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ORIGINAL RESEARCH ARTICLE

The effect of organizational belonging and profession on clinicians' attitudes toward supporting vaginal birth and interprofessional teamwork—a cross-sectional study

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Abstract

Introduction: The aim of this study was to investigate the effect of organizational belonging and profession on clinicians' attitudes toward supporting vaginal birth and interprofessional teamwork in Swedish maternity care.

Material and methods: The study used a cross-sectional design, with a web-based survey sent to midwives, physicians and nurse assistants at five labor wards in Sweden. The survey consisted of two validated scales: the Swedish version of the Labor Culture Survey (S-LCS), measuring attitudes toward supporting vaginal birth, and the Assessment of Collaborative Environments (ACE-15), measuring attitudes toward interprofessional teamwork. Two-way ANOVA was conducted to assess the main effect of and interaction effect between organizational belonging and profession for the different subscales of the S-LCS and the ACE-15, together with Tukey's honest significant difference post-hoc analysis and partial eta squared to determine effect size. The relation between the subscales was assessed using the Pearson's correlation analysis.

Results: A total of 539 midwives, physicians and nurse assistants completed the survey. Organizational belonging significantly influenced attitudes toward supporting vaginal birth and interprofessional teamwork, with the largest effect for Positive team culture ($F = 38.88$, effect size = 0.25, $p < 0.001$). The effect of profession was strongest for the subscale Best practices ($F = 59.43$, effect size = 0.20, $p < 0.001$), with midwives being more supportive of strategies proposed to support vaginal birth than physicians and nurse assistants. A significant interaction effect was found for four of the subscales of the S-LCS, with the strongest effect for items reflecting the Unpredictability of vaginal birth ($F = 4.49$, effect size = 0.07, $p < 0.001$). Labor ward culture (unit microculture) specifically related to supporting vaginal birth was strongly correlated to interprofessional teamwork ($r = 0.598$, $p < 0.001$).

Abbreviations: ACE-15, Assessment of Collaborative Environments; CS, cesarean section; S-LCS, Swedish version of the Labor Culture Survey.

Conclusions: In the current study, both organizational belonging and profession influenced attitudes toward supporting vaginal birth and interprofessional teamwork. Positive team culture was positively correlated to an organizational culture supportive of vaginal birth. Interventions to support vaginal births should include efforts to strengthen teamwork between professions, as well as considering women's values, preferences and informed choices.

KEYWORDS
cesarean section, interprofessional teamwork, organizational culture, professional attitudes, vaginal birth

1 | INTRODUCTION

While there is growing global concern that the number of women giving birth spontaneously is declining,[1] when asked women prefer a vaginal birth.[2] Compared to other high-income countries Sweden has a high rate of women giving birth spontaneously and a low cesarean section (CS) rate (17.9% in 2020).[3,4] However, Sweden follow the global trend with an increasing incidence of CS (from 10.6 in 1990 to 17.9 in 2020).[4]

In high-income countries, many pregnant women are older, have a higher body mass index, and have more underlying chronic diseases than they did previously, which may require interventions to ensure maternal, fetal and infant safety.[5,6] Research shows that the rates of CS and consequently spontaneous vaginal births vary not only between countries but also within, and that these differences cannot be explained by demographic variations.[3,7] Therefore, there is raised interest in investigating what factors influence the increase and differences in CS rates. According to Betran et al., the drivers of CS include nonclinical factors such as organizational culture and the culture among health care professionals.[8] While several definitions and variations of organizational culture exist, all feature institutional life where members' basic assumptions, values, shared understandings, and beliefs are used to acculturate new members into the "correct" way to perceive, think, and feel.[9,10] Organizational culture has been linked to patient outcomes in other health care areas, where a positive culture, that is, a culture that is inclusive, supportive, collaborative and cohesive, is associated with better patient outcomes.[9,11] Collaboration and teamwork are often used interchangeably,[12] and interprofessional teamwork has been defined as professionals from at least two disciplines working together toward a common goal.[13] Well-functioning interprofessional teamwork, with a shared goal of optimizing the conditions for spontaneous vaginal birth has been suggested as an important factor to reduce CS.[14,15] On the other hand, patient safety can be affected by dysfunctional teamwork; this includes lack of communication, difficult relationships between professions, or a failure to include and listen to women and their partners.[16]

Previous research from the USA, using a validated scale to measure professional attitudes toward supporting vaginal birth[17] found that profession (i.e., being an obstetrician, family physician or a midwife), and organizational belonging (i.e., organizational culture) affected clinicians' attitudes.[18] Swedish maternity care is organized differently to the USA, and more first time mothers achieve a spontaneous vaginal birth.[4] Furthermore, most women give birth in hospitals with midwives as the primary care givers. Midwives are assisted by nurse assistants, and work in close collaboration with physicians when complications arise.[19] Therefore, nonclinical factors to support vaginal birth may vary in different countries. Measuring attitudes toward supporting vaginal birth as well as interprofessional teamwork, both among different professions and in various organizations in a setting with low CS rates, may contribute to understanding nonclinical factors related to supporting vaginal birth.

Key message

Attitudes toward supporting vaginal birth differ between organizations and professions. Organizational belonging has a stronger influence than profession on attitudes toward interprofessional teamwork. Positive team culture is correlated to a labor ward culture supportive of vaginal birth.

Therefore, the aim of this study was to investigate the effect of organizational belonging and profession on clinician's attitudes toward supporting vaginal birth and interprofessional teamwork in Swedish maternity care.

2 | MATERIAL AND METHODS

The study used a cross-sectional design, with a web-based survey sent to midwives, physicians and nurse assistants at four obstetric units, comprising five labor wards; Karolinska University hospital Huddinge and Solna, BB Stockholm, Linköping University hospital and Karlstad Central hospital. Located in three different regions in Sweden, these labor wards represent a variation in organization, geographical spread, and teaching status. The number

of births per year at each of these labor wards varies between 2600 and 4500, representing 15% of all births in Sweden 2021. To illustrate differences between the labor wards, specific characteristics in terms of leadership, care development, quality improvement, and medical interventions among nulliparous women is shown in Figure 1.

