of included reviews and AMSTAR ratings for each systematic review in summary tables. We have provided a narrative summary of the results of the individual reviews for all outcomes reported by the studies for each of the aspects of normal labor and delivery management. It was not anticipated that we would be able to perform any quantitative data analyses.

RESULTS

Figure 1 shows a flow diagram describing the study selection process. The initial search yielded 1190 research reports, of which 54 were excluded for having the same title or authors and 1136 were excluded due to not having eligible study design (including non-human studies, case reports, comment, letter, and observational study). Additional 36 studies were found irrelevant to the original research question and were excluded. Of the 90 remaining studies, 67 either updated by another included review, not systematic review, inappropriate population, inappropriate intervention, or not meet inclusion criteria. A total of 23 systematic reviews were included in our overview [Table 1]. All systematic reviews assessed interventions used most commonly for labor and delivery management in the first stage of labor. All reviews were published between 1996 and 2013, with the majority ($n = 18$) having been published from 2000 to 2013. Overall quality of the existing systematic reviews was variable. The quality of Cochrane reviews was high, but the quality of non-Cochrane reviews was intermediate or low [Table 2]. To avoid losing meaning, the findings contain direct quotes as those authors of systematic reviews have stated.

In this overview, one systematic review was related to the time of admission of women with low-risk pregnancy to the labor ward. In this review, only one study of 209 women was included. The trial was of excellent quality. Authors of this review concluded, “Labor assessment programs, which aim to delay hospital admission until active labor, may benefit women with term pregnancies. The review found, women who were randomised to the labour assessment

unit spent less time in the labour ward, were less likely to receive intrapartum oxytocics and analgesia, than women who were admitted directly to the labour ward.”^[14]

We found one systematic review [including three randomized controlled trials (RCTs) involving 1039 women] of perineal shaving for women on admission in the labor ward. Based on this review, “there was insufficient evidence to recommend perineal shaving for women on admission in labor. Also there is sufficient evidence that avoiding routine perineal shaving for women prior to labor is safe.” Furthermore, “the potential for side-effects suggests that shaving should not be part of routine clinical practice.”^[15]

One systematic review (four RCTs including 1917 women) was related to use of enemas during labor. Only one study was judged as having low risk of bias: “Scientific research evidence does not support the routine use of enemas during the first stage of labor; therefore, such practice should be discouraged.”^[16]

We found one meta-analysis (21 RCTs including 3286 women) of administering antispasmodics during labor. Most studies included in this review lacked methodological rigor. Only four studies were considered as having a low risk of bias. Authors of this review concluded, “There is low quality evidence that antispasmodics reduce the duration of first stage of labor and increase the cervical dilatation rate. Also there is very low quality evidence that antispasmodics reduce the total duration of labor.” Furthermore, “there is insufficient evidence to make any conclusions regarding the safety of these drugs for both mother and baby.”^[17]

There were two systematic reviews related to use of intravenous fluids during labor. Authors of these reviews implied that “there is no robust evidence to recommend routine administration of intravenous fluids.”^[18] They also reported that “future trials should examine the use of different types of intravenous and oral fluids on clinically important outcomes and include women’s perception and satisfaction with care during labor and birth.”^[19]

One systematic review (6 studies including 7706 women) was related to use of partogram during labor: Two trials comparing partogram versus no partogram and three trials comparing different partogram formats. Four of the five trials were of good quality. In the remaining trial, the method of allocation concealment and the method of randomization were unclear. Authors reported, “Based on the evidence in this review, we couldn’t recommend routine use of the partogram as part of standard labor management and care.”^[20]

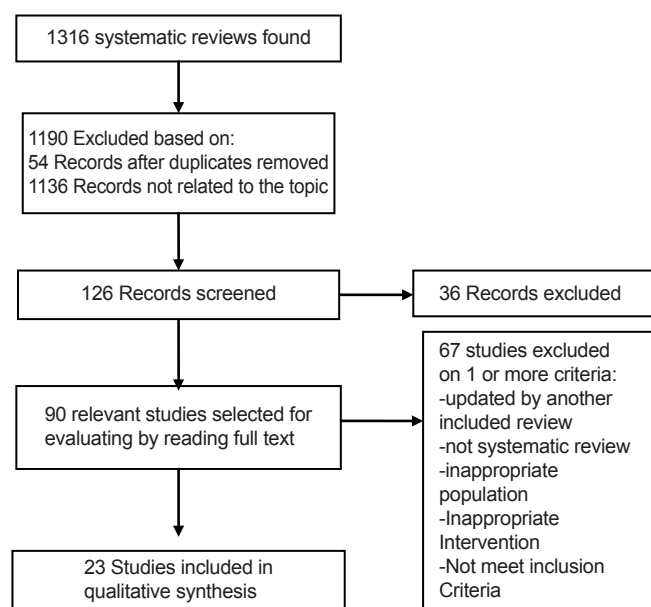


Figure 1: Flow diagram of the review-selection process

Table 1: Summary of included systematic reviews for normal labor and delivery management

