Women and Birth 39 (2026) 102426

Contents lists available at ScienceDirect

Women and Birth

journal homepage: www.sciencedirect.com/journal/women-and-birth

Induction of labour vs spontaneous labour onset and maternal and perinatal outcomes and maternal experiences: The Birth Experience Study (BESt)

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ARTICLE INFO

Keywords:
Induction of labour
Mode of birth
Birthing interventions
Maternal and infant outcomes
Maternal childbirth experience

ABSTRACT

Background: Induction of labour (IOL) is rising around the world, with little known about consequent outcomes in large cohorts of childbearing women.
Aim: To examine the impact of IOL vs spontaneous labour onset on maternal and perinatal outcomes, as reported by women in a national survey.
Design: A cross-sectional, online, maternal self-report survey, was open in Australia from March–December 2021.
Participants: 7791 women who had a spontaneous onset (n = 5230), or IOL (n = 2561) were included.
Analysis: Labour, birth and postnatal outcomes were classified as binary variables and percentages. Univariable and multivariable logistic regression analyses were performed, controlling for likely confounders.
Results: Compared with spontaneous onset of labour, survey respondents having an IOL were significantly more likely to experience: forceps or vacuum; episiotomy; emergency caesarean; excessive blood loss; physical pain and/or poor or decreased physical health; birth as traumatic; regrets about their birth experience; diagnosis of PTSD; obstetric violence; and less skin-to-skin contact with their babies. Neonatal outcomes following IOL included: significantly higher odds of being distressed during labour; having jaundice; and being given formula when the mother had chosen to breast feed. There was no difference in major perineal injury or pelvic floor outcomes, or admission of the baby to special care nursery or neonatal intensive care.
Conclusions: IOL was associated with significant negative physical and psychological health impacts for women and babies compared to spontaneous labour onset. There is a need for more research on clinical and psychological impacts of IOL for women, to ensure decision making is informed.

Introduction

Induction of labour (IOL) rates have risen significantly in many high-income countries in the last decade [1]. Australia has been no exception with an increase in IOL from 25% in 2010–33% in 2023 [2]. Induction may be performed for medical reasons affecting the mother and/or baby and for post-term pregnancy [1]. Several randomised controlled trials (RCTs) of IOL for term or post term pregnancy in otherwise healthy women have suggested that IOL may not affect the rates of caesarean section [3,4] and some have even found reductions in surgical births [5,

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https://doi.org/10.1016/j.wombi.2026.102426
Received 1 July 2026; Received in revised form 12 October 2026; Accepted 14 October 2026
Available online 9 November 2026
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Table 1
Labour birth and postnatal variables examined.

Labour and birth variables	Postnatal variables
- Spontaneous vaginal birth	- Baby sent to SCN or NICU
- Vaginal birth with forceps or vacuum	- Baby had jaundice
- Emergency caesarean section	- Baby needed extra medical care after birth
- Use of oxytocin drip to increase contractions	- Skin to contact within the 1st hour after birth
- Excessive blood loss	- Baby given formula when chosen to breastfeed
- Baby being distressed during labour	- Midwife visited at home after birth
- Perineal injury	- Excessive physical pain since the birth
- Episiotomy	- Ongoing pelvic floor issues since the birth
	- Reliving unpleasant events from the labour and or birth
	- Regrets about the birth experience
	- Recent birth described as traumatic
	- Diagnosed with PTSD since the birth
	- Experiencing obstetric violence (defined as: dehumanised treatment or abuse of health professionals towards the body or reproductive process of women)

6], and improvements in other medical conditions that can affect the end of pregnancy, as well as improved maternal satisfaction [5]. Additionally, some women with lower-risk pregnancies may express a preference for IOL for reasons of convenience or certainty about when their baby might be born [7]. Other studies, however, have indicated that IOL can lead to further need for medical interventions, especially for primiparous women [8], linking IOL to increased rates of instrumental birth, emergency caesarean section, epidural use, and episiotomies in women, as well as birth trauma, need for resuscitation, respiratory disorders, and hospital admission for infections for babies and later, for children [8,9]. Some women who have an IOL report lower birth satisfaction [10–14], higher birth trauma [14–19], experience of obstetric violence [17], and a desire to delay or avoid IOL in future pregnancies, unless absolutely medically indicated [20].

