Women's Experiences of Induction of Labour With Low-dose Misoprostol Oral Tablets Compared With Slow-release Vaginal Insert. A Prospective Cohort Study Based on Questionnaires.

Karen Hell Hansen (✉ karen_hell_hansen@hotmail.com)

Herlev Hospital <https://orcid.org/0000-0002-1547-3156>

Maria Jeppegaard

Hvidovre Hospital

Axelina Eriksson

Hvidovre Hospital

Sarah C. B. Jeppesen

Slagelse Hospital: Slagelse Sygehus

Lone Krebs

Hvidovre Hospital

Research article

Keywords: Patient experience, induced, induction, labour, angusta, oral misoprostol, misodel, slow-release misoprostol vaginal insert, nulliparous

Posted Date: December 17th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-127692/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Abstract

Background: The aim of this study was to compare nulliparous women's experiences of induction of labour with two different regimens of misoprostol.

Methods: In two different hospitals, nulliparous women undergoing medical induction of labour were asked to complete a questionnaire after delivery. We adapted a validated questionnaire regarding mood and feelings during induction of labour, experience of labour and experience of induction.

The questionnaire was completed by 123 (42.7%) of 288 eligible women; 57 (46.3%) had been allocated to oral misoprostol and 66 (53.7%) to slow-release vaginal insert. An independent-samples T-test was used for comparison of parametric continuous variables and a Pearson chi-square test was used for categorical data.

Results: Women induced with oral misoprostol experienced a more painful induction of labour ($p=0.019$) and described feeling the length of stay at hospital as too long ($p=0.028$). The overall experience of giving birth after induction of labour was reported as "good" among 87.8% of women induced with oral misoprostol compared to 72.7% of women induced with slow-release misoprostol vaginal insert ($p=0.039$).

Conclusions: Induction with low-dose oral misoprostol in nulliparous women is associated with experience of more pain and longer duration but overall a more positive experience of labour compared with induction with slow-release misoprostol vaginal insert.

Trial registration: *Clinicaltrials.gov* ID: [NCT02693587](https://clinicaltrials.gov/ct2/show/study/NCT02693587) on February 26, 2016.

EudraCT number 2020-000366-42 on 23 January 2020, retrospectively registered.

Background

Induction of labour is a common intervention. In Denmark, 24% of all deliveries are induced, with a 27% prevalence among nulliparous women [1]. Hence, it is of great importance to offer a regimen of induction that is not only safe and cost efficient but also provides the best possible experience for the parents during induction and labour.

In a recent study, we compared women induced with oral misoprostol to slow-release vaginal insert [2], finding that induction with vaginal misoprostol leads to faster deliveries and an increased risk of tachysystole but with similar perinatal outcomes and incidence of caesarean section or instrumental vaginal delivery. Low dose oral misoprostol appeared to be safe but was associated with an increased use of secondary methods of induction and a non-significant tendency of more intrapartum fever compared with vaginal misoprostol.

The knowledge of women's experiences with different regimens for induction of labour is limited. A Cochrane analysis in 2017 stated "We do not have sufficient evidence to know which induction methods are preferred by women" [3].

Most studies evaluate safety and efficacy in relation to induction but recently more attention has been paid to women's experiences of induction of labour, suggesting women's experience should be an important factor in the decision-making process [4, 5]

Previous studies have found that women who experience induction of labour have an increased risk of a negative birth experience compared to women with a spontaneous onset of labour [6–8]. No previous studies have compared patients' experiences with regimens having very different efficacy in terms of duration from start of induction to delivery.

The aim of this study was to compare two populations of nulliparous women with unripe cervixes regarding experiences of induction of labour and giving birth after induction with oral misoprostol and slow-release vaginal insert, respectively.

Methods

Details of the study protocol have been reported elsewhere [2]. In short, all nulliparous women eligible for vaginal delivery and medical induction of labour were evaluated. Inclusion criteria were defined as singleton pregnancies, cephalic presentation of the fetus and a gestational age of 37 weeks or more. Artificial rupture of membranes was preferred for induction in women with favourable cervical conditions based on the midwife assessments. Exclusion criteria were defined as a previous uterine scar, suspicion of growth restriction of the fetus and prelabour rupture of membranes.

The study was conducted as part of a prospective cohort study localised in two different obstetric departments in the region of Zealand, Denmark. Data were collected from November 2015 to November 2017 with telephone follow up until May 2018.

