

Evolution of gynaecologists' practices regarding the implementation of Swiss legislation on maternity protection at work between 2008 and 2017

Abderhalden-Zellweger Alessia^{ab}, Mediouni Zakia^b, Probst Isabelle^a, Mercier Maria-Pia Politis^a, Danuser Brigitta^b, Wild Pascal^{bc}, Chiarini Bastien^b, Hale Marie-Louise^d, Krief Peggy^b

^a School of Health Sciences (HESAV), University of Applied Sciences and Arts Western Switzerland (HES-SO), Switzerland

^b Center for Primary Care and Public Health (Unisanté), Occupational Health and Environment Department (DSTE), University of Lausanne (UNIL), Switzerland

^c INRS Research and Studies Management, Vandoeuvre les Nancy, France

^d Occupational health physician and general practitioner in private practice, 1162 St-Prex, Switzerland

Summary

BACKGROUND: In accordance with the International Labour Organization's Maternity Protection Convention (No. 183) and European Union Directive 92/85/CEE (1992), Switzerland's Labour Law and its Maternity Protection Ordinance (OProMa) aim to protect the health of pregnant employees and their future children while enabling them to pursue their working activities. Gynaecologists-obstetricians have a key role in this legislation, particularly through the prescription of preventive leave for patients who would otherwise face dangerous or arduous tasks in the absence of an adequate risk analysis or suitable protective measures. However, international and national literature suggests that gynaecologists-obstetricians may encounter difficulties in fulfilling their role.

AIMS: This study aimed to: (1) describe the practices and difficulties encountered by gynaecologists-obstetricians in the practical implementation of the OProMa; and (2) compare the evolution of these practices and difficulties between 2008 and 2017.

METHODS: A survey by questionnaire was conducted in 2008 and repeated in 2017. Both surveys focused on gynaecologists-obstetricians working in the French-speaking part of Switzerland (in private practices, hospitals or both). Descriptive and comparative analyses were carried out.

RESULTS: 83 gynaecologists-obstetricians responded in 2008 and 93 in 2017: response rates of 47% and 32%, respectively. In 2017, gynaecologists-obstetricians were more likely to ask questions about occupational risks faced by their patients when consulted by working mothers about their pregnancies. The estimated percentage of patients exposed to an occupational risk remained constant (20% in 2008 and 22% in 2017). Communication and collaboration with employers were reported to be difficult in both surveys, even though these are key elements in the

implementation of the OProMa. Collaboration with occupational physicians, however, was more frequent in 2017.

CONCLUSION: In 2017, gynaecologists-obstetricians showed a greater awareness of occupational risks and collaborated more frequently with occupational health specialists. However, the application of the OProMa remained limited over the studied time period. Improving training of gynaecologists-obstetricians in this field could be a significant factor in encouraging better implementation of the current legislation. Moreover, gynaecologists-obstetricians need to be given the necessary support to enable their clinical practice to evolve towards a more preventive type of medicine. Collaboration with relevant stakeholders, including occupational physicians, midwives and workers, should be encouraged.

Background

Although the international medical literature supports the principle that work in itself does not pose a risk to pregnancy [1, 2], evidence suggests that occupational exposures or arduous activities may affect women's health, pregnancy outcomes and child development [3–5]. Moreover, although pregnancy is a normal physiological state and “most women are at low risk of adverse effects, these risks are not zero when compared to non-pregnant women” [6].

Some negative work-related effects could be prevented through targeted measures [7, 8]. However, studies in Switzerland and in other national contexts reveal gaps in the implementation of legislative requirements for the protection of pregnant employees [9–11]. This discrepancy between the recommended provisions and their application may have consequences for the health of these employees and that of their future children. The COVID-19 epidemic has further highlighted the need for greater protection of pregnant workers, given the specific effects of SARS-CoV-2 on pregnancy: placental damage and increased risk

Correspondence:

Alessia Abderhalden-Zellweger, PhD, School of Health Sciences (HESAV), University of Applied Sciences and Arts Western Switzerland (HES-SO), Avenue de Beaumont 21, CH-1011 Lausanne, alessia.zellweger[at]hesav.ch

of complications in the third trimester [12–14]. In Switzerland, certain media articles have highlighted the role of gynaecologists in the protection of pregnant workers throughout the epidemic, and some of the difficulties encountered in this task [15].