Source	Intervention	Search strategy	No. of studies included	Study population and no. of participants	Inclusion criteria for "types of participants"	Comparison interventions	Key finding	Quality of review
Lauzon <i>et al.</i> , 2009 ^[9]	Delaying admission to the labor ward until active phase in labor	Cochrane review (2004)	1	209 women	All pregnant women at term gestation	Direct admission to labor wards	Women have shorter labor ward stays, feel more controlled, and use fewer drugs to progress labor or for pain relief	High quality
Basevi <i>et al.</i> , 2009 ^[10]	Perineal shaving	Cochrane review (2008)	3	1039 women	All primiparous and multiparous women	No perineal shaving	There is insufficient evidence to recommend perineal shaving for women on admission in labor	High quality
Reveiz <i>et al.</i> , 2013 ^[11]	Enemas applied during the first stage of labor	Cochrane review (2013)	4	1917 women	Women during the first stage of labor	No enema	Evidence does not support the routine use of enemas during the first stage of labor; therefore, such practice should be discouraged	High quality
Rohwer <i>et al.</i> , 2013 ^[12]	Use of antispasmodics on labor in term pregnancies	Cochrane review (2013)	21	3296 women	Women with term pregnancies	Placebo or no medication	There is insufficient evidence to make any conclusions regarding the safety of these drugs for both mother and baby	High quality
Dawood <i>et al.</i> , 2013 ^[13]	Routine administration of intravenous fluids to low-risk nulliparous laboring women	Cochrane review (2013)	9	1781 women	Low-risk nulliparous women	Oral intake alone or oral intake restricted	There is no robust evidence to recommend routine administration of intravenous fluids	High quality
Toohill <i>et al.</i> , 2012 ^[14]	Use of intravenous fluids or increased oral intake administered to women in labor for the treatment of ketosis	Cochrane review (2008)	No trials	0	Women with an uncomplicated pregnancy	No intervention	Future trials should examine the use of different types of intravenous and oral fluids on clinically important outcomes	High quality
Lavender <i>et al.</i> , 2013 ^[15]	Use of partogram on perinatal and maternal morbidity and mortality	Cochrane review (2013)	6	7706 women	All women with singleton pregnancies and cephalic presentations, in spontaneous labor at term	No partogram, or comparison between different partogram designs	Cannot recommend routine use of the partogram as part of standard labor management and care	High quality
Smyth <i>et al.</i> , 2013 ^[16]	Amniotomy alone	Cochrane review (2013)	15	5583 women	Pregnant women with singleton pregnancies entry in spontaneous labor	Intention to preserve the membranes	Do not recommend that amniotomy be introduced routinely as part of standard labor management and care	High quality
Brisson-Carroll <i>et al.</i> , 1996 ^[17]	Amniotomy	Non-Cochrane review	7	3098 women	Multi- and nulliparous women in labor	Attempt to conserve the membranes	No support for the hypothesis that routine early amniotomy reduces the risk of cesarean delivery	Intermediate quality

Contd...

Table 1: Contd...

