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Midwives and protection of pregnant workers in Western Switzerland: Practices, difficulties and contributions

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ABSTRACT

Background: Switzerland's maternity protection legislation aims to protect the health of pregnant employees and their unborn children by regulating their potential occupational exposure to hazards and strenuous activities. This legislation provides a role for obstetricians, but not for midwives.
Aims: Identify the practices of Switzerland's French-speaking midwives that favour the implementation of maternity protection legislation and reflect on the profession's role in supporting pregnant employees.
Methods: 356 midwives answered an online questionnaire. The analysis focuses on the 205 midwives who perform pregnancy consultations in their practice. Data were analysed in two stages using STATA software: 1) simple descriptive and correlational statistics and 2) hierarchical cluster analysis to identify typologies of practices by grouping similar responses.
Findings: Despite having no officially defined role in Switzerland's maternity protection legislation, its midwives actively participate in protecting pregnant employees , especially those with more knowledge of the legislation, those with more years of experience and those practicing independently. The barriers that midwives face when trying to provide greater support for pregnant employees are linked significantly to their lack of knowledge about the legislation, a lack of recognition for their role in the current legislation and a lack of continuing education about the occupational health risks associated with pregnancy at work.
Conclusions and implications for practice: Their profession and specific practices give midwives privileged access to pregnant employees. Midwives' knowledge of the legislation, their awareness of the occupational risks and hazards facing pregnant employees and the conviction that their profession has the potential to make a difference could all be improved. The role of midwives should be—and deserves to be—formally and legally recognised and integrated into Switzerland's maternity protection legislation.

Introduction

From a public health perspective, the care surrounding maternity is essential to ensuring the health of pregnant women and their children (Renfrew et al., 2014; World Health Organization Regional Office for Europe, 2017).

Following the hypothesis of the *Developmental Origins of Health and Disease* (Barker, 2004; Crispi, et al., 2018), several studies (Chernausek, 2012; Fleming et al., 2018; Stephenson et al., 2018) and inter-governmental declarations (World Health Organization Regional Office for Europe, 2017) have underlined that a significant part of an adult's future physical and psychological health is determined during the foetus' intrauterine development. For example, the 2015 conference on *Adults Born Preterm: Epidemiology and Biological Basis for Adult Outcomes*, organised by the US National Institutes of Health, concludes that premature babies run a greater risk of developing type II diabetes, cardiovascular and cerebrovascular diseases, hypertension, kidney, pulmonary function and cognitive disorders, and weaker social adaptation (Raju et al., 2017).

In addition to the obvious benefits to the biological health of future generations, the WHO recognises that good antenatal care throughout pregnancy provides the basis for a healthy maternity period. Thus, all pregnant women should benefit from high-quality medical monitoring and respectful support in the social, cultural, emotional and psychological aspects of their lives (World Health Organization, 2016).

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Work is a major social determinant of health, but it can either benefit or harm it (Marmot and Wilkinson, 2007). The medical literature concerning the relationship between work and pregnancy underlines that carrying out a work activity poses no risks *per se* to the health of either employees or their unborn children (Casas et al., 2015). However, specific workplace exposures (physical, biological, chemical) can have adverse effects on female health, pregnancy outcomes and child development (Cai et al., 2019a; Warembourg, 2017). The impact of some dangerous or strenuous work activities (e.g. schedule constraints, carrying loads, strenuous movements and postures) and stress are also well known (Cai et al., 2019b; Croteau, 2020). Because of all these observations, the International Labour Organisation's (ILO) Convention No. 183 enjoins member States to pass legislation to protect the health of pregnant employees and their unborn children (International Labour Organization, 2000).

As several systematic reviews have demonstrated (Homer et al., 2014; Renfrew et al., 2014), the professional roles and practices of a midwife are crucial to reproductive, maternal, neonatal and public health. The positive impact of midwifery in supporting women who have to work during their pregnancies has also been shown (Alstveit et al., 2011). Switzerland's maternity protection legislation, which aims to protect the health of pregnant employees and their unborn children from workplace exposures, includes obstetricians, but not midwives.

In this study, we explore the practices of French-speaking Switzerland's midwives in relation to maternity protection at work. By analysing midwives' role in supporting pregnant employees, our ultimate goal will be to evaluate the possibility that midwives might be legally integrated into Switzerland's maternity protection legislation.

The Swiss context

The labour market

Switzerland's labour market is characterised by a high proportion of tertiary sector companies (76%) and many small companies, 90% of which have fewer than 10 employees and 8% of which have between 10 and 49 employees (Federal Statistical Office, 2018). Women represent a large part of Switzerland's workforce (82.8% of women aged 25–54 participate in the workforce versus a European average of 63.4% (Giudici and Schumacher, 2017)); however, most of them work part-time. In 2017, 42.2% of women working in Switzerland declared that they were subject to at least three physical risks at work, with 21.7% often or always feeling stressed (Federal Statistical Office, 2017).

The present study was conducted in Switzerland's French-speaking cantons (Vaud, Valais, Geneva, Fribourg, Jura and Neuchâtel), which together comprise about one quarter (2,226,614 inhabitants in 2019) of the country's population.

The legal framework for pregnant employees

Switzerland generally has been very slow in recognising certain women's rights—women got the right to vote on a federal level in 1971—and in implementing policies for reconciling work and family—a fourteen-week maternity leave was implemented in 2005 and a two-week paternity leave in 2021; there is still neither prenatal nor parental leave (Federal Social Insurance Office FSIO, 2020; Federal Commission for Women's Issues FCWI 2020)

In conformity with article 8 of ILO Convention 183, Switzerland's legislation protects employees from being fired during the entirety of their pregnancy and the 16 weeks following childbirth. The Swiss federal law on loss-of-earnings benefits gives female employees the right to 14 weeks paid maternity leave, one of the shortest periods in Europe (Rudin et al., 2018).