The demographical population in the two departments were similar except for women with gestational diabetes mellitus (GDM) who were referred to one of the departments [2].

Local guidelines on induction of labour were elaborated for the two different departments defining dosage and criteria for discontinuation.

One department used a regime with 25 mcg oral tablets of misoprostol (manufactured by Azanta) and the other department used a regime with 200 mcg slow-release vaginal insert of misoprostol (manufactured by Ferring).

The women induced with oral misoprostol were induced in an outpatient setting unless there was a medical indication for admitting the woman to the obstetric department. The women induced with vaginal misoprostol slow-release insert were hospitalized from the beginning of induction.

A total of 288 women were included in the study. All participating women were requested to complete a questionnaire on their experience of induction and labour after delivery. Only women who were able to complete the questionnaire in Danish could participate in the study.

Women who did not complete the questionnaire before leaving the hospital were contacted by telephone with a total of three times within the following few months and invited to participate. The questionnaires were then sent to the women by mail with an enclosed envelope with prepaid stamping.

The questionnaire was based on the items in the Wijma Delivery Expectancy/Experience Questionnaire which has previously been validated [9, 10]. For the present study we elaborated 17 questions regarding the woman's moods and experiences of labour induction with most answers on a scale of 1 to 5; "Strongly agree", "agree", "neither nor/neutral", "disagree agree", "strongly disagree". Other questions had answers on a scale of 1 to 4; "very satisfied", "satisfied", "dissatisfied" or "very dissatisfied" or "very good", "good", "bad" or "very bad" and finally two questions with answers on a scale from 1 to 3.

Furthermore, the women were asked about the overall satisfaction of labour induction and some additional background data (Appendix).

All questionnaires were anonymous, and all women gave written or oral informed consent for collection of data for this study [2].

Statistical analyses

The statistical analyses were performed with SPSS Statistics (version 25.0). Normally distributed continuous data were reported as mean (SD). Percentage calculation was based on the number of available observations.

For the analysis of the experience of induction questions, we combined the answers; "Strongly agree" and "agree", as well as "disagree agree" and "strongly disagree".

For the analysis of the questions about general satisfaction, we combined “very satisfied/very good” and “satisfied/good” as well as “dissatisfied/bad” and “very dissatisfied/very bad”.

We used an independent-samples T-test comparison of parametric continuous variables and a Pearson chi-square test was used for categorical data.

We considered a p-value of < 0.05 to indicate statistical significance.

Ethical approval

The study was performed in accordance with the guidelines of the Declaration of Helsinki and was approved by the Regional Ethics Committee (no. 50213) Regional Medicines Agency and the Danish Data Protection Agency (REG-81-2015). The original study was registered at clinical trials ID: NTC02693587 on February 26; 2016 and on EudraCT number 2020–000366-42 on January 23; 2020, retrospectively registered.

Reporting of the results followed the STROBE guidelines.

Results

A total of 288 women in the cohort were eligible for the study. 123 women completed the questionnaire, of which 57 women were allocated to oral misoprostol and 66 women to slow release vaginal insert. 165 women did not respond to the questionnaire (Fig. 1).

Baseline demographics were overall comparable between responders in the oral misoprostol and slow-release vaginal misoprostol groups except for GDM, BMI, Bishop score and time from induction to delivery. Women in the oral misoprostol group had a significantly higher BMI (30.5) compared with the slow-release vaginal misoprostol group (27.6, $p = 0.05$). Mean Bishop score in the oral group was 4.18 compared with 3.26 in the slow-release vaginal insert group ($p = 0.03$). Significantly more women induced with slow-release vaginal insert delivered within 24 hours of induction (59.1%) compared with the oral misoprostol group (14%) ($p = 0.000$). 61.4% of women induced with oral misoprostol spent more than 48 hours from induction to labour compared with 7.6% of the slow release vaginal insert group ($p = 0.000$) (Table 1).

Clinical characteristics between responders and non-responders of the questionnaire were similar, except for the distribution of GDM and the time from induction to delivery, with significantly more women with GDM found in the non-responder group induced by oral misoprostol (Table 1). Time from induction to delivery differs significantly between the responder and non-responder group with more women in the responder group delivering within 24 hours ($p = 0.02$).

