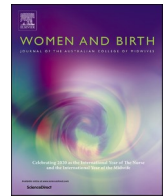




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Symptoms of onset of labour and early labour: A scoping review

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ABSTRACT

Background: Early labour care often insufficiently addresses the individual needs of pregnant women leading to great dissatisfaction. In-depth knowledge about symptoms of onset of labour and early labour is necessary to develop women-centred interventions.

Question or aim: To provide an overview on the current evidence about pregnant women's symptoms of onset of labour and early labour.

Methods: We conducted a scoping review in the five databases PubMed, Web of Science, CINHAL Complete, PsychInfo and MIDIRS in May 2021 and August 2022 using a sensitive search strategy. A total of 2861 titles and abstracts and 290 full texts were screened independently by two researchers using Covidence. For this article, data was extracted from 91 articles and summarised descriptively and narratively.

Findings: The most frequently mentioned symptoms were 'Contractions, labour pain' (n = 78, 85.7 %), 'Details about the contractions' (n = 51 articles, 56.0 %), 'Positive and negative emotions' (n = 50, 54.9 %) and 'Fear and worries' (n = 48 articles, 52.7 %). Details about the contractions ranged from a slight pulling to unbearable pain and the emotional condition varied from joy to great fear, showing an extraordinary diversity of symptoms highlighting the very individual character of early labour.

Discussion: A comprehensive picture of varying and contradicting symptoms of onset of labour and early labour was drawn. Different experiences indicate different needs. This knowledge builds a good basis to develop women-centred approaches to improve early labour care.

Conclusion: Further research is necessary to design individualised early labour interventions and evaluate their effectiveness.

Statement of significance

The individual needs of women are a major challenge for providing satisfactory early labour care.

What is already known

Diverse early labour experiences of pregnant women underlie the individual needs.

What this paper adds

Conducting a scoping review using a sensitive search strategy allowed to show a comprehensive picture of the diverse and contrasting symptoms of onset of labour and early labour and provide a good basis for the development of women-centred interventions and for further research.

1. Introduction

Knowledge about symptoms of onset of labour and early labour is important to understand women's individual needs and provide women-centred support and improved early labour care. Onset of labour, meaning the transition from pregnancy to labour and birth, is a physiological chain of events within a biological process [1,2]. Complex physiological inflammatory and hormonal processes lead to uterine contractions, which become stronger, more regular and more frequent and result in cervical dilatation [2,3]. With the onset of early labour, also called latent phase, the first phase of childbirth starts, and this together with the subsequent active phase of cervical dilatation constitutes the first stage of labour [4,5].

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These physiological changes are experienced by pregnant women in many ways with various physical and emotional signs. Gross et al. [6] summarised symptoms of onset of labour into groups such as recurrent and nonrecurrent pain, altered sleep pattern, emotional upheaval and others without providing further details. Some symptoms interact with each other such as anxiety with increased pain [7] or with care needs during the labour process, e.g. with pain management [8]. Pregnant women frequently experience early labour as difficult to manage, especially in case of long hours with pain and slow progress, and often describe early labour care as unsatisfactory [9,10]. They and their partners have difficulties staying at home during early labour and would like to be admitted to the hospital before labour progresses [11,12]. Yet, early hospital admission has been found to be associated with increased intrapartum intervention rates such as vaginal examination, labour augmentation with synthetic oxytocin, epidural analgesia, caesarean section as well as admission of the infant to neonatal intensive care units [13–15].

Based on this knowledge, interventions to delay hospital admission have been explored [9]. Studies investigating measures to improve early labour care such as support at home during early labour, telephone triage prior to hospital admission, an algorithm to diagnose active labour and structured care during early labour showed varying results [9, 16–18]. They provided some evidence for a reduced need of epidural analgesia and increased maternal satisfaction but did not show a clear impact on caesarean section and instrumental birth rates. Furthermore, Janssen & Weissinger [19] reported that the perception of pre-hospital labour duration lasting 24 h or longer was associated with an increased risk of intrapartum interventions and caesarean section. The varying perception of early labour duration emphasises large differences in experiences and their association with labour and birth outcomes. These challenging situations at home might also indicate that delaying hospital admission is not the best option for all women. Due to the difficulties in meeting women's needs and to limited time resources of in-hospital care, early labour care is also perceived as challenging for health care professionals [9,20]. It seems crucial to seek new ways of including women-centred care to ensure that the individual needs of pregnant women during early labour are addressed sufficiently [9,20, 21]. For this, health care providers need more detailed knowledge about women's experiences regarding symptoms and signs of onset of labour and early labour [22].

The aim of this study was to provide an overview of the current evidence about pregnant women's symptoms of onset of labour and early labour.