Regarding occupational health protection for pregnant employees, Switzerland's legislation is consistent with ILO Recommendation (No. 191) (2000), which aims to enable those employees to continue their work activities in conditions appropriate to their state. Flowing directly from Switzerland's Federal Labour Law (1964), the Maternity Protection Ordinance (2001) presents a list of occupational activities that might prove dangerous or strenuous for pregnant employees. It also lays out the responsibilities of the different stakeholders involved in maternity protection at work. If a company carries out activities that are potentially dangerous or strenuous for pregnant employees, Switzerland's legislation states that employers must mandate an authorised occupational health specialist to carry out a risk assessment before even hiring a woman—whether or not she is pregnant. The employer is also legally obliged to adapt the pregnant employee's workstation and give that employee full information on any potential risks linked to that workstation and on the prescribed protection measures (State Secretariat for Economic Affairs SECO, 2006). The pregnant employee's attending physician or, more often, her obstetrician also plays an essential role within the Maternity Protection Ordinance as they are charged with verifying whether pregnant workers are exposed to any work activities that are prohibited by this Ordinance. In cases involving exposure to danger or the absence of a risk assessment, the obstetrician must follow the precautionary principle and write the employee a medical certificate of unfitness for their specific job. The preventive leave that results from this certificate of unfitness is entirely financed by the employer (at least 80% of the woman's salary). This prescription is different from a sick leave prescription, that supposes a pathological pregnancy or another illness and that is often financed by the employer's insurance.

Maternity protection at work is a complex three-party mechanism that shares the responsibility for protecting pregnant employees between the employer, occupational health specialists and the pregnant employee's obstetrician. That mechanism gives pregnant employees themselves a very passive role: they must be informed about the results of any risk assessment, as well as of any preventive measures subsequently put in place, but they are not involved in identifying any risks that need to be avoided or suggesting appropriate preventive measures. Finally, midwives, who carry out low-risk pregnancy consultations independently or in collaboration with an obstetrician, are not entitled to intervene according to the Maternity Protection Ordinance. However, since 2001, when the Maternity Protection Ordinance was implemented, there have been many changes in the organisation of clinical practice for midwives. Firstly, since 2002 (Stamm, 2002) midwifery education is at BSc level in accordance with the European Union Directives 2013/55/UE (European Parliament Council of the European Union, 2013). Secondly, in the compulsory national health insurance scheme (LAMal) and according to the Health Care Benefits Ordinance KLV/OPAS (art. 16) (Health Care Benefits Ordinance, 1995) and to the Federal Law on Health Professions (LPSan) (Federal Office of Public Health FOPH, 2016) and its Ordinance RO 2020 81 (art. 5; Federal Office of Public Health, 2019), midwives are clearly mentioned as care providers in their own right.

Pregnancy care in Switzerland

Switzerland's 3,343 midwives can work either as the salaried employees of public service institutions or be self-employed (Dolder and Grünig, 2016). In Switzerland, pregnant women are free to choose their care provider (De Pietro et al., 2015). The majority of them are monitored by obstetricians whatever the level of risk of their pregnancy. Nevertheless, most of them also encounter either a salaried or a self-employed midwife during their pregnancy consultations or antenatal classes. Midwives follow a significant proportion of pregnancies, especially low-risk pregnancies, either completely autonomously or in collaboration with an obstetrician. In 2019, Switzerland's self-employed midwives carried out 77 506 pregnancy consultations on 27 862 women. Pregnant women received an average of 2.8 pregnancy consultations by a midwife (Grylka-Bäschlin and Borner, 2020). Added to these data will be pregnancy consultations carried out from salaried midwives working in maternity wards. However, for the latter, exact numbers are unavailable.

What role for midwives in caring for pregnant employees?

Studies in various national contexts (Adams et al., 2016; COWI, 2015; Lembrechts and Valgaeren, 2010), including Switzerland (Rudin et al., 2018), have highlighted shortcomings in the implementation of protective legislation. This lack of maternity protection measures within workplaces occurs in a context where female workers who become expectant mothers are frequently discriminated against in Swiss companies, even to the point of dismissal (Rudin et al., 2018). One study in French-speaking Switzerland estimated that only 12% of women working in the healthcare sector and 2% working in the food industry benefitted from the protective measures they had the right to expect during their pregnancy (Abderhalden-Zellweger et al., 2021). An online survey among obstetricians working in French-speaking Switzerland showed that they have difficulty taking up the essential role that Swiss legislation has conferred upon them, namely the prescription of preventive leave to pregnant employees facing an occupational risk (Abderhalden-Zellweger et al., 2020). It should also be noted that consultations with obstetricians are generally short (about 20 minutes) and focus on potential medical problems; they leave little or no time for discussing any potential occupational risks and fears that pregnant women might have about their work environments.

Pregnancy consultations with midwives are usually longer because of the *social model* they follow (International Confederation of Midwives, 2018; van Teijlingen, 2005). Notably, Leap (2009) defined the concept of woman-centred midwifery as being a type of care that focuses on the woman's individual needs and the social, emotional, physical, psychological, spiritual and cultural components of those needs. Several studies and international recommendations have shown *midwifery-led care's* advantages and contributions to the health of pregnant women (Homer et al., 2014; National Institute for Health and Care Excellence NICE, 2019; Sandall et al., 2016). Renfrew et al. (2014) identified several short-, medium- and long-term outcomes that could be improved by maternal and neonatal care that was within the scope of midwifery, as defined by the authors. Finally, two systematic reviews (Medley et al., 2018; Sandall et al., 2016) have underlined that *midwife-led care*-type models led to significantly lower perinatal death.