In a subgroup analysis excluding women with GDM, the groups were comparable except for significantly more women not delivering within 48 hours ($p = 0.003$) in the oral misoprostol group that responded to the questionnaire compared with the oral misoprostol non-responder group. (Table 2).

In the comparison of the oral misoprostol group and slow-release vaginal insert group, we found no significant differences regarding the women's emotions during induction, overall evaluation of the induction of labour and feelings about the labour being induced. (Tables 3 and 4).

We found a non-significant tendency of women being induced with slow-release vaginal insert more often reported a dissatisfaction with the duration of induction of labour with a total of 40.9% versus 26.3% of women being dissatisfied induced with oral misoprostol ($p = 0.213$).

Significantly more women induced with oral misoprostol reported time spent at the hospital during induction and labour as “not acceptable” or “too long” ($p = 0.03$). Also, they more often reported they could not handle the pain during induction of labour ($p = 0.02$) (Table 3).

The overall experience of giving birth after induction was significantly more positive in the group of women induced with oral misoprostol compared to the women induced with slow-release vaginal insert ($p = 0.04$) (Table 4).

Discussion

In this questionnaire-based prospective cohort study, we evaluated nulliparous women's experiences with induction of misoprostol in two hospitals with two different regimens and two different routes of administration; 25 mcg oral tablets and 200 mcg slow-release vaginal insert. A total of 123 of 288 women completed the questionnaire, corresponding to a response rate of 42.7%. Although time from induction to birth was experienced as longer and more painful in women induced with oral misoprostol, their overall experience of birth was significantly more positive compared to women induced with slow-release vaginal insert.

To our knowledge, this is the first published evaluation comparing nulliparous women's experience with induction of labour with oral misoprostol to slow-release misoprostol vaginal insert in a homogenous population of women.

The present study is not without limitations. At the time we initiated this study there were no validated questionnaires on women's experiences of induction of labour.

The Wijma Delivery Expectancy/Experience Questionnaire is the most frequently used instrument when measuring expectations and fear of childbirth. When identifying women's experience of induction of labour, the questionnaire seems the most objective instrument. We elaborated the questionnaire for this study based on the themes raised by Wijma et al. [9]. However, it is a limitation that our questionnaire has not been validated.

Another limitation to the study is that the women were asked about their experience of the whole procedure after giving birth, and not solely regarding the experience of the induction. Since completion of a questionnaire is difficult during the active phase of labour, and because determination of the active phase is not realizable, we assume this to be the best solution. Furthermore, the questionnaire did not include questions on preferences of induction of labour in future pregnancies – nor questions on expectations, worries about the baby and the availability and quality of care received before and during labour, which previous reports have shown are relevant domains for women's overall experience of labour [11, 12].

A recent review concluded that women's experiences with induced labour can likely be improved by a communicative and patient-centred approach [4].

This study was also subject to methodological limitations as it was neither randomised nor blinded and set in two different hospitals. However, apart from inclusion of women with GDM, the two populations were comparable and a sub analysis excluding women with GDM did not change the results. As only women who were able to complete the questionnaire in Danish could participate, and as the study is from only two centres, there is a risk that the population studied is too homogenous in this aspect.

Another limitation of the study was the difference in in- versus out-patient regimen for induction, where women's experience may reflect the opportunity to leave the hospital more than the method as such. Knowledge of women's preferences in this aspect is limited [13]. Use of oral misoprostol in an outpatient setting could be more comparable to a spontaneous start of labour, where women usually spend the time during the latent phase outside hospital. However, it is also possible that some women may be more anxious in the outpatient setting because of the uncertainties surrounding induction of labour and practicalities.

Finally, a limitation is the response rate in the two groups. More women in the slow-release vaginal insert group (53%) than in the oral misoprostol group (46%) participated. Although no difference in demographic characteristics between responders and non-responders were found except for faster deliveries (within 24 hours) in the responding group ($p = 0.02$), the difference in response rate of the groups could result in a potential risk of biased results. An obvious reason could be that

the women were not informed about the study prior to induction and when receiving the questionnaire immediately after delivery, they were more likely to forget or reject to complete the questionnaire as they had just become mothers.

Previous studies investigating women's experience of induction achieved a response rate of 55.1% [14] and 70% [15], the latter informed orally and written about the study at least one day before admission.

In the present study we found that time from induction to delivery had no influence on women's birth experience or their experience of induction of labour when comparing women delivering within 24 hours to women with more than 48 hours from induction to birth.