2. Methods

To achieve the above objectives, we conducted a broad scoping review using the PRISMA Extension for Scoping Reviews (PRISMA-ScR) reporting checklist [23]. A scoping review seemed appropriate because of its purpose in the overall study that includes an exploratory approach which used to identify and discuss the characteristics of a concept or phenomenon [24]. This scoping review was realised in the context of the GebStart-study, a larger research project aiming to develop a tool for advising primiparous women during early labour [22]. The whole study received ethical approval from the Ethics Committee of the Canton of Zurich in Switzerland (BASEC-Nr. 2021-00687). To ensure transparency, the scoping review was registered in the Open Science Framework (registration osf.io/3sqrw) and was updated regularly.

2.1. Search strategy

The search components for the search of the whole scoping review had to meet the requirements of a search for the superordinate research project, the above mentioned GebStart-study [22]. The search was developed using the PCC mnemonic [24]: Population: pregnant women, Concept 1: physical and/or emotional symptoms, Concept 2:

care/support needs, Context: onset of labour ([Supplementary material](#)). Findings related to Concept 2 will be reported elsewhere. Publications of any study design concentrating on pregnant women as well as physical and emotional symptoms of onset of labour and early labour were included in the scoping review. Articles presenting scientific results were included, but birth stories and study protocols were not taken into consideration. The study population could be either women who reported on their experiences with the onset of labour or early labour or health care professionals who described their observation on pregnant women during this labour phase. Articles were only included if symptoms of onset of labour were assessed without technical means such as laboratory tests or ultrasounds. Published evidence in English, German, French and Italian was taken into consideration and there was no limitation to the date of publication. We excluded articles focusing on induction of labour or elective caesarean section with no relation to the physiological and spontaneous onset of labour.

2.2. Literature research

A sensitive literature search was conducted on the five databases PubMed, Web of Science, CINHAL Complete, PsychInfo and MIDIRS in May 2021 and was updated August 2022. In a first step, key words suitable to represent the search components were identified ([Table 1](#)).

Using the Boolean operators AND, OR and NOT, search strings were developed which suited the requirements of the databases. The components of the context had to be included either in the title or in the abstract. The guidelines by McGowan [25] were followed and a second researcher reviewed the search string.

The literature search results were imported into Zotero, duplicates removed through the citation manager Zotero, and hits imported into Covidence. If duplicates were not recognised by Zotero, they were eliminated through Covidence. Furthermore, a hand search was conducted screening reference lists of included articles.

2.3. Screening and study selection

Two researchers (ANM, a midwifery researcher with a MSc and SG-B, a midwifery researcher with a PhD and a professor) conducted the title and abstract screening as well as the full text screening using Covidence. This tool allows an independent screening process indicating conflicts, which were resolved finding consensus. A third researcher was ready to be included in case of difficulties to find consensus but was not needed. Titles and abstracts of $n = 2861$ hits were screened. A total of $n = 290$ articles were included in the full text screening leading to $n = 96$ articles included in the whole review. A total of $n = 91$ articles contained data about symptoms of onset of labour and early labour, see flow chart of the article selection and exclusion process in [Fig. 1](#). Reasons for the exclusion of articles were wrong outcomes, wrong language, unavailability of the full text, wrong study design, wrong patient population and others.

2.4. Data extraction and analysis

A data extraction tool in Excel was especially designed for the purpose of this study. One reviewer extracted data (ANM or SG-B) and all findings were checked by the other researcher. Again, disagreements were resolved in joint discussions leading to consensus. A third researcher was available to find consensus but was not needed. Absolute and relative frequencies of the characteristics of articles as well as of symptoms of onset of labour and early labour were analysed descriptively using Excel. Description of the details of extracted symptoms was done narratively.

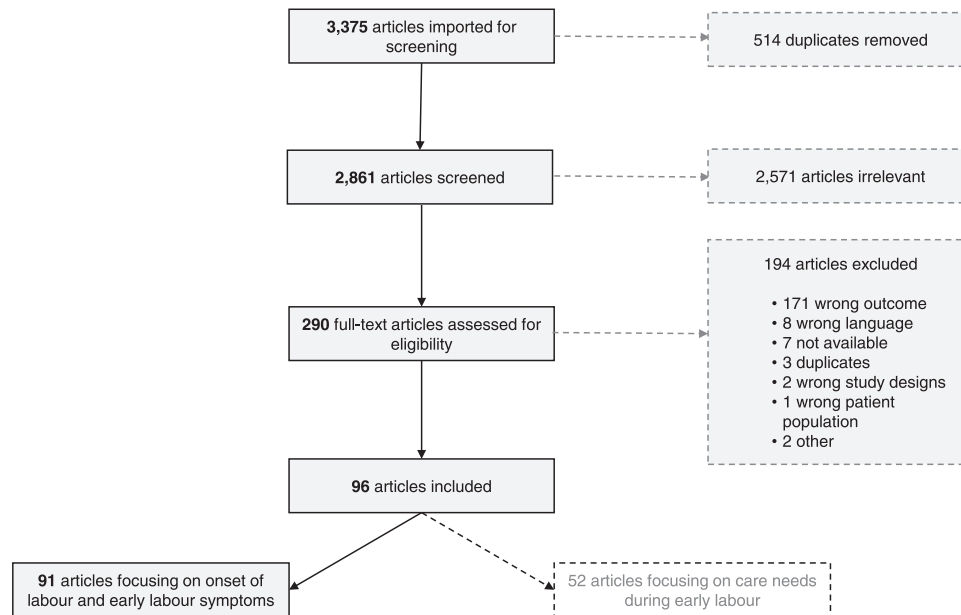
3. Findings

Data from $n = 91$ articles addressing symptoms of onset of labour and early labour was extracted. Included articles were published

Table 1

Keywords identified for the literature search (osf.io/3sqwr).