Given the above, the developments in Swiss midwifery practice over the last 20 years and the fact that salaried or self-employed midwives follow a significant proportion of pregnancies, either autonomously or in collaboration with an obstetrician, an exploration of their practices with regards to pregnancy protection at work seemed essential.

Aims

The study's aims were the following:

- Analyse midwives' practices towards the occupational health of pregnant employees and the difficulties encountered.
- Identify the different typologies of practices used by midwives with regard to maternity protection at work and explore whether surveyed midwives are adopting practices that favour the implementation of Switzerland's maternity protection legislation.
- Evaluate the possibility that midwives' role should be legally integrated into Switzerland's maternity protection legislation.

Methods

Ethical approval

The Human Research Ethics Committee of the Canton Vaud (CER-VD) has certified that the research study protocol associated with this study falls outside of the field of application of the Swiss Federal Act on Research Involving Humans.

The participation in the study was voluntary.

In the email sent to the midwives, participants were informed about the objectives of this study and the standards of confidentiality regarding the use of the gathered data. By accepting to fulfil the questionnaire on a voluntary basis, the midwives agreed on the intended use of their data.

Population

The target population consisted of midwives in French-Speaking Switzerland working in both public and private practice. A list from the Swiss Federation of Midwives was supplemented with the email addresses of midwives working at the three regional maternity wards and with a charitable foundation providing pregnancy consultations.

Data collection

An online questionnaire was generated using Sphinx Online (v.4.8) software. Questions were built with regard to the literature and to the authors' clinical experiences. Three external evaluators tested the French version of the survey – notably in order to check the readability of the questionnaire.

The electronic format of the survey was chosen to allow an ample response time (almost three months). From April to June 2017, we sent four reminders. Data collection was closed on the 30th of June 2017.

The questionnaire covered the themes of midwives' knowledge and perceptions about the legal dispositions for maternity protection in Switzerland, their practices, the difficulties they faced and the resources they had with regard to maternity protection at work. The response rate to the 657 email questionnaires sent out in April 2017 was 54% (n = 356). The responses of the study participants were filtered using the question, "*Are pregnancy consultations part of your professional activity?*" to which 205 midwives answered "*Yes*". The analysis focuses on the 205 midwives who perform pregnancy consultations in their practice.

Statistical analysis

Data from questionnaire responses were treated using STATA 15 software. The analysis involved:

- Simple descriptive and correlational statistics ($p < 0.05$).

Ordinal variables ("none at all, some, fairly good, very good" or "never/rarely, sometimes, often, nearly always/always") were analysed using ordered logistic regressions adjusting for the place of practice (private practice/birth centre, hospital, or both), midwives' years of experience and whether participants had undergone training on the Maternity Protection Ordinance and how it relates to pregnant workers.

- Hierarchical cluster analysis to identify typologies of practices related to the occupational health of pregnant employees.

The hierarchical cluster analysis was based on the midwives' practices that favour the implementation of Switzerland's maternity protection legislation, that is:

- Querying the pregnant women about occupational health;
- Requesting a risk assessment;
- Referring the pregnant women to an obstetrician for the prescription of sick or preventive leave;
- Giving pregnant workers advice on Switzerland's maternity protection legislation and;
- Contacting the employers of pregnant workers whose work poses a risk to their pregnancy.

The clustering was based on Euclidean distances on centred and standardized variables with complete linkage.

Results

Simple descriptive statistics

Participants' characteristics and descriptive statistics are presented in **Table 1**.

All the participants were women, with an average age of 43 years old (± 10.6). They worked either in hospital settings (47%), as self-employed midwives practicing at home, in private practice or in a birth centre (40%), or in both types of settings (13%).

Estimating the occupational risks faced by pregnant employees

Participating midwives estimated that an average of 31% of the women in their care had a work activity that posed a risk to their pregnancy, with the five most common risky activities being standing for long periods (89%), a detrimental psychological atmosphere (73%), a stressful job (71%), strenuous postures or movements (61%), and carrying heavy loads (53%).

Knowledge and perceptions of the maternity protection legislation

Forty percent of midwives estimated that they knew the Swiss maternity protection legislation "quite well" or "very well". Nearly all of them (99%) believed that this legislation was an important instrument for the protection of pregnant employees. A minority (24%) believed that this legislation was too onerous on employers. However, the midwives also considered the same legislation to be insufficient because it didn't cover every pregnant employee (95% of respondents) or every occupational risk (91%). 67% feared that a woman who was prescribed preventive leave would be putting her future career at risk, notably on her return from maternity leave.

Only 8% (n = 15) of participating midwives had undergone specific training about pregnant employees and the Swiss' Maternity Protection Ordinance, 79% of whom believed that the training had helped them in their daily practice.

Practices associated with maternity protection in the workplace

Nearly all participating midwives (97%) stated that they "often/always" asked questions about women's profession during pregnancy consultations, with 69% asking about the existence of any potential occupational risks, 75% asking about working conditions in general and 63% asking about job satisfaction.

In companies whose activities may be dangerous or arduous for a pregnant woman, Switzerland's legislation states that employers must mandate an authorised occupational health specialist to carry out a risk assessment before even hiring a woman—whether or not she is pregnant. However, the midwives estimated that a risk assessment had only been carried out in about 2% of the cases involving a pregnant woman facing an occupational risk during her pregnancy. Furthermore, 94% of midwives declared that they "never/rarely" requested a risk assessment, even when they were following women whose job involved a risk to their pregnancy.

