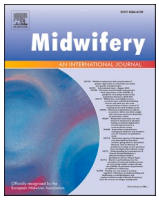
Midwifery 145 (2025) 104375

Contents lists available at ScienceDirect

Midwifery

journal homepage: www.elsevier.com/locate/midw



The PRIMROSE Project: What is 'physiological birth'? A quantitative approach to the perceptions of the Australian population

Brooke I. Henshall [a,b,c,*], Heather A. Grimes [d], Jennifer Davis [a], Christine E. East [a,b,c]

[a] La Trobe University, School of Nursing & Midwifery, Bundoora, Victoria, Australia
[b] Judith Lumley Centre, School of Nursing & Midwifery, La Trobe University, Bundoora, Victoria, Australia
[c] Mercy Hospital for Women, Mercy Health Pty Ltd, Heidelberg Victoria, Australia
[d] Department of Nursing & Midwifery, James Cook University, Townsville, Queensland, Australia

ARTICLE INFO

Keywords:
Physiological birth
Women/Woman
Midwife
Obstetricians
Doula
Support Persons

ABSTRACT

Background: The definition of 'physiological birth' by the World Health Organization in 1997 may need to be revisited to better align with current practices in labour and birth in the Australian context, and to better understand the perspectives of women and their care providers.
This study explored if obstetric doctors, midwives, doulas, women, and support people (with experience in labour and birth in the last 12 months) recognise physiological birth differently, which interventions they consider congruent with physiological birth, and terms that should be included in a consensus statement of 'physiological birth'.
Methods: A self-administered, anonymous, 68-field questionnaire was developed and shared online via social media platforms (Facebook, X, and LinkedIn). The questionnaire included Visual Analogue Scales, multi-choice, Likert scale, and open-text items. Data were collected between August - November 2023.
Results: 733 participants interacted with the survey. Medical intervention such as vaginal examination to assess labour progress, was considered congruent with physiological birth, whereas continuous cardiotocography and artificial rupture of membranes were considered to be 'non-physiological'. Doulas associated physiological birth with being 'intervention-free' more strongly than any other group.
Obstetrics doctors viewed birth as inherently risky. Respondents indicated that the psychological experience of birth, and terms such as 'spontaneous onset', 'no/minimal intervention' and 'spontaneous delivery/birth' should be included in a consensus statement of 'physiological birth'.
Conclusion: There are multiple understandings of the term 'physiological birth', implying that the term lacks clarity. There are disparities in how care providers and women view intervention in birth; suggesting a consensus statement of 'physiological birth' is appropriate for the Australian context.

Introduction

The term 'physiological birth' has been defined by the World Health Organization in 1997, as "spontaneous onset, low risk at the commencement of labour, and continuing so for the remainder of labour and birth. The infant is born spontaneously between 37 and 42 weeks of pregnancy with a cephalic presentation. Following birth, both mother and infant are in good condition" (World Health Organization, 1997, p121). This definition leaves little consideration of the women's perspective of physiological birth and does not address whether medical intervention alters physiological birth.

A scoping review of the literature (2013-2023) in databases ProQuest, Cumulative Index to Nursing and Allied Health Literature (CINAHL, EBSCO), Medline (Ovid) and PubMed (NLM) showed that peer-reviewed articles utilise numerous definitions of physiological birth, without stating the rationale for the chosen definition (Henshall et al., 2024a). This scoping review also showed that women/birthing persons were not involved in the formation of any definitions used to describe physiological birth.

An understanding of 'physiological birth' is essential to ensure experts and non-experts alike can meet the individual expectations of the women in their care while promoting safe birthing practices and a

* Corresponding author at: La Trobe University, School of Nursing & Midwifery, Bundoora, Victoria, Australia.
E-mail address: B.Owen@latrobe.edu.au (B.I. Henshall).
https://twitter.com/BHen3634 (B.I. Henshall)

https://doi.org/10.1016/j.midw.2025.104375
Received 31 May 2024; Received in revised form 21 October 2024; Accepted 11 March 2025
Available online 12 March 2025

positive birth experience (World Health Organization, 2018).

The Australian context:

In the Australian context, obstetric doctors and midwives play an essential role in various maternity care settings including public and private hospitals. Midwives provide perinatal care for low-risk women and collaborate with medical providers in line with the National Midwifery Guidelines for Consultation and Referral (Australian College of Midwives, 2021). Midwifery practice may differ across states and territories based on individual midwifery scope, and can 'vary depending on the context in which the midwife works, the health needs of women and the baby or babies… and the policy requirements of the service provider' (Nursing and Midwifery Board of Australia, 2018).

Fostering physiological birth is a core aspect of midwifery practice, aligning with government policy (Council of Australian Governments (COAG), 2019) and the 'Midwife Standards for Practice', which emphasise 'promoting normal physiological childbirth' and working within a 'woman-centred' philosophy (Nursing and Midwifery Board of Australia, 2018).

Despite the centrality of physiological birth to midwifery practice and the maternity care landscape, contemporary Australian definitions of physiological birth are not available. Analysis of trends in perinatal data provided in The Australian 'Mothers and Babies' report (Australian Institute of Health and Welfare, 2023) suggests that the rate of physiological birth, as defined by WHO, is declining. Two in five mothers commenced their labour spontaneously in 2021 (decreasing from 55% in 2011) and of these women, one in four went on to have their labours augmented. One in three women had an induced labour in 2021 (increased from 26% in 2011), with the most common reason for induction being diabetes (15%), pre-labour rupture of membranes (10%) and prolonged pregnancy (9.9%) (Australian Institute of Health and Welfare, 2023).

The proportion of women experiencing a 'non-instrumental vaginal birth' has decreased to 50% in Australia (compared to 56% in 2011), coupled with a significant increase in the rate of caesarean section, accounting for 38% of births, (rising from 32% in 2011) (Australian Institute of Health and Welfare, 2023). It appears that the escalation in birthing interventions makes the attainment of a physiological birth unlikely if the traditional WHO definition is applied. If midwifery were to move away from its core philosophy of being 'with woman', women could have diminished autonomy and decision-making power (Fontein-Kuipers et al., 2018).

This study explores whether the concept of physiological birth is evolving in line with contemporary practice in Australia.

The objective of this study is to identify:

(1) what is the understanding of physiological birth among obstetric doctors, midwives, doulas, women/birthing persons and support people,
(2) how these perceptions could inform a consensus statement of physiological birth in the Australian context, and
(3) if any interventions in labour and birth are perceived as congruent with physiological birth.

The context of this study

This research is part of the PRIMROSE (*P*hysiological Bi*r*th: A M*ixed M*ethod Explanato*r*y Framewo*r*k with *S*equential De*s*ign) Project. The PRIMROSE Project is an explanatory sequential design study, exploring the perceptions of physiological birth in the Australian setting from the perspectives of maternity care providers, women/birthing persons and support people. This project encompasses four parts; 1) a scoping review (Henshall et al., 2024a); 2) a quantitative nationwide survey (described herein); 3) a qualitative understanding of physiological birth (Henshall et al., 2024b), and finally, 4) the development of a consensus statement on 'physiological birth' informed by the previous stages of the PRIMROSE Project.

Methods

A self-administered, anonymous, online questionnaire was designed to explore the perception of physiological birth among the people involved in labour and birth, across all states and territories of Australia.

The questionnaire

A search of the literature was unable to identify a validated measure specifically related to the perceptions of physiological birth among obstetric doctors, midwives, doulas, women/birthing persons and support people; therefore, a survey instrument informed by available literature was designed for this study. Questions were based on the findings of a scoping review undertaken to examine the perspectives of physiological birth among women, and maternity care providers (Henshall et al., 2024a). Questions related to the congruence of interventions with the concept of physiological birth were developed to understand if participants view medical and non-medical interventions differently, and their effect on physiological birth.

The screening questions inquired about which state/territory participants had experienced labour and birth care, which group each participant identified with for the survey, and screening questions about age, gender, language spoken, education, and years of experience providing labour and birth care. Many questions included in the survey had branching logic applied, to ensure the appropriate questions applied to each group completing the survey, and to gather more data when participants needed to extend their response.

Study data were collected and managed using the host University's REDCap electronic data capture tools (Harris et al., 2019; Harris et al., 2009). REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture for research studies. The questionnaire was designed and evaluated by the PRIMROSE Team (BH, CE, JD, HG).

The survey was piloted by 5 midwives, 2 doulas, 4 women and 3 support people. Those who piloted the questionnaire did not participate in the study. They were asked to complete the online survey, note any ambiguous questions, and make suggestions that could improve the survey. Based on the pilot feedback, minor changes were made and grammatical and typographical errors were identified and corrected. A further pilot round ensured the final version was clear and functional.