Our study investigates the practices of gynaecologists concerning the protection of pregnant workers, the difficulties encountered and their evolution over a 10-year period.

Switzerland's legal framework regarding the protection of pregnant workers

In accordance with ILO Convention 183 [16], and European Union Directive 92/85/CEE (1992) [17], Switzerland's legislation protects pregnant employees from occupational hazards and strenuous activities while enabling them to continue their work activities under suitable conditions. Stemming from Switzerland's Federal Labour Law (1964) [18], the *Maternity Protection Ordinance* (OProMa) (2001) [19] presents a list of occupational activities that might prove dangerous or strenuous for pregnant employees (table 1). It should be noted that psychosocial risks are not included in the OProMa. The OProMa attributes a central role to gynaecologists-obstetricians. Table 2 presents an overview of best practice for gynaecologists-obstetricians, as determined by Swiss legislation. During pregnancy follow-up consultations, they have to verify whether their patients are exposed to any professional activities that might be dangerous or arduous for their health or that of their unborn child. If they are, gynaecologists-obstetricians should contact the expectant mother's employer and request a risk analysis in order to determine whether the employee can safely continue her work. The OProMa specifies that in order to carry out an appropriate risk analysis, the employer must call upon an occupational physician or other qualified occupational health and safety specialist [19]. In the presence of suspected health risks and in the absence of an OProMa-compliant risk analysis, the ob-gyn should prescribe preventive leave as a precautionary measure. The preventive leave resulting from this certificate is entirely financed by the employer (at least 80% of the woman's salary). This prescription differs from sick leave, which presupposes the existence of a medical problem and which is usually financed by the employees' health insurance. According to the OProMa, the cost of pregnancy consultations resulting from a prescription of preventive leave should be borne by the employer and not by the obligatory national health insurance scheme (LAMal). Table 3 presents the principal differences be-

tween preventive leave and sick leave. It should be noted that in Switzerland, antenatal services are mainly provided by gynaecologists, either in private practice [22] or in hospitals, and this is independent of the level of risk of the pregnancy. Pregnancy consultations with gynaecologists-obstetricians are generally short (about 20 minutes) and focus mainly on potential medical problems.

Despite the central role that gynaecologists-obstetricians play in the protection of pregnant women in the workplace, international [23–25] and national literature has shown that gynaecologists-obstetricians encounter several difficulties in this task. A lack of perceived competence in assessing working conditions and pregnant women's ability to work, time constraints and a lack of cooperation from employers are some examples of these difficulties.

Objectives

This study aimed to:

1. Describe the practices and difficulties encountered by gynaecologists-obstetricians working in the French-speaking part of Switzerland concerning the implementation of the OProMa.
2. Compare the evolution of these practices and difficulties between 2008 and 2017.

Materials and methods

Study population

The target population included gynaecologists-obstetricians working in French-speaking Switzerland's hospitals, private practices or both.

In 2008, a postal questionnaire was sent to all the gynaecologists-obstetricians registered on the Swiss Medical Association (FMH) website and working in French-speaking Switzerland (n = 175). The response rate was 47% (n = 83). In 2017, we contacted a broader population of gynaecologists-obstetricians, including those identified from the FMH register and from the cantonal registers for the French-speaking regions of Switzerland. This resulted in 333 gynaecologists-obstetricians with valid email addresses being contacted. The response rate was 32% (n = 105).

Data collection

The main themes investigated in both questionnaires were: the frequency at which gynaecologists-obstetricians asked their patients questions about their jobs and working conditions during pregnancy consultations, their cooperation

Table 1: Dangerous or arduous activities as detailed in the OProMa [20].