Induction of labour is also being performed at earlier gestations with concerns raised in the literature about consequent short and longer term implications for neonatal and child health [8]. Studies such as the US ARRIVE Trial [5], which examined elective induction at 39 weeks to reduce adverse perinatal outcomes, have contributed to a lowering of the threshold for offering inductions. As a result, more inductions are now occurring at or before 39 weeks, despite existing recommendations in national and global guidelines that induction should only be offered at 41 weeks in cases where both mother and baby are otherwise well [21, 22].

Changes in the rate and timing of IOL have also been attributed to changes in maternal health profiles over time, such as being older and more likely to be obese [23], though there is little actual evidence of large changes in these factors over the short time that induction rates have risen sharply. Other reasons given have little to do with what is best for women and babies but are influenced more by provider or organisational imperatives. These include fear of litigation, efficient use of staffing to set up and oversee the induction process, provider convenience, and institutional or personal financial benefit in situations where IOL attracts higher fees than spontaneous labour and birth [24–26].

These conflicting findings add complexity and difficulty to decision making for both providers and pregnant women. This is reflected in varying clinical practices both within and between countries, and even between practitioners in the same institution [27,28]. Further clarification is required to better inform policy, provider knowledge and individual women's informed decision making process [29]. Most studies are based on registration data with inherent validity limitations, as these are not collected for research purposes and lack information on women's experiences. Recently, information on labour and birth outcomes for women and babies, and on women's experiences, was collected in a large Australian survey, the Birth Experience Study (BESt) [30].

The aim of this paper was to examine survey data relating to respondents reports on the impact of IOL compared to spontaneous onset of labour on maternal and perinatal outcomes and maternal experiences.

Methods

The co-designed online survey was open from March–December 2021 and comprised of 133 open and closed ended questions that asked women about their experiences of giving birth within the previous five-year period.

The objectives of the BESt were to:

- Use co-design principles with maternity consumers throughout the research process, including implementation and translation of findings.
- Discover the prevalence and impact of birth trauma and obstetric violence on women and their families.
- Explore the impact of model of care and interactions with health care providers on women's perinatal experiences.
- Determine the factors contributing to positive and negative birth experiences.
- Explore the impact of psychosocial issues on women's perinatal experiences.

The BESt was co-designed and pilot tested with 10 consumer groups (including a cultural steering group), distributed through Qualtrics © software and advertised through social media, including 10 paid Facebook advertisements (reaching 51,702 accounts). Women who had a baby at any time in the preceding five years in Australia were eligible to take part. The survey was available in seven languages other than English. Out of a total of 8804 responders, 7791 completed 75% or more of the survey and were included in the analysis. See methodology paper for full details [31].

Ethics approval for this study was granted from the Western Sydney University Human Ethics Board (H14260).

Outcome variables

Eight labour and birth and 13 postnatal variables were examined. Labour, birth and postnatal outcomes were classified as binary 1 for 'Yes' and 0 for 'No'. The factors examined for this paper were in relation to birth onset (spontaneous and induced labour).

Potential confounding variables

Potential confounding factors incorporated into the analysis were based on previous studies [32,33], and were divided into demographic, obstetric and mental health risk factors. Demographic factors included: State or Territory in Australia resided in; age in categories; level of education; employment status; combined family income; country of birth; language other than English spoken at home; and partnered or unpartnered. Maternity factors included: parity; gestational age; risk factors in

Table 2
Characteristics of the study population (number and percentage and comparable national averages).