Participants

Our target population were based in Australia, and were either:

(1) obstetric doctors (a medical doctor who specialises in maternity care, including managing complications during pregnancy and childbirth (Department of Health, 2018) who were involved in care provision in labour and birth settings (any) in the last 12 months,
(2) midwives (a registered health professional who works in partnership with women to give the necessary support, care and advice during pregnancy, birth and the first few weeks after birth (Australian Government, 2024) who had worked in labour and birth settings (any) in the last 12 months,
(3) doulas (doulas offer emotional, physical, and social support to individuals during the perinatal period, without providing clinical care (Bohren et al., 2017) who had worked in labour and birth settings (any) in the last 12 months,
(4) women/birthing persons who had their labour commence outside of a hospital, had given birth to a singleton, term, liveborn infant, in the last 12 months in Australia, and
(5) people who had supported someone in labour and birth in the previous 12 months.

Experiences were limited to those within the previous 12 months to minimise recall bias and capture current perceptions in practice and experience. The intention to screen women who had had their labour 'commence outside of the hospital' in this preliminary survey was to sample perspectives of women who had experienced a spontaneous onset of labour, therefore excluding women who had undergone an elective caesarean section, or who had had a planned induction of labour. The phrase for labour to 'commence outside of the hospital' was selected rather than 'spontaneous onset', as this was one of the terms being reviewed in this survey.

Recruitment

The research team shared the link to the online survey delivered via the REDCap platform and pictorial advertisement 1-2 times a week throughout the recruitment phase. The link was circulated on social media platforms (Facebook, X and LinkedIn) between August- October 2023. People could access the survey through several Facebook pages, including (1) Midwifery Group Practice Australia (2) Mums Around Australia (3) Call the Student Midwife (Australia) or (4) Birth Workers and Beyond, and through posts on other Facebook pages related to pregnancy and birth. The survey could be accessed on personal pages through the repost function and La Trobe University's Judith Lumley Centre 'X' page. On LinkedIn, the survey could be accessed on personal pages, through the repost function, with posts gaining 60-500 impressions. All social media platforms have the option of a 'share' function, meaning that the survey could have been shared outside of these pages.

Snowball sampling was utilised via social media, as this method is an effective, efficient and common way to recruit study participants indirectly through networks and other participants (Leighton et al., 2021). Additionally, the questionnaire was distributed through a Quick Response (QR) code during the Australian College of Midwives (ACM) conference in Adelaide, and the ACM conference in Maryborough, Victoria in late October 2023. The survey was administered over an 11-week period (77 days).

Data collection

The survey comprised of 68-fields, combining multiple choice, Likert scale, Visual Analogue Scale (VAS) questions and open-ended questions. Electronic consent and demographic characteristics were recorded. Participants were asked to describe what the term 'physiological birth' meant to them and how frequently they had heard the term. Participants were asked to complete Likert scale questions about their views of physiological birth, and were asked to consider what terms they would like to see in a consensus statement on physiological birth, using a VAS to rate terms from Disagree 1- Agree 100.

In the final section of the survey participants were asked whether labour and birth can be considered physiological when interventions are involved (i.e., vaginal examination in labour, an epidural or use of aromatherapy), rating each intervention from 'non-physiological' 1 – 'physiological' 100. The final survey question was open-ended: 'Would you like to add anything further?' All participants were asked if they would like to have their contact details collected for the next stage of the PRIMROSE Project.

Data analysis

Quantitative responses were summarised using descriptive statistics (Vetter, 2017). Likert Scale points were grouped according to whether participants agreed (Strongly Agree, Agree), neutral or disagreed (Strongly Disagree, Disagree). Visual analogue scales were reported as median and interquartile range. Responses from different respondent categories were compared using Chi-Square and Kruskal-Wallis tests, through the statistical software package Stata 18 (StataCorp, 2023).

Narrative responses to the optional open-ended questions were analysed by thematic analysis using open coding, drawing on the Braun and Clarke framework (Braun & Clarke, 2006). Responses were read and re-read by BH and initial codes were generated and grouped into themes through the software NVivo 1.0 (NVivo, 2018). The themes were reviewed and refined through an iterative process undertaken by BH and JD.

Reflexive statement

All researchers are midwives, with recent experience in intrapartum care (BH) or midwifery education and research (CE, JD, HG). There was no prior relationship between any of the authors and the participants. It is acknowledged that the interpretation of the data may be biased, based on the research team's profession and experience.

Ethical considerations

Ethics approval for the study was obtained from the host university's Human Research Ethics Committee (HEC23252). Participants were provided with a detailed participant information sheet (explaining voluntary participation, risks, confidentiality and anonymity), and consent was self-selected through a tick box option. Responses were anonymous and only aggregated results were presented. Confidentiality of data was maintained using password-protected computers and deidentified data during the analysis of findings. Participants were informed that they could withdraw from the study at any time by exiting the questionnaire. Participants were provided with a list of support services and phone numbers that they could access should they experience any discomfort while completing the survey, as well as the researcher's contact details.

Findings

A total of 27 posts were shared through social media platforms Facebook, X and LinkedIn, with snowball sampling used thereafter. The response rate was unable to be calculated due to the nature of snowball sampling. A total of 733 responses were received and screened, with 508 completed survey responses included in the analysis (76 obstetric doctors, 266 midwives, 22 doulas, 114 women/birthing persons, and 30 support people).

Participant characteristics

The majority of responses were from participants identifying as female (98.8%), self-selected as midwives (52.4%), and were based in the Australia state of Victoria (54.1%).

Obstetric doctors (n=76, 15%) had a median of 12 (range 1-30) years of experience. Of these, 54 (71.1%) were consultants, 18 (23.7%) were registrars, and one was a resident (1.3%). Three (3.9%) obstetric doctors selected 'other' (and were GP obstetricians). Midwives (n =266, 52.4%) had worked in labour and birth settings for a median of eight years, with a range of <1 to 45 years. Of midwives, 177 (66.5%) midwives were dual registered as nurses. Doulas (n = 22, 4.3%) had a median of five years of experience in labour and birth settings, ranging from 1-22 years of experience.

Most women/birth persons identified as female, spoke English as a first language and were aged between 22-34 years. More than 70% of women/birthing persons held a university degree or higher. Over half of women/birthing persons gave birth in a public hospital (54.1%), and nearly a third had a planned homebirth. Support people made up a total of 5.9% of responses to this survey, the majority identified as female, spoke English as a first language, and were aged 22-44 years. Half of the support people participants held a university degree or higher (Table 1).

Table 1
Participant characteristics

	Obstetric Doctors		Midwives		Doulas		Woman/Birthing Persons		Support Persons		All	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Number of Participants (who completed the Primrose survey)	76	(15.0)	266	(52.4)	22	(4.3)	114	(22.4)	30	(5.9)	508	(100)
State/Territory in Australia												
VIC	23	(30.3)	162	(60.9)	8	(36.4)	62	(54.4)	20	(66.7)	275	(54.1)
NSW	18	(23.7)	27	(10.1)	4	(18.2)	22	(19.3)	3	(10.0)	74	(14.6)
QLD	14	(18.4)	29	(10.9)	1	(4.5)	15	(13.2)	3	(10.0)	62	(12.2)
WA	5	(6.6)	18	(6.8)	8	(36.4)	7	(6.1)	1	(3.3)	39	(7.7)
SA	10	(13.1)	13	(4.9)	0	(0.0)	1	(0.9)	2	(6.7)	26	(5.1)
TAS	5	(6.6)	9	(3.4)	0	(0.0)	4	(3.5)	0	(0.0)	18	(3.5)
ACT	1	(1.3)	5	(1.9)	0	(0.0)	2	(1.8)	1	(3.3)	9	(1.8)
NT	0	(0.0)	3	(1.1)	1	(4.5)	1	(0.9)	0	(0.0)	5	(1.0)
Gender												
Woman	76	(100.0)	265	(99.6)	22	(100.0)	109	(97.3)	28	(93.3)	500	(98.8)
Man	0	(0.0)	0	(0.0)	0	(0.0)	2	(1.8)	2	(6.7)	4	(0.8)
Prefer to self-describe	0	(0.0)	1	(0.4)	0	(0.0)	1	(0.9)	0	(0.0)	2	(0.4)
Age												
18-21	0	(0.0)	1	(0.4)	0	(0.0)	0	(0.0)	8	(26.7)	9	(1.8)
22-34	9	(11.8)	122	(45.9)	7	(31.8)	79	(70.5)	13	(43.3)	230	(45.5)
35-44	46	(60.5)	68	(25.6)	7	(31.8)	33	(29.5)	7	(23.3)	161	(31.8)
45+	21	(27.7)	75	(28.2)	8	(36.4)	0	(0.0)	2	(6.6)	106	(20.9)
English as first language												
Yes	69	(90.8)	256	(97.3)	23	(100.0)	109	(97.3)	29	(96.7)	485	(96.4)
Highest level of completed education*												
Completed a Degree or higher					9	(40.9)	79	(70.5)	15	(50.0)		
Completed Diploma or certificate					8	(36.4)	23	(20.5)	5	(16.7)		
Completed secondary school to year 12 (or equivalent)					4	(18.2)	10	(8.9)	10	(33.3)		
Did not complete secondary school					1	(4.5)	0	(0.0)	0	(0.0)		
Type of hospital setting*												
Primary	6	(7.9)	31	(11.7)								
Secondary	24	(31.6)	91	(34.2)								
Tertiary	43	(56.6)	120	(45.1)								
Other	3	(3.9)	24	(9.0)								
Place of giving birth*												
Public Hospital							60	(54.1)				
Private Hospital							8	(7.1)				
Planned home birth							36	(32.5)				
Other†							7	(6.3)				
Level of Obstetric Experience*												
Resident	1	(1.3)										
Registrar	18	(23.7)										
Consultant	54	(71.1)										
Other	3	(3.9)										
Registered Nurse*												
Yes			177	(66.5)								
No			89	(33.5)								
Years of Midwifery Experience*												
<1			6	(2.3)								
1-5			83	(31.2)								
6-10			81	(30.5)								
11-15			38	(14.3)								
16-20			26	(9.8)								
21+ years			32	(11.9)								