Article of the legislation	Types of working conditions and activities that are considered to be dangerous or arduous for pregnant employees under the OProMa
OProMa art. 7	Shifting heavy loads
OProMa art. 8	Working in extremes of cold (below -5°C), heat (over $+28^{\circ}\text{C}$) or very wet conditions
OProMa art. 9	Movements and postures generating early fatigue (e.g., extensive stretching or bending, continuous crouching, etc.) or other tough conditions such as vibrations, shocks and bumps
OProMa art. 10	Exposure to micro-organisms
OProMa art. 11	Noise exposures
OProMa art. 12	Ionising and non-ionising radiation
OProMa art. 13	Exposure to dangerous chemicals
OProMa art. 14	Constraining working-time organisation
OProMa art. 15	Piecework and/or activities at a predetermined work-rate without the possibility of flexibility from the pregnant employee
OProMa art. 16	Work in high pressure or in workplaces with an oxygen-reduced atmosphere

with employers and collaboration with occupational physicians (contact, difficulties encountered), and the frequency at which they prescribed preventive leave when detecting an occupational risk. In 2017, a number of questions were added to the questionnaire and some questions were reformulated. For the present paper, we analysed only the questions that are comparable in both surveys.

[Table 4](#) summarises and describes the variables analysed in this paper.

Statistical analysis

Statistical analyses were conducted using STATA 15 software. Inter-survey comparisons were performed using lo-

gistical regressions, adjusting for sex and type of practice. The significance level was fixed at $p < 0.05$.

When the number of responses was too small to be modelled, the surveys were compared using Fisher's exact test with no adjustment.

Results

Study populations

We analysed 83 completed questionnaires from 2008 and 93 from 2017. In 2017, we excluded 12 respondents who did not do pregnancy follow-up consultations.

[Table 5](#) summarises relevant characteristics of the two study populations.

Table 2: Overview of gynaecologists-obstetricians' best practices as detailed in Swiss legislation

Activity	Detailed description	Article of the legislation if applicable
Determination of the aptitude for work of the pregnant or breastfeeding mother	The ob-gyn determines the aptitude for work of the pregnant or breastfeeding mother. He or she shall take account of the following: (a) the interview with the worker and her medical examination; (b) the results of the risk analysis carried out for the company by a specialist; (c) any additional information obtained during an interview with the occupational health specialist who carried out the risk analysis or with the employer.	Art. 2; al. 2 of the OProMa [19]
Pregnancy consultation	During pregnancy consultations, gynaecologists-obstetricians have to ask their patient about her occupational conditions and work activities that might be dangerous or arduous for their health or that of their unborn child. The OProMa describes the objective criteria and threshold values above which specialists must consider the activity or exposure as dangerous for pregnant workers.	Art. 7-16 of the OProMa [19] specify and supplement the list risks proposed by the art. 62 OLT 1 [21].
	The decision must also take into account the specific working conditions, such as the accumulation of several loads, the duration of exposure, the frequency of the load or hazard and other factors that may have a positive or negative influence on the risk potential to be measured.	Art. 6 of the OProMa [19].
Risk analysis	In the presence of alleged health dangers, contact the expectant mother's employer and ask for a risk analysis to decide whether they can safely continue their work.	
	The specialists legally entitled to carry out a risk analysis are: occupational physicians and occupational hygienists, as well as other specialists such as ergonomists who have acquired the necessary knowledge and experience in risk assessment.	Art. 17 of the OProMa [19]; art. 63, al. 1, OLT 1 [21].
Preventive leave	On the basis of the interview with the worker and her medical examination, a pregnant woman or a breastfeeding mother should not work if: (a) no risk analysis has been carried out or the one carried out is insufficient or inadequate; (b) a risk analysis has been carried out but the necessary protective measures are not implemented or are not respected within the company; (c) a risk analysis has been carried out and protective measures are taken but these are not sufficiently effective; or (d) There are indications of a risk to the worker or her child. In these scenarios, the ob-gyn should prescribe preventive leave in accordance with the precautionary principle.	Art. 2, al.3 of the OProMa [19].
Other resources	The guide provided by the State Secretariat for Economic Affairs (SECO) designed explicitly for attending physicians on the protection of pregnant workers. The DSTE specialised occupational medicine consultation for pregnant workers. The DSTE training on OProMa, pregnant workers' rights and the role of relevant stakeholders within legislation.	-

Table 3: Comparison between sick leave and preventive leave of pregnant employees in Switzerland.