The survey was sent electronically with eligible participants being employed as a midwifes, physicians, or nurse assistants for more than 1 month at the labor ward and working mainly with labor care. Individuals who were casually employed were invited to participate if they had been working more than 1 day per week for the past 6 months. Furthermore, one item assessed if the participants had worked for less than 6 months at their respective obstetric units. No items were mandatory to complete, and as such, both fully and partly completed surveys were included in the analysis.

Data collection took place between February 1, and March 21, 2021. Brief information about the study was sent by email 1 week before the survey was distributed. Information and reminders were given to all labor wards at various meetings throughout the data collection period. Further, several email reminders were sent in order to increase participation.

The survey consisted of demographic questions and the three validated scales: the Swedish version of the Labor Culture Survey (S-LCS),[17] with additional items for the Swedish context; the Assessment of Collaborative Environments (ACE-15)[20]; and the Swedish version of the Organizational Readiness for Change

Obstetric unit	Births/year[B]	Funding	Commission	Organization	Vision	Medical interventions 2020[C]
Obstetric unit 1 Karolinska University Hospital **Labor ward A Huddinge** **Labor ward B Solna**	4500 3200	Public Public	Huddinge University teaching hospital Caseload midwifery Perinatal psychiatry Women with HIV Solna University teaching hospital Women with chronic, severe diseases Preterm births (≥22 weeks)	Organization with two labor wards within one unit under the Department of Women's Health. Shared leadership between head of midwifery and obstetrics in Pregnancy and Delivery division. --- Senior midwives with PhD (3). Care developer for the whole department. Interprofessional quality improvement teams. Senior midwife at each shift. Coordinator at each shift. --- At Huddinge, all obstetricians and gynecologists rotate. Newly qualified midwives and nurse assistants rotate between antenatal, labor and postnatal care. At Solna, the majority of the staff rotate between antenatal, labor and postnatal care. No gynecological department.	Karolinska University Hospital vision[G]: We will cure and relieve tomorrow what no one can cure and relieve today. Labor ward vision[H]: Every family and every birth is unique. Our goal is to meet expectant parents needs and wishes, to give advice and guidance during pregnancy, birth, and postnatally.	Huddinge Emergency cesarean section: 17.5% Instrumental birth[D]: 6.1% Augmentation with oxytocin: 62.6% Induction of labor: 12.3% Births without major interventions or complications[E]: 67% Solna Emergency cesarean section: 14.8% Instrumental birth[D]: 9.9% Augmentation with oxytocin: 72.1% Induction of labor:14.9% Births without major interventions or complications[D]: 64%
Obstetric unit 2 **Labor ward C BB Stockholm**	4100	49% public 51% private	No special commission	One operations manager, shared leadership between head of midwifery and obstetrics. --- Senior midwife with PhD and care developer. Interprofessional quality improvement teams. --- All physicians are specialists in obstetrics. No residents. --- All staff rotate between antenatal, labor and postnatal care.	Vision[I]: High quality care, where expectant parents and new families have great influence on their care, where all care should be conducted with respect, commitment and quality. The employees in our company is our absolute greatest asset. The majority of the staff rotate between antenatal, labor and postnatal care. Have been actively working with their vision and joy in work (IHI)[K]	Emergency cesarean section: 14.4% Instrumental birth[D]: 7.9% Augmentation with oxytocin: 67.6% Induction of labor: 13.4% Births without major interventions or complications[D]: 69%
Obstetric unit 3 **Labor ward D Linköping University Hospital**	2600	Public	University teaching hospital Preterm births (≥23 weeks)	One head of department and three operations managers (one for obstetrics and two for midwifery). --- Interprofessional teams working with different areas of improvement. --- The same physicians work with both maternity and labor care.	Vision: To provide expectant parents with a medically safe care and a positive experience. We wish for a good collaboration with the expectant parents and strive to discuss wishes and thoughts together. Working according to the "Nine Item List"[A]	Emergency cesarean section: 10.0% Instrumental birth[D]: 6.0% Augmentation with oxytocin: 76.5% Induction of labor: 10.0% Births without major interventions or complications[D]: 72%
				Midwives and nurse assistants only work at the labor ward.	• Monitoring of obstetric results • Midwife coordinator on every shift • Risk classification of women • Three midwife competence levels • Teamwork around the patient • Obstetrical morning round to create consensus • Fetal monitoring skills • Obstetrical skills training • Public promotion of the strategy	
Obstetric unit 4 **Labor ward E Karlstad Central Hospital**	2800	Public	County hospital	One head of department and four operations managers (two for obstetrics and two for midwifery). --- Senior midwife with PhD responsible for research and education. --- Midwives and nurse assistants only work at the labor ward.	No vision published online[J]	Emergency cesarean section: 14.6% Instrumental birth[D]: 6.3% Augmentation with oxytocin: Not available Induction of labor: 11.6% Births without major interventions or complications[D]: Not available

[A]Data collected from the different organizations websites, published data, and from interviews with care developers at the labor wards
[B]Data from the Swedish Pregnancy Register 2020
[C]Primiparous, term gestation, spontaneous onset of labor and induction of labor
[D]Rate of instrumental births out of all vaginal births
[E]Instrumental birth, CS, bleeding>1500 ml or blood transfusion, OASIS or Apgar<7 at 5 minutes

Online documents:
[G]https://www.karolinska.se/en/karolinska-university-hospital/about-karolinska/values-mission-and-vision/
[H]https://www.karolinska.se/for-patienter/graviditet-och-forlossning/
[I]https://bbstockholm.se/content/om-osshttps://www.1177.se/hitta-vard/kontaktkort/Forlossningsavdelning-Kvinnokliniken-US/
[J]https://www.1177.se/Sormland/hitta-vard/kontaktkort/Forlossningsavdelningen-kvinnosjukvarden-Centralsjukhuset-Karlstad/

FIGURE 1 Characteristics of the organizations.