*Sections marked in grey were not asked of participant groups as they were not applicable.
†Three women/birthing persons had a BBA (born before arrival), three had a freebirth, and one did not elaborate.

'Physiological birth' in practice

Women/birthing persons and doulas were least likely to have encountered the term 'physiological birth' in childbirth education classes at a hospital. Obstetric doctors and midwives were more likely to have encountered the term when caring for people in labour and birth settings. Doulas and two-thirds of women/birthing persons had encountered the term 'physiological birth' in websites, blogs, and birthing books. Support people were more likely to have encountered the term when caring for people in labour and birth settings and the research literature (Table 2). Almost half of the participants had not heard or had rarely heard of the World Health Organization's 'physiological birth' definition. Obstetric doctors were the most likely to have 'never' used or heard the WHO definition of physiological birth. Approximately a third of midwives and support people were aware of the definition; having selected 'often' or 'always' in their response (Table 2).

Obstetric doctors 'agreed' and 'strongly agreed' with the statement 'birth is inherently risky' more than any other group. They also 'agreed' and 'strongly agreed' that 'a risk management-based approach is safer than a physiological approach to labour and birth', more than other care providers surveyed. (Table 2).

Perception of 'physiological birth'

We asked several open-ended questions including 'What does physiological birth mean to you?' and received 456 responses (89.8% response rate). Four key themes and nine subthemes were identified. Key themes included 'Spontaneous onset', 'In the absence of intervention', 'Powered by the woman and baby', and 'Loaded and dangerous'. Fig. 1 displays the findings diagrammatically. Table 3 presents key themes and sub-themes with exemplar participant quotes.

Table 2
Familiarity with the term 'physiological birth', the WHO definition of 'physiological birth' and individual philosophy of birth

Statement		Obstetric Doctors	Midwives	Doulas	Woman/ Birthing Person	Support Person	Total	p-value[†]
		N (%)	N (%)	N (%)	N (%)	N (%)	N (% of 508)	
Where have you encountered the term physiological birth (tick all that apply):[*]	In social setting with friends and family	14 (18.4)	72 (27.3)	4 (18.2)	32 (28.1)	7 (23.3)	129 (25.5)	0.5
	In social situations with others who are pregnant or have recently given birth	14(18.4)	94 (35.6)	9 (40.9)	44 (38.6)	12 (40.0)	173 (34.2)	0.03
	Websites, blogs, or birthing books	33 (43.4)	184 (69.7)	20 (90.9)	77 (67.5)	16 (53.3)	330 (65.2)	<0.001
	Childbirth education classes (at a hospital)	10 (13.2)	96 (36.4)	0 (0.0)	12 (10.5)	10 (33.3)	128 (25.3)	<0.001
	Childbirth education classes (not at a hospital)	11 (14.5)	113 (42.8)	17 (77.3)	62 (54.4)	14 (46.7)	217 (42.9)	<0.001
	When caring for people in labour and birth settings	53 (69.7)	225 (85.2)	12 (54.5)	32 (28.1)	23 (76.7)	345 (68.2)	<0.001
	In research literature	15 (19.7)	206 (78.0)	17 (77.3)	54 (47.4)	20 (66.7)	312 (61.7)	<0.001
	At professional birth conference	15 (19.7)	160 (60.6)	9 (40.9)	17 (14.9)	12 (40.0)	213 (42.1)	<0.001
	I haven't encountered the term 'physiological birth'	11 (14.5)	1 (0.4)	0 (0.0)	12 (10.5)	0 (0.0)	24 (4.7)	<0.001
Question	**Likert Scale Response**	**Obstetric Doctors**	**Midwives**	**Doulas**	**Woman/ Birthing Person**	**Support Person**	**Total**	**p-value[†]**
		N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (% of 508)**	
Have you heard or used the below term to describe 'physiological birth'? '...spontaneous onset, low risk at the commencement of labour and continuing so for the remainder of labour and birth. The infant is born spontaneously, between 37 and 42 weeks of pregnancy with a cephalic presentation. Following birth, both mother and infant are in good condition (World Health Organization, 1997).	Never	36 (48.0)	37 (14.0)	10 (45.5)	35 (31.0)	7 (23.3)	125 (24.8)	<0.001
	Rarely	10 (13.3)	63 (23.8)	2 (9.1)	24 (21.2)	4 (13.3)	103 (20.4)	
	Sometimes	19 (25.3)	76 (28.7)	7 (31.8)	32 (28.3)	9 (30.0)	143 (28.3)	
	Often	8 (10.7)	75 (28.3)	2 (9.1)	14 (12.4)	7 (23.3)	106 (21.0)	
	Always	2 (2.7)	14 (5.3)	1 (4.5)	8 (7.1)	3 (10.0)	28 (5.5)	
	Total	75 (98.7)	265 (99.6)	22 (100)	113 (99.1)	30 (100)	505 (99.4)	
Statement	**Likert Scale Response**	**Obstetric Doctors**	**Midwives**	**Doulas**	**Woman/ Birthing Person**	**Support Person**	**Total**	**p-value**
		N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (% of 508)**	
Birth is a natural process	Strongly Disagree	0 (0.0)	9 (3.4)	1 (4.5)	5 (4.4)	0 (0.0)	15 (3.0)	<0.001
	Disagree	1(1.3)	3 (1.1)	0 (0)	2 (1.8)	0 (0.0)	6 (1.2)	
	Neutral	9 (12.0)	1 (0.4)	0 (0)	3 (2.6)	1 (3.3)	14 (2.8)	
	Agree	43 (57.3)	60 (22.6)	2 (9.1)	14 (12.3)	6 (20.0)	125 (24.7)	
	Strongly Agree	22 (29.3)	192 (72.5)	19 (86.4)	90 (78.9)	23 (76.7)	346 (68.4)	
	Total	75 (98.7)	265 (99.6)	22 (100)	114 (100)	30 (100)	506 (99.6)	
Statement	**Likert Scale Response**	**Obstetric Doctors**	**Midwives**	**Doulas**	**Woman/ Birthing Person**	**Support Person**	**Total**	**p-value**
		N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (% of 508)**	
Birth is inherently risky	Strongly Disagree	0 (0.0)	55 (20.8)	11 (50.0)	33 (29.5)	7 (23.3)	106 (21.0)	<0.001
	Disagree	2 (2.7)	113 (42.6)	5 (22.7)	39 (34.8)	13 (43.3)	172 (34.1)	
	Neutral	8 (10.7)	47 (17.7)	4 (18.2)	17 (15.2)	4 (13.3)	80 (15.9)	
	Agree	37 (49.3)	47 (17.7)	1 (4.5)	19 (17.0)	4 (13.3)	108 (21.4)	
	Strongly Agree	28 (37.3)	3 (1.1)	1 (4.5)	4 (3.6)	2 (6.7)	38 (7.5)	
	Total	75 (98.7)	265 (99.6)	22 (100)	112 (98.2)	30 (100)	504 (99.2)	

(*continued on next page*)

Table 2 (*continued*)