Despite the lack of a legally defined role, 9% of midwives declared that they had previously contacted a woman's employer when they believed that her occupation posed a risk to her pregnancy. When midwives did not contact the employers of women whom they believed faced an occupational risk to their pregnancy, this was "often/always" because they had not thought about it (45%), because they believed that they lacked the skills to do so (38%), because they believed this was the obstetrician's responsibility (28%) or because the woman refused (24%). Among the midwives who had contacted employers (9%, n = 19), half (53%) declared that they had encountered complications with employers in the implementation of the Maternity Protection Ordinance .

Preventive leave versus sick leave

In cases involving a non-pathological pregnancy and a proven occupational risk, only 42% of midwives "often/always" referred their patient to an obstetrician for the prescription of preventive leave, whereas 56% declared that they "often/always" referred the women in their care to an obstetrician for prescribing sick leave or prescribed sick leave themselves. When midwives prescribed or referred a woman to an obstetrician in order to prescribe sick leave, it was "often/always" because of their own perceived lack of competency (59%), at the woman's request (45%), out of habit (28%), because of time constraints (19%) or at the employer's request (8%).

Giving advice and collaborating with other professionals

Nearly half of midwives (45%) stated that they "often/always" gave the women in their care advice about the maternity protection legislation. This was principally in the form of oral advice (84%) and more rarely written information (48%) or a referral to another professional (44%). The vast majority (96%) of midwives stated that they referred the women in their care to an obstetrician if they had identified or suspected an occupational risk. The main reasons for this were the need for preventive leave to be prescribed by an obstetrician (87%), and the midwives' own perceived lack of competencies in this kind of situation (31%).

In our sample, 19% of midwives also stated that they referred the women in their care to occupational health physicians in cases involving proven or suspected occupational risks. The main reasons why midwives did not refer pregnant workers to an occupational health physician were that they referred the women in their care to obstetricians (79%), they did not know any occupational physicians (48%), or they had never thought about it (35%).

Associations between variables

Significant associations between midwives' principal professional or personal characteristics and important questionnaire items are shown in **Table 2**.

Participants with more years of work experience stated that they were more likely to ask questions about women's occupational risks ($p = 0.000$) and working conditions ($p = 0.000$) during pregnancy consultations. They also more frequently stated that they would ask for a risk assessment ($p = 0.027$) and provide the women in their care with advice on maternity protection legislation ($p = 0.003$). In cases involving a normal healthy pregnancy and a proven risk, more experienced midwives were more likely to refer the women in their care to an obstetrician for the prescription of preventive leave ($p = 0.001$) or sick leave ($p = 0.016$).

Only 15 midwives (8%) had undergone training on pregnant employees and the Maternity Protection Ordinance, but they were more likely to state that they had a good understanding of Switzerland's maternity protection legislation ($p = 0.034$).

Hierarchical cluster analysis

Typologies of practices

Hierarchical cluster analysis identified three groups of midwives with similar typologies of practices concerning the occupational health of pregnant employees. Nine midwives did not answer the question about contact with the employer (no cluster could be determined for those midwives). The factors distinguishing these groups are summarised in **Table 3**.

Group 1: Practices that favour the implementation of maternity protection legislation (n = 28). Midwives in this group were more likely to ask questions about the woman's profession, the existence of occupational risks, working conditions and job satisfaction. They also more frequently asked for a risk assessment, and they were more likely to contact the pregnant worker's employer if her job posed a risk to her pregnancy. In cases involving a non-pathological pregnancy but a proven occupational risk, three quarters of the midwives referred the women in their care to an obstetrician for the prescription of preven-

Table 1
Simple descriptive statistics.