(S-ORC). For the purpose of the present study, the S-LCS and the ACE-15 were analyzed. The items and subscales are shown in Table 1

The LCS was developed in the USA by VanGompel et al.,[17] and was culturally adapted to the Swedish context and used for the purpose of this study. The psychometric properties of the Swedish version are being investigated and the abbreviation S-LCS is used to clarify that this is a culturally adapted version of the scale. The Swedish version of the LCS contains 30 items and five subscales - *Best practices*, *unpredictability of vaginal birth*, *unit microculture*, *maternal agency*, and *organizational oversight* - and measures both the individual and unit culture toward supporting vaginal birth and reducing CS. *Best practices* reflects the staffs' attitudes toward strategies that has been proposed to support vaginal birth. The subscale *unpredictability of vaginal birth* contains items related to fear of complications and perceptions about safety. *Unit microculture* comprises items that together reflect the labor ward culture specifically related to supporting vaginal birth. *Maternal agency* covers maternal choice and the importance of achieving a vaginal birth. The subscale *organizational oversight* measures perceptions regarding organizational efforts to reduce CS. The scale further contains one single item: *Cesarean birth is as safe as vaginal birth for women*.

The ACE-15 scale was developed by Tilden et al. to measure interprofessional teamwork qualities[20] and contains two subscales; *Positive team culture* and *dysfunctional teamwork*. *Positive team culture* comprises items regarding shared goals, clear roles, mutual trust, effective communication, measurable outcomes and processes, and organizational support, while *dysfunctional teamwork* encompasses the opposite. A score for *total teamness* can be calculated using all 15 items.

For both the S-LCS and the ACE-15, each item is rated on a 5-point Likert response scale from 1 (strongly disagree) to 5 (strongly agree) (Table 1).

Demographic data collected included year of birth, gender, profession, work experience, working hours, employment rate, time employed at the labor ward (>6 months, yes/no) and extra commitments at the labor ward. Age at survey was determined by calculating the difference between year of birth and the year of data collection. The following continuous variables were categorized: age (<35 years, 35–50 years, >50 years) and work experience (<5 years, 5–15 years, >15 years). The categorization of age was based on the mean age and having very few ($n = 35$) respondents aged less than 30 years. Employment rate was categorized into working full time or not.

2.1 | Statistical analyses

Descriptive statistics were calculated to present the data. Missing data are presented as numbers and percentages for each background variable (Table 1), and for each item included in the respective subscale as supplementary material (Table S1). Differences between labor wards for all background variables were assessed using one-way ANOVA, Chi-square test, and Fisher's exact test. A two-way ANOVA with the significance level set at <0.05 was conducted to assess the main effect of organization, the main effect of profession and the possible interaction effect between organization and profession on the different subscales of the S-LCS and the ACE-15. Levene's test was carried out to examine homogeneity of variances, with a significance level set at <0.01. Where the two-way ANOVA test was significant, a post-hoc analysis was performed (Tukey's honest significant difference). Partial eta squared was estimated to determine effect size using Cohen's criteria of 0.01 indicating a small effect, 0.06 a medium effect and 0.14 a large effect.[18]

As physicians are the final decisionmakers for CS, we conducted a subgroup analysis comparing their attitudes. The physicians at Linköping (the labor ward with lowest CS rate in this sample) were compared with the physicians at the other labor wards. For this analysis *t*-tests were calculated.

The relation between the subscales of the S-LCS and the ACE-15 were assessed using Pearson's correlation coefficients. The strength of the correlation was interpreted according to Cohen: $r = 0.10$ to <0.30 indicating a small correlation, $r = 0.30$ to <0.50 a medium correlation, and $r = \geq 0.50$ a large correlation.[18] For all these analyses the level of significance was set to <0.05 except for the Levene's test where a more stringent significant level was used (<0.01). The Statistical Package for Social Services (SPSS) version 26.0 (IBM Corp., Armonk, USA) was used to analyze the data.

2.2 | Ethics statement

The study was approved by the Swedish Ethical Review Authority (2020–02500, 2020–06872) on October 20, 2020 and January 4, 2021.

3 | RESULTS

The survey was sent to 690 midwives, physicians and nurse assistants at the participating labor wards. A total of 539 participants responded, of which around half (52.1%) were midwives, followed by nurse assistants (25.1%) and physicians (22.8%) (Table 2). The overall response rate was 78%, with the highest response rate among midwives (84%), followed by nurse assistants (75%) and physicians (71%). Only 10 of the participants had been employed at the respective labor ward for less than 6 months. One labor ward only employed specialists in obstetrics and had no residents or gynecologists (BB Stockholm). The labor ward Karolinska Solna had the largest group of participants with less than 5 years of work experience, and BB Stockholm had the largest group of participants with more than 15 years of work experience (Table 2).

Internal consistency for all subscales of the S-LCS and the ACE-15 was acceptable to high, with Chronbach alpha values ranging from 0.60 to 0.91 (Table 1). There were significant differences between the labor wards regarding organizational culture as well as individual attitudes toward interprofessional teamwork and supporting vaginal

TABLE 1 Overview of items included in the subscales of S-LCS and ACE-15

Swedish Labor culture survey (S-LCS)	Chronbach alpha
Best practices (11 items)	0.83
Providing more midwifery services	
Implementing a program that supports early labor at home	
In my L&D unit, provider work flow considerations affect medical interventions in labor	
Providing more direct (in-room) nursing time with laboring women	
Intermittent auscultations are as safe for low-risk women	
CS reduced if longer second stage are allowed	
Providing more doula services	
Changing medical and nursing education to encourage more positive attitudes toward vaginal birth	
Eliminating routine continuous electronic fetal monitoring (EFM) for low risk patients	
Improving patient preparation for labor and birth	
There are too many cesarean births performed in my L&D unit	
Unpredictability of vaginal birth (6 items)	0.73
I fear vaginal birth for myself or my partner as it may lead to urinary or fecal incontinence or pelvic floor injury	
I fear vaginal birth for myself or my partner as it may compromise sexual functioning	
Because of the unpredictability of vaginal birth, I would prefer a scheduled cesarean section for myself or my partner	
If my partner or I were pregnant with an apparently normal pregnancy, I would prefer an elective cesarean birth instead of a vaginal birth	
Cesarean birth is safer for the baby than vaginal birth	
Childbirth is a normal event[a]	
Unit microculture (6 items)	0.69
Our L&D staff are skilled at providing effective labor coping strategies	
The culture of my L&D unit supports vaginal birth and discourages overuse of cesarean section	
Staff on my L&D unit support the laboring women's informed choices, values, and preferences	
In my L&D unit, labor nurses are encouraged and supported to spend the majority of their time in the room with the patient throughout her labor	
Most of my patients have sufficient knowledge about vaginal and cesarean birth to make informed choices	
In my hospital, doulas who accompany woman in labor are welcomed into the labor support team	
Maternal agency (5 items)	0.60
Women who deliver their baby by cesarean section miss an important life experience	
Having a vaginal birth is a more empowering experience than delivery by cesarean birth	
Internal sharing of provider cesarean rates	
Birth without interventions benefits health	
An important determinant of a successful vaginal birth is the woman's own confidence in her ability to give birth	
Organizational oversight (6 items)	
CS is reduced if the team uses structured time out	
CS is reduced with individualized use of augmentation	
CS is reduced if variety of midwives' experiences during shift	
Departmental peer review of all cesarean births not meeting ACOG/SMFM guidelines	
Reducing the number of inductions of labor for nonmedical indications	
Precesarean birth peer review of all elective cesareans	
Single item	
Cesarean birth is as safe as vaginal birth for women	
Assessment of collaborative environments (ACE-15)	
Positive team culture (9 items)	0.90