Variables	Total	%	Australian averages (by year) %
Demographic factors (n = 7791, unless stated otherwise)			
Maternal age in categories (n = 7789)			**2020/2021**[1]
< =24	307	3.9	12.1/11.0
25–29	1730	22.2	25.7/25.1
30–34	3372	43.3	36.7/37.5
35 and over	2380	30.6	25.5/26.3
Country of birth			**2019**[1]
Australia	6712	86.2	64.1
Not born in Australia	1079	13.8	
Language spoken at home			**2021**[2]
English	7155	91.8	88.0
Non-English	636	8.2	22.0
Indigenous status			**2020**[1]
Non-Indigenous	7644	98.1	
Indigenous	147	1.9	4.9
Family combined income (n = 7448)			**2020/2021**
< $100,000	2485	33.4	
> =100,000	4963	66.6	50.2[3]
Education level			
Less than Year 12	234	3.0	
Year 12 or higher school certificate	620	8.0	
TAFE or Diploma	1577	20.2	
University undergraduate or postgraduate	5360	68.8	
State resided in			**2023**[4]
NSW	2722	34.9	31.7
VIC	1687	21.7	25.7
QLD	1485	19.1	20.5
SA	526	6.8	6.5
WA	827	10.6	10.6
TAS	185	2.4	2.0
ACT	208	2.7	1.8
NT	151	1.9	1.2
Relationship status			**2021**
Currently partnered	7463	95.8	
No current partner	328	4.2	12.3[5]
Obstetric factors			
Parity (n = 7787)			**2020/2021**[6]
Multiparous	3954	50.8	56.0
Primiparous	3833	49.2	
Risk factors for the pregnancy			
I believe I had no risk factors	4539	58.3	-
I had some mild risk factors (see supp Table 1)	2641	33.9	-
I had some serious risk factors (see supp Table 1)	611	7.8	
Gestation (n = 7677)			**2020/2021**[1]
Pre-term (< 37 weeks)	392	5.1	8.2/8.3
Term (37–41 +6 weeks)	6841	89.1	91.2/92.0
Post-term (>42 weeks)	444	5.8[$]	0.4/0.5
Mental health risk factor			
Diagnosed or treated for mental health concerns			
No	4599	59.0	-
Yes	3192	41.0	43%[7]
Birth onset (main study factors)			**2020/2021**[1]
Spontaneous labour	5230	67.1	40.8/41.2
Induced labour	2561	32.9	35.5/34.2
Labour and birth outcomes			
Vaginal birth			**2020/2021**[1]
No	2583	33.2	
Yes	5208	66.9	62.6/61.8
Vaginal birth with forceps or vacuum			**2020/2021**[1]
No	6616	84.9	
Yes	1175	15.1	12.6/12.1
Emergency caesarean*			**2023**[4]
No	6443	82.7	
Yes	1348	17.3	13.8
Use of oxytocin drip to increase contractions			**2023**[4]
No	5149	66.1	70.4
Yes	2642	33.9	
Excessive blood loss			**2020/2021**[8]
No	6628	85.1	
Yes	1163	14.9	11.7/11.1
My baby was distressed during labour			
No	6068	77.9	-
Yes	1723	22.1	-
Postnatal outcomes			

(*continued on next page*)

Table 2 (*continued*)

Variables	Total	%	Australian averages (by year) %
Baby sent to special care nursery or NICU			**2020/2021**[1]
No	6638	85.2	
Yes	1153	14.8	18.2/17.1
Baby had jaundice			
No	5987	76.9	
Yes	1804	23.2	
Baby needed extra care after birth			
No	6904	88.6	-
Yes	887	11.4	-
Skin-to-skin contact within the 1st hour after birth (n = 7748)			
No	871	11.2	-
Yes	6877	88.8	-
Baby given formula when I had chosen to breastfeed			
No	7250	93.1	-
Yes	541	6.9	-
Did midwife visit you after birth			
No	1462	18.8	-
Yes	6329	81.2	-
Perineal injury (n = 5179-only vaginal births included)[#]			**2020/2021**[1]
None/minor (intact/1st degree)	3062	59.1	42.1/41.9
Major (2nd, 3rd, 4th)	2117	40.9	33.4/33.9
Episiotomy (n = 5208 only vaginal births included)[#]			**2020/2021**[1]
No	4677	81.6	
Yes	513	10.2	25.4/24.6
Excessive physical pain since having the baby (not felt before pregnancy and birth, n = 7744)			
No	6249	89.8	-
Yes	1495	19.3	-
Ongoing pelvic floor issues since the birth (n = 7723)			
No	5082	65.8	-
Yes	2641	34.2	-
Experienced poor or decreased physical health since having the baby (n = 7714)			
No	5248	68.0	-
Yes	2466	32.0	-
Reliving negative or unpleasant events from labour and birth (n = 7595)			
No	5058	66.6	-
Yes	2537	33.4	-
Regrets about the birth experience (n = 7415)			
No	4099	55.3	-
Yes	3316	44.7	-
Recent birth described as a traumatic experience (n = 7632)			
No	5413	70.9	-
Yes	2219	29.1	-
Diagnosed with PTSD since the birth of the baby (n = 7510)			
No	7184	95.7	-
Yes	326	4.3	-
Experienced obstetric violence			
No	6887	88.4	-
Yes/Maybe	904	11.6	-