Source	Intervention	Search strategy	No. of studies included	Study population and no. of participants	Inclusion criteria for "types of participants"	Comparison interventions	Key finding	Quality of review
Singata <i>et al.</i> , 2013 ^[18]	Oral fluid or food restriction during labor	Cochrane review (2013)	5	3130 women	Women in labor	Women free to eat and drink	Since the evidence shows no benefits or harms, there is no justification for the restriction of fluids and food in labor for women at low risk of complications	High quality
O'Sullivan <i>et al.</i> , 2007 ^[19]	Use of light diet or isotonic drinks (carbohydrate)	Non-Cochrane review	5	973 women	Multiparae and nulliparae, singleton fetus, cephalic presentation, gestation >37 weeks	Water only	Do not support the concept that caloric data shortens the duration of labor or decreases the cesarean section rate	Low quality
Lawrence <i>et al.</i> , 2013 ^[20]	Encouraging women to assume different upright positions (including walking, sitting, standing, and kneeling)	Cochrane review (2013)	25	5218 women	Women in the first stage of labor	Recumbent positions in the first stage of labor	There is evidence that walking and upright positions in the first stage of labor reduce the duration of labor, the risk of cesarean birth, the need for epidural, and do not seem to be associated with increased intervention or negative effects on mothers and babies	High quality
Souza <i>et al.</i> , 2006 ^[21]	Encouraging women to adopt an upright position or to ambulate during the first stage of labor	Non-Cochrane review	9	2220 women	Women with normal labor	No intervention	Adoption of the upright position or ambulation during the first stage of labor may be safe, but considering the available evidence and its consistency, it cannot be recommended as an effective intervention to reduce the duration of the first stage of labor	Intermediate quality
Hodnett <i>et al.</i> , 2013 ^[22]	Continuous, one-to-one intrapartum support	Cochrane review (2013)	22	15,288 women	Pregnant women, in labor	Usual care	Continuous support during labor has clinically meaningful benefits for women and infants and no known harm	High quality
Zhang <i>et al.</i> , 1996 ^[23]	Continuous labor support	Non-Cochrane review	7	Unknown	Young, low-income, primiparous women in labor	Routine intrapartum care without a labor attendant	In these women, not only labor was shorter, but also oxytocin use, analgesic needs, and cesarean delivery rates were significantly reduced. Supported mothers felt less fatigued during and after labor, and delivery and were more satisfied	Low quality

Contd...

Table 1: Contd...

Source	Intervention	Search strategy	No. of studies included	Study population and no. of participants	Inclusion criteria for "types of participants"	Comparison interventions	Key finding	Quality of review
Scott <i>et al.</i> , 1999 ^[24]	Continuous support provided by doulas during labor	Non-Cochrane review	11	4230 women	Women with normal labor	Intermittent support during labor	The continuous presence of a doula during labor and delivery appears to have a greater beneficial effect than the support provided on an intermittent basis	Intermediate quality
Sandall <i>et al.</i> , 2013 ^[25]	Midwife-led models of care	Cochrane review (2013)	13	16,242 women	Pregnant women classified as having low or mixed risk of complications	Other models of care for childbearing women and their infants	Women who had midwife-led models of care were less likely to experience regional analgesia, episiotomy, and instrumental delivery, and were more likely to experience no intrapartum analgesia/ anaesthesia, spontaneous vaginal birth, and feeling in control during childbirth	High quality
Waldenström <i>et al.</i> , 1998 ^[26]	Continuity of midwifery care	Non-Cochrane review	7	9148 women	Women with normal labor	Standard maternity care	Continuity of midwifery care is associated with lower intervention rates than standard maternity care	Intermediate quality
Devane <i>et al.</i> , 2012 ^[27]	Admission CTG with intermittent auscultation of the FHR	Cochrane review (2011)	4	13,000 women	Low-risk pregnant women	Intermittent auscultation of the FHR	The findings support recommendations that the admission CTG not be used for women who are at low risk on admission in labor	High quality
Alfirevic <i>et al.</i> , 2013 ^[28]	Continuous CTG during labor	Cochrane review (2012)	13	37,000 women	Pregnant women in labor and their babies	No fetal monitoring or intermittent auscultation or intermittent CTG	Continuous CTG was associated with an increase in cesarean sections and instrumental vaginal births	High quality
Wei <i>et al.</i> , 2013 ^[29]	Early augmentation with amniotomy and oxytocin for prevention of, or therapy for, delay in labor progress	Cochrane review (2013)	14	8033 women	Pregnant women in spontaneous labor	Standard care	Early intervention with amniotomy and oxytocin appears to be associated with a modest reduction in the rate of cesarean section over standard care	High quality
Fraser <i>et al.</i> , 1998 ^[30]	Early augmentation with amniotomy and oxytocin	Non-Cochrane review	12	5111 women	Women with normal labor in prevention trials	A less active form of management	Early augmentation does not appear to provide benefit over a more conservative form of management in the context of care of nulliparous women with mild delays in the progress of labor	Intermediate quality

Contd...

Table 1: Contd...