(Continues)

TABLE 1 (Continued)

Swedish Labor culture survey (S-LCS)	Chronbach alpha
Team members contribute to setting and evaluating goals for improving the practice	
The team engages in routine, frequent, meaningful evaluation to improve its performance	
The team encourages trust by paying attention to important personal or professional connections (eg celebrating achievements, milestones, etc.)	
The team has a culture of mutual continuous learning	
The team is effective in assigning and implementing administrative tasks (eg leadership, record keeping, meeting facilitation, etc.)	
The team fosters a culture of continuously improving communication	
The team is well supported by the overall organization (eg practice improvement is encouraged, team training is supported)	
All voices on the team are heard and valued	
Members of the team are active listeners and pay close attention to the contributions of others, including the patient and family	
Dysfunctional teamwork (6 items)	0.76
Team members tend not to recognize their own limitations in knowledge and skills	
Team members fail to appreciate each other's values and diversity	
Team members appreciate each other's roles and expertise[a]	
Team members do not feel safe bringing up concerns about roles and responsibilities for discussion, proactive improvement, and prevention	
Team members have the autonomy to implement their part of the plan once the patient's needs and goals are clear[a]	
The team constructively manages disagreements among team members[a]	

Note: The S-LCS and the ACE-15 scales uses a 5-point Likert scale; from 1 (strongly disagree) to 5 (strongly agree).

[a]Reversed scored item meaning that the numerical scoring for this item runs in the opposite direction, from 1 (strongly agree) to 5 (strongly disagree).

birth (Table 3). The greatest differences were found for the subscales *positive team culture* and *dysfunctional teamwork* (ACE-15), with large effect sizes (0.25 and 0.15) (Table 3). Of the S-LCS subscales, *unit microculture* and *best practices* showed the largest effect sizes, although these were graded as medium (0.11 and 0.09) (Table 3).

When comparing the attitudes of midwives, physicians and nurse assistants, there were significant differences in how the different professions scored on all subscales of the S-LCS except for *maternal agency* (Table 4). Compared to physicians and nurse assistants, midwives believed more in the items included in *best practices* and *organizational oversight* with a large effect size (0.20 and 0.16, respectively) (Table 4). Physicians agreed to a higher extent with the items included in the subscale *unpredictability of vaginal birth* (Table 4), for example "I fear vaginal birth for myself or my partner as it may lead to urinary or fecal incontinence or pelvic floor injury" and "cesarean birth is safer for the child than vaginal birth" (Table 1). Nurse assistants agreed to a higher extent that the interprofessional teamwork at their unit was dysfunctional (*dysfunctional teamwork*), compared to physicians and midwives (Table 4). In the subgroup analysis comparing the attitudes of physicians at different labor wards, physicians at Linköping scored significantly lower on *unpredictability of vaginal birth* (1.38 [0.64] vs. 1.81 [0.66], $p = 0.006$) compared to physicians at the other labor wards. They also scored higher on *unit microculture* (3.96 [0.29] vs. 3.73 [0.59], $p = 0.007$) and on *organizational oversight* (4.37 [0.38] vs. 4.0 [0.63], $p = 0.012$).

An interaction effect between organization and profession was found for four of the subscales of the S-LCS with the largest effect size for *unpredictability of vaginal birth* (F = 4.49, effect size = 0.07, $p \leq 0.001$) (Table 5). For this specific subscale, Levene's test was significant ($p < 0.001$) indicating heterogeneity of the variances between the groups. As shown in Figure 2, clinicians' at Linköping scored quite similarly for the subscale *unpredictability of vaginal birth* (from 1.38 [0.65] to 1.54 [0.74], $p = 0.80$), whereas midwives and physicians at Karolinska Huddinge held disparate views on this subscale (from 1.31 [0.39] to 2.11 [0.81], $p \leq 0.001$).

The correlation analysis showed a significant positive correlation for all labor wards on the subscales *positive team culture* and *unit microculture* ($r = 0.598$, $p = <0.001$). The positive correlation was most accentuated at Karolinska Huddinge ($r = 0.614$, $p = <0.001$) (Table 6), who also had a positive correlation between *dysfunctional teamwork* and *unpredictability of vaginal birth* ($r = 0.281$, $p = 0.001$) (Table 5).

4 | DISCUSSION

This study shows that both organizational belonging and profession influence attitudes toward an organizational culture supportive of vaginal birth and interprofessional teamwork. Furthermore, an interaction effect was found between organization and profession on four of the subscales of S-LCS, with the strongest effect for items reflecting the unpredictability of vaginal birth. Compared to physicians and nurse assistants, midwives were overall more supportive of strategies proposed to support vaginal birth and of organizational initiatives aiming at reducing the CS rate.