		Midwives (n = 205)
Age: mean (sd)		43.3 (10.6)
Years of experience as a midwife: mean (sd)		16.3 (10.2)
Estimated percentage of patients facing an occupational risk: mean (sd)		31 (20.1)
Estimated percentage of risk analyses provided for patients[1] facing an occupational risk: mean (sd)		2.1 (5.8)
		% (n)
Place of practice	Private practices or birth centres	40% (82)
	Hospitals	47% (96)
	Private practices and hospitals	13% (27)
Perceived knowledge about maternity protection legislation	None at all	6% (13)
	Some	54% (110)
	Fairly good	34% (68)
	Very good	6% (12)
"Often" or "always" ask questions about:	Profession	97% (195)
	Occupational risks	69% (138)
	Workplace conditions	75% (151)
	Job satisfaction	63% (126)
Multiple-choice question: The five most common risky activities encountered by midwives during pregnancy consultation	Standing for long periods	89% (179)
	Detrimental psychological atmosphere	73% (147)
	Stressful job	71% (143)
	Strenuous postures or movements	61% (121)
	Carrying heavy loads	53% (105)
Frequency with which midwives asked for an occupational risk assessment	Never/rarely	79% (159)
	Sometimes	15% (31)
	Often	3% (6)
	Nearly always/always	3% (5)
Contact with the employer of a patient whose work poses a risk to pregnancy		9% (19)
Multiple-choice question: Reasons explaining the absence of contact with employers in cases involving suspected occupational risk and the absence of a risk assessment	I have never thought about it	45% (89)
	Perceived lack of experience or competencies	38% (74)
	It is the obstetrician's responsibility	28% (55)
	Refusal by the patient	24% (48)
Difficulties implementing the Maternity Protection Ordinance with the employer		53% (10)
Frequency with which the midwife refers patients to an obstetrician for the prescription of preventive leave	Never/rarely	31% (60)
	Sometimes	27% (54)
	Often	23% (46)
	Nearly always/always	19% (37)
Frequency with which the midwife prescribes or refers patients to an obstetrician for the prescription of sick leave	Never/rarely	13% (26)
	Sometimes	30% (60)
	Often	31% (62)
	Nearly always/always	25% (49)
Multiple-choice question: When midwives refer patients to an obstetrician for the prescription of sick leave instead of preventive leave, it is "nearly always" or "always" because of:	The midwife's perceived lack of competency	59% (59)
	A request by the patient	45% (55)
	Habit	28% (25)
	Time constraints	19% (15)
	A request by the employer	8% (8)
Frequency with which advice on maternity protection legislation is given to patients	Never/rarely	18% (35)
	Sometimes	37% (72)
	Often	30% (58)
	Nearly always/always	15% (28)
Multiple-choice question: Type of advice given to patients	Oral information	84% (156)
	Written information	48% (89)
	Discussion between the patient and her hierarchical superior	15% (27)
	Patient oriented to another professional	44% (82)
Patients referred to an obstetrician in cases involving suspected or proven occupational risks		96% (179)
Multiple-choice question: Reasons explaining referral to an obstetrician	So that the patient can be prescribed preventive leave	87% (155)
	To manage the situation because I do not have the competencies	31% (56)
	To manage the situation because I do not have the time	4% (7)
Patients referred to occupational health physicians in cases involving suspected or proven occupational risks		19% (35)
Multiple-choice question: Reasons explaining non-referral to an occupational health physician	The patient was oriented to an obstetrician	79% (116)
	I do not know any occupational health physicians	48% (70)
	I did not think about it	35% (66)
Midwives who attended training programmes on pregnant employees and the Maternity Protection Ordinance		8% (15)
Perceived usefulness of the training		79% (11)
Maternity protection legislation is an important means of protecting pregnant employees		99% (186)
Maternity protection legislation is too burdensome on employers		24% (42)
Maternity protection legislation is insufficient because it does not cover all female employees		95% (170)
Maternity protection legislation is insufficient because it does not cover all occupational risks		91% (164)
Prescribing preventive leave may adversely affect the patient, particularly on her return to work after maternity leave		67% (119)

In the midwives' questionnaire, we used the term "patient" because this is the generic term used in Switzerland.

Table 2
Significant associations between midwives' principal professional or personal characteristics and important questionnaire items.

		Years of experience as a midwife						Training on pregnant employees and the Maternity Protection Ordinance			
		0–10 (n = 67) % (n)	11–20 (n = 73) % (n)	21–30 (n = 41) % (n)	31–45 (n = 21) % (n)	*p-value*	OR	Yes (n = 15) % (n)	No (n = 172) % (n)	*p-value*	OR
Perceived knowledge about maternity protection legislation	None at all	10% (7)	5% (4)	2% (1)	5% (1)			-	5% (9)		
	Some	60% (40)	55% (40)	46% (19)	52% (11)			33% (5)	56% (96)		
	Fairly well	28% (19)	34% (25)	42% (17)	29% (6)			53% (8)	33% (57)		
	Very good	2% (1)	6% (4)	10% (4)	14% (3)	**0.046**	1.03	13% (2)	6% (10)	**0.034**	2.98
Frequency with which midwives asked for an occupational risk assessment	Never/rarely	86% (56)	79% (58)	68% (28)	76% (16)			73% (11)	79% (136)		
	Sometimes	12% (8)	14% (10)	27% (11)	10% (2)			20% (3)	16% (27)		
	Often	-	6% (4)	5% (2)	-			-	3% (6)		
	Nearly always/always	2% (1)	1% (1)	-	14% (3)	**0.027**	1.04	7% (1)	2% (3)	0.561	1.44
Ask questions about the employee's profession	Never/rarely	-	-	2% (1)	-			-	1% (1)		
	Sometimes	3% (2)	3% (2)	2% (1)	-			-	3% (5)		
	Often	31% (20)	18% (13)	10% (4)	10% (2)			7% (1)	18% (31)		
	Nearly always/always	66% (43)	79% (58)	86% (35)	90% (19)	**0.037**	1.04	93% (14)	79% (135)	0.328	2.85
Ask questions about occupational risks in the workplace	Never/rarely	12% (8)	3% (2)	5% (2)	-			-	6% (11)		
	Sometimes	37% (24)	25% (18)	17% (7)	10% (2)			20% (3)	24% (41)		
	Often	32% (21)	37% (27)	27% (11)	28% (6)			20% (3)	34% (58)		
	Nearly always/always	18% (12)	36% (26)	51% (21)	62% (13)	**0.000**	1.06	60% (9)	36% (62)	0.088	2.64
Ask questions about working conditions	Never/rarely	3% (2)	1% (1)	2% (1)	-			-	2% (4)		
	Sometimes	40% (26)	16% (12)	15% (6)	10% (2)			20% (3)	20% (34)		
	Often	29% (19)	40% (29)	29% (12)	14% (3)			27% (4)	33% (56)		
	Nearly always/always	28% (18)	43% (31)	54% (22)	76% (16)	**0.000**	1.07	53% (8)	45% (78)	0.596	1.34
Ask questions about job satisfaction	Never/rarely	18% (12)	10% (7)	5% (2)	-			7% (1)	10% (17)		
	Sometimes	42% (27)	22% (16)	15% (6)	24% (5)			7% (1)	28% (48)		
	Often	25% (16)	22% (16)	37% (15)	19% (4)			33% (5)	25% (44)		
	Nearly always/always	15% (10)	46% (34)	44% (18)	57% (12)	**0.000**	1.07	53% (8)	37% (63)	0.125	2.27
Frequency with which midwife refers patient to an obstetrician for the prescription of preventive leave	Never/rarely	38% (25)	32% (23)	23% (9)	14% (3)			13% (2)	30% (52)		
	Sometimes	31% (20)	24% (17)	33% (13)	19% (4)			54% (8)	26% (45)		
	Often	23% (15)	23% (16)	23% (9)	24% (5)			13% (2)	25% (42)		
	Nearly always/always	8% (5)	21% (15)	21% (8)	43% (9)	**0.001**	1.05	20% (3)	19% (33)	0.790	1.13
Frequency with which midwife prescribes or refers patient to obstetrician for the prescription of sick leave	Never/rarely	15% (10)	15% (11)	10% (4)	5% (1)			13% (2)	12% (20)		
	Sometimes	36% (23)	31% (22)	23% (9)	24% (5)			27% (4)	31% (54)		
	Often	32% (21)	30% (21)	41% (16)	19% (4)			27% (4)	32% (55)		
	Nearly always/always	17% (11)	24% (17)	26% (10)	52% (11)	**0.016**	1.03	33% (5)	25% (43)	0.762	1.16
Frequency with which midwife gives advice about maternity protection legislation	Never/rarely	20% (13)	24% (16)	10% (4)	9% (2)			-	18% (31)		
	Sometimes	50% (35)	34% (23)	28% (11)	29% (6)			47% (7)	37% (63)		
	Often	22% (14)	29% (20)	41% (16)	33% (7)			20% (3)	32% (55)		
	Nearly always/always	8% (5)	13% (9)	21% (8)	29% (6)	**0.003**	1.04	33% (5)	13% (23)	0.134	2.18