Population		Concept 1		Concept 2 ^a		Context	
Search component	Keywords	Search component	Keywords	Search component	Keywords	Search component	Keywords
Pregnant women Parturients	Pregnant women Mother Expectant mother Primiparas	Physical and emotional symptoms / signs	Symptom assessment Signs and symptoms Symptoms	Care / support need	Needs assessment Counseling	Onset of labour Early labour	Labour onset

^a Concept 2 was relevant for the subordinate research project but not for this article**Fig. 1.** PRISMA flowchart.

between 1982 and 2022 (Table 2). Slightly more than a third of these articles comprised qualitative studies ($n = 32$, 35.2%) [26–40,6,41–55, 20], $n = 25$ (27.5%) observational studies [7,8,56–78], $n = 15$ (16.5%) reviews, discussion papers or guidelines [4,11,21,79–91], $n = 12$ (13.2%) randomised or quasi randomised controlled trials [88,92–102], $n = 5$ (5.5%) mixed methods studies [103–107] and $n = 2$ (2.2%) corresponded to another study design [108,109] (Table 2). In randomised or quasi randomised controlled trials, symptoms of women in the control group were of special interest to evaluate physiological early labour, but data on both study groups were extracted. Some reviews, discussion papers and guidelines described results of single studies included in this scoping review, which is why the articles and not the studies were counted. A large proportion of studies were conducted in Europe ($n = 41$, 45.1%) [7,8,20,28–33,37–39,41,44,46–48,50,51,53, 54,56,61–63,65–67,72,74,76,78,92,94,100,102–106], followed by North America ($n = 20$, 22.0%) [27,36,40,42,45,49,52,55,57–60, 69–71,73,93,96,97,107], Asia ($n = 10$, 11.0%) [43,64,68,75,77,88,95, 98,99,101], and Oceania ($n = 3$, 3.3%) [26,34,35]. For reviews, discussion papers, guidelines and other study designs ($n = 17$, 18.7%), the geographical location of the results was either multiple or could not be clearly assigned [4,11,21,79–87,89–91,108,109]. As described above, participants of included studies could be either pregnant women/mothers or health care professionals describing the symptoms of onset of labour and early labour experienced by pregnant women during the first labour phase. A total of 70 articles (76.9%) [6–8,11,20,26,27,29–32, 34–36,38–49,51,55–75,77,78,80,82,85,88,90,92–96,98–107] included pregnant women and mothers, one article (1.1%) mothers and fathers

[53], six (6.6%) health care professionals (midwives, midwifery students or nurses) [28,33,37,50,52,97], two (2.2%) women and health care professionals [54,76] and for 12 articles (reviews, discussion papers and guidelines, 13.2%), participants were not determined [4,21,79,81, 83,84,86,87,89,91,108,109].

3.1. Symptoms mentioned and their frequency

The following categories were generated deductively [6,67,78] and inductively for the data extraction: ‘Contractions, labour pain’, ‘Details about the contractions’, ‘Other pains’, ‘Pain scores’, ‘Mucus discharge’, ‘Watery discharge, rupture of membranes’, ‘Bloody show’, ‘Gastrointestinal symptoms’, ‘Sleep exhaustion’, ‘Cervical dilatation’, ‘Other physical symptoms’, ‘Positive and negative emotions’ and ‘Fear and worries’ (Tables 2 and 3). The most frequently mentioned symptoms were ‘Contractions, labour pain’ in 78 articles (85.7%), followed by ‘Details about the contractions’ ($n = 51$ articles, 56.0%), ‘Positive and negative emotions’ ($n = 50$, 54.9%) and ‘Fear and worries’ ($n = 48$ articles, 52.7%). ‘Other pain’ was named the least often ($n = 12$, 13.2%), Table 3).

3.2. Details of the symptoms of onset of labour and early labour

For the following symptoms, additional important details were extracted: ‘Details on the contractions’, ‘Pain scores’, ‘Other pain’, ‘Gastrointestinal symptoms’, ‘Cervical dilatation’, ‘Other physical symptoms’, ‘Emotional symptoms’ as well as ‘Fear and worries’.

Table 2
Overview on the included studies.