N = 7791, otherwise in brackets. NB: All data is maternal self-reported outcomes and so perception may differ to clinical outcomes. Percentages have been rounded up or down to 1 decimal point. $High rates of women > 42 weeks in this study compared to the Australian average was mostly associated with midwifery models of care (Supplementary Table 2). *All data relating to elective caesarean sections have been removed. #Episiotomy and perineal trauma calculated out of vaginal births only (emergency caesareans removed). [1]Australian Institute of Health and Welfare (AIHW) 2023 - https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/overview-and-demographics/maternal-age. [2]Australian Bureau of Statistics (ABS) 2021 - https://www.abs.gov.au/statistics/people/people-and-communities/cultural-diversity-census/latest-release#:~:text=Top%205%20languages%20used%20at,Hinduism%20(2.7%20per%20cent). [3]ABS 2021 - https://www.abs.gov.au/statistics/labour/earnings-and-working-conditions/income-and-work-census/latest-release. [4]AIHW 2026 - https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/overview-and-demographics/geography. [5]ABS 2021 - https://www.abs.gov.au/statistics/people/people-and-communities/snapshot-australia/latest-release. [6]AIHW 2024 - https://www.aihw.gov.au/reports/mothers-babies/maternal-and-perinatal-outcomes-during-covid-19/contents/summary. [7]Over two in five (about 43%) Australians aged 16–85 will experience a mental health disorder at some point in their lifetime. Anxiety is the most common disorder, followed by affective disorders (like depression) and substance use. ABS https://www.abs.gov.au/statistics/health/mental-health/national-study-mental-health-and-wellbeing/latest-release. [8]AIHW 2025 - https://www.aihw.gov.au/reports/mothers-babies/national-core-maternity-indicators/contents/birth-outcome-indicators/major-primary-postpartum-haemorrhage.

pregnancy; and diagnosis or treatment for mental health conditions in pregnancy. Women were asked if they had any risk factors in the pregnancy and could respond as: a) no, I believe I had no risk factors; b) yes, I had some mild risk factors or; c) yes, I was aware I had some serious risk factors. Women were then asked to provide information on the risk factors if they responded that they were present, such as diabetes, obesity, hypertension, fetal growth etc (Supplementary Table 1).

Statistical methods

Descriptive statistics were reported for demographic characteristics, and labour and birth, and postnatal and baby outcomes. Percentages of total responders per category were reported. Univariable and multivariable logistic regression models were performed, adjusting for the following confounders: State or Territory in Australia, age, level of education, employment status, family combined income, country of birth, language other than English spoken at home, marital status, parity, risk factors during pregnancy, gestation, and mental health risk factors.

Table 3
Association between onset of labour and labour outcomes.