Statement		Obstetric Doctors	Midwives	Doulas	Woman/ Birthing Person	Support Person	Total	p-value[†]
		N (%)	N (%)	N (%)	N (%)	N (%)	N (% of 508)	
Statement	**Likert Scale Response**	**Obstetric Doctors**	**Midwives**	**Doulas**			**Total**	**p-value**
		N (%)	**N (%)**	**N (%)**			**N (% of 364)**	
A risk management-based approach is safer than a physiological approach to labour and birth[†]	Strongly Disagree	1 (1.3)	83 (33.7)	14 (66.7)			98 (28.7)	<0.001
	Disagree	4 (5.3)	109 (44.3)	7 (33.3)			120 (35.1)	
	Neutral	20 (26.7)	35 (14.2)	0 (0)			55 (16.1)	
	Agree	30 (40.0)	17 (6.9)	0 (0)			47 (13.7)	
	Strongly Agree	20 (26.7)	2 (0.8)	0 (0)			22 (6.4)	
	Total	75 (98.7)	246 (92.5)	21 (95.5)			342 (94.0)	
Statement	**Likert Scale Response**	**Obstetric Doctors**	**Midwives**	**Doulas**			**Total**	**p-value**
		N (%)	**N (%)**	**N (%)**			**N (% of 364)**	
My colleagues support physiological birth[†]	Strongly Disagree	2 (2.7)	9 (3.7)	0 (0)			11 (3.2)	<0.001
	Disagree	6 (8.1)	46 (18.7)	0 (0)			52 (15.2)	
	Neutral	17 (23.0)	64 (26.0)	1 (4.8)			82 (24.0)	
	Agree	37 (50.0)	83 (33.7)	7 (33.3)			127 (37.2)	
	Strongly Agree	12 (16.2)	44 (17.9)	13 (61.9)			69 (20.2)	
	Total	74 (97.4)	246 (92.5)	21 (95.5)			341 (93.7)	
Statement	**Likert Scale Response**	**Obstetric Doctors**	**Midwives**	**Doulas**			**Total**	**p-value**
		N (%)	**N (%)**	**N (%)**			**N (% of 364)**	<0.001
I'm confident in facilitating physiological birth[†]	Strongly Disagree	2 (2.7)	0 (0)	0 (0)			2 (0.6)	
	Disagree	4 (5.3)	8 (3.3)	0 (0)			12 (3.5)	
	Neutral	17 (22.7)	12 (4.9)	3 (15.0)			32 (9.4)	
	Agree	35 (46.7)	88 (35.9)	3 (15.0)			126 (37.1)	
	Strongly Agree	17 (22.7)	137 (55.9)	14 (70.0)			168 (49.4)	
	Total	75 (98.7)	245 (92.1)	20 (90.9)			340 (93.4)	

[¶]Chi squared
[*] Participants were able to select multiple options.
[†] Applicable to obstetric doctors, midwives, and doulas.

Terms in a definition of 'physiological birth'

Respondents indicated that terms such as 'spontaneous onset', 'spontaneous delivery/birth', 'vaginal birth' and 'no/minimal intervention' were acceptable terms in a consensus statement on physiological birth. Obstetric doctors disagreed with the terms 'normal' and 'no intervention' more strongly than any other group. Midwives, doulas, women/birthing persons and support people disagreed with the term 'low-risk' being part of a consensus statement on 'physiological birth' (Table 4).

Three-quarters of participants felt that the 'person's psychological experience during labour and birth' should be included in a consensus statement on physiological birth. Three-fifths (61.6%) of participants felt that the state of the baby (i.e., healthy) was not needed, nor that the 'person's emotions during labour and birth' should be included in a consensus statement (58.1%) **(Supplementary table 1)**.

Interventions in 'physiological birth'

Overall, respondents indicated that vaginal examination, aromatherapy, use of a peanut ball, Transcutaneous Electrical Nerve stimulation (TENS) machine were interventions congruent with physiological birth, that is, interventions that can occur without changing a birth from physiological to non-physiological (Table 4).

Obstetric doctors perceived vaginal examination, membrane sweep, intravenous access, intravenous antibiotics, continuous cardiotocography (CTG), aromatherapy, use of a peanut ball, TENS machine, and nitrous oxide as interventions congruent with physiological birth. Obstetric doctors were more likely to interpret medical intervention as being more 'physiological', with higher medians than other participant groups. Obstetric doctors viewed non-medical interventions as congruent with physiological birth, however less strongly than all other groups surveyed. For example, obstetric doctors perceived the use of aromatherapy as congruent with physiological birth (76(50-100)), yet,

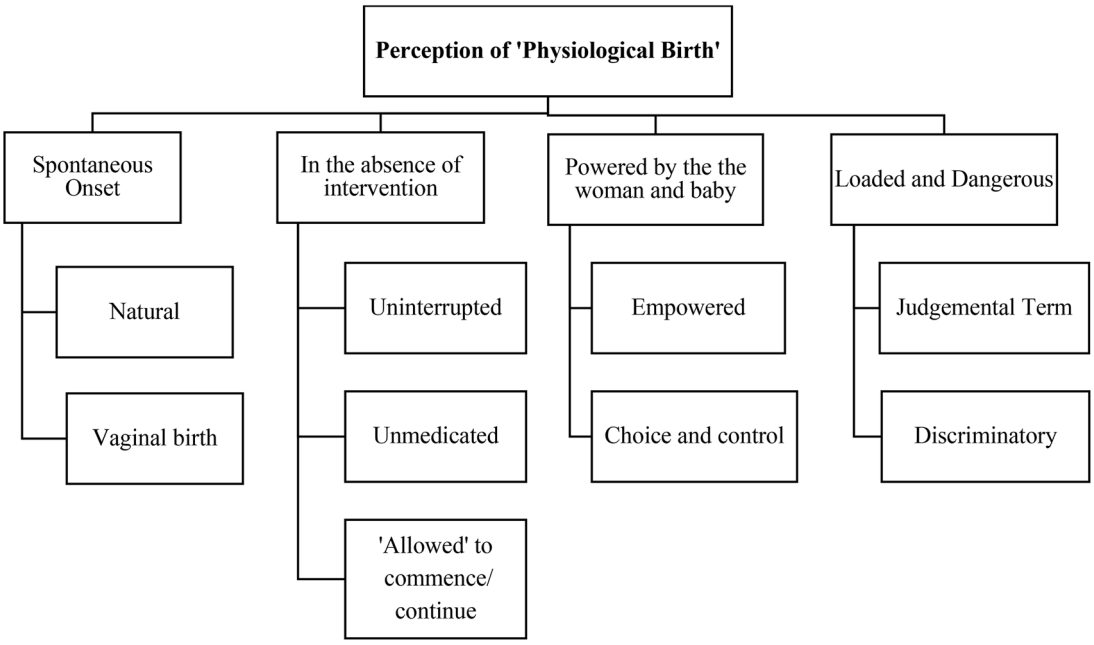


Fig. 1. Themes and subthemes from free-text responses "What does physiological birth mean to you?"

all other groups surveyed viewed aromatherapy as more strongly aligned with physiological birth (88-93(59-100)) (Table 4).

Midwife respondents shared similar views about augmentation, induction of labour (all modes), and instrumental delivery, categorising these interventions as 'non-physiological' with low medians, and narrow interquartile ranges. Doulas perceived aromatherapy, using a peanut ball and a TENS machine, as interventions aligned with physiological birth. Doulas perceived all other interventions as 'non-physiological' with a low median, and narrow interquartile range (Table 4). Furthermore, midwives, women/birthing persons, and support people viewed vaginal examination, aromatherapy, using a peanut ball, and TENS machine, as congruent interventions with physiological birth (Table 4).

Discussion

A key component of the provision of maternity care in Australia is the promotion and support of physiological birth, as an approach to working with and caring for labouring women/birthing persons, and as a mode of birth (Nursing and Midwifery Board of Australia, 2018). Despite the well-documented facilitators of physiological birth such as continuity of care (Fox et al., 2023), shared decision-making (Hall et al., 2023) and environmental conditions (Balabanoff, 2023), this study is evidence of an underlying issue in the Australian maternity setting. The stakeholders in physiological birth have a different understanding of what it is, what it means, and which interventions change a physiological birth to a non-physiological birth.

Exposure to the term 'physiological birth'

Two Australian studies have identified that women want to learn about the physiological and emotional changes in pregnancy as part of planning for labour and birth (Keedle et al., 2023; Levett et al., 2023). Clinical guidance in either area has been identified as largely missing from existing guidelines. Ferri et al., have recommended the integration of evidence-based Childbirth and Parenting Education (CBPE) into Australian maternity guidelines in their 2024 guideline review (Ferri et al., 2024). In our study, respondents were least likely to have encountered the term 'physiological birth' in childbirth education classes at a hospital (25.3%). Childbirth and parent education delivered systematically has been shown to positively influence labour and birth experience, by improving self-efficacy and lowering rates of medical intervention in childbirth, such as medicated pain relief (Bilgin et al., 2020; Hong et al., 2021). In Australia, antenatal education programs are predominantly designed by care providers, however, important differences exist between addressing the educational needs of the woman/-birthing person and their support people, and the health care provider's perception of the educational needs of their client (Svensson et al., 2008).