Authors, year of publication	Study designs	Participants	Contractions	Details about the contractions	Pain scores	Other pain	Mucus discharge	Watery discharge and rupture of membranes	Bloody show	Gastrointestinal symptoms	Sleep, exhaustion	Cervical dilatation	Other physical symptoms	Positive and negative emotions	Fear and worries
ACOG [79]	Committee opinion, discussion paper	-										•			
Abalos et al. [90]	Systematic Review	Healthy low risk pregnant women	•	•								•			
Allen et al. [26]	Qualitative study	Pregnant women						•				•		•	•
Ångeby et al. [20]	Qualitative study	Primiparous women												•	
Ångeby et al. [56]	Cross-sectional study	Primi and multiparous women												•	•
Austin and Calderon [87]	Literature review	-	•								•	•	•	•	•
Balcik et al. [75]	Observational study	Labouring women	•	•				•							
Barnett et al. [105]	Mixed methods study	Primiparous women	•				•	•	•		•	•	•	•	•
Beake et al. [80]	Systematic review, qualitative	Primi- and multiparous women in early labour	•	•					•					•	•
Beebe and Humphreys [27]	Qualitative study	Nulliparous women	•	•				•		•	•		•	•	•
Beebe et al. [57]	Longitudinal, descriptive study	Nulliparous women	•		•							•		•	•
Bovbjerg et al. [58]	Cohort study	Pregnant women	•	•				•	•		•		•	•	•
Bråne et al. [92]	Randomise controlled trial	Nulliparous women	•		•							•			•
Breman et al. [59]	Cross sectional study	Nulliparous women	•		•							•			
Buran and Aksu [88]	Randomised controlled trial	Pregnant women	•		•										
Burvill [28]	Qualitative study	Midwifery students and lecturers	•	•			•					•	•	•	•
Cappelletti et al. [29]	Qualitative study	First-time mothers	•	•		•					•			•	•
Carlsson [31]	Qualitative study	Women in early labour	•	•						•	•			•	•
Carlsson et al. [32]	Qualitative study	First time mothers	•	•			•		•				•	•	•
Carlsson [30]	Secondary analysis of qualitative studies	Women who had given birth												•	•
Carstoniu et al. [93]	Randomise controlled trial	Pregnant women	•			•						•			
Cevik and Karaduman [94]	Randomise controlled trial	Pregnant women	•	•	•										
Chang et al. [101]	Observational study	Women in early labour	•		•										
Chang et al. [101]	Randomise controlled trial	Women in early labour	•		•										•
Cheyne et al. [33]	Qualitative study	Midwives	•	•			•	•				•	•	•	•
Cheyne et al. [51]	Qualitative study	Women who had given birth	•	•								•	•	•	•

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Table 2 (continued)

Authors, year of publication	Study designs	Participants	Contractions	Details about the contractions	Pain scores	Other pain	Mucus discharge	Watery discharge and rupture of membranes	Bloody show	Gastrointestinal symptoms	Sleep, exhaustion	Cervical dilatation	Other physical symptoms	Positive and negative emotions	Fear and worries
Cluett [108]	Journal article	-										•			
Conell-Price et al. [60]	Retrospective study	Pregnant women	•		•										
Copstick et al. [61]	Case study and quantitative survey	Primiparous women	•		•										
Costa-Martins et al. [62]	Observational study	Pregnant women	•		•										
Dencker et al. [63]	Secondary analysis of prospective study	Nulliparous women in active labour	•		•						•		•	•	
Deng et al. [64]	Retrospective cohort study	Multiparous pregnant women	•		•										
Dixon et al. [91]	Review	-	•	•		•	•	•	•	•				•	
Dixon et al. [34]	Qualitative study	Women who had given birth	•	•			•	•		•		•			
Dixon et al. [35]	Qualitative study	Women who had given birth	•	•										•	•
Edmonds and Zabbo [55]	Qualitative study	Nulliparous women	•				•	•	•	•	•		•	•	•
Edmonds et al. [36]	Qualitative study	Primiparous women	•										•	•	•
Eri et al. [38]	Qualitative study	Pregnant nulliparous women	•	•									•	•	•
Eri et al. [39]	Qualitative study	Pregnant nulliparous women	•	•			•	•	•						
Eri et al. [37]	Qualitative study	Midwives	•	•							•	•	•	•	•
Eri et al. [11]	Metasynthesis	First time mothers	•	•					•					•	•
Faucher and Kennedy [40]	Qualitative study	Women who had given birth	•							•			•		
Floris et al. [7]	Longitudinal cohort study	Pregnant nulliparous women	•	•										•	•
Gaston-Johansson [65]	Observational study	Primiparous and multiparous women during early labour	•	•	•									•	
Gaudernack et al. [66]	Quantitative study with one open question	First time mothers	•	•							•				•
Green et al. [103]	Mixed methods study	First time mothers	•												•
Greulich & Tarrant [81]	Literature review	-	•		•		•	•	•				•		
Gross [109]	Textbook	-	•				•				•		•		
Gross et al. [6]	Content analysis	Women with spontaneous onset of labour	•				•	•	•	•	•		•	•	•
Gross et al. [67]	Longitudinal study	Primiparous and multiparous women admitted during labour	•				•	•	•	•	•		•	•	•