TABLE 2 Overview of participants

	Total	Huddinge	Solna	BB Stockholm	Linköping	Karlstad	
	n = 539	*n* = 152	*n* = 114	*n* = 112	*n* = 92	*n* = 69	*p*-value
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	
Profession							0.001
Midwife	281 (52.1)	68 (44.7)	67 (58.8)	70 (62.5)	42 (45.7)	34 (49.3)	
Physician	123 (22.8)	38 (25.0)	24 (21.1)	10 (8.9)	33 (35.9)	18 (26.1)	
Obstetrician	49 (39.8)	14 (36.8)	13 (11.4)	10 (100.0)	8 (24.2)	4 (22.2)	
Gynecologist	19 (15.4)	7 (18.4)	0	0	8 (24.2)	4 (22.2)	
Resident	37 (30.1)	11 (28.9)	10 (8.8)	0	8 (24.2)	8 (44.4)	
Other[a]	18 (14.6)	6 (15.8)	1 (4.2)	0	9 (27.3)	4	
Nurse assistant	135 (25.0)	46 (30.3)	23 (20.2)	32 (28.6)	17 (18.5)	17 (24.6)	
Age groups							0.04
<35	97 (18.0)	32 (21.1)	23 (20.2)	19 (17.0)	13 (14.1)	10 (14.5)	
35–50	236 (43.8)	78 (51.3)	46 (40.0)	39 (34.8)	39 (42.4)	34 (49.3)	
>50	145 (26.9)	30 (19.7)	33 (28.9)	44 (39.3)	18 (19.6)	20 (29.0)	
Missing data	61 (11.3)	12 (7.9)	12 (10.5)	10 (8.9)	22 (23.9)	5 (7.2)	
Gender							0.03
Female	468 (86.8)	136 (89.5)	103 (90.4)	103 (92.0)	66 (71.7)	60 (87.0)	
Missing data	57 (10.6)	11 (7.2)	10 (8.8)	9 (8.0)	22 (23.9)	5 (7.2)	
Work experience							0.05
<5 years	177 (32.8)	63 (41.4)	35 (30.7)	30 (26.8)	26 (28.3)	23 (33.3)	
5–15 years	172 (31.9)	52 (34.2)	43 (37.7)	36 (32.1)	22 (23.9)	19 (27.5)	
>15 years	132 (24.5)	25 (16.4)	26 (22.8)	37 (33.0)	22 (23.9)	22 (31.9)	
Missing data	58 (10.8)	12 (7.9)	10 (8.8)	9 (8.0)	22 (23.9)	5 (7.2)	
Working hours							<0.001
Dayshift	200 (37.1)	63 (41.4)	50 (43.9)	60 (53.6)	17 (18.5)	10 (14.5)	
Night shift	115 (21.3)	32 (21.1)	29 (25.4)	35 (31.3)	10 (10.9)	9 (13.0)	
Rotation all hours	160 (29.7)	43 (28.3)	24 (21.1)	7 (6.3)	42 (45.7)	44 (63.8)	
Missing data	60 (11.1)	12 (7.9)	10 (8.8)	10 (8.9)	23 (25.0)	5 (7.2)	
Working full time	240 (44.5)	86 (56.6)	51 (44.7)	26 (23.2)	37 (40.2)	39 (56.5)	<0.001
Missing data	58 (10.8)	11 (7.2)	11 (9.6)	9 (8.0)	22 (23.9)	5 (7.2)	
Employed at the clinic							0.04
>6 months	460 (85.3)	135 (88.8)	93 (81.6)	101 (90.2)	69 (75.0)	62 (89.9)	
Missing data	69 (12.8)	14 (9.2)	15 (13.2)	11 (9.8)	22 (23.9)	7 (10.1)	
Extra assignments[b]	159 (29.5)	46 (30.3)	35 (30.7)	35 (31.3)	27 (29.3)	16 (23.2)	0.57
Missing data	59 (10.9)	11 (7.2)	11 (9.6)	10 (8.9)	22 (23.9)	5 (7.2)	

[a]Pelvic floor specialist, fetal medicine specialist or not specified.

[b]Extra assignments include various types of tasks such as shift coordinator, quality improvement team member, training responsibility, education responsibility and management responsibility.

Our results showed that organizational belonging affected attitudes toward interprofessional teamwork and supporting vaginal birth, with the strongest effect for the subscales *positive team culture* and *dysfunctional teamwork*. Organizational culture is receiving growing attention as a contributor to team effectiveness,[21] and a recent review also indicates that shared values, behaviors, goals, attitudes, practices, and beliefs are correlated with better patient outcomes.[9]

We also found a positive correlation between the subscales *positive team culture* and *unit microculture*. This suggests that items reflecting a teamwork culture that is inclusive, that continuously

TABLE 3 Comparisons between organizations (labor wards) for the subscales of S-LCS and ACE-15 (Main effect assessed by two-way ANOVA)

	Huddinge (A) *n* = 152 mean (SD)	Solna (B) *n* = 114 mean (SD)	BB Stockholm (C) *n* = 112 mean (SD)	Linköping (D) *n* = 92 mean (SD)	Karlstad (E) *n* = 69 mean (SD)	*F*	*p*-value	Tukey's HSD	Partial eta squared[e]
Labor culture survey (S-LCS)									
Best practices[a]	3.72 (0.71)	3.94 (0.52)	3.85 (0.61)	3.41 (0.63)	3.96 (0.56)	11.49	<0.001	B > A ($p = 0.02$) B > D ($p = 0.01$) C > A ($p = 0.02$) C > D ($p = 0.003$) E > A ($p = 0.01$) E > D ($p = 0.003$)	0.09
Unpredictability of vaginal birth[b]	1.62 (0.71)	1.36 (0.42)	1.32 (0.44)	1.43 (0.61)	1.34 (0.41)	8.19	<0.001	A > B ($p = 0.001$) A > C ($p = <0.001$) A > E ($p = 0.004$)	0.06
Unit microculture[a]	3.60 (0.63)	3.72 (0.67)	4.18 (0.43)	3.71 (0.55)	3.46 (0.58)	14.76	<0.001	B > E ($p = 0.04$) C > A ($p < 0.001$) C > B ($p < 0.001$) C > D ($p < 0.001$) C > E ($p = 0.001$)	0.11
Maternal agency[a]	3.13 (0.80)	3.51 (0.74)	3.30 (0.82)	3.21 (0.59)	3.67 (0.66)	8.81	<0.001	B > A ($p = 0.001$) E > A ($p < 0.001$) E > C ($p = 0.02$) E > D ($p = 0.003$)	0.07
Organizational oversight[a]	3.94 (0.67)	4.11 (0.58)	4.10 (0.68)	4.02 (0.70)	4.24 (0.56)	4.44	0.002	E > A ($p = 0.005$)	0.04
Single item									
Cesarean birth is as safe as vaginal birth for women[b]	2.27 (1.14)	2.21 (1.25)	2.14 (1.27)	1.96 (1.09)	1.85 (1.03)	1.89	0.11	n/a	0.02
Assessment of collaborative environments (ACE-15)									
Positive team culture[c]	3.16 (0.77)	3.50 (0.63)	4.12 (0.60)	3.18 (0.74)	2.61 (0.62)	38.88	<0.001	A > E ($p < 0.001$) B > A ($p = 0.001$) B > D ($p = 0.02$) B > E ($p < 0.001$) C > A ($p < 0.001$) C > B ($p < 0.001$) C > D ($p < 0.001$) C > E ($p < 0.001$) D > E ($p < 0.001$)	0.25