Variable by labour onset	Prevalence	Unadjusted OR (95% CI)	Adjusted OR$ (95% CI)
Spontaneous Vaginal birth			
Spontaneous labour	72.8	1.00	1.00
Induced labour	54.7	**0.45 (0.41, 0.49)**	**0.54 (0.48, 0.61)**
Vaginal birth with forceps or vacuum			
Spontaneous labour	12.9	1.00	1.00
Induced labour	19.6	**1.66 (1.46, 1.88)**	**1.38 (1.19, 1.59)**
Emergency caesarean			
Spontaneous labour	13.4	1.00	1.00
Induced labour	25.3	**2.19 (1.95, 2.47)**	**1.84 (1.61, 2.1)**
Use of oxytocin drip to increase contractions			
Spontaneous labour	13.8	1.00	1.00
Induced labour	75.1	**18.84 (16.72, 21.22)**	**19.96 (17.42,22.86)**
Excessive blood loss			
Spontaneous labour	13.4	1.00	1.00
Induced labour	18.1	**1.43 (1.26, 1.62)**	**1.23 (1.07,1.42)**
My baby was distressed during labour			
Spontaneous labour	17.1	1.00	1.00
Induced labour	32.4	**2.33 (2.09, 2.60)**	**1.96 (1.74, 2.22)**
Perineal injury major (2^{nd}, 3^{rd}, 4^{th} degree)			
Spontaneous labour	39.8	1.00	1.00
Induced labour	43.7	**1.17 (1.04, 1.33)**	1.13 (0.98, 1.29)
Episiotomy			
Spontaneous labour	8.2	1.00	1.00
Induced labour	15.6	**2.06 (1.71, 2.48)**	**1.90 (1.55, 2.34)**

$Adjusted for demographic, obstetric and mental health risk factors. Bolded data represent significant findings.

Separate analyses were undertaken to see whether model of maternity care (Supplementary Table 2) should be included in the multivariable logistic regression model, but due to collinearity between model of care, gestational age and medical/obstetric risk factors, this was not included (Supplementary Tables 3–5).

This modelling strategy aimed to examine the influence of each of the confounding factors on the relationship between induced labour and outcomes. Adjusted odd ratios (AOR) and their 95% confidence intervals were calculated. All analyses were conducted using STATA version 17.0 (Stata Corporation, College Station, TX, USA), and significance levels were set at $P < 0.05$. Where available, we provide comparative data to Australian averages (Table 2).

Results

After removing women who had an elective caesarean section, a sample of 7791 women were included in the current analysis. There were 28 women who stated their baby died either during the labour and birth or after birth. As women are often induced when experiencing a stillbirth and women who lose a baby are less likely to respond to surveys like this one, we have not reported further on this.

Demographic, maternity, and mental health characteristics of participants are provided in Table 2. Two-thirds of the women had combined family incomes of more than A$100,000, and approximately one-third were from New South Wales (NSW). Parity was almost evenly distributed, and about 90% of women had term babies. Forty-one percent of women had been diagnosed or treated for mental health concerns (e.g. depression, bipolar disorder, anxiety disorder) over their lifetime, and about 96% of women were currently partnered. Approximately two-thirds of women had an undergraduate or postgraduate university education, and close to 75% were 30 years and over.

Exploration of findings in reference to national rates were not always able to be made due to missing data, and in addition, elective caesarean sections were removed from the sample, hence comparative data is provided for interest and context purposes only. Notably the women in our sample were more likely to be older, born in Australia, speak English at home, have an income over >=100 K and be partnered. The percentage of women giving birth in each state and territory was comparable to the national averages.

In Table 3, associations between the type of onset of labour and labour outcomes are provided. Statistically significant differences between spontaneous labour and induced labour were observed for the majority of assessed outcomes. Specifically, women having an induced labour were 46% less likely to have a vaginal birth (aOR= 0.54, 95%CI 0.48–0.61), and nearly 20 times more likely to report use of an oxytocin drip to increase contractions (aOR=19.96, 95%CI: 17.42–22.86). Induced labour was also found to be significantly associated with increased occurrence of having an episiotomy (aOR=1.90 95%CI: 1.55-2.34), vaginal birth with forceps or vacuum (aOR= 1.38, 95%CI: 1.19–1.59), emergency caesarean (aOR= 1.84, 95%CI: 1.61–2.10), excessive blood loss (aOR=1.23, 95%CI: 1.07–1.42) and reports that 'my baby was distressed during labour' (aOR=1.96, 95%CI: 1.74–2.22). No significant association was observed between having an induced labour and the mother suffering from major perineal injury.

