Abstract: Systematic review of the effects of induction of labour on maternal and neonatal outcomes and childbirth experience

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Background: The population of low-risk pregnant women whose labour was induced in Flanders has been rising from 23.8% in 2011 to 27% in 2021. The induction rate varied widely between Flemish hospitals, from 14.0% to 40.1% in 2021 (Goemaes et al., 2022). A survey undertaken by the Flemish Association of Midwives indicated that until 2019 Flemish hospitals recommended an induction of labour (IOL) between 41^{+3} tot 41^{+5} weeks in line with national guidelines. Since then, clinical practice seems to have changed and Flemish midwives express their concern that more and more women are being induced earlier. Recent evidence-based guidelines are lacking, leading to great inter- and intraprofessional variation regarding the medical indications used for IOL, induction methods and induction terms in Flemish healthcare practice (VBOV, 2022a and VBOV, 2022b).

Aim: The aim of this review was to understand the changes in induction policy in Flemish clinical practice and to raise healthcare providers' awareness of the recent evidence regarding IOL to foster quality of care and critical interprofessional dialogue.

Methodology: Systematic review of the recent scientific evidence between 2017 and 2022. Inclusion criteria: induction of labour, low-risk singleton pregnancies, maternal outcomes, neonatal outcomes, clinical guidelines, systematic reviews, randomised controlled trails, observational studies, in English or Dutch language.

The following three research questions were studied:

In a term, low-risk, singleton pregnancy, what is the effect of induction of labour:

1. At 41 weeks gestational age on maternal and neonatal outcomes? (incl. 7 guidelines, 15 studies)
2. At 39 weeks gestational age on maternal and neonatal outcomes? (incl. 8 guidelines, 19 studies)
3. On the birth experience of women? (incl. 9 guidelines, 39 studies)

Findings:

Clinical guidelines

Clinical guidelines recommend an induction from 41 weeks onwards, suggesting that certain risks, although very rare in absolute terms may increase over time, including the risk of a caesarean section, stillbirth and neonatal mortality, and of admission to a Neonatal Intensive Care Unit (NICU). This increase in risk constitutes a continuum and not a fixed point in time as the duration of post-term pregnancy rises. Health care providers are advised to discuss the advantages and disadvantages of IOL and its alternatives, the fact that 99% of women go into spontaneous labour by 42 weeks and that IOL may lead to more pain sensations. It is recommended to point out the benefits and risks of additional foetal monitoring from 41 weeks in case of expectant management. For low-risk pregnant women an IOL at 39 weeks is not recommended.

Scientific evidence on obstetric outcomes

Clinical guidelines are based on a limited number of scientific studies (predominantly systematic reviews of RCTs, and RCTs) until 2020, with significant study limitations.

This systematic literature review includes also recent evidence after 2020 and observational studies. The findings from this review indicate that IOL at 39 weeks and 41 weeks does not unambiguously leads to more favourable maternal or neonatal outcomes and that the effect on caesarean sections is not clear. Conflicting evidence regarding the effects of IOL on obstetric outcomes across studies is a result of important study limitations (e.g. differences in study type and design).

Scientific evidence on birth experience

For pregnant women, IOL has a higher risk of a negative childbirth experience, and the shared decision-making process is flawed. Women receive insufficiently balanced information about the benefits and risks of induction, the alternatives to IOL, the different induction indications, the induction process, other interventions that may accompany an induction, that IOL may lead to more intense labour pain, the impact of induction on the woman's freedom of mobility and the right to refuse an induction. Women often experience the induction recommendation by health care providers as binding rather than a choice; sometimes they feel pressured.

Health care providers themselves are concerned about the fact that women are induced earlier and earlier. There is no unanimity between health care professions about induction indications, methods and terms. Health care providers feel demotivated to understand the evidence regarding IOL. Barriers are the large amount of evidence, limited access to information, limited time and capacities to interpret the evidence. Training in communication and counselling skills in case of complex birth decisions, and decision-making tools are also lacking.

Discussion:

Any consideration to induce labour is a complex matter and should consider *all* advantages and risks, both for mother and child (including the birth experience) of *both* birth options (IOL, expectant management) in the short- and long term. The Hippocratic principle of "first do no harm" should guide the assessment of whether equally effective but less invasive interventions can be applied, and the evidence-based benefits outweigh the disadvantages.

Individual characteristics and preferences of women and care context seem to influence maternal and neonatal outcomes arising from an induction. The recent study of Bruinsma et al. (2022) highlights that the majority of women prefer a spontaneous childbirth, and these women are more likely to be physically and mentally healthier. If women are treated according to their preferences, there are no significant differences in neonatal mortality and morbidity and caesarean sections between IOL and expectant management. Guideline recommendations and

evidence therefore need to be translated to the individual situation and risk profile and be taken with caution. Moreover, birth is more than just a healthy baby. Women's birth experience matters, as this review indicated. Any birth needs to be safe from a medical perspective and respond to the psychological and emotional needs of women and their partners.

IOL is an intervention into the physiology of childbirth and has many iatrogenic effects. Recent research points to the fact that the risks of induction medication (synthetic oxytocin) and the benefits of going into spontaneous labour for mother and child should not be underestimated (Buckley et al., 2023; Uvnäs-Moberg et al., 2019).

While for certain medical indications, IOL may make sense, the *routine* induction of low-risk pregnant women just because they reach 41 weeks of pregnancy is not recommended. IOL at 41 weeks *may* reduce the already low absolute risk of perinatal mortality, although the optimal time to offer an IOL remains unclear. This increase in perinatal mortality risk thus constitutes a *continuum* as the duration of post-term pregnancy rises and is not a fixed point in time.

It is crucial that healthcare providers inform parents in a timely, balanced and evidence-based manner about both birth option and that the autonomy and preferences of the woman are fully respected.

Conclusion:

The epidemiological trends in Flanders, the findings from this systematic review and the limitations of the scientific studies reviewed shed new light on (the interpretation of) the scientific evidence regarding induction and the current induction policy in Flanders.

There is an urgent need for an open, constructive, interdisciplinary dialogue between different healthcare providers (gynaecologists, paediatricians, midwives, psychologists, …) and patient associations to critically appraise the current induction policy in Flemish hospitals within a broader perspective of mother-child care and patient rights. A future clinical guideline on induction should therefore be developed multidisciplinary and consider the latest evidence on the medical indications for induction, the effects of induction on maternal and neonatal outcomes, possible iatrogenic effects of induction, the effects of induction methods, the birth experience of women and the importance of shared informed decision-making.

The full article (in Dutch) and this abstract (in English) can be found:

https://www.vroedvrouwen.be/inleiden-versus-afwachten-wat-zegt-de-wetenschap

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