Philosophy of birth

Perception of physiological birth in the free-text responses to this survey showed diverse opinions on what 'physiological birth' means to the individual. Viewing 'physiological birth' as both 'natural' and 'uninterrupted' was highlighted in a third of the responses, with elements of choice and empowerment being central to the physiological birth experience. Conversely, physiological birth was also seen to be a judgemental and discriminatory term that could widen the divide between care providers and birthing individuals. In an Australian study of women who chose to freebirth, a hospital system that fears birth, a previous negative childbirth experience and viewing the hospital as an 'unsafe place to have a baby', were contributing factors to a woman's choice to birth 'outside the system' (Jackson et al., 2020).

In our study, obstetric doctors generally viewed birth as 'inherently risky', more so than midwives, indicating that in the Australian setting, a 'risk-management approach' is strongly favoured over a 'physiological approach' to birth from obstetric doctors. These results are similar to an Australian survey of midwives and obstetricians, where variation in birth philosophy and beliefs was associated with the discipline (medical or midwifery) rather than years of experience (Coates et al., 2021). In Australia, most births (97%) occur in a hospital-based setting, with 3 in 4 of those births in the public hospital setting and under the supervision of midwives and obstetric doctors (Australian Institute of Health and Welfare, 2023). There is a clear misalignment in the approach used in the Australian mainstream maternity care setting towards birth, which can be a barrier to appropriate care provision.

In a study conducted in 2016, Australian midwives expressed an inability to use all their midwifery skills and knowledge in medically dominated environments (Catling & Rossiter, 2020). Two-thirds observed a negative workplace culture, partially based on the pervading workplace philosophy, which was overwhelmingly medically focused (Catling & Rossiter, 2020). This may be caused by organisational barriers such as staff shortages and the normalisation of dysfunctional relationships. Combined, this can intimidate midwives

Table 3
Verbatim quotes supporting themes and subthemes from free-text responses "What does physiological birth mean to you?"

Key Themes	Subthemes and samples of verbatim quotes
1. Spontaneous onset	1.1 Natural "Natural vaginal birth, undisturbed, without pain relief or medical intervention, with full support to realise my physical potential" *Woman/Birthing Person #63* "as nature intended" *Woman/Birthing Person #17.* "Birth under circumstances where the woman's physiology and the birth process are supported to occur spontaneously" *Woman/Birthing Person #29* "Doing what the woman's body is designed to do in birth." *Support Person #15* 1.2 Vaginal Birth "a birth that commences spontaneously, no augmentation or epidural and ends with the woman having a normal vaginal birth, has no problems delivering the placenta, with normal blood loss." *Midwife #5* "a spontaneous vaginal birth without any intervention and physiological 3rd stage." *Midwife #25*
2. In the absence of intervention	2.1 Uninterrupted "A labour and birth uninterrupted by medical intervention. That is, awaiting spontaneous onset of labour, no Syntocinon for augmentation and a spontaneous vaginal birth." *Obstetric Doctor #4* "Allowing for birth to follow it's natural course and for an uninterrupted labour and birth." *Midwife #22* 2.2 Unmedicated "Unmedicated, unaugmented, uninterrupted vaginal birth with minimal intervention" *Doula #19* "Unmediated, undisturbed, spontaneous onset of labour, no interventions, natural birth of the placenta." *Midwife #232* 2.3 'Allowed' to commence/continue "Where labour and birth is uninterrupted and allowed to run naturally and normally without drugs medication and unnecessary interventions." *Doula #22* "Physiological birth is undisturbed in nature and unfolds independently of the prescribed perimeters of "normal and safe". *Woman/Birthing Person #73* "No interventions and the birthing person is not instructed or coached in any way (which are interventions anyway!). The delivery of placenta and initiation of breastfeeding are allowed to unfold in their own time." *Woman/Birthing Person #74*
3. Powered by the woman and baby	3.1 Empowered "The process of birthing in an embodied and empowered way, allowing the body to do what we have evolved to do (but medical backup if need be). It may be you labour like this and then need a vacuum, or augmentation, or some gas....but that can still be part of a physiological birth - all the hard work you put in gets you closer to your baby and being a Mumma. It's about being an active player in your birth, the active process of going into your body and experiencing the rawness and animalness of birth - that's where all the hormones and the nervous system allows the labour process to unfold." *Obstetric Doctor #57* "A holistic approach to childbirth- free of interventions and allowing the woman to be empowered by her own abilities" *Support Person #3* "Uninterrupted birth mentally, spiritually and physically. Where a woman is empowered to trust herself and her body and give birth with no interruptions or interventions. Not simply just "having a vaginal birth". *Midwife #224* 3.2 Choice and control "…Choice in every aspect of my birthing body and in how my baby is handled during and straight after birth. Just don't touch my baby! It also means baby and mum being emotionally safe. Able to be with one another, rather than taken away for xyz..." *Woman/Birthing Person #12* "The natural process of giving birth vaginally without intervention in a supported environment, where the woman has freedom of choice" *Midwife #207*
4. Loaded and dangerous	4.1 Judgemental term "It's a highly judgemental term. Its antonym is pathological. It suggests that anything other than a spontaneous vaginal birth is pathological, which is quite prejudicial to the experience of a huge number of women." *Obstetric Doctor #24* "It is loaded and dangerous…supported birth with care for wellbeing of mother and baby is what matters, not some achievement totem pole…that injures the people it tries to help. It splits professional care when we should be working together…crying shame." *Obstetric Doctor #23* 4.2 Discriminatory "Meaningless words to describe birth. Trying to differentiate between augmented birth." *Obstetric Doctor #28* "…My grave concern is that this term will give yet another metric for women to measure themselves and others against to judge failure due to no fault of their own." *Obstetric Doctor #21*

and create uncertainty in clinical decision-making, directly affecting the provision of labour care (Elliott-Mainwaring, 2021). One in five midwives in our study felt their colleagues did not support physiological birth. Insufficient support to enable access to physiological birth for women may be attributed to limited opportunities for care providers to witness physiological birth (McKenzie & Montgomery, 2021).

Doulas associated physiological birth with being 'intervention-free' more strongly than any other group. In Australia, a doula's main role is to 'help pregnant women feel confident about giving birth', in labour (Bohren et al., 2017). This can include helping communicate a birth plan with midwives/obstetricians or creating a birthing environment in line with the desires of the labouring woman (Raising Children Net, 2022).

A change in language

Participants agreed that the terms 'spontaneous onset', 'spontaneous delivery/birth', 'vaginal birth' and 'no/minimal intervention' were appropriate in a consensus statement on 'physiological birth' for the Australian setting. Women/birthing persons and doulas agreed more strongly that 'no intervention' should be included rather than 'minimal intervention'. Midwives felt similarly about both terms. Conversely, the term 'no intervention' was disagreed with by obstetric doctors, with obstetric doctors preferring 'minimal intervention'. These findings underscore the diversity in beliefs among care providers and women, demonstrating a clear misalignment in the understanding of 'physiological birth'.

In this study, the terms 'gestational term' and 'normal' and their place in 'physiological birth' appear contentious, with midwives, women and support people having a range of views suggested by a wide interquartile range. Within the research literature, 'gestational term' is well documented, with decades of research reviewing neonatal and childhood outcomes based on gestation (Gleason et al., 2022; Lee et al., 2013; Spong, 2013), thus providing the defining range of 37-42 weeks completed gestation for optimal timing of birth. Regardless of whether the catalyst of labour is pathological or physiological in origin, 'gestational term' as a defining criterion in physiological birth requires further research.

'Normal' is a term that can hold widely different meanings when used in relation to childbirth. It is also a term that invites deviations from 'normal' being labelled 'abnormal'. Problematically, labelling one option of childbirth as 'normal' has the potential to bias antenatal and birth education, when education should be tailored to the individual needs of the woman/birthing person (Ferri et al., 2024). In the United Kingdom, the 'Re: Birth Project' led by the Royal College of Midwives in 2022, emphasised the need for descriptive and technically accurate

Table 4
Terms to include in a consensus statement on physiological birth and perception of acceptable interventions in 'physiological birth'