The analysis simultaneously includes midwives' years of experience and whether they had undergone training on pregnant employees and the Maternity Protection Ordinance, adjusting for the place of practice. Ordered logistic regression was used.
In the midwives' questionnaire, we used the term "patient" because this is the generic term used in Switzerland.

tive leave, in line with the Maternity Protection Ordinance. Finally, this group of midwives was more likely to offer advice about the legislation.

Group 2: Practices that offer little encouragement to the implementation of the maternity protection legislation (n = 161). This group of midwives rarely or never asked for a risk assessment when consulting a woman whose work posed a risk to her pregnancy. Only 6% of them contacted the employer. Their principal reasons for their lack of contact with employers were that they never thought of developing this contact or that they did not perceive themselves to have the appropriate competencies in the domain of occupational health. Finally, more than half of this group "rarely/never" advised the women in their care about the legislation. This cluster of practice was the largest of the groups of midwives questioned.

Group 3: Limited and heterogeneous practices (n = 2). Hierarchical cluster analysis revealed two midwives who responded significantly differently from all the others. They had never asked for a risk assessment, nor had they ever contacted a pregnant worker's employer when they consulted a woman whose job posed a risk to her pregnancy. In cases involving normal healthy pregnancies yet proven occupational risks, they never referred the women in their care to an obstetrician for the prescription of preventive leave. Because of the restricted number of midwives in this cluster, these results will not be discussed.

Associations between typologies of practices and midwives' characteristics and attitudes

Table 4 shows the associations between the typologies of practices identified by the cluster analysis and the variables describing midwives' characteristics and their attitudes vis-à-vis Switzerland's maternity protection legislation. There was a significant association between midwives' knowledge of this legislation and their distinguishing groups. Of those midwives whose practices support the implementation of maternity protection legislation, 68% estimated that they knew the legislation "well/very well" ($p = 0.003$), and this percentage was lower in group 2 (36%). Participants who worked exclusively as self-employed midwives (private practice or birth centres) and those with more years of experience display practices that encourage the implementation of this leg-

Table 3
Typologies of midwives' practices defined using hierarchical cluster analysis.

		Practices that favour the implementation of maternity protection legislation (midwifery-led care) (n = 28) % (n)	Practices that offer little encouragement to the implementation of maternity protection legislation (n = 161) % (n)	Limited and heterogeneous practices (n = 2) % (n)
"Often" or "always" ask questions about:	Profession	96% (27)	98% (158)	-
	Occupational risks	89% (25)	67% (108)	-
	Workplace conditions	93% (26)	74% (120)	-
	Job satisfaction	93% (26)	59% (94)	-
Frequency with which midwives ask for an occupational risk assessment	Never/rarely	32% (9)	87% (140)	100% (2)
	Sometimes	32% (9)	12% (20)	-
	Often	18% (5)	1% (1)	-
	Nearly always/always	18% (5)	-	-
Contact with the employers of patients whose work poses a risk to pregnancy		29% (8)	6% (9)	-
Frequency with which midwives refer patients to an obstetrician for the prescription of preventive leave during normal pregnancies and proven occupational risk	Never/rarely	11% (3)	33% (53)	100% (2)
	Sometimes	14% (4)	30% (48)	-
	Often	36% (10)	21% (34)	-
	Nearly always/always	39% (11)	16% (26)	-
Frequency with which midwives prescribe or refer patients to an obstetrician for the prescription of sick leave during normal pregnancies and proven occupational risk	Never/rarely	-	15% (24)	50% (1)
	Sometimes	39% (11)	29% (46)	-
	Often	29% (8)	32% (52)	-
	Nearly always/always	32% (9)	24% (39)	50% (1)
Frequency with which advice about maternity protection legislation is given to patients	Never/rarely	-	21% (33)	100% (2)
	Sometimes	25% (7)	40% (39)	-
	Often	39% (11)	29% (46)	-
	Nearly always/always	36% (10)	11% (18)	-

In the midwives' questionnaire, we used the term "patient" because this is the generic term used in Switzerland.