In Table 4, associations between the type of labour onset (spontaneous or IOL) and postnatal outcomes are presented. Women who had induced labours had higher adjusted odds of reporting having excessive physical pain (aOR=1.31 95%CI: 1.15, 1.49) and/or poor or decreased physical health since having the baby (aOR=1.25 95%CI: 1.12, 1.40); as well as reduced likelihood of post-birth skin-to-skin contact (aOR=0.70 95%CI: 0.59, 0.82), and receiving midwife home visits after birth (aOR=0.58 95%CI: 0.51, 0.66). Psychologically, women were significantly more likely to report the reliving of/or re-experiencing of negative or unpleasant events (aOR=1.72 95%CI: 1.54, 1.93), birth as traumatic (aOR=1.95 95%CI: 1.74, 2.19), regrets about their birth experience (aOR=1.80 95%CI: 1.61, 2.01), being diagnosed with PTSD since the birth of the baby (aOR=1.44 95%CI: 1.12, 1.86), and the belief that they experienced obstetric violence (aOR=1.30 95%CI: 1.11, 1.52). Outcomes for babies included a significantly increased likelihood of having jaundice (aOR=1.41 95%CI: 1.25, 1.60) and being given formula when the mother had chosen to breast feed (aOR=1.62 95%CI: 1.34, 1.97). No significant associations were observed between having an induced labour and the mother suffering from ongoing pelvic floor issues since birth, or the baby being sent to a special care nursery or NICU or needing extra care after birth.

Table 4
Association between onset of labour and postnatal outcomes.

Variable by labour onset	Prevalence (%)	Unadjusted OR (95% CI)	Adjusted OR[$] (95% CI)
Baby sent to special care nursery or NICU			
Spontaneous labour	13.7	1.00	1.00
Induced labour	17.0	**1.29 (1.13, 1.47)**	1.16 (0.99, 1.35)
Baby had jaundice			
Spontaneous labour	20.5	1.00	1.00
Induced labour	28.6	**1.56 (1.40, 1.74)**	**1.41 (1.25, 1.60)**
Baby needed extra care after birth			
Spontaneous labour	10.8	1.00	1.00
Induced labour	12.6	**1.19 (1.03, 1.37)**	1.11 (0.95, 1.31)
Skin-to-skin contact within the 1st hour after birth			
Spontaneous labour	90.5	1.00	1.00
Induced labour	85.1	**0.60 (0.52, 0.69)**	**0.70 (0.59, 0.82)**
Baby given formula when I had chosen to breastfeed			
Spontaneous labour	0.32	1.00	1.00
Induced labour	10.3	**2.04 (1.71, 2.43)**	**1.62 (1.34, 1.97)**
Did midwife visit you after birth			
Spontaneous labour	83.7	1.00	1.00
Induced labour	76.2	**0.62 (0.55, 0.70)**	**0.58 (0.51, 0.66)**
Excessive physical pain since having the baby			
Spontaneous labour	17.2	1.00	1.00
Induced labour	23.7	**1.50 (1.33, 1.68)**	**1.31 (1.15, 1.49)**
Ongoing pelvic floor issues since the birth			
Spontaneous labour	33.7	1.00	1.00
Induced labour	35.2	1.07 (0.96, 1.78)	1.06 (0.95, 1.18)
Experienced poor or decreased physical health since having the baby			
Spontaneous labour	29.6	1.00	1.00
Induced labour	36.8	**1.38 (1.25, 1.53)**	**1.25 (1.12, 1.40)**
Reliving or re-experiencing negative or unpleasant events from labour and birth			
Spontaneous labour	28.5	1.00	1.00
Induced labour	43.4	**1.92 (1.74, 2.12)**	**1.72 (1.54, 1.93)**
Recent birth as a traumatic experience			
Spontaneous labour	23.4	1.00	1.00
Induced labour	40.6	**2.23 (2.02, 2.48)**	**1.95 (1.74, 2.19)**
Regrets about your birth experience			
Spontaneous labour	39	1.00	1.00
Induced labour	56.6	**2.04 (1.85, 2.26)**	**1.80 (1.61, 2.01)**
Diagnosed with PTSD since the birth of the baby			
Spontaneous labour	3.69	1.00	1.00
Induced labour	5.68	**1.57 (1.26, 1.97)**	**1.44 (1.12, 1.86)**
Experienced obstetric violence			
Spontaneous labour	10.3	1.00	1.00
Induced labour	14.4	**1.47 (1.27, 1.69)**	**1.30 (1.11, 1.52)**

$Adjusted for demographic, obstetric and mental health risk factors. Bolded data represent significant findings.