(continued on next page)

Table 2 (continued)

Authors, year of publication	Study designs	Participants	Contractions	Details about the contractions	Pain scores	Other pain	Mucus discharge	Watery discharge and rupture of membranes	Bloody show	Gastrointestinal symptoms	Sleep, exhaustion	Cervical dilatation	Other physical symptoms	Positive and negative emotions	Fear and worries
Gross et al. [78]	Longitudinal cohort study	Primiparous and multiparous women admitted during labour	•				•	•	•	•	•			•	
Gross et al. [106]	Mixed methods	Women with spontaneous onset of labour	•				•	•	•	•	•		•	•	
Hanley et al. [82]	Systematic literature review	Women with term births	•	•			•	•	•	•		•	•		
Henderson and Redshaw [104]	Mixed methods study	Women who had given birth	•	•			•	•					•		•
Hundley et al. [83]	Discussion paper	-	•	•			•	•	•	•			•	•	•
Hunter and Chern-Hughes [52]	Qualitative study	Nurse-midwives	•								•				•
Ip et al. [95]	Randomised controlled trial	Pregnant women	•		•										•
Janssen et al. [21]	Discussion paper	-	•	•			•	•	•		•			•	•
Janssen and Desmarais [96]	Randomised controlled trial	Nulliparous women in labour	•											•	•
Karlsdottir et al. [41]	Qualitative study	Women who had given birth	•								•			•	
Kennedy et al. [42]	Qualitative study	First-time mothers, caregiver and policy makers	•								•	•			•
Krahl et al. [4]	Literature review	-	•	•			•	•	•	•	•	•		•	•
Kurji et al. [43]	Qualitative study	First-time mothers	•				•	•						•	•
Larkin et al. [44]	Qualitative study	Women who had given birth	•	•										•	
Leung et al. [68]	Case series study	Pregnant women	•	•	•								•		•
Lowe [69]	Observational study	Multiparous parturients	•	•	•							•			
Lowe and Roberts [70]	Observational study	Parturients and women, who had given birth	•	•	•										
Low and Moffat [45]	Qualitative study	Women who had given birth	•	•					•		•			•	•
Luisier [76]	Observational study	Pregnant women	•	•			•	•	•		•			•	•
Marowitz [84]	Literature review, "clinical round"	Multiparous parturients	•	•										•	•
Meyer et al. [74]	Retrospective study	Nulliparous pregnant women	•									•			
Miller [97]	Quasi experimental study design	Nurses	•	•								•			
Myhre et al. [46]	Qualitative study	First time mothers	•	•			•							•	
Neal et al. [71]	Secondary analysis of two prospective studies	Pregnant women	•									•			
Nolan et al. [72]	Observational study	Women who had given birth	•	•										•	•
Nolan and Smith [48]	Qualitative study	Women who had given birth	•	•			•				•		•	•	•

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Table 2 (continued)

Authors, year of publication	Study designs	Participants	Contractions	Details about the contractions	Pain scores	Other pain	Mucus discharge	Watery discharge and rupture of membranes	Bloody show	Gastrointestinal symptoms	Sleep, exhaustion	Cervical dilatation	Other physical symptoms	Positive and negative emotions	Fear and worries
Nolan [47]	Qualitative study	Women who had given birth												•	•
Nyman et al. [53]	Qualitative study	Mothers and partners	•											•	•
Olza et al. [85]	Meta synthesis	-	•	•										•	•
Olza et al. [86]	Systematic review	-												•	
Pawale and Salunkhe [98]	Randomised controlled trial	Primiparous women during labour	•	•											
Petersen et al. [8]	Longitudinal cohort study	Labouring women	•	•			•	•	•	•	•	•	•	•	
Pugh et al. [73]	Secondary analysis of a longitudinal study	Primiparous parturients									•				
Scrimshaw and Souza [107]	Mixed methods	Postpartum women	•	•	•			•	•				•		•
Seval et al. [99]	Randomised controlled trial	Pregnant parous women	•	•											•
Shallow [54]	Qualitative study	Women and midwives	•	•				•			•		•	•	•
Simkin [49]	Qualitative study	Primigravid women	•	•				•		•	•			•	
Spiby et ELSA team [102]	Randomised controlled trial	Nulliparous women	•	•				•	•			•		•	•
Spiby et al. [50]	Qualitative study	Labour ward coordinator and midwives	•	•				•					•	•	
WHO [89]	Guideline	-	•	•				•	•			•			
Yildirim and Sahin [100]	Experimental study	Primiparous women in latent phase	•		•										