Table 4
Associations between typologies of practices and midwives' characteristics and attitudes.

		p-value	Practices that favour the implementation of maternity protection legislation (midwifery-led care) (n = 28)	Practices that offer little encouragement to the implementation of maternity protection legislation (n = 161) % (n)	Limited and heterogeneous practices (n = 2) % (n)
Perceived knowledge about maternity protection legislation	None at all		-	6% (10)	50% (1)
	Some		32% (9)	58% (93)	50% (1)
	Fairly good		50% (14)	32% (51)	-
	Very good	**0.003**	18% (5)	4% (7)	-
Years of experience	0–10		7% (2)	38% (60)	50% (1)
	11–20		43% (12)	34% (55)	-
	21–30		29% (8)	19% (30)	50% (1)
	31–45	**0.005**	21% (6)	9% (15)	-
Place of practice	Private practices or birth centres		64% (18)	37% (59)	-
	Hospitals		22% (6)	50% (81)	100% (2)
	Private practices and hospitals	**0.011**	14% (4)	13% (21)	-
Midwives who attended a training programme on pregnant employees and the Maternity Protection Ordinance.		0.362	15% (4)	7% (11)	-

islation ($p = 0.011$ and $p = 0.005$, respectively). No associations were found between midwives' typologies of practice and their attitudes vis-à-vis Switzerland's maternity protection legislation.

Discussion

Our findings indicate that most of the midwives who participated in our study asked questions related to the jobs of the women in their care, and to any potential exposure to dangerous and/or strenuous activities that might harm their health or that of their unborn child. Nearly half of the midwives also stated that they advised the women in their care about maternity protection legislation. Consistent with our results, Franco et al. (2020) stated that among other health and prenatal care professionals, midwives are in an excellent position to support pregnant women, flag their legal rights, and suggest additional informational resources.

Hierarchical cluster analysis shows that even in the absence of a clearly defined legal role, some midwives adopt practices that favour the implementation of maternity protection legislation in order to protect the women in their care living through pregnancy in the workplace (Group 1). This group primarily included midwives with more experience who tended to be self-employed, notably often in birth centres (a variable also associated with this type of practice). We imagine that being a self-employed midwife can improve the *continuity of carer* (and care), thus encouraging a typology of practice that supports the

implementation of maternity protection legislation more broadly because this also requires the incorporation of different dimensions of women' health. A systematic review by Sandall et al. (2016), found that midwife-led care models for low-risk pregnancies did not create more adverse outcomes compared with others models of care. Moreover, midwife-led care models are perceived to be very satisfactory for women (Sandall, 2017; Sandall et al., 2016). A study carried out in French-speaking Switzerland shows that not only women welcomed the idea of a midwife-led unit in their local university hospital; healthcare providers were also optimistic about this possibility (Maillefer et al., 2015). These findings suggest that a greater role for midwives in the protection of pregnant employees would be appropriate.

Our analyses did reveal some difficulties, however. First, several midwives felt that they lacked knowledge about maternity protection legislation and competencies in the domain of occupational health, both factors that could limit their ability to inform pregnant employees about their rights. It is worth noting that very few of the midwives stated that they had been able to attend training on pregnant employees and the Maternity Protection Ordinance. These elements show the importance of informing midwives and raising their awareness of this subject.

Second, contacting and collaborating with employers were both perceived to be difficult. Like obstetricians (Abderhalden-Zellweger et al., 2020), some midwives do not contact women's employers because the women do not want them to. This refusal from pregnant women might be related to their fear of entering into conflict with their superiors. A recent survey commissioned by the Federal Social Insurance Office (Rudin et al., 2018) revealed that when employees announced their pregnancy to their employer, 10% were threatened with being fired. Indeed, 3.2% of women in Switzerland are fired once their period of legal protection from being fired runs out. The risk of facing discrimination or being fired seems to stymie some of the efforts made to ensure protective measures are implemented and preventive actions are taken for pregnant employees within companies. These difficulties reflect the weakness of the legal framework surrounding employment protection and women's health when they become pregnant. However, midwives do have a part to play in identifying discrimination and supporting pregnant women, e.g. by referring them to labour inspectors and/or legal specialists (e.g. professional associations, trade unions). Defending women's rights is part of the midwife's *advocacy* role.

Finally, although collaboration with obstetricians was good, very few midwives collaborated with the occupational health physicians who have the specific competencies needed to identify and prevent occupational risks and who may be in a better position to discuss with employers. The barriers to this collaboration deserve further investigation using qualitative interview studies. It should also be underlined that occupational health is relatively underdeveloped in Switzerland in comparison with other Western countries (Danuser, 2014).

The problems revealed by the present study could also reflect more general issues. Firstly, it is important to note that the fact that midwives are excluded from Switzerland's maternity protection legislation may be a reflection of the increasing medicalisation of pregnancy and maternity in Western societies (Healy et al., 2017). Indeed, in Switzerland, obstetricians take the lead role in monitoring pregnancies, even normal healthy ones. There has nevertheless been some evolution in midwifery, as seen by the increasing number of consultations they carry out, including for antenatal care (Grylka and Borner, 2020). Furthermore, the world of work and business is often quite reticent about adapting a pregnant employee's working conditions. Sick leave is frequently used to withdraw pregnant employees from strenuous or dangerous working environments with the consequence of leaving occupational dangers and strenuous activities invisible and ignored.