Terms to include in a consensus statement of physiological birth (Scale of 0 "Disagree" through to 100 "Agree")							
	Obstetric Doctors n= 76 Median (IQR) n (%)	Midwives n= 266 Median (IQR) n (%)	Doulas n= 22 Median (IQR) n (%)	Woman/ Birthing Person n= 114 Median (IQR) n (%)	Support Person n=30 Median (IQR) n (%)	All N= 508 Median (IQR) N (%)	p-value*
Terms to include in a consensus statement on 'physiological birth': median >70 consensus							
Spontaneous onset	83 (50-100) n= 68 (89.5)	99 (80-100) n=259 (97.4)	100 (100-100) n=21 (95.5)	100 (77-100) n=111 (97.3)	90 (77-100) n=29 (96.7)	99 (76-100) n=488 (96.0)	<0.001
Spontaneous delivery/birth	80 (66-100) n=69 (90.7)	97(79-100) n=257 (96.6)	100 (98-100) n= 22 (100)	98 (74-100) n=107 (93.9)	86 (76.25-100) n=30 (100)	96 (75-100) n=485 (95.5)	<0.001
Vaginal birth	91 (65-100) n=67 (88.2)	97 (78-100) n=256 (96.2)	100 (87-100) n=22 (100)	100 (82-100) n=112 (98.2)	97 (76-100) n=30 (100)	97 (77-100) n=487 (95.9)	0.02
Terms considered contentious in a consensus statement on 'physiological birth'							
Gestation term (i.e. full term)	80 (50-96.5) n=63 (82.9)	50 (25-78) n=247 (92.8)	26 (6-66) n=18 (81.8)	50 (18.5-79) n=111 (97.3)	50 (16-77) n=29 (96.7)	50 (22-81) n=468 (92.1)	0.06
Minimal intervention	55 (17-85) n=66 (86.8)	76 (49-96) n=254 (95.5)	56 (21-99) n=20 (90.9)	68 (25.5-92) n=111 (97.3)	83 (50-98) n=29 (96.7)	73 (30-94) n=480 (94.5)	0.03
Normal	0 (0-18) n=65 (85.5)	50 (24-85) n=245 (92.1)	48 (18-79) n=18 (81.8)	50 (11-89.50) n=106 (93.0)	65 (30-88) n=28 (93.3)	50 (12-80) n=462 (90.9)	0.0001
No intervention	23.5 (1-76) n=66 (86.8)	77 (50-100) n=252 (94.7)	100 (77-100) n=22 (100)	87.5 (50-100) n=110 (96.5)	78 (57.5-99.25) n=30 (100)	76 (41-100) n=480 (94.5)	<0.001
Low-risk	50 (7-93) n=67 (88.2)	41 (15-69) n=250 (94.0)	18 (0-46) n=18 (81.8)	38 (0-59) n= 107 (93.9)	23 (15-69) n=29 (96.7)	39 (10-70) n=471 (92.7)	0.04
Perception of Acceptable Interventions in Physiological Birth (Scale of 0 "Non-physiological" through to 100 "Physiological")							
Interventions considered congruent with 'physiological birth': median >70 consensus across all groups							
Aromatherapy	76 (50-100) n= 66 (86.8)	89.5 (64-100) n= 256 (96.2)	88 (59-100) n= 21 (95.5)	93 (61-100) n= 109 (95.6)	90 (72-99) n= 28 (93.3)	89 (57-100) n= 480 (94.5)	0.09
Peanut ball	90 (74-100) n= 66 (86.8)	94 (75-100) n= 255 (95.8)	100 (87-100) n= 21 (95.5)	97 (70-100) n=110 (96.5)	95 (82-100) n= 29 (96.6)	95 (75-100) n= 481 (94.7)	0.2
Transcutaneous electrical nerve stimulation (TENS) machine	78 (50-99) n= 68 (89.5)	92 (73-100) n=255 (95.8)	80 (50-100) n=21 (95.5)	97 (75-100) n=113 (99.1)	91 (72-97) n=29 (96.6)	91 (69-100) n= 486 (95.7)	0.004
Interventions considered contentious							
Intravenous access	76 (36-93) n= 71 (93.4)	50 (21-78) n= 255 (95.9)	0 (0-23) n= 21 (95.5)	29 (0-66) n= 109 (95.6)	50 (50-70) n= 29 (96.6)	50 (12-79) n= 485 (95.5)	0.0001
Intravenous medications (i.e. antibiotics)	74 (49-95) n= 70 (92.1)	50 (16-75) n= 254 (95.5)	0 (0-20) n= 21 (95.5)	26 (0-59.50) n= 108 (94.7)	50 (27-78) n= 28 (93.3)	50 (10-77) n= 481 (94.7)	0.0001
Continuous Cardiotocography	74 (50-92) n=70 (92.1)	28 (3-50) n= 259 (97.4)	1 (0-43) n= 22 (100)	50 (0-76) n= 111 (97.3)	50 (0-67) n= 29 (96.6)	37 (3-67) n= 491 (96.7)	0.0001
Vaginal examination to access progress in labour	99 (87-100) n= 72 (94.7)	71 (50-90) n= 256 (96.2)	17 (0-50) n= 22 (100)	64 (11-97) n= 112 (98.2)	69 (31-87) n= 30 (100)	75 (39-97) n= 492 (96.9)	0.0001
Membrane Sweep	82 (50-100) n= 72 (94.7)	50 (23-76) n= 259 (97.4)	0 (0-15) n= 22 (100)	26 (0-70) n= 112 (98.2)	40 (30-75) n= 29 (96.6)	50 (8-80) n= 494 (97.2)	0.0001
Artificial Rupture of Membranes (ARM)	50 (20-86) n= 70 (92.1)	20 (0-45) n= 257 (96.6)	0 (0-2) n= 22 (100)	10 (0-38) n= 111 (97.3)	21 (0-39) n= 30 (100)	19 (0-50) n= 490 (96.5)	0.0001
Episiotomy	50 (16-78) n=69 (90.8)	17 (0-50) n= 253 (95.1)	0 (0-0) n=22 (100)	20 (0-50) n=111 (97.3)	12 (0-43) n=28 (93.3)	19 (0-50) n= 483 (95.1)	0.0001
Gas (Nitrous Oxide)	77 (37-95) n= 70 (92.1)	59 (37-89) n= 255 (95.8)	15 (0-41) n=22 (100)	55 (1-85) n=107 (93.8)	62 (42-83) n=29 (96.6)	59 (29-89) n= 483 (95.1)	0.0001
Morphine	50 (29-85) n= 71 (93.4)	29 (2-53) n= 256 (96.2)	0 (0-2) n=22 (100)	22 (0-50) n=111 (97.3)	50 (19-68) n=29 (96.6)	30 (0-63) n= 489 (96.3)	0.0001

(*continued on next page*)

Table 4 (*continued*)

Terms to include in a consensus statement of physiological birth (Scale of 0 "Disagree" through to 100 "Agree")							
	Obstetric Doctors n= 76 Median (IQR) n (%)	Midwives n= 266 Median (IQR) n (%)	Doulas n= 22 Median (IQR) n (%)	Woman/ Birthing Person n= 114 Median (IQR) n (%)	Support Person n=30 Median (IQR) n (%)	All N= 508 Median (IQR) N (%)	p-value*
Epidural	35 (0-66) n= 69 (90.8)	4 (0-25) n= 258 (97.0)	0 (0-0) n=22 (100)	3 (0-50) n=111 (97.3)	19 (0-50) n=28 (93.3)	7 (0-34) n= 488 (96.1)	0.0001
Third Stage management: Medications	50 (0-74) n= 70 (92.1)	10 (0-38) n= 257 (96.6)	0 (0-0) n=22 (100)	9 (0-50) n=109 (95.6)	3 (0-56) n= 28 (93.3)	10 (0-50) n= 486 (95.7)	0.0001
Third Stage Management: Controlled Cord Traction	50 (4-88) n= 68 (89.5)	15 (0-50) n=257 (96.6)	0 (0-3) n=22 (100)	19 (0-50) n=111 (97.3)	20 (0-43) n=27 (90)	18 (0-50) n= 485 (95.5)	0.0001
Interventions considered noncongruent with 'physiological birth': median <30 consensus across all groups							
Induction of labour using a balloon catheter	20 (0-48) n= 70 (92.1)	3 (0-26) n= 259 (97.4)	0 (0-0) n= 22 (100)	1 (0-26) n= 114 (100)	16 (0-30) n= 29 (96.6)	4 (0-28) n= 494 (97.2)	0.0003
Induction of labour using prostaglandin	10 (0-32) n= 69 (90.8)	0 (0-13) n= 259 (97.4)	0 (0-0) n= 22 (100)	0 (0-17) n= 113 (99.1)	15 (0-27) n= 30 (100)	0 (0-18) n= 493 (97.0)	0.0001
Induction of labour using continuous oxytocin infusion	8 (0-35) n= 70 (92.1)	0 (0-8) n= 260 (97.7)	0 (0-0) n= 22 (100)	0 (0-7) n= 112 (98.2)	1 (0-21) n= 29 (96.6)	0 (0-11) n= 493 (97.0)	0.0001
Augmentation of labour	14 (0-47) n= 70 (92.1)	2 (0-23) n= 260 (97.7)	0 (0-0) n= 22 (100)	1 (0-27) n= 111 (97.3)	12 (0-31) n= 29 (96.6)	2 (0-25) n= 492 (96.9)	0.0001
Instrumental delivery: Vacuum	20 (1-43) n= 71 (93.4)	0 (0-11) n=258 (97.0)	0 (0-0) n=22 (100)	0 (0-28) n=112 (98.2)	5 (0-18) n=29 (96.6)	1 (0-19) n= 492 (96.9)	0.0001
Instrumental delivery: Forceps	15 (0-44) n= 71 (93.4)	0 (0-10) n=258 (97.0)	0 (0-0) n=22 (100)	0 (0-27) n=110 (96.5)	3 (0-27) n=29 (96.6)	0 (0-14) n= 490 (96.5)	0.0001

terms that are non-judgemental. These terms should be specific enough to identify different modes of labour and birth, concluding that when necessary, labour and birth may need to be described separately; i.e. "where a labour was spontaneous but followed by a birth with forceps, an appropriate term might be 'spontaneous labour followed by a birth with forceps'" (Royal College of Midwives, 2022). While this may be a way forward if applied in Australia, 'physiological birth' as a term and a concept remains contentious in Australia, with central elements such as 'gestational term' and 'normal' being debatable.