3.2.1. Details of the contractions

In some articles, labour pain was used as a synonym for contractions. The details of the contractions described were various and were grouped as follows: Type of pain [4,7,11,27,29,31,32,34,35,38,39,46,48,49,51,54,55,58,65,72,75,76,82,84,85,89,91,94,105,107,109], frequency [4,33,37,38,45,46,49,50,68,69,80,82,84,89,90,97,98,104,107,109], regularity/rhythmicity [4,8,11,21,29,33,34,38,39,44,55,72,78,80,82,87,89,102,107], length [4,28,34,37,38,50,76,80,82,84,97,98,104], intensity/strength of contractions [29,33,34,66,80,83,85,107], the way of touching contractions [28] but also the duration of the early labour phase [34,66,90,102,109] and that contractions were affecting talking and walking [109]. For the type of pain, adjectives such as menstrual-like, crampy, pulling, pressing, not serious, chopping, changing, more or less painful, weak to moderate, more or less uncomfortable, worse than expected, less than expected, more and more painful, cutting, sharp, tearing, sore, aching, severe, acute, grinding, powerful, stabbing in the back, hurting really badly, degree of pain signalling abnormality, tormenting, very strong, distressing, unbearable, and increased with anxiety were used. Furthermore, different locations of the pain were described such as back, stomach, tummy, from the lower back to the pubic bone.

3.2.2. Pain score

Measuring the intensity of pain was done in randomised controlled trials or experimental studies assessing the effect of interventions during early labour [88,92,93,95,99–101], observations studies investigating associations between early labour related factors and pain [7,57,59–65,68–70,77] and a literature review [81]. The most frequently used tool to assess pain was the Visual Analog Scale (VAS) or Numerical Rating Scale (NRS) from 0 to 10 or 0–100 in 17 articles [59–65,68,77,81,88,92–95,99,100]. Further measurement instruments were the short form McGill Pain Questionnaire [7,57,69], the Verbal Response Scale [57], the Present Behavioural Intensity [101], the Present Pain Intensity [70], the Johansson Pain-o-meter [65] and the Pain Rating Index [69,70]. Results of studies using the same instrument such as the VAS did not assess pain at the same point in time during the early labour process (e.g. first contraction or assessment before an intervention). Values on the 0–100 scale were located all over the whole range. The most frequently rated values were between 4 and 7 respectively 40–70 according to the scale used.

3.2.3. Other pains

Apart from contractions, other pains were mentioned such as pelvic pain [29], backache/backpain [49,68,83,91,107], non-recurrent pain without further specification [6,67,81,82,106] as well as bodily experience of pain [45].

3.2.4. Gastrointestinal symptoms

Gastrointestinal symptoms could be either nausea/vomiting/stomach upset [31,40,91] or diarrhoea/constipation [67] or affect both stomach and intestine [6,27,91,106]. In some articles, gastrointestinal disturbances were not specified with regard to their location [4,55,67,78,78,82,83].

3.2.5. Cervical dilatation

Cervical dilatation was the only symptom included in this review that women usually could not assess themselves, but midwives could without the use of technical or laboratory equipment. Some articles mentioned cervical dilatation as a predictor for going into spontaneous labour [74] or values during the early labour process [4,8,28,34,37,42,51,105]. Furthermore, some articles discussed values of cervical dilation for the start [82] or the end of early labour [4,69,79,82,87,89,90,108], whereas others mentioned values at hospital admission [26,57,59,93,97,102] or before interventions [92,93]. Across the range of these articles, values between one and six centimetres were mentioned. Additionally, the article of Cheyne et al. [33] indicated the importance of

assessing the position of the cervix as well as the consistency and the effacement together with the dilatation for the evaluation to determine whether the women is in labour, or not.

3.2.6. Other physical symptoms

A variety of further physical symptoms was indicated in a total of 25 articles. Most symptoms were recognised by the women themselves, such as being hungry, more or less food and fluid intake, increased energy, heaviness or lightening, pressure in the lower abdomen, perineal and pelvic pressure, swelling of the external genitalia, “loosened vagina”, vagina hot and slippery due to increased secretion, vaginal cramps, increased urinary frequency, urinary urgency, belly drop, discomfort, difficulties/impossibilities to move, shivering, dyspnoea, breathing speaks, hyperventilating, bodily sensation, grasping abdomen, bending forward with contractions, voicing reaction to contraction, working a lot, focusing on others, nesting behaviour, quiet baby, lack of foetal movements, feeling that something is happening as well as other unspecified symptoms [6,8,27,28,32,36,38,40,48,49,51,54,55,58,63,68,83,87,104,105,109]. Moreover, some articles described symptoms observed by support persons such as altered appearance/demeanour as a response to the pain, an “ugly look” in the face, altered sound of the voice, the “red line” with a length of 1–2 cm (from anal margin to top of cleft of buttocks) or the presenting part descending and beginning to rotate [28,33,37,50,83,107].

3.2.7. Emotional symptoms

Emotions associated with the onset of labour and early labour were described in 50 articles but could not have been described with greater contradiction. Whereas some emotions were positive and others negative, others were neither positive nor negative or even both at the same time.