Source	Intervention	Search strategy	No. of studies included	Study population and no. of participants	Inclusion criteria for "types of participants"	Comparison interventions	Key finding	Quality of review
Brown et al., 2013 ^[31]	Active management of labor	Cochrane review (2013)	7	5390 women	Healthy pregnant women with spontaneous labor at term	Women receiving routine care	Active management is associated with small reductions in the CS rate, but it is highly prescriptive and interventional	High quality

CTG: Cardiotocography, FHR: Fetal heart rate

Table 2: Assessment of the quality of included systematic reviews (AMSTAR ratings)

Systematic review	AMSTAR question											Total score	Quality of review	
	1	2	3	4	5	6	7	8	9	10	11			
Lauzon et al., 2009 ^[9]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Not applicable	No	Yes	9	High
Basevi et al., 2009 ^[10]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Reveiz et al., 2013 ^[11]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Rohwer et al., 2013 ^[12]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Dawood et al., 2013 ^[13]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	11	High
Toohill et al., 2012 ^[14]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Lavender et al., 2013 ^[15]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Smyth et al., 2013 ^[16]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Brisson-Carroll et al., 1996 ^[17]	Yes	Yes	Yes	Can't answer	Yes	Yes	Yes	Yes	No	Yes	No	No	7	Intermediate
Singata et al., 2013 ^[18]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
O'Sullivan et al., 2007 ^[19]	Can't answer	No	No	No	No	Yes	No	No	Yes		No	No	2	Low
Lawrence et al., 2013 ^[20]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Souza et al., 2006 ^[21]	Yes	Yes	Can't answer	Yes	No	Yes	Yes	No	Yes		No	Yes	7	Intermediate
Hodnett et al., 2013 ^[22]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Zhang et al., 1996 ^[23]	Can't answer	Yes	No	Yes	No	Yes	No	No	Yes		No	No	4	Low
Scott et al., 1999 ^[24]	Can't answer	Yes	Yes	Can't answer	No	Yes	Yes	No	Yes		No	No	5	Intermediate
Sandall et al., 2013 ^[25]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Waldenström et al., 1998 ^[26]	Yes	Yes	Yes	Can't answer	No	Yes	Yes	No	Yes		No	No	6	Intermediate
Devane et al., 2012 ^[27]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Alfirevic et al., 2013 ^[28]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Wei et al., 2013 ^[29]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High
Fraser et al., 1998 ^[30]	Can't answer	Yes	No	Can't answer	Yes	Can't answer	Yes	Yes	Yes	Yes	No	Yes	6	Intermediate
Brown et al., 2013 ^[31]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	10	High

AMSTAR: Assessment of multiple systematic reviews

There were two systematic reviews related to use of routine amniotomy during labor. In the Smyth et al. review,^[21] a total of 5583 women were recruited in 15 trials comparing amniotomy with intention to preserve the membranes. All data in the review were presented by the allocated group (intention-to-treat analysis) and not by the

intervention actually received. On the basis of the findings of this review, we do not recommend that "amniotomy be introduced routinely as part of standard labor management and care." The meta-analysis by Brisson-Carroll et al.^[22] implied that "routine amniotomy is associated with both benefits and risks. Benefits include a reduction in labor

duration and a possible reduction in abnormal 5-minute Apgar scores. The evidence provides no support for the hypothesis that routine early amniotomy reduces the risk of Caesarean delivery. An association between early amniotomy and Caesarean delivery for fetal distress was noted in one large trial, suggesting that amniotomy should be reserved for patients with abnormal labor progress.”

There were two systematic reviews related to the restriction of fluids and food in labor. Singata *et al.*^[23] identified five studies (3130 women). In this Cochrane review, the overall quality of the evidence was reasonable. The authors concluded that “since the evidence shows no benefits or harms, there is no justification for the restriction of fluids and food in labor for women at low risk of complications.” The meta-analysis by O’Sullivan *et al.*^[24] (5 studies, 973 women) suggested that current evidence does not support the concept that caloric data shortens the duration of labor. Authors of this review implied that “current studies do not support the claim that oral intake decreases the Cesarean section (CS) rate.”

We found two systematic reviews of maternal position and mobility during labor. Lawrence *et al.*^[25] included 25 studies with a total of 5218 women. Overall, the quality of the studies included in the review was mixed and most studies provided little information on the methods. Authors of this Cochrane review concluded that “walking and upright positions in the first stage of labour reduces the duration of labour, the risk of caesarean birth, the need for epidural, and does not seem to be associated with increased intervention or negative effects on mothers’ and babies’ well being. Women should be encouraged to take up whatever position they find most comfortable in the first stage of labor.”