	Sick leave	Preventive leave
Cause	Pathologies both linked and not linked to the pregnancy.	In the following scenarios, the ob-gyn should prescribe preventive leave in accordance with the precautionary principle: (a) no risk analysis has been carried out or the one carried out is insufficient or inadequate; (b) a risk analysis has been carried out but the necessary protective measures are not implemented or are not respected within the company; (c) a risk analysis has been carried out and protective measures are taken but these are not sufficiently effective; or (d) There are indications of a risk to the worker or her child.
Remuneration	100% for a period depending on the length of employment; or 80% for two years (in case of a loss of earnings insurance).	80% of salary throughout the entire period of preventive leave.
Cost coverage	Employer or employer's loss of earnings insurance.	Employer.
Costs of pregnancy consultations resulting in	National health insurance scheme (LAMal).	Employer.

It is important to note that in 2017, there are more women, more gynaecologists-obstetricians working exclusively in hospitals, and fewer working in both private practices and hospitals. These differences may be explained by the

broader selection of respondents or by an evolution in the target population.

Table 4: Variables analysed and description of these items.

Variables	Description	Type of variable
The most common risky activities encountered by gynaecologists-obstetricians during pregnancy consultations	The questionnaires proposed a list of risky activities as detailed in the OProMa and in the Federal Labour Law, which can be dangerous for pregnant workers. As psychosocial risks the items "Detrimental psychological atmosphere" and "Stressful job" were also added in the list proposed to gynaecologists-obstetricians. We asked participants to select the five risky activities most commonly encountered during their pregnancy consultations. The item, "Strenuous postures or movements", was only proposed in 2017.	Binary variables
Frequency with which gynaecologists-obstetricians asked questions concerning their patients' profession, potential occupational risks, working conditions and job satisfaction during pregnancy consultations	Participants had to evaluate how often they asked questions about their patients' profession, potential occupational risks, working conditions and job satisfaction during pregnancy consultations. The rating scale was, "never/rarely, sometimes, often, and always".	Ordinal variable
Contact with the employer of a patient whose work poses a risk to pregnancy	Participants were asked if they had ever initiated contact with the employer of a patient whose work posed a risk to their pregnancy.	Binary variable
Reasons for not contacting employers in cases involving a suspected occupational risk and the absence of a risk analysis	Among the items proposed in the questionnaire, participants were asked to select one or more reasons why they might choose not to contact their patient's employer. The only reasons given in both surveys were: (1) time constraints, and (2) the maintenance of medical secrecy. In 2017, participants could select four extra items: (1) refusal by the patient; (2) gynaecologists-obstetricians' self-perceived lack of experience or competence; (3) it is the occupational health physician's responsibility; and (4) I have never thought about it.	Binary variables
Difficulties in contacting the employer	Participants were asked if they had ever encountered difficulties when trying to contact the employer of a patient whose work posed a risk to their pregnancy.	Binary variable
Reasons for difficulties in contacting the employer	Among the items proposed in the questionnaire, participants were asked to select one or more difficulties encountered when trying to contact the employer. In both surveys, participants could select one or more of these items: (1) time constraints; (2) lack of cooperation from the employer; and (3) the maintenance of medical secrecy.	Binary variables
Frequency of prescription of preventive leave during non-pathological pregnancies	Participants were asked about the frequency with which they prescribed preventive leave in cases involving a non-pathological pregnancy yet a proven occupational risk. In the 2008 survey, gynaecologists-obstetricians were asked: "Since you began your clinical career, how many times have you prescribed preventive leave because of the proven or suspected occupational health risks facing a pregnant woman or her unborn child?" The possible answers were, (I have done this: 1 or 2 times; 3–5 times; 6–10 times; 11–20 times; more than 20 times). In 2017, we reformulated this question: "In cases involving a non-pathological pregnancy and strenuous and/or dangerous work activities, as per OProMa, how often do you prescribe workers preventive leave from their workstation?" The rating scale was, "never/rarely, sometimes, often, and always".	Ordinal variable
To whom do you address the invoice after having prescribed preventive leave?	Participants in the 2017 survey were asked to whom they sent their invoices for the prescription of preventive leave following a pregnancy consultation.	Binary variable
Patients referred to occupational health physicians in cases involving suspected or proven occupational risks	Participants were asked if they referred their patients to occupational health physicians in cases involving suspected or proven occupational risks.	Binary variable
Reasons for not referring the patient to an occupational health physician	Among the items proposed in the questionnaire, participants were asked to select one or more items explaining non-referral to an occupational health physician. The reasons given in both surveys were: (1) I do not know any occupational health physicians; (2) I did not think about it; and (3) I can manage the situation myself. In 2017, participants had three more choices: (4) I do not have time to orient my patients; (5) the question of pregnant women's occupational health is not a priority in my practice; and (6) I could not find any occupational health physicians available.	Binary variables