Discussion

The findings of this survey show a consistent pattern of advantage of spontaneous onset of labour over IOL for the majority of maternal and neonatal health outcomes and birth experiences examined. Induction of labour was for instance significantly associated with an increased likelihood of the mother experiencing: labour augmentation (oxytocin drip), an episiotomy, instrumental delivery (use of forceps or vacuum), emergency c-section, excessive blood loss, excessive physical pain, reduced skin-to-skin contact post-birth, poorer postpartum physical health, and less postnatal midwife visits. The baby was also significantly more likely to: become distressed during labour, have jaundice and receive formula when the mother had chosen to breast feed. Psychologically, women were more likely to report negative feelings about the birth (unpleasant or traumatic), regret about their birth experience, a belief that they had experienced obstetric violence and a postpartum diagnosis of PTSD.

Our findings provide sharp contrast to many RCTs of outcomes following IOL [34]. This could be due to self-selection into the survey by those with more positive experiences of spontaneous labour and birth. For example, women who lose their babies during or after birth are reportedly less likely to respond to postpartum surveys [35]. Additionally, when compared to the general population, respondents tended to be: better educated, more likely to have been born in Australia, under the care of privately practising midwives (PPM, 8.2% versus 2.1%), or the continuity of midwifery model (MWCoC, 28.3% versus 17.3%), and at more advanced gestation ages prior to birth (for example, >42 weeks) [2,36].

There can be obvious benefits of labour induction for women and babies with medical or maternity complications, or for those who would choose this option for personal, emotional, or psychological reasons. However, IOL appears to be increasingly performed for women over > 39 weeks gestation without diagnosed medical risk, with the information women receive in this situation being framed around IOL as the normative choice [37]. This approach is strongly influenced by the findings from large RCTs that IOL for uncomplicated post term pregnancies (>41 weeks) is associated with benefits for mother and/or baby [38]. Yet these benefits only apply to very small numbers in the population, meaning substantial numbers of women and babies would need to experience this intervention to achieve these outcomes [38]. Given the devastation of baby loss, this situation may be acceptable to most women if IOL is associated with minimal harm to themselves or their newborns.

However, as we have previously reported [8], outside of large controlled trials, what women and newborns actually experience might be very different to the current outcomes listed in national and international guidelines, and cited in most sources of information on this topic. For example, findings from a large RCT undertaken in the Netherlands of IOL at 41 versus 42 weeks of gestation showed a lower rate of composite adverse perinatal outcomes in the induction group [39]. However, when examining the outcomes for women who did not want to take part in the trial (the majority), the rate of adverse perinatal outcomes was much lower; and not significantly different among the induction versus spontaneous onset of labour groups; and no neonatal deaths occurred in either group [4]. Our study adds to the growing evidence that RCTs may not reflect reality in everyday practice [8] and that questions should be asked about their generalisability to all contexts. The fact that between 70% and 86% of women who were eligible to be involved in RCTs examining IOL declined to participate, makes the question of their external validity even more relevant [5,39–41].

Furthermore, most previous controlled studies have focused on short term clinical outcomes for mother and baby. In relation to psychological wellbeing, at the most, they include measures of satisfaction [10–14]. However, satisfaction is a poor measure of experience, with qualitative findings instead highlighting that IOL is associated with reports of: experiencing birth as traumatic [42], loss of control, a lack of informed consent and coercion from clinicians [20,26]. Our study included specific psychological outcomes, and reinforced these findings with higher rates of regret or negative feelings about birthing experiences, reports of obstetric violence, birth trauma and postpartum diagnoses of PTSD being reported in women who experienced an IOL compared to women who had a spontaneous labour.

Qualitative research from Australia found that after experiencing an IOL, many women indicated that they would resist an IOL in a future pregnancy [20,30]. Women highlighted feeling pressured or coerced to accept an IOL through the use of fear-based language. A lack of informed decision making was also identified in these studies with women feeling they were not fully aware of the risks of increased interventions

associated with IOL. Other research has also shown that women often report feeling coerced and poorly informed when it comes to IOL [43,44]. Research into the main contributors to the high level of birth trauma in Australia (28%) include a lack of fully informed consent [45]. A recent government inquiry into birth trauma in NSW highlighted the impact this has on women who viewed their birth as traumatic [17].