Perception of intervention

The majority of respondents agreed that vaginal examination to assess labour progress, aromatherapy, the use of a peanut ball, and TENs were consistent with a physiological approach to birth. Based on these findings, it is evident that the various parties involved in labour and birth have unique perspectives on interventions during the process. As such, categorising interventions as solely 'physiological' or 'non-physiological' would be overly simplistic.

The obstetric doctors surveyed demonstrated a range of perspectives on whether the use of artificial rupture of membranes, episiotomy, and active management of third-stage (medications and controlled cord traction) were consistent with physiological management. This range of views was not seen among other groups surveyed, all of whom agreed that these interventions were 'non-physiological'. Overall, obstetric doctors were more likely to view intervention in labour and birth as congruent with physiological birth. Conversely, doulas viewed most interventions in labour and birth as 'non-physiological'. These polarised views may position midwives as the 'middle ground', when all three care providers may be involved in the intrapartum care of women.

Continuous cardiotocography (CTG), a tool used to assess fetal well-being in labour and birth (when clinically indicated), was seen as 'physiological' by obstetric doctors and 'non-physiological' by midwives. Obstetric doctors viewed continuous surveillance as a part of monitoring labour and birth and, therefore a part of physiological birth. Conversely, midwives may consider that using a CTG generates a non-physiological state that could trigger a 'cascade of interventions' (Kale, 2022). These results further the findings of a 2022 Australian study, where midwives felt that wired CTG created a barrier to the physiological process, requiring constant repositioning to obtain a continuous trace, drawing attention away from the labouring woman (Fox et al., 2022). There is evidence that overuse of CTG surveillance for low-risk women can increase intervention in labour and birth, without improving neonatal outcomes (Alfirevic et al., 2017; Jepsen et al., 2022). Further research into the use of continuous CTG and its perceived influence on physiological birth is warranted, based on the wide range of perspectives seen in this study.

Strengths and limitations

Many aspects of this study highlight existing gaps in knowledge regarding the understanding of physiological birth, and the differences in perception of intervention. The results of this study need to be interpreted with caution, as it would be unwise to apply the findings of each group to a broader generalisation of birth in Australia. In the piloting of this study, there was no obstetric professional input, which may or may not have altered the structure and formulation of the questions used.

Recruitment through online platforms has its deficits, as not all potential participants would have access to social media platforms, and participant credentials are unable to be verified. Some participants may have been both birthing persons and maternity care professionals: in selecting to respond as one or the other option in screening, their survey responses may (or may not) have inadvertently been influenced by their other role in labour and birth. Individuals who actively use social media tend to be younger (Oudat & Bakas, 2023), and certain ethnic and racial groups tend to be more active on social media than others (Abi-Jaoude, 2020; Sheldon et al., 2021). Social media users are therefore not

representative of the wider population, which can limit any potential generalisability of results (Barth & de Jong, 2017).

Australia is culturally and linguistically diverse and these findings were mainly derived from a group of participants that predominantly spoke English as their first language. Of the women/birthing persons who completed this survey, one in three had had a planned homebirth; far more than the national average, suggesting that women who had a homebirth experience were more inclined to engage in a physiological birth study. The majority of participants in this survey were midwives, 40% had more than 10 years of experience, which is representative of the midwifery workforce in Australia (Bogossian et al., 2011). The findings in this study may not represent the views of all individuals within the groups from which the data were derived.

Conclusion

There are multiple understandings of the term 'physiological birth', implying that the term itself lacks clarity. There are significant disparities in how care providers and women view intervention in labour and birth. The World Health Organization's definition of 'physiological birth' is infrequently used in clinical practice, with key components seen as contentious in the Australian setting. Therefore, a consensus statement on 'physiological birth' formed by those involved in birth, may be appropriate for the Australian context.

Author Agreement

I declare and agree the following;

- that the article is the author(s) original work
- the article has not received prior publication and is not under consideration for publication elsewhere
- that all authors have seen and approved the manuscript being submitted
- the author(s) abide by the copyright terms and conditions of Elsevier

Ethical Statement

This research project has been approved by the La Trobe University Human Ethics Committee (Ethics approval number HEC23252) on 21/08/2023.

Funding

Not applicable.

Author Contributions

All authors contributed to the concept and design of this study, analysis and interpretation of the data, revision of the manuscript, and approval of the final version submitted for publication.

CRediT authorship contribution statement

Brooke I. Henshall: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Heather A. Grimes:** Writing – review & editing, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Jennifer Davis:** Writing – review & editing, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Christine E. East:** Writing – review & editing, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

There are no known competing interests to be declared.

Acknowledgement

The corresponding author of this paper is a PhD student at La Trobe University, Melbourne, Australia. The student receives a scholarship, in the form of a monthly stipend, from this University to pursue a PhD but there is no conflict of interest in the reporting of data. The co-authors are supervisors of this PhD.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.midw.2025.104375.

References

Abi-Jaoude, E., Naylor, K.T., Pignatiello, A., 2020. Smartphones, social media use and youth mental health. CMAJ. 192 (6), 136–141. https://doi.org/10.1503/cmaj.190434.

Alfirevic, Z., Devane, D., Gyte, G.M., Cuthbert, A., 2017. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. Cochrane Database Syst. Rev. 2 (2), Cd006066. https://doi.org/10.1002/14651858.CD006066.pub3.

Australian College of Midwives, 2021. National Midwifery Guidelines for Consultation and Referral, ACM, Canberra. Retrieved 13 March 2025 https://midwives.org.au/Web/Web/About-ACM/Guiding-Documents.aspx.

Australian Institute of Health and Welfare, 2023. Australia's mothers and babies. Australian Government. Retrieved 13th April from. https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies/contents/summary.

Australian Government, 2024. About nurses and midwives. Retrieved 1 November 2024 https://www.health.gov.au/topics/nurses-and-midwives/about.

Balabanoff, D., 2023. Color, light, and birth space design: An integrative review. Color Research & Application 48 (5), 413–432. https://doi.org/10.1002/col.22842.

Barth, S., de Jong, M.D.T., 2017. The privacy paradox – Investigating discrepancies between expressed privacy concerns and actual online behavior – A systematic literature review. Telemat. Inform. 34 (7), 1038–1058. https://doi.org/10.1016/j.tele.2017.04.013.

Bilgin, N.Ç., Ak, B., Ayhan, F., Koçyiğit, F.Ö., Yorgun, S., Topçuoğlu, M.A., 2020. Effects of childbirth education on prenatal adaptation, prenatal and maternal attachment. The Anatolian Journal of Family Medicine 3 (2), 128.

Bogossian, F.E., Long, M.H., Benefer, C., Humphreyes Reid, L.J., Kellett, S.E.M., Zhao, I., Turner, C., 2011. A workforce profile comparison of practising and non-practising midwives in Australia: Baseline data from the Midwives and Nurses e-cohort Study. Midwifery. 27 (3), 342–349. https://doi.org/10.1016/j.midw.2011.03.001.

Bohren, M.A., Hofmeyr, G.J., Sakala, C., Fukuzawa, R.K., Cuthbert, A., 2017. Continuous support for women during childbirth. Cochrane Database of Systematic Reviews (7). https://doi.org/10.1002/14651858.CD003766.pub6.

Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. Qual. Res. Psychol. 3 (2), 77–101. https://doi.org/10.1191/1478088706qp063oa.

Catling, C., Rossiter, C., 2020. Midwifery workplace culture in Australia: A national survey of midwives. Women and Birth 33 (5), 464–472. https://doi.org/10.1016/j.wombi.2019.09.008.

Coates, D., Donnolley, N., Henry, A., 2021. The Attitudes and Beliefs of Australian Midwives and Obstetricians About Birth Options and Labor Interventions. J. Midwifery. Womens Health 66 (2), 161–173. https://doi.org/10.1111/jmwh.13168.

Council of Australian Governments (COAG), 2019. *Woman-centred care: Strategic directions for Australian maternity services*. Retrieved 7th May 2024 https://www.health.gov.au/sites/default/files/documents/2019/11/woman-centred-care-strategic-directions-for-australian-maternity-services.pdf.

Department of Health, 2018. Australia's Future Health Workforce – Obstetrics and Gynaecology. https://www.health.gov.au/sites/default/files/documents/2021/03/obstetrics-and-gynaecology-australia-s-future-health-workforce-report.pdf.