TABLE 3 (Continued)

	Huddinge (A) $n = 152$ mean (SD)	Solna (B) $n = 114$ mean (SD)	BB Stockholm (C) $n = 112$ mean (SD)	Linköping (D) $n = 92$ mean (SD)	Karlstad (E) $n = 69$ mean (SD)	*F*	*p*-value	Tukey's HSD	Partial eta squared[e]
Dysfunctional teamwork[d]	2.63 (0.64)	2.32 (0.60)	1.88 (0.55)	2.59 (0.68)	2.74 (0.61)	21.40	<0.001	A > B ($p = 0.001$) A > C ($p = <0.001$) B > C ($p < 0.001$) D > B ($p = 0.03$) D > C ($p < 0.001$) E > B ($p < 0.001$) E > C ($p < 0.001$)	0.15
Total score teamness[c]	3.25 (0.66)	3.57 (0.55)	4.12 (0.53)	3.27 (0.68)	2.87 (0.52)	37.63	<0.001	A > E ($p < 0.001$) B > A ($p < 0.001$) B > D ($p = 0.01$) B > E ($p < 0.001$) C > A ($p < 0.001$) C > B ($p < 0.001$) C > D ($p < 0.001$) C > E ($p < 0.001$) D > E ($p = 0.001$)	0.24

Note: The S-LCS and the ACE-15 scales uses a 5-point Likert scale; from 1 (strongly disagree) to 5 (strongly agree).

Abbreviation: n/a, not applicable.

[a]Higher scores on this scale indicate stronger agreement with attitudes more supportive of vaginal birth.

[b]Higher scores on this scale indicate stronger agreement with attitudes less supportive of vaginal birth.

[c]Higher scores on this scale indicate stronger agreement with positive teamwork.

[d]Higher scores on this scale indicate stronger agreement with dysfunctional teamwork.

[e]Effect size according to Cohen: Small effect = 0.01, Medium effect = 0.06, Large effect = 0.14.

TABLE 4 Comparisons between professions for the subscales of S-LCS and ACE-15 (Main effect assessed by two-way ANOVA)

	Midwives (RNM) $n = 281$	Physicians (PH) $n = 123$	Nurse assistants (NA) $n = 135$				
	mean (SD)	mean (SD)	mean (SD)	*F*	*p*-value	Tukey's HSD	Partial eta squared[e]
Labor culture survey (S-LCS)							
Best practices[a]	4.07 (0.54)	3.37 (0.55)	3.52 (0.63)	59.43	<0.001	RNM > PH ($p < 0.001$) RNM > NA ($p < 0.001$)	0.20
Unpredictability of vaginal birth[b]	1.31 (0.42)	1.71 (0.68)	1.45 (0.62)	13.43	<0.001	PH > RNM ($p < 0.001$) PH > NA ($p = 0.001$) NA > RNM ($p = 0.04$)	0.05
Unit microculture[a]	3.68 (0.66)	3.78 (0.55)	3.88 (0.62)	6.82	0.001	NA > RNM ($p = 0.01$)	0.03
Maternal agency[a]	3.43 (0.71)	3.15 (0.79)	3.28 (0.83)	2.27	0.10	n/a[f]	0.01
Organizational oversight[a]	4.26 (0.51)	4.10 (0.60)	3.59 (0.73)	42.79	<0.001	RNM > PH ($p = 0.04$) RNM > NA ($p < 0.001$) PH > NA ($p < 0.001$)	0.16
Single item							
Cesarean birth is as safe as vaginal birth for women[b]	1.96 (1.13)	2.22 (1.26)	2.43 (1.15)	4.68	0.01	NA > RNM ($p = 0.001$)	0.02
Assessment of collaborative environments (ACE-15)							
Positive team culture	3.37 (0.85)	3.40 (0.80)	3.33 (0.81)	3.84	0.02	n/a[f]	0.02
Dysfunctional teamwork	2.35 (0.67)	2.38 (0.73)	2.60 (0.66)	7.59	0.001	NA > RNM ($p = 0.001$) NA > PH ($p = 0.02$)	0.03
Total score teamness	3.48 (0.73)	3.49 (0.72)	3.36 (0.70)	4.67	0.01	n/a[f]	0.02

Note: The S-LCS and the ACE-15 scales uses a 5-point Likert scale; from 1 (strongly disagree) to 5 (strongly agree).

Abbreviation: n/a, not applicable.

[a]Higher scores on this scale indicate stronger agreement with attitudes more supportive of vaginal birth.

[b]Higher scores on this scale indicate stronger agreement with attitudes less supportive of vaginal birth.

[c]Higher scores on this scale indicate stronger agreement with positive teamwork.

[d]Higher scores on this scale indicate stronger agreement with dysfunctional teamwork.

[e]Effect size according to Cohen: Small effect = 0.01, Medium effect = 0.06, Large effect = 0.14.