Positive emotions were diverse and contradictory: Happy, anticipatory excited, curious, comfortable, relaxed, clam, in peace, feeling of wonder, confident, having self-efficacy, ‘my body is made for this’, in control, mentally prepared, eager, relieved, joyful, having strength, secure, lovely feeling, wellbeing, positive mood, rely on one’s ability, full of curiosity and expectations, positive expectations of childbirth, longing to give birth, letting go of everything, trusting oneself, experiencing it as beautiful, lovely feeling comparable with Christmas, things seeming more beautiful than usual, conserving emotional strength and maintaining positive attitude, feeling reassured, mental preparedness [6,21,27–32,35,37,43,49,51,56,57,63,72,80,83,85–87,91,96,102].

The **negative emotions** were also multifaceted: Emotionally not able to cope, distressed, stressed, feeling lost, insecure, uncertain, confused, tense, inability to relax, nervousness, out of the body, strange, weird, in a haze, not feeling oneself, detached from others, trying to ignore it, bored, miserable, terrible, frustrated, disappointed, irritable, dying, tearful, crying, emotional, sad, end of one’s rope, helpless, being a victim of pain, being encapsulated, irritated, vulnerable, feeling that something is wrong, not knowing what to expect, inability to assess own strength, feeling unsupported, lonely, feeling of being naïve and unrealistic, powerful negative emotions and feelings, being on the edge, surprised over the severity of pain, feeling tortured, demotivated, agitated, troublesome, tiring, restlessness, emotional upheaval, feeling pressure of relatives to go to the hospital, lose patience, impatience, angry, uneasy, upset (of being sent home), strained, feeling that things are not being quite right, waned confidence [4,6,11,20,21,26–28,30–32,38,41,44–51,53–56,65,67,72,76,83,84,87,96,102,105].

Some emotions were **not clearly positive or negative**: Changes in mood, feeling of something being different, emotional symptoms, emotional changes, feeling of being in labour [4,8,55,78,83].

Particularly astonishing were emotions which were **simultaneously positive and negative**: Positive feelings mixed with apprehension and anxiety, simultaneously happy and sad or happy and irritated [27,65,85].

Multiparous women were described as more relaxed and in control

Table 3

Frequency of articles which mentioned the different symptoms of onset of labour and early labour.

Category	Number of articles, N = 91	Proportion (%), N = 91
Contraction, labour pain	78	85.7
Details about the contractions	51	56.0
Other pain	22	24.2
Pain scores	12	13.2
Mucus discharge	15	16.5
Watery discharge, rupture of membranes	29	31.9
Bloody show	21	23.1
Gastrointestinal symptoms	14	15.4
Sleep, exhaustion	28	30.8
Cervical dilatation	25	27.5
Other physical symptoms	25	27.5
Positive and negative emotions	50	54.9
Fear and worries	48	52.7

than primiparous women [65,80]. Some of these emotional symptoms were recognised as being a sign of onset of labour. Others, however, were reactions to other symptoms or experiences of support and care during early labour. Most often it was not possible to distinguish this.

3.2.8. Fear and worries

Fear and worries were mentioned in a total of 48 articles [4,6,7,11, 21,26–33,35–38,42,43,45,47,48,51–58,66,68,72,76,80,83–85,87,92, 95,99,101–105,107]. Similar to the emotions, they could be a sign of onset of labour or be related to other symptoms such as contractions and pain, or be a reaction of respectively the lack of support and care. Fear, anxiety and worries were mentioned to be related to contractions, unbearable pain, how women were able to cope with labour or with pain at home, the rupture of the membranes at an embarrassing moment, labour that might last long, labour itself, not knowing when labour would start or if it really had started, an unexpected onset of labour, not knowing how a true onset of labour should feel, having significant pain early in labour, being alone, not being able to contact the partner, not having the partner with them, being told to stay at home, getting to the hospital, coming to the hospital too early, making a mistake in identifying the right time, coming in time, an unplanned home birth, a long distance between home and hospital, being sent home during labour, needing to speak to lots of midwives, conflicting advice from midwives, missing information or uncertainties about labour progress, having a bath, missing the window for pain interventions, something going wrong, women's or baby's health or wellbeing, or disturbing others. Some studies used scales to assess fear such as the State-Trait Anxiety Inventor [7,57,99], the Wijma Delivery Expectancy Questionnaire [92], Visual Analogue Scale for Anxiety [68,95,101]. Anxiety of parturients was increased by the anxiety of the accompanying persons [72].

4. Discussion

To our knowledge, this was the first study providing an overview of the current evidence about symptoms of onset of labour and early labour. Extracting and summarising signs of onset of labour and early labour from 91 articles in this scoping review allowed the drawing of a compressive picture and thereby expanding the knowledge gained so far. Women mentioned and midwives observed a variety of symptoms with contractions, details of the contractions, positive and negative emotions as well as fear and worries being the most frequent ones. The details of contractions being perceived by some women as a slight pulling and by others as unbearable pains and the mental condition that could vary from joy to great fear showed the very individual and contradictory character of symptoms of onset of labour and early labour.