Elliott-Mainwaring, H., 2021. How do power and hierarchy influence staff safety in maternity services? Br. J. Midwifery. 29 (8), 430–439. https://doi.org/10.12968/bjom.2021.29.8.430.

Ferri, A., Levett, K.M., Sutcliffe, K.L., Catling, C., Newman, E., 2024. Antenatal Education – Putting Research into Practice: A Guideline Review. Midwifery., 103960 https://doi.org/10.1016/j.midw.2024.103960.

Fontein-Kuipers, Y., de Groot, R., van Staa, A., 2018. Woman-centered care 2.0: Bringing the concept into focus. Eur. J. Midwifery. 2, 5. https://doi.org/10.18332/ejm/91492.

Fox, D., Coddington, R., Scarf, V., 2022. Wanting to be 'with woman', not with machine: Midwives' experiences of caring for women being continuously monitored in labour. Women & Birth 35 (4), 387–393. https://doi.org/10.1016/j.wombi.2021.09.002.

Fox, D., Scarf, V., Turkmani, S., Rossiter, C., Coddington, R., Sheehy, A., Catling, C., Cummins, A., Baird, K., 2023. Midwifery continuity of care for women with complex

pregnancies in Australia: An integrative review. Women and Birth 36 (2), e187–e194. https://doi.org/10.1016/j.wombi.2022.07.001.
Gleason, J.L., Gilman, S.E., Sundaram, R., Yeung, E., Putnick, D.L., Vafai, Y., Saha, A., Grantz, K.L., 2022. Gestational age at term delivery and children's neurocognitive development. Int. J. Epidemiol. 50 (6), 1814–1823. https://doi.org/10.1093/ije/dyab134.
Hall, H., Fooladi, E., Kloester, J., Ulnang, A., Sinni, S., White, C., McLaren, M., Yeganeh, L., 2023. Factors that Promote a Positive Childbearing Experience: A Qualitative Study. J. Midwifery. Womens Health 68 (1), 44–51. https://doi.org/10.1111/jmwh.13402.
Harris, P.A., Taylor, R., Minor, B.L., Elliott, V., Fernandez, M., O'Neal, L., McLeod, L., Delacqua, G., Delacqua, F., Kirby, J., Duda, S.N., 2019. The REDCap consortium: Building an international community of software platform partners. J. Biomed. Inform. 95, 103208. https://doi.org/10.1016/j.jbi.2019.103208.
Harris, P.A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., Conde, J.G., 2009. Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. J. Biomed. Inform. 42 (2), 377–381. https://doi.org/10.1016/j.jbi.2008.08.010.
Henshall, B.I., Grimes, H.A., Davis, J., East, C.E., 2024b. What is 'physiological birth'? A scoping review of the perspectives of women and care providers. Midwifery. 132, 103964. https://doi.org/10.1016/j.midw.2024.103964.
Henshall, B.I., Grimes, H.A., Davis, J., East, C.E., 2024a. P9 - The PRIMROSE Project: What is 'Physiological Birth'? A Qualitative Approach to the Perceptions of the Australian Population using Interpretive Hermeneutic Phenomenology. Women and Birth 37, 101763. https://doi.org/10.1016/j.wombi.2024.101763.
Hong, K., Hwang, H., Han, H., Chae, J., Choi, J., Jeong, Y., Lee, J., Lee, K.J., 2021. Perspectives on antenatal education associated with pregnancy outcomes: Systematic review and meta-analysis. Women and Birth 34 (3), 219–230. https://doi.org/10.1016/j.wombi.2020.04.002.
Jackson, M.K., Schmied, V., Dahlen, H.G., 2020. Birthing outside the system: the motivation behind the choice to freebirth or have a homebirth with risk factors in Australia. BMC. Pregnancy. ChildBirth 20 (1), 254. https://doi.org/10.1186/s12884-020-02944-6.
Jepsen, I., Blix, E., Cooke, H., Adrian, S.W., Maude, R., 2022. The overuse of intrapartum cardiotocography (CTG) for low-risk women: An actor-network theory analysis of data from focus groups. Women and Birth 35 (6), 593–601. https://doi.org/10.1016/j.wombi.2022.01.003.
Kale, I., 2022. Does continuous cardiotocography during labor cause excessive fetal distress diagnosis and unnecessary cesarean sections? J. Matern. Fetal. Neonatal. Med. 35 (6), 1017–1022. https://doi.org/10.1080/14767058.2021.1906220.
Keedle, H., Lockwood, R., Keedle, W., Susic, D., Dahlen, H.G., 2023. What women want if they were to have another baby: the Australian Birth Experience Study (BESt) cross-sectional national survey. BMJ Open. 13 (9), e071582. https://doi.org/10.1136/bmjopen-2023-071582.
Lee, A.C., Katz, J., Blencowe, H., Cousens, S., Kozuki, N., Vogel, J.P., Adair, L., Baqui, A. H., Bhutta, Z.A., Caulfield, L.E., Christian, P., Clarke, S.E., Ezzati, M., Fawzi, W., Gonzalez, R., Huybregts, L., Kariuki, S., Kolsteren, P., Lusingu, J., Marchant, T., Merialdi, M., Mongkolchati, A., Mullany, L.C., Ndirangu, J., Newell, M.L., Nien, J.K., Osrin, D., Roberfroid, D., Rosen, H.E., Sania, A., Silveira, M.F., Tielsch, J., Vaidya, A., Willey, B.A., Lawn, J.E., Black, R.E., 2013. National and regional estimates of term and preterm babies born small for gestational age in 138 low-income and middle-income countries in 2010. Lancet Glob. Health 1 (1), e26–e36. https://doi.org/10.1016/s2214-109x(13)70006-8.
Leighton, K., Kardong-Edgren, S., Schneidereith, T., Foisy-Doll, C., 2021. Using Social Media and Snowball Sampling as an Alternative Recruitment Strategy for Research. Clin. Simul. Nurs. 55, 37–42. https://doi.org/10.1016/j.ecns.2021.03.006.
Levett, K.M., Sutcliffe, K.L., Keedle, H., Dahlen, H., 2023. Women's experiences of changes to childbirth and parenting education in Australia during the COVID-19 pandemic: The birth in the time of COVID-19 (BITTOC) study. Sexual & Reproductive Healthcare 38, 100904.
McKenzie, G., Montgomery, E., 2021. Undisturbed Physiological Birth: Insights from Women Who Freebirth in the United Kingdom. Midwifery. 101, 103042. https://doi.org/10.1016/j.midw.2021.103042.
Nursing and Midwifery Board of Australia, 2018. Midwife Standards for Practice. Retrieved 3rd April from. https://www.nursingmidwiferyboard.gov.au/Codes-Guidelines-Statements/Professional-standards/Midwife-standards-for-practice.aspx.
NVivo, 2018. NVivo qualitative data analysis software (Version 12, 2018). Computer Software.
Oudat, Q., Bakas, T., 2023. Merits and Pitfalls of Social Media as a Platform for Recruitment of Study Participants. J. Med. Internet. Res. 25 (1). https://doi.org/10.2196/47705.
Raising Children Net, 2022. Doula. https://raisingchildren.net.au/guides/a-z-health-reference/doula.
Royal College of Midwives, 2022. The Re:Birth Project, Final Report. https://www.rcm.org.uk/media/6327/rebirth-final-full-report-july-2022.pdf.
Sheldon, P., Antony, M.G., Ware, L.J., 2021. Baby Boomers' use of Facebook and Instagram: uses and gratifications theory and contextual age indicators. Heliyon. 7 (4), e06670. https://doi.org/10.1016/j.heliyon.2021.e06670.
Spong, C.Y., 2013. Defining "Term" Pregnancy: Recommendations From the Defining "Term" Pregnancy Workgroup. JAMa 309 (23), 2445–2446. https://doi.org/10.1001/jama.2013.6235.
World Health Organization, 2018. WHO recommendations: intrapartum care for a positive childbirth experience. https://iris.who.int/bitstream/handle/10665/260178/9789241550215-%eng.pdf?sequence=1.
StataCorp. (2023). *Stata Statistical Software: Release 18.* In StataCorp LLC.
Svensson, J., Barclay, L., Cooke, M., 2008. Effective antenatal education: strategies recommended by expectant and new parents. J. Perinat. Educ. 17 (4), 33–42. https://doi.org/10.1624/105812408x364152.
Vetter, T.R., 2017. Descriptive Statistics: Reporting the Answers to the 5 Basic Questions of Who, What, Why, When, Where, and a Sixth, So What? Anesth. Analg. 125 (5), 1797–1802. https://doi.org/10.1213/ane.0000000000002471.
World Health Organization, 1997. Care in normal birth: a practical guide. Technical Working Group, World Health Organization. Birth 24 (2), 121–123.