It seems plausible that the risk of secondary interventions increases with time interval between induction start and delivery, thereby creating more contact moments with the attending midwife that could lead to more satisfaction with the induction experience.

The relative risk of hyperstimulation is expected to be increased with the use of slow-release vaginal insert, as demonstrated in our recent study and other [2, 16, 17]. Hyperstimulation could possibly affect the experience of labour, which supports our finding of the vaginal insert group having a more negative experience of labour compared with the oral group.

A previous randomized clinical trial on oral versus vaginal misoprostol found no difference in the average interval from the first dose of misoprostol to delivery. Still 14% of women in the vaginal group versus 7.5% in the oral group were dissatisfied with the use of misoprostol [18].

Other studies found no difference in labour experience and no difference in time from induction to vaginal delivery with vaginal and oral misoprostol [19].

Research on women's experiences with a fast versus a slow delivery is sparse. Neither a fast nor slow delivery seems to make a difference in the experience of giving birth nor does it seem to be important for the women's overall experience of labour and satisfaction with the procedure.

On the other hand, induced women might be less satisfied in general because the experience of the time of induction diverges from the women's expectations.

Experiences differ among pregnant women. What is important for one woman may be less important for another. Furthermore, clinical factors such as gestational age, BMI, parity, indication for induction, ripening of cervix could be factors to consider when designing individual regimens for induction. Slow-release vaginal misoprostol insert has some advantages compared with oral misoprostol and there may be some individuals who could benefit from this method of induction, for instance, when induction of labour is expected to be particularly difficult and/or prolonged.

Conclusion

In this study we found that the experience of induction of labour in at term nulliparous women with oral misoprostol compared to vaginal inserts was comparable.

An overall better experience of labour was found among women induced with oral misoprostol in an out-patient setting compared to slow-release vaginal misoprostol in an in-patient setting.

Duration from induction of labour to delivery does not seem important to women's experience.

Abbreviations

GDM: gestational diabetes mellitus

Declarations

Ethics approval and consent to participate

The study was performed in accordance with the guidelines of the Declaration of Helsinki and was approved by the Regional Ethics Committee (no. 50213), Regional Medicines Agency and the Danish Data Protection Agency (REG-81-2015). The study was registered at clinicaltrials.gov ID: NCT02693587 on February 26; 2016 and on EudraCT number 2020–000366-42 on January 23; 2020, retrospectively registered.

The use of the two different regimens for induction of labour was approved by the Regional Medicines Agency as standard regimens for the two different departments, therefore individual consent for the choice of medication was not required – besides informed consent for induction of labour in general.

All women who participated in the study were asked to fill out a questionnaire about their birth experience before they left the department. In the end of this questionnaire they were asked for permission to collect information from their medical record. If they did not fill out the questionnaire, they were contacted by telephone and asked to answer the same questions including the question about collecting information from their medical record. The Regional Ethics committee approved the use of verbal consent for data collection, for patients contacted by telephone.

All patients included in this study provided informed consent (verbal or written) to access their medical records, and this was collected and registered before data-collection was commenced, as approved by the ethics committee. The researcher accessing the information was/is an authorised health care professional.

Consent for publication

Not applicable.

Availability of data and materials

All data analysed during this study are included in this published article. All generated raw data used for the analysis was deleted after completion of analysis as advised from the data protection authorities.

Competing interests

The authors declare that they have no competing interests.

Funding

Region Zealand Health Scientific Research Foundation supported the study financially.

Author's Contributions

AE and LK contributed to the study design, AE and SJ contributed to the acquisition of data retrieval, KH, MJ and LK analysed and interpreted the data. KH drafted the manuscript with revisions from AE, SJ, MJ and LK. All authors approved the final edition and are accountable for all aspects of the work.

Acknowledgements

Not applicable.

Disclosure of interests:

All authors declare no conflict of interest.