It is also important to underline that pregnant women can be confronted, on the one hand, with significant medical, social and moral injunctions to manage and minimise the slightest potential risk to their child's future health (Lupton, 2012); but on the other hand, especially in business and work environments, pregnancy can be treated as a *normalised* physiological state, and so the risks inherent in that state can be trivialised and concealed. Pregnancy remains a difficult state to define in occupational settings; it is neither a normal state nor a sickness. When pregnancy is identified as a sickness, women find themselves temporarily excluded from employment. On the other hand, when pregnancy is identified as a normal state and no extra precautions are taken, then health protection measures no longer seem appropriate and tend to disappear.

Recommendations

It is important for midwives to be able to use the full scope of their practice options to favorise better outcomes for pregnant employees and their unborn children. In view of our findings and with the objective of supporting midwives and empowering them to work to their full potential we would like to offer the following recommendations:

1 Midwives' knowledge of the occupational health risks associated with pregnancy must be improved, and their awareness of their roles in this issue must be raised. This could be done by integrating these themes into their initial professional training and especially into their continuing education. The health of pregnant employees could also be the subject of specific sessions in relevant congresses or professional journals.

The *High Quality Midwifery Care* (Royal College of Midwives, 2014) report underlined that a philosophy espousing both the continuity of care and woman-centred care should also include social determinants when trying to identify each individual woman's needs. A woman's work activity, her working conditions and the legal elements protecting her health at work are all very valid social determinants of health. In Switzerland, these determinants can be gathered during women's individual consultations with midwives or during antenatal or parenthood classes.

1 Given that midwives are very capable of autonomously following and monitoring many pregnancies, a legally defined role for them in the protection of pregnant employees needs to be formalised within an updated Maternity Protection Ordinance and in conjunction with other stakeholders.

Switzerland's recently passed Federal Law on Health-Care Professions (LPsan) (Federal Office of Public Health FOPH, 2016) encourages the autonomy of tertiary level health-care professionals, including midwives. However, the Maternity Protection Ordinance is now nearly 20 years old, creating somewhat of a discrepancy between that legislation and the wishes expressed in the LPsan as well as the professional competencies of today's midwives. Thus, whether midwives provide pregnancy consultations autonomously or in collaboration with an obstetrician, they are in a privileged position to: 1) identify women's proximal and distal needs by carrying out a comprehensive assessment of the social determinants of their health-care needs; 2) recognise occupational exposures that could endanger the health of pregnant women and their unborn children, and ask whether employers have provided employees with risk analyses in cases where exposure risk has been proven; 3) advise, support and inform pregnant employees about their rights; and 4) in cases involving risky occupational activities and pregnant employees not being presented with risk assessments, midwives could orient the women in their care towards an obstetrician and/or their employer's occupational physician in order to get a risk assessment done, implement changes to the woman's workstation or write a prescription for preventive leave if all else fails.

Strengths and limitations

Midwives' practices with regard to the implementation of maternity protection legislation in Switzerland have never been investigated before. The high response rate (54%) demonstrated the interest in this theme among the midwives invited to participate in our study.

Nevertheless, our findings do present some limitations. First, although the Maternity Protection Ordinance is a federal legislation, there may be variations in local practice. Extrapolating our results to Switzerland's German- and Italian-speaking regions would have to be done with caution, and further studies should thoroughly examine these different Swiss contexts. Second, given that study participation was voluntary, we cannot exclude a positive selection bias in our sample. Assuming that the midwives who responded to our survey were those most interested in and sensitive to the issues of and relationships between pregnancy and working conditions, our results may overestimate the midwives' potential for involvement in maternity protection at work. In addition, the questionnaire's self-reporting format could introduce a social desirability bias. Finally, although our sample is not intended to be representative, the fact that we did not send our survey to all salaried and self-employed midwives working in French-speaking Switzerland limits the generalisation of the results.

Despite these limitations, midwifery's potential role and contributions to supporting and advising employees during their pregnancy, as observed during this study, provide some interesting avenues of reflection for updating current regulations, for improving resource use in the implementation of maternity protection legislation and for protecting pregnant employees and their unborn children.

Conclusion

There are complex challenges to overcome in order to properly protect the health of pregnant employees, and those challenges act at different levels. Midwives could act as a significant first point of contact for informing pregnant employees about the dangers associated with their profession and for supporting them through advice during consultations. On the one hand, it appears necessary that midwives improve their knowledge and awareness of pregnant women's occupational health. On the other hand, it is essential that their roles be clarified and formally integrated into Switzerland's maternity protection legislation.

Supplementary Data

Translated version to the questionnaire provided to midwives (English)

Declaration of Competing Interest

None Declared

CRediT authorship contribution statement

Alessia Abderhalden-Zellweger: Conceptualization, Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. **Maria-Pia Politis Mercier:** Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing – review & editing. **Isabelle Probst:** Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing – review & editing. **Pascal Wild:** Conceptualization, Methodology, Data curation, Writing – review & editing. **Brigitta Danuser:** Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing – review & editing. **Peggy Krief:** Conceptualization, Funding acquisition, Methodology, Project administration, Supervision, Writing – review & editing.

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Declaration of interest statement:

(1) Conflict of Interest: None Declared.

(2) Ethical Approval: The Human Research Ethics Committee of the Canton Vaud (CER-VD) has certified that the research study protocol associated with this study falls outside of the field of application of the Swiss Federal Act on Research Involving Humans.

The participation in the study was voluntary.

In the email sent to the midwives, participants were informed about the objectives of this study and the confidentiality regarding the use of the gathered data. By accepting to fulfill the questionnaire on a voluntary base, the midwives agreed on the intended use of their data.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.midw.2021.103125.

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