[f]The difference between groups is significant but marginal, thus not identifiable by Tukey's HSD as this test corrects for multiple tests.

seeks to improve its performance, and where team members are respectful are also related to a labor ward culture of supporting vaginal birth. To our knowledge, this is a novel finding that needs further investigation. However, a very positive childbirth experience has been connected to women's feelings of being part of a team, where all participants are of importance for the experience.[22,23]

Midwives in this study were overall more supportive of strategies proposed to support vaginal birth and of organizational initiatives to reduce the CS rate than both physicians and nurse assistants. Differences in attitudes between midwives and physicians are known from previous research and has mainly been attributed to different care perspectives.[24] In general, midwives adhere more to the salutogenic perspective,[25] while physicians are generally more prone to see the inherent risks related to pregnancy and birth.[26] Many of the items included in *best practices* reflect strategies that midwives believe in, such as providing more midwifery services and implementing a program that supports early labor at home.[24,27]

Furthermore, the interaction effect seen for the subscales was mainly related to midwives, physicians and nurse assistants at two labor wards; Karolinska Huddinge and Linköping. The interaction effect was most accentuated for the subscale *unpredictability of vaginal birth* (Figure 2). Karolinska Huddinge differs from the other labor wards by being the only organization providing case-load midwifery. As the case-load midwives also work at the labor ward, they may also influence the professional culture at the unit, especially among the midwives. Both the labor wards of Linköping and Karolinska Huddinge have Pelvic Floor Centres

with a research focus on pelvic floor dysfunction,[28,29] which may have influenced their attitudes on this subscale. Additionally, it is interesting to note that Linköping, the organization with the lowest CS rate since more than a decade,[11] was not less fearful of the consequences of vaginal birth than the other labor wards. However, in contrast to Karolinska Huddinge, all professions at Linköping scored quite similarly, indicating consensus in this area. Moreover, we found that Linköping did not score significantly higher than the other labor wards on the subscales *unit microculture* or *positive team culture*. This is in contrast to findings by VanGompel et al., where a labor ward culture supportive of vaginal birth was associated with a lower CS rate in nulliparous women.[30] However, the subgroup analysis comparing physicians' attitudes showed that physicians working at Linköping, scored highest for the subscale *organizational oversight* (Figure 2). The items in this subscale are connected to organizational initiatives to reduce CS, some of which are included in their "9-item-list" - a list of cultural and organizational changes to support vaginal birth used at this labor ward.[14] Altogether it might be assumed that, in the Swedish context, *organizational oversight* and *unpredictability of vaginal birth*, rather than *unit microculture*, reflects differences in CS rates between organizations.

TABLE 5 Interaction effect between organization (labor ward) and profession for S-LCS and ACE-15 (assessed by two-way ANOVA)

	F	*p*-value	Partial eta squared*
Labor culture survey (S-LCS)			
Best practices	2.363	0.017	0.038
Unpredictability of vaginal birth	4.489	<0.001	0.070
Unit microculture	1.301	0.241	0.022
Maternal agency	1.994	0.046	0.032
Organizational oversight	4.048	<0.001	0.065
Assessment of collaborative environments (ACE-15)			
Positive team culture	1.734	0.088	0.028
Dysfunctional teamwork	1.469	0.166	0.024
Total score teamness	1.588	0.126	0.026

*Effect size according to Cohen: Small effect = 0.01, Medium effect = 0.06, Large effect = 0.14.

The strength of this study includes investigating both organizational belonging and profession, in order to understand the culture of supporting vaginal birth and interprofessional teamwork in the Swedish context. The use of validated scales further contributes to the study's validity. Other strengths include the high response rate and the variation in labor wards recruited; including organization, teaching status, and rates of medical interventions.

We acknowledge some limitations of the study. We have not linked attitudes toward supporting vaginal birth or interprofessional teamwork to CS provider rates, and therefore cannot draw any conclusion as to whether attitudes measured are reflected in

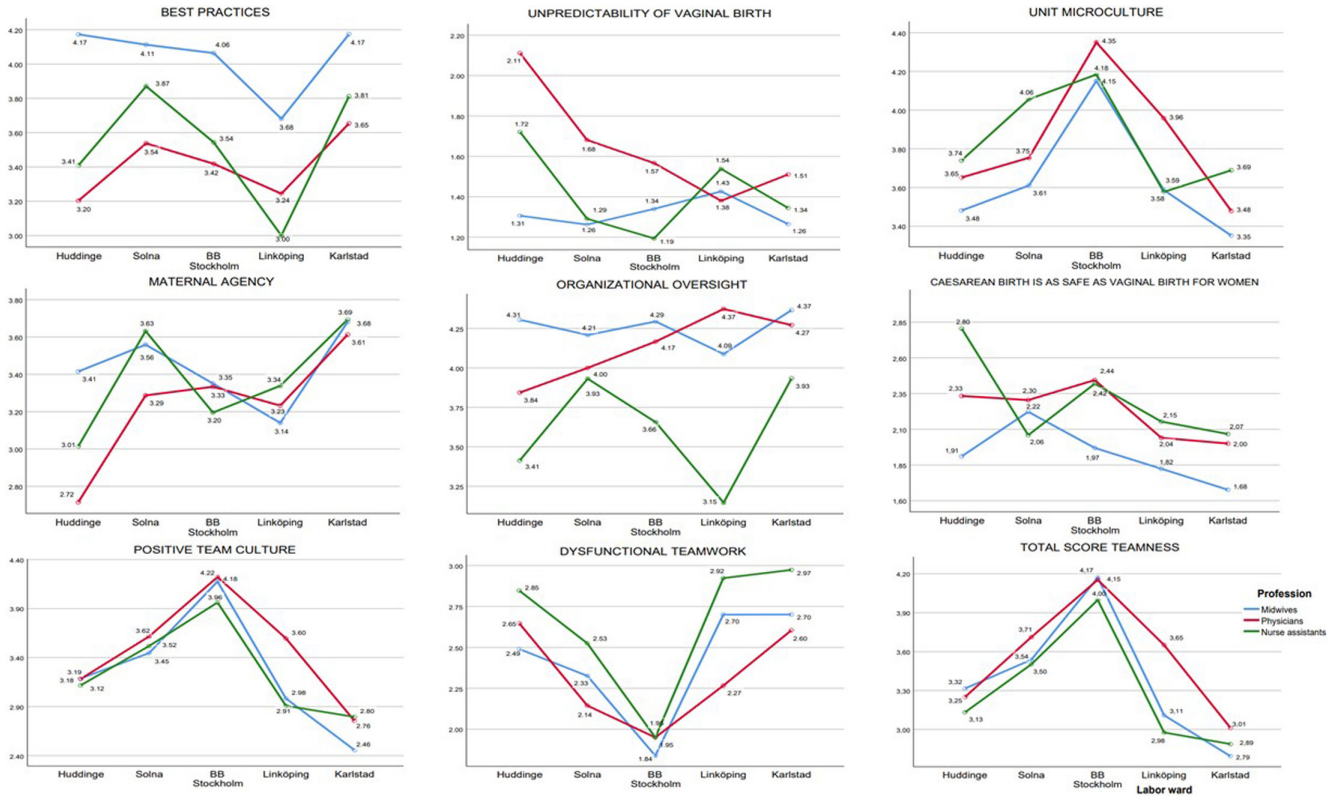

FIGURE 2 Mean scores of professions at each labor ward for the subscales of S-LCS and ACE-15. Note different scale of the y-axis.