Another meta-analysis by Souza *et al.*^[26] implied that “adoption of the upright position or ambulation during first stage of labor may be safe, but considering the available evidence and its consistency, it cannot be recommended as an effective intervention to reduce duration of the first stage of labor.” Therefore, “Women should be encouraged to take up whatever position they find most comfortable while avoiding spending long periods supine. Women’s preferences may change during labor. Many women may choose an upright or ambulant position in early first stage of labor and choose to lie down as their labor progresses.”^[25]

We found three systematic reviews of continuous labor support during labor. In Hodnett *et al.*’s^[27] review, the methodological quality of the trials was generally good to excellent. Authors of this Cochrane review reported, “Continuous support during labor has clinically meaningful benefits for women and infants and no known harm. All

women should have support throughout labor and birth.” In the review of Zhang *et al.*,^[28] four studies (1349 patients) were included. The authors reported, “Continuous labor support by labor attendants for young, low-income, primiparous women ameliorates the effect of dysfunctional uterine activity. In these women, not only was labor shorter, but oxytocin use, analgesic needs and Caesarean delivery rates were significantly reduced. Supported mothers felt less fatigued during and after labor and delivery and were more satisfied. In the postpartum period, mothers who had labor support showed increased mother infant bonding and breast-feeding.” Scott *et al.*,^[29] in a meta-analysis, demonstrate that “the continuous presence of a doula during labor and delivery appears to have a greater beneficial effect than the support provided on an intermittent basis. Thus, every effort should be made to ensure that women’s birth environments are empowering, non-stressful, afford privacy, communicate respect and are not characterized by routine interventions that add risk without clear benefit.”^[39]

Two systematic reviews were related to continuity of midwifery care during labor. A Cochrane review of 13 studies (16,242 women) determined that “most women should be offered midwife-led models of care and women should be encouraged to ask for this option although caution should be exercised in applying this advice to women with substantial medical or obstetric complications.” The methodological quality of the included trials based on allocation concealment was “high quality” for nine trials and “unclear” for two trials.^[30] Waldenström *et al.*,^[31] in another review, reported, “Continuity of midwifery care is associated with lower intervention rates than standard maternity care. No statistically significant differences were observed in maternal and infant outcomes. However, more research is necessary to make definite conclusions about safety, for the infant as well as for the mother. This review illustrates the variation in the different models of alternative and standard maternity care, and thus the problems associated with pooling data from different trials.”

Two systematic reviews were related to cardiotocography (CTG) during labor. Devane *et al.*^[32] found no evidence of benefit for the use of admission CTG for low-risk women on admission in labor. The findings of current evidence support recommendations that “the admission CTG should not be used for women who are at low risk on admission in labor. Women should be informed that admission CTG is likely associated with an increase in the incidence of CS without evidence of benefit.” Alfirevic *et al.*^[33] implied that “continuous CTG during labor is associated with a reduction in neonatal seizures, but no significant differences in cerebral palsy, infant mortality or other standard measures of neonatal well-being. However, continuous CTG was

associated with an increase in CSs and instrumental vaginal births. The real challenge is how best to convey this uncertainty to women to enable them to make an informed choice without compromising the normality of labor.”

The use of oxytocin for speeding up labor with normal progress has not been studied as a primary isolated intervention. There were two systematic reviews related to augmentation by amniotomy and oxytocin. In prevention trials, “early intervention with amniotomy and oxytocin appears to be associated with a modest reduction in the rate of CS over standard care.”^[34] Fraser reported, “Early augmentation does not appear to provide benefit over a more conservative form of management in the context of care of nulliparous women with mild delays in the progress of labor.”^[35] Evidence of the research suggested that only women with truly abnormal labor progress should have amniotomy and that only women with truly prolonged labors and sluggish uterine activity should receive oxytocin.^[40]

Brown *et al.*^[36] compared low-risk women receiving a predefined package of care (active management) with women receiving routine care. In this review, the quality of the included studies was variable. Authors of this review reported, “Active management is associated with small reductions in the CS rate, but it is highly prescriptive and interventional. It is possible that some components of the active management package are more effective than others. Further work is required to determine the acceptability of active management to women in labor.”

DISCUSSION

Our main objective was to find, summarize, and bring together existing systematic reviews in a single place as the authors of these papers have reported. Due to the breadth of the topic, it was not possible, in this review, to describe comprehensively all intrapartum interventions that have been subjected to systematic review, but this review of systematic reviews was aimed at identifying high-quality reviews on the interventions used most commonly for management of normal labor and delivery in the first stage of labor. This overview included 23 systematic reviews including 16 Cochrane reviews and 7 non-Cochrane reviews.