Outcomes for babies also reinforced other findings, that labour induction may be associated with a cascade of labour and birth interventions that has consequences. The higher rates of neonatal jaundice for example, may have been in part due to the higher instrumental birth rate experienced by women having an induction [46] and the prevalent use of synthetic oxytocin [47]. Babies and mothers in the IOL group also received poorer postpartum care, including less skin-to-skin contact, formula feeding when the mother had chosen to breastfeed, and reduced at home visits by a midwife after the birth. This is likely a consequence of longer hospital stays due to the higher rates of emergency caesarean section, instrumental birth, episiotomy and blood loss associated with IOL.

Some factors did not differ between the groups. This included the mother suffering from major perineal injury or pelvic floor issues since birth, or the baby being sent to a special care nursery or NICU, or needing extra medical care after birth. These findings imply that undertaking IOL to reduce any of these outcomes for mother or baby need to be researched further.

Overall, detrimental impacts in addition to PTSD that negative birthing experiences and poorer maternal and infant health can have on women and their families are broad ranging and include reduced capabilities to provide care [48], postpartum depression and anxiety disorders, mother and infant bonding issues [49,50], relationship issues and negative developmental outcomes for children [51]. Therefore, the possible negative impacts of IOL on women's physical and psychological wellbeing must be integral to discussions with mothers in pregnancy. Health care providers need more education around respectful maternity care and shared decision making to support informed choice in this area [17].

Strengths and limitations

This study is the largest national survey to date of childbearing women's birth experiences in Australia. The inclusion of a wide range of demographic data, and of clinical and psychological outcomes provide a more comprehensive picture of women's experience of IOL. This also allowed for meaningful control for important potential confounders. However, as mentioned previously, there are also some significant limitations regarding the generalisability of findings to other populations. This is due to participating women being more likely to be born in Australia, to have had care with a private midwife, or CoC midwifery care, and give birth at later gestations than the general population. Women who did not speak English as their first language or did not have computer literacy were also less likely to respond, as were women who had experienced a perinatal loss. While the survey was translated into seven other languages there were low response rates in languages other than English. Women self-reported their experiences and this may have led to some inaccurate interpretation of some important clinical outcomes such as intrapartum risk factors (even though we asked for these to be listed), including blood loss, jaundice etc. Another limitation of this study was that epidural use could not be analysed reliably because the survey item permitted multiple responses and included overlapping options for epidural analgesia in labour and epidural/spinal anaesthesia for caesarean birth, resulting in ambiguous reporting and preventing accurate estimation of proportions. Some of the births would also have occurred during 2020/2021 when the COVID-19 pandemic was at its peak and this could have affected outcomes and experiences that were not related to the IOL. There could also be unknown confounders that could not be taken into account in the analysis. Additionally, due to the nature of the survey focus, positive outcomes are not reported on. As not being ill or traumatised is not the same as being positively well and happy, this gap may miss some important outcomes that matter to childbearing women and their families. Future studies could address this gap.

Conclusion

This national study of birth experiences demonstrates that IOL, compared with spontaneous labour onset, was significantly associated with higher rates of medical intervention, increased physical morbidity, and poorer psychological outcomes for women. No clinical or psychological benefits of induction were identified after adjusting for multiple confounding factors. These findings highlight the need to reconsider current approaches to IOL, particularly for women without medical complications, and to ensure that maternity care includes comprehensive, balanced information and genuinely shared decision making. Greater attention to women's experiences that include the psychological impacts of induction as well as important clinical outcomes, in both the short and the longer term, is essential to guide evidence-informed policy and practice and to promote respectful, woman-centred maternity care.

Funding

Funding for this project was provided from a Western Sydney University School of Nursing and Midwifery Partnership Grant through, The Qiara Vincent Thiang Memorial Award and Maridulu Budyari Gumal SPHERE Maternal, Newborn and Women's Clinical Academic Group.

Declaration of Competing Interest

The authors wish to declare that there are no actual or potential conflicts of interest in relation to this manuscript.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.wombi.2026.102426.

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