TABLE 6 Correlations between the subscales of ACE-15 and S-LCS

		Positive team culture	Dysfunctional teamwork	Best practices	Unpredictability of vaginal birth	Unit microculture	Maternal agency	Organizational oversight
Positive team culture	Pearson correlation Total score[a]	1						
	Pearson correlation[b]							
	Sig. (2-tailed)							
	N[c]	494						
Dysfunctional teamwork	Pearson correlation Total score[a]	−0.714**	1					
	Pearson correlation[b]	−0.774[D] to −0.361[E]						
	Sig. (2-tailed)	<0.001						
	N[c]	494	494					
Best practices	Pearson correlation Total score[a]	0.045	−0.065	1				
	Pearson correlation[b]	−0.311[E] to 0.195[c]	−0.140[c] to 0.174[D]					
	Sig. (2-tailed)	0.325	0.154					
	N[c]	487	487	489				
Unpredictability of vaginal birth	Pearson correlation Total score[a]	−0.072	0.153**	−0.220**	1			
	Pearson correlation[b]	−0.090[A] to 0.055[D]	−0.057[B] to 0.281[A]	−0.363[A] to 0.076[c]				
	Sig. (2-tailed)	0.111	0.001	<0.001				
	N[c]	489	489	489	491			
Unit microculture	Pearson correlation Total score[a]	0.598**	−0.511**	−0.145**	−0.024	1		
	Pearson correlation[b]	0.352[E] to 0.614[A]	−0.609[D] to −0.234[B]	−0.242[D] to −0.136[B]	−0.039[D] to 0.076[E]			
	Sig. (2-tailed)	<0.001	<0.001	0.001	0.602			
	N[c]	479	479	480	481	481		
Maternal agency	Pearson correlation Total score[a]	0.000	−0.015	0.427**	−0.183**	−0.079	1	
	Pearson correlation[b]	−0.070[E] to 0.198[D]	−0.062[A] to 0.102[B]	0.120[D] to 0.564[A]	−0.220[A] to 0.004[B]	−0.144[A] to 0.075[D]		
	Sig. (2-tailed)	1.000	0.741	<0.001	<0.001	0.083		
	N[c]	489	489	488	490	480	490	
Organizational oversight	Pearson correlation Total score[a]	0.033	−0.107*	0.581**	−0.208**	−0.076	0.337**	1

TABLE 6 (Continued)

		Positive team culture	Dysfunctional teamwork	Best practices	Unpredictability of vaginal birth	Unit microculture	Maternal agency	Organizational oversight
	Pearson correlation[a]	−0.446[E] to 0.200[D]	−0.202[D] to 0.035[E]	0.433[B] to 0.689[A]	−0.292[D] to −0.021[C]	−0.209[E] to - 0.191[D]	−0.30[D] to 0.409[C]	
	Sig. (2-tailed)	0.465	0.019	<0.001	<0.001	0.099	<0.001	
	N[c]	480	480	481	481	478	481	481

Note: Strength of correlation according to Cohen: Small correlation = $r = 0.10$ to <0.30, Medium correlation = $r = 0.30$ to <0.50, Large correlation = $r = \geq 0.50$. Uppercase A–E in Table 6 signifies the different labor wards: A: Huddinge, B: Solna, C: BB Stockholm, D: Linköping, E: Karlstad.

[a]Pearson correlation total population.

[b]Pearson correlation, clinic with lowest and highest value.

[c]N varies between 479–494 because all participants did not respond to all individual questions for each subscale.

*Correlation is significant at the 0.01 level (2-tailed).; **Correlation is significant at the 0.05 level (2-tailed).

actual behavior.[27] Furthermore, the design of the study means we are unable to draw conclusions on the directionality of the studied associations and correlations.

The order of the scales in a survey is of importance.[31] When constructing the survey, it was decided that ACE-15 should precede S-LCS. It is therefore possible that the items from ACE-15 were perceived as relating to teamwork in general, and not specifically related to teamwork to support vaginal birth, as intended.

Another limitation to be considered is the study sample and population. The majority of the respondents were midwives, which might have affected the results. However, this could also be considered as a study strength, since it mirrors the Swedish context where most of the labor care providers are midwives, followed by nurse assistants, and then physicians. Further, the sample might not be representative of all labor wards in Sweden, as we did not include labor wards in the north or south of Sweden. We sought to include a variety of labor wards in terms of organization, that is, including the only privately funded labor ward and the only labor ward with a caseload midwifery care integrated in the organization. This may limit the generalizability of the findings. Furthermore, a mixed method design combining the survey with interviews could have deepened the understanding of the results.

Having included surveys that were both fully and partially completed, we saw that missing data increased for the variables at the end of the survey. In addition, the proportion of missing data was higher for the labor ward Linköping compared to the other labor wards. Regardless of this, Linköping had the highest proportion of partially completed surveys. All participants were sent the same number of reminders; however, there was no study coordinator at the Linköping labor ward.

5 | CONCLUSION

In the current study, both organizational belonging and profession affected attitudes toward supporting vaginal birth as well as attitudes toward interprofessional teamwork. Furthermore, an organizational culture supportive of vaginal birth, including supporting women's informed choices, was correlated with a positive interprofessional team culture. A greater understanding of the role of organizational belonging on interprofessional teamwork and labor ward culture specifically related to supporting vaginal birth, could aid organizations to further improve the care they provide. Interventions to support vaginal birth should include efforts to strengthen teamwork between professions and also include women and their partners.

AUTHOR CONTRIBUTIONS

ME initiated and designed the study with input from KJO, CE and SS. KJO, ME and CE coordinated the data collection and acquired the data at the different study sites. Data analysis was performed by KJO with input from ME, CE, KJ and SS. All authors were involved in the interpretation of the results. KJO was responsible for writing

the first draft of the manuscript, and all authors contributed to and approved the final version. All authors were responsible for the decision to submit for publication.

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CONFLICT OF INTEREST

The authors declare no competing interests.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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