References

1. <http://end2019.esundhed.dk/sundhedsregistre/MFR/Sider/MFR06A.aspx>. Accessed 11062020 n.d.
2. Eriksson A, Jeppesen S, Krebs L. Induction of labour in nulliparous women- quick or slow: A cohort study comparing slow-release vaginal insert with low-dose misoprostol oral tablets. *BMC Pregnancy and Childbirth* 2020;20(1):79. <https://doi.org/10.1186/s12884-020-2770-0>
3. Vogel JP, Osoti AO, Kelly AJ, Livio S, Norman JE, Alfirevic Z. Pharmacological and mechanical interventions for labour induction in outpatient settings. *Cochrane Database Syst Rev* 2017; 9(9):CD007701. <https://doi.org/10.1002/14651858.CD007701.pub3>.
4. Coates R, Cupples G, Scamell A, McCourt C. Women's experiences of induction of labour: Qualitative systematic review and thematic synthesis. *Midwifery* 2019; 69:17-28. <https://doi.org/10.1016/j.midw.2018.10.013>.
5. Alfirevic Z, Aflaifel N, Weeks A. Oral misoprostol for induction of labour. *Cochrane Database Syst Rev* 2014;2014(6):CD001338. <https://doi.org/10.1002/14651858.CD001338.pub3>.
6. Hildingsson I, Karlström A, Nystedt A. Women's experiences of induction of labour - Findings from a Swedish regional study. *Aust N Z J Obstet Gynaecol* 2011;51(2):151-7. <https://doi.org/10.1111/j.1479-828X.2010.01262.x>.
7. Lou S, Hvidman L, Uldbjerg N, Neumann L, Jensen TF, Haben JG, et al. Women's experiences of postterm induction of labor: A systematic review of qualitative studies. *Birth* 2019; 46(3):400-410. <https://doi.org/10.1111/birt.12412>.
8. Shetty A, Burt R, Rice P, Templeton A. Women's perceptions, expectations and satisfaction with induced labour - A questionnaire-based study. *Eur J Obstet Gynecol Reprod Biol* 2005; 123(1):56-61. <https://doi.org/10.1016/j.ejogrb.2005.03.004>.
9. Wijma K, Wijma B, Zar M. Psychometric aspects of the W-DEQ; A new questionnaire for the measurement of fear of childbirth. *J Psychosom Obstet Gynaecol* 1998;19(2):84-97. <https://doi.org/10.3109/01674829809048501>.
10. Garthus-Niegel S, Størksen HT, Torgersen L, von Soest T, Eberhard-Gran M. The Wijma Delivery Expectancy/Experience Questionnaire a factor analytic study. *J Psychosom Obstet Gynaecol* 2011;32(3):160-3. <https://doi.org/10.3109/0167482X.2011.573110>.
11. Gärtner FR, Freeman LM, Rijnders ME, Middeldorp JM, Bloemenkamp KWM, Stiggelbout AM, et al. A comprehensive representation of the birth-experience: Identification and prioritization of birth-specific domains based on a mixed-method design. *BMC Pregnancy and Childbirth* 2014;14:147. <https://doi.org/10.1186/1471-2393-14-147>.
12. Simkin P. The experience of maternity in a woman's life. *J Obstet Gynecol Neonatal Nurs* 1996;25(3):247-52. <https://doi.org/10.1111/j.1552-6909.1996.tb02432.x>.
13. Kelly AJ, Alfirevic Z, Ghosh A. Outpatient versus inpatient induction of labour for improving birth outcomes. *Cochrane Database Syst Rev* 2013;(11):CD007372. <https://doi.org/10.1002/14651858.CD007372.pub3>.
14. Henderson J, Redshaw M. Women's experience of induction of labor: A mixed methods study. *Acta Obstet Gynecol Scand* 2013;92(10):1159-67. <https://doi.org/10.1111/aogs.12211>.
15. Ten Eikelder MLG, van de Meent MM, Mast K, Rengerink KO, Jozwiak M, de Graaf IM, et al. Women's Experiences with and Preference for Induction of Labor with Oral Misoprostol or Foley Catheter at Term. *Am J Perinatol* 2017;34(2):138-146. <https://doi.org/10.1055/s-0036-1584523>.
16. Wing DA, Miller H, Parker L, Powers BL, Rayburn WF. Misoprostol vaginal insert for successful labor induction: A randomized controlled trial. *Obstet Gynecol* 2011;117(3):533-41. <https://doi.org/10.1097/AOG.0b013e318209d669>.
17. Hofmeyr GJ, Gülmezoglu AM, Pileggi C. Vaginal misoprostol for cervical ripening and induction of labour. *Cochrane Database Syst Rev* 2010;2010(10):CD000941. <https://doi.org/10.1002/14651858.cd000941.pub2>.
18. Colon I, Clawson K, Taslimi M, Druzin M. Prospective randomized clinical trial of inpatient cervical ripening with stepwise oral misoprostol versus vaginal misoprostol. *Am J Obstet Gynecol* 2005;192(3):747-52. <https://doi.org/10.1016/j.ajog.2004.09.068>.