Previous studies focusing on symptoms of onset of labour already showed that they included different physical but also mental aspects [6,

67]. This scoping review, however, added the details and new facets to the symptoms of onset of labour and early labour and allowed a much deeper insight into women's experiences. The contrasting descriptions of contractions and labour pain ranging from painless/weak to very painful/unbearable [31,32,34,39,51,54,66,75,94,107,109], and from less than expected to more than expected [94,105], as well as emotional symptoms varying from joy [28,29,91] to severe fear [32,92] show the whole range of possible experiences. Furthermore, some symptoms interact with each other, e.g. anxiety was found to increase the perception of pain [7], which makes matters even more complex. Experiencing strong pain or fear during early labour increases uncertainty, which is a frequent cause for seeking support and care, even if labour is not yet progressing [29]. However, early admission to the hospital was found to be associated with unnecessary interventions [13–15]. This is the major reason for midwives to recommend women to stay at home as long as possible [37]. Nevertheless, it is important to also consider that both early hospital admissions [13,14,16] and labour at home for more than 24 h [19], are associated with negative labour and birth outcomes. Considering this effect and the very different experiences of pregnant women during early labour, it becomes obvious that only measures that are individualised and woman-centred can meet the needs of very different women and improve early labour care as well as labour and birth outcomes [22]. The findings of this scoping review highlighted that due to the varying experiences, different care provisions and support services are necessary. This is in line with previous [9,21] research which emphasised that new paths are required to improve early labour care but this also means a major challenge for health care providers [20].

Results of this scoping review also play a role in the discussion about the unclear definition of onset of labour. Gross et al. [78] investigated the difference between women's recognition and midwives' assessment of the onset of labour. Pregnant women usually diagnose labour based on personal impression and several hours earlier than health care professionals who refer to the clinical assessment [78]. If women's and midwives' diagnoses differed more, the first stage of labour was found to be longer [78] and the administration of epidural anesthesia earlier [8]. Hanley et al. [82] highlighted in their systematic review about labour onset definitions that some studies considered the onset of early labour as the starting point of giving birth, but others considered it to be the onset of active labour. This ambiguous definition can also be observed in clinical practice within health care providers but it can also be the cause for the divergence between women's recognition and midwives' diagnosis of onset of labour. This differently determined timing of the onset of labour is a major reason why women do not feel understood and cared for well during early labour, especially if they are diagnosed as not being in labour and sent home [105]. It could be questioned if in cases where women have very strong pain and great fear, the women's experiences are not more important than the clinical assessment and care should be proposed earlier. The contrasting symptoms in this scoping review give indications that early labour experiences differ and that individualised care should be provided as other studies have already emphasised [9, 21].

Strengths of this scoping review were the extensive literature search in five large data bases, conducted in a thorough and systematic way. This sensitive literature search led to very rich data. Screening was done independently by two researchers and data extraction was checked by a second person enhancing rigor of the study. A weakness of the study was the heterogeneity of the quality of included articles with a few of them being of very low scientific value. Nevertheless, this wide search allowed to show a very comprehensive picture of symptoms and signs of onset of labour and early labour. Furthermore, also including discussion papers and guidelines resulted in studies which had been considered more than once. To avoid this, we consistently mentioned and counted only the articles and not the studies. Additionally, it could not be distinguished whether emotions, fear and worries were actual symptoms of onset of labour and early labour or the reactions to the beginning of labour. Some

women for example felt restless as a first sign and realised afterwards that labour started but others were restless because of other symptoms, the long waiting, and the uncertainty about what to expect.

5. Conclusion

Until now, early labour interventions have shown little effect in caesarean section and instrumental birth rates [9], possibly due to the diverse range of symptoms and experiences of early labour and a lack of individualised care. The results of this scoping review show a comprehensive picture of the diverse and opposing symptoms of onset of labour and early labour, making it obvious that more individualised early labour care is necessary. This knowledge builds a good basis to develop woman-centred approaches to better support pregnant women during the first labour phase. Further research is necessary to design new early labour interventions and evaluate their effectiveness.

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Ethical statement

The whole study received ethical approval from the Ethics Committee of the Canton of Zurich in Switzerland (BASEC-Nr. 2021-00687).

Author contributions

SG-B designed the overall project and acquired the funding. **SG-B** and **ANM** developed the research questions and defined the search components for the scoping review. **ANM** designed the search strings and conducted the literature search. Both authors screened articles and extracted, checked and analysed data. **SG-B** wrote the original draft and both authors reviewed, revised and approved the manuscript.

Conflict of interest statement

None declared.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.wombi.2023.03.009](https://doi.org/10.1016/j.wombi.2023.03.009).

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