It was not surprising that all Cochrane reviews received high-quality grading. For the non-Cochrane reviews, scores were intermediate or low; this was commonly because some features of the review process may not have been clearly stated in the published reviews. Our study showed that the Cochrane reviews had a greater level of appraisal for the

quality of the included studies. Although all reviews are summarized and reported, we focused our conclusion on reviews of higher quality (AMSTAR > 5).

Based on this overview, scientific evidence does not support routine enemas, routine perineal shaving, continuous electronic fetal heart rate monitoring, routine early amniotomy, and restriction of fluids and food in labor; these practices can be associated with complications without sufficient benefits, and should probably be avoided. Evidence supports of continuous support, continuity of midwifery care, encouragement of non-supine position, and freedom in movement throughout labor; these practices should be routinely performed. There is insufficient evidence to routine administration of intravenous fluids and antispasmodics during labor; therefore, it should probably be left for women to decide. More evidence is needed regarding delayed admission until active labor and use of partograph.

The WHO classifies routine use of pubic shaving, enema, intravenous infusion, and routine use of the supine position during labor as practices that are clearly harmful or ineffective and should be eliminated; allowing women to drink fluids during labor and fetal monitoring with intermittent auscultation, use of partogram in labor, empathic support by caregivers during labor, offering oral fluids during labor and delivery, freedom in position and movement throughout labor, and encouragement of non-supine position in labor as practices that are demonstrably useful and should be encouraged; routine early amniotomy in the first stage of labor as a practice for which insufficient evidence exists to support a clear recommendation and which should be used with caution while further research clarifies the issue; and lists electronic fetal monitoring during labor, restriction of food and fluids during labor, and oxytocin augmentation of labor as practices that are frequently used inappropriately.^[41] Although the recommendations dated from 1996, researchers have found that they are still useful because they are in line with today’s recommendations and evidence.^[42]

The guide to effective care in pregnancy and childbirth categorizes routine pubic shaving and enema forms of care that are likely to be ineffective or harmful (ineffectiveness or harm demonstrated by clear evidence); routine intravenous infusion in labor, routine use of IVs and not allowing women to eat or drink during labor as forms of care that are unlikely to be beneficial (evidence against these forms of care not as firmly established); amniotomy to augment slow labor as a form of care that is likely to be beneficial; emotional and psychological support in labor as beneficial form of care (effectiveness demonstrated by clear evidence from

controlled trials); admission CTG tests as form of care of unknown effectiveness (insufficient or inadequate quality data upon which to base a recommendation for practice); and lists early use of oxytocin to augment slow or prolonged labor and “active management” of labor as forms of care with unknown effectiveness.^[43]

There are several strengths of this overview. First, it applied a comprehensive search strategy. Second, duplicate screening, data extraction, and quality assessments were conducted. Third, a validated instrument (AMSTAR) was used to evaluate the methodological quality of included reviews. Finally, the conclusions reported in this review highlight the usefulness of bringing together a summary of reviews in one place for assistance of evidence-based clinical decision-making. These conclusions are important for maternity care practices and should be implemented throughout the clinical centers.

Our overview has several limitations. First, the aim of this overview was to evaluate the systematic reviews instead of the individual initial studies, which means there is a risk of rarifying the results of high-quality studies by including low-quality data. The second limitation of this review is the variation in practices. Third, it is possible that some of the newly published studies have not yet been included in the reviews and, therefore, are not included in our review.

CONCLUSION

Some of the routine interventions that are common during labor and birth might not always be essential or beneficial for women with uncomplicated and low-risk pregnancies. It is important that an evidence-based approach to intrapartum care be incorporated into clinical practice setting. This overview of systematic reviews detected high-quality evidence to support effective practices for normal labor and delivery management in the first stage of labor. The review also has identified the interventions which are supported by limited evidence as areas for future research.

ACKNOWLEDGMENT

This study as part of PhD thesis of the first author was approved by Isfahan University of Medical Sciences, Iran (with code of 391206). Hereby, the researchers appreciate the Faculty of Nursing and Midwifery of Isfahan University of Medical Sciences for approving the study.

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How to cite: Iravani M, Janghorbani M, Zarean E, Bahrami M. An overview of systematic reviews of normal labor and delivery management. *Journal of Nursing and Midwifery Research* 2015;20:293-303.
Source of Support: Isfahan University of Medical Sciences,
Conflict of Interest: None declared.