19. Wallström T, Strandberg M, Gemzell-Danielsson K, Pilo C, Jarnbert-Pettersson H, Friman-Mathiasson M, et al. Slow-release vaginal insert of misoprostol versus orally administrated solution of misoprostol for the induction of labour in primiparous term pregnant women: a randomised controlled trial. BJOG 2019;126(9):1148-1155.
<https://doi.org/10.1111/1471-0528.15796>.

Tables

Table 1
Characteristics of responders and non-responders to the questionnaire

Characteristic	Responders (n = 123)			Nonresponders (n = 165)			p-value responders vs. nonresponders
Method of induction	Oral misoprostol (n = 57)	Vaginal misoprostol (n = 66)	p-value oral vs. vaginal	Oral misoprostol (n = 115)	Vaginal misoprostol (n = 50)	p-value oral vs. vaginal	
Maternal age (years), mean (SD)	28.2 (5)	28.5 (5.6)	0.760	27.2 (5.1)	26.9 (4.7)	0.666	0.053
BMI (kg/m ²), mean (SD)	30.5 (8.3) ^a	27.6 (6.9)	0.050*	29,1 (7,4) ^b	28 (7.6) ^c	0.384	0.156
Caesarean Section, n (%)	N = 16 (28.1%)	N = 23 (34.8%)	0.420	79 (68.7%)	36 (72%)	0.728	0.739
Maternal educational level, n (%)	6 (10.7%) ^d	6 (9.1%)	0.766	-	-	-	-
<10 years	26 (46.4%)	35 (53.0%)					
10–15 years	24 (42.9%)	25 (37.9%)					
>15 years							
Cigarette use, n (%)	7 (12.3%)	10 (15.2%)	0.645	18 (15.7%)	9 (18.0%)	0.708	0.553
Pre-existing medical conditions, n (%)	7 (12.3%)	7 (10.62%)	0.771	15(13.0%)	5 (10.0%)	0.582	0.848
Pre-existing psychiatric conditions, n (%)	3 (5.26%)	5 (7.56%)	0.630	11 (9.6%)	5 (10.0%)	0.932	0.538

^adata on n = 44, ^bdata on n = 106, ^cdata on n = 49, ^ddata on n = 56, ^eincluding 5 with GDM + other diagnosis, ^f including 3 with GDM + other diagnosis, ^hdata on 113, ⁱdata on n = 25,

*p < 0.05

Characteristic	Responders (n = 123)			Nonresponders (n = 165)			p-value responders vs. nonresponders
Pregnancy-related medical conditions, n (%)	22 (38.6%)	17 (25.8%)	0.220	69 (60.0%)	14 (28.0%)	0.02*	0.007*
GDM, n (%)	2 (9.1%)	1 (5.9%)		27 (39.1%)	-		
Preeclampsia (%)	6 (27.2%)	11 (64.7%)		16 (23.2%)	5 (35.7%)		
Hypertension (%)	2 (9.1%)	2 (11.8%)		7 (10.4%)	-		
Intrahepatic cholestasis (%)	1 (4.5%)	1 (5.9%)		4 (5.8%)	2 (14.3%)		
Others, n (%)	11 (50%) ^e	2 (11.8%)		15 (21.7%) ^f	7 (50%)		
Indication for induction, n (%)	57(100%)	66 (100%)	0.075	115 (100%)	50 (100%)	0.021*	0.764
Medical/obstetrical	44 (77.2%)	45 (68.2%)		91 (79.1%)	31(62.0%)		
Post-dates	13 (22.80%)	21 (31.8%)		24 (20.9%)	19(38.0%)		
Other	-	-		-	-		
Bishop score, mean (SD)	4.18 (1.770) ^d	3.26 (1.572)	0.03*	4.40 (2.262) ^h	3.16 (1.405) ^c	0.001*	0.143
Gestational age at delivery (w + d), mean (SD)	40 + 6 (1 + 4)	40 + 6 (1 + 3)	0.838	40 + 5 (1 + 2)	40 + 4 (1 + 4)	0.575	0.43
Birthweight (g), mean (SD)	3706 (528) ⁱ	3697 (526)	0.936	3619 (532)	3556 (485)	0.530	0.136
Post partum hemorrhage n (%)							
500–1000 ml	10 (17.5%)	9 (13.6%)	0.389	16 (13.9%)	8 (16.0%)	0.136	0.777
> 1000 ml	4 (7.0%)	7 (10.6%)		14 (12.2%)	2 (4.0%)		
Time from induction to delivery (minutes), mean (SD)	3107.89 (1363.10)	1420.27 (824.65)	0.000*	2925.39 (1584.18)	1683.22 (1128.13)	0.004*	0.463
< 24 hours, n (%)	8 (n = 14%)	39 (n = 59.1%)	0.000*	15 (n = 13%)	27 (n = 54%)	0.000*	0.020*
> 24 hours, n (%)	49 (n = 86%)	27 (n = 40.9%)	0.000*	100 (n = 87%)	23 (n = 46%)	0.000*	0.020*
< 48 hours, n (%)	22 (n = 38.6%)	61 (n = 92.4%)	0.000*	67 (n = 58.3%)	43 (n = 86%)	0.001*	0.885
> 48 hours, n (%)	35 (n = 61.4%)	5 (n = 7.6%)	0.000*	48 (n = 41.7%)	7 (n = 14%)	0.001*	0.885
^a data on n = 44, ^b data on n = 106, ^c data on n = 49, ^d data on n = 56, ^e including 5 with GDM + other diagnosis, ^f including 3 with GDM + other diagnosis, ^h data on 113, ⁱ data on n = 25,							
*p < 0.05							

Table 2

Characteristics on responders and non-responders to the questionnaire excluding women with gestational diabetes

Characteristic	Responders	Nonresponders	p-value
Method of Induction	Oral excluding GDM (n = 55)	Oral excluding GDM (n = 88)	
Maternal age (years), mean (SD)	28 (5)	27 (5)	0.085
BMI, mean (SD)	30.7 (8.4)	28.6 (7.4)	0.157
Caesarean Section, n (%)	15 (27.3%)	26 (29.5%)	0.738
Maternal educational level, n (%)			
<10 years	6 (10.9%)	-	-
10–15 years	25 (45.5%)		
>15 years	23 (41.8%) ^a		
Cigarette use, n (%)	6 (10.9%)	14 (15.9%)	0.402
Pre-existing medical conditions, n (%)	7 (12.7%)	12 (13.6%)	0.876
Pre-existing psychiatric conditions, n (%)	3 (5.9%) ^b	9 (10.8%) ^c	0.329
Pregnancy-related medical conditions, n (%)	20 (36.4%)	42 (47.7%)	0.239
<i>Preeclampsia (%)</i>	6 (30%)	16 (38.1%)	
<i>Hypertension (%)</i>	2 (10%)	7 (16.7%)	
<i>Intrahepatic cholestasis (%)</i>	1 (5%)	4 (9.5%)	
<i>Others, n (%)</i>	11 (55%)	15 (35.7%)	
Indication for induction, n (%)	55	88	0.738
<i>Medical/obstetrical</i>	42 (76.4%)	65 (73.9%)	
<i>Post-dates</i>	13 (23.6%)	23 (26.1%)	
Bishop score, mean (SD)	4.1 (1.8) ^d	4.5 (2.3) ^e	0.353
Gestational age at delivery (w + d), mean (SD)	41 + 0 (1 + 3)	40 + 6 (1 + 3)	0.797
Birthweight (g), mean (SD)	3720 (534.5) ^f	3580 (541.3) ^g	0.308
Post partum hemorrhage, n (%)			
<i>500–1000 ml</i>	10 (18.2%)	11 (12.5%)	0.567
<i>> 1000 ml</i>	4 (7.3%)	8 (9.1%)	
Time from induction to delivery (minutes), mean (SD)			
< 24 hours, n (%)	7 (12.7%)	14 (15.9%)	0.601
> 24 hours, n (%)	48 (87.3%)	74 (84.1%)	0.601

^adata on n = 54, ^bdata on n = 51, ^cdata on n = 83, ^ddata on n = 54, ^edata on n = 86, ^fdata on n = 24, ^gdata on n = 45

*p < 0.05

Characteristic	Responders	Nonresponders	
< 48 hours, n (%)	21 (38.2%)	56 (63.6%)	0.003*
> 48 hours, n (%)	34 (61.8%)	32 (36.4%)	0.003*
^a data on n = 54, ^b data on n = 51, ^c data on n = 83, ^d data on n = 54, ^e data on n = 86, ^f data on n = 24, ^g data on n = 45			
*p < 0.05			

Table 3

Women's experience of induction of labour

	Oral Misoprostol (n=57)			Vaginal Misoprostol (n=66)			
Question	Acceptable	Too short	Too long	Acceptable	Too short	Too long	p-value
"How did you experience the length of your hospital stay during induction?"	2 (3.5%)	36 (63.2%)	19 (33.3%)	5 (7.6%)	52 (78.8%)	9 (13.6%)	0.028*
	Acceptable	Too few	Too many	Acceptable	Too few	Too many	
"How did you experience the number of midwife examinations during induction and labour?"	1 ^a (1.8%)	50 (89.3%)	5 (8.9%)	3 (4.5%)	51 (77.3%)	12 (18.2%)	0.213
	Agree	Neither nor	Disagree	Agree	Neither nor	Disagree	
"I felt I could handle the pain during induction"	5 (8.8%)	12 (21.1%)	40 (70.2%)	19 (28.8%)	12 (18.2%)	35 (53%)	0.019*
"I felt helpless during induction"	31 (54.4%)	18 (31.6%)	8 (14.0%)	39 (59.1%)	12 (18.2%)	15 (22.7%)	0.165
"I felt positive during induction"	10 (17.5%)	13 (22.8%)	34 (59.6%)	20 (30.3%)	15 (22.7%)	31 (47.0%)	0.226
"I felt I would never come out of it"	32 (56.1%)	9 (15.8%)	16 (28.1%)	29 (43.9%)	12 (18.2%)	25 (37.9%)	0.386
"I felt I could make it during induction"	11 (19.3%)	13 (22.8%)	33 (57.9%)	17 (25.8%)	17 (25.8%)	32 (48.5%)	0.554
"I felt I no longer wanted to participate during induction"	35 (61.4%)	9 (15.8%)	13 (22.8%)	35 (53.0%)	8 (12.1%)	23 (34.8%)	0.335
"I felt happy during induction"	8 (14.0%)	13 (22.8%)	36 (63.2%)	17 (25.8%)	16 (24.2%)	33 (50.0%)	0.219
"I felt like giving up during induction"	31 (54.4%)	10 (17.5%)	16 (28.1%)	38 (57.6%)	12 (18.2%)	16 (24.2%)	0.889
"I felt induction took really long time"	15 (26.3%)	8 (14.0%)	34 (59.6%)	27 (40.9%)	9 (13.6%)	30 (45.5%)	0.213
"I felt calm during induction"	12 (21.1%)	20 (35.1%)	25 (43.9%)	16 (24.2%)	27 (40.9%)	23 (34.8%)	0.593
	Good	Average	Bad	Good	Average	Bad	
Compared to other women giving birth, how did you experience your induction of labour process?	33 (57.9%)	16 (28.1%)	8 (14.0%)	36 (54.5%)	22 (33.3%)	8 (12.1%)	0.810
	Easier	Average	Harder	Easier	Average	Harder	
"How do you evaluate your induction of labour?"	39 ^a (69.6%)	7 (12.5%)	10 (17.9%)	40 (60.6%)	13 (19.7%)	13 (19.7%)	0.498

^aData on n=56

*p<0.05

Table 4

General satisfaction with the induction and delivery procedure

	Oral Misoprostol, n=57		Vaginal Misoprostol, n=66		p-value
	Safe	Unsafe	Safe	Unsafe	
"Did you feel safe during induction?"	50 (87.7%)	7 (12.3%)	56 (84.8%)	10 (15.2%)	0.645
	Good	Bad	Good	Bad	p-value
"How was your overall experience of giving birth?"	50 (87.7%)	7 (12.3%)	48 (72.7%)	18 (27.3%)	0.039*
"How did you experience your pregnancy?"	47 (82.5%)	10 (17.5%)	56 (84.8%)	10 (15.2%)	0.720
	Satisfied	Unsatisfied	Satisfied	Unsatisfied	
"How satisfied are you about the labour being induced?"	47 (82.5%)	10 (17.5%)	57 (86.4%)	9 (13.6%)	0.550
*p<0.05					

Figures

Figure 1

Flow chart

Figure 1

Flow chart

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [questionnaire.docx](#)
- [questionnaire.docx](#)