Table 5: Description of the gynaecologists-obstetricians study population in 2008 and 2017 surveys.

		2008 (n = 83)	2017 (n = 93)
Age (years), mean ± SD		52.7 ± 7.67	50.1 ± 9.98
		% (n)	% (n)
Sex	Man	55% (44)	35% (31)
	Woman	45% (36)	65% (57)
Type of practice	Private practice	50% (42)	54% (50)
	Private practice and hospital	46% (38)	20% (19)
	Hospital	4% (3)	26% (24)
Canton of practice	Vaud	37% (30)	52% (48)
	Geneva	32% (26)	24% (22)
	Fribourg	13% (11)	6% (6)
	Neuchâtel	10% (8)	11% (10)
	Valais	4% (3)	5% (5)
	Jura	4% (3)	2% (2)

Comparison of gynaecologists-obstetricians' responses between 2008 and 2017

Table 6 displays descriptive statistics and a comparison of gynaecologists-obstetricians' responses between 2008 and 2017. The analysis includes gynaecologists-obstetricians who answered in 2008 and those who answered in 2017, adjusting for sex and type of practice.

Estimated percentage of pregnant workers facing an occupational risk and types of risks encountered in workplaces

Gynaecologists-obstetricians estimated that an average of one fifth of their patients (20% in 2008; 22% in 2017) were carrying out an occupational activity that presented a risk to their pregnancy.

In 2008, the five most frequent occupational risks for pregnant workers reported by gynaecologists-obstetricians were:

- detrimental psychological atmosphere (88%)*
- standing for long periods (87%)
- burdensome work schedules such as >9 h per day, irregular shifts or night work (86%)
- lifting heavy loads (81%)

- stressful job (81%)*

* As psychosocial risks the items “Detrimental psychological atmosphere” and “Stressful job” do not fall within the occupational health risks predetermined in the OProMa or within the Federal labour law.

In 2017, the five most frequent occupational risks were:

- lifting heavy loads (91%)
- standing for long periods (80%)
- detrimental psychological atmosphere (78%)*
- strenuous postures or movements (65%)
- stressful job (53%)*

Frequency at which gynaecologists-obstetricians asked about work-related issues during pregnancy consultations

The majority of gynaecologists-obstetricians in 2008 and 2017 stated that they “often/always” enquired about their patients' professions (96% and 99%, respectively); the occupational risks encountered in their workplace (71% and 86%); working conditions (83% and 84%) and job satisfaction (63% and 68%).

Table 6: Comparison of gynaecologists-obstetricians' responses in the 2008 and 2017 surveys.

		2008 (n = 83)	2017 (n = 93)	p-value	Odds ratio
Estimated percentage of patients facing an occupational risk, mean ± SD		20 ± 16.1	22 ± 15.4	0.544†	1.60
		% (n)	% (n)		
The five most common risky activities encountered by gynaecologists-obstetricians during pregnancy consultations	Heavy loads	81% (67)	91% (80)	0.067†	2.52
	Standing for long periods	87% (72)	80% (70)	0.084†	0.43
	Detrimental psychological atmosphere	88% (73)	78% (69)	0.189†	0.53
	Strenuous postures or movements	NA	65% (57)	-	-
	Stressful job	81% (67)	53% (47)	0.009†	0.37
	Constrained schedule	86% (71)	0	-	-
Ask questions about:	Profession	96% (78)	99% (89)	0.464†	2.43
	Occupational risks	71% (58)	86% (77)	0.028†	2.64
	Workplace conditions	83% (67)	84% (76)	0.761†	0.86
	Satisfaction at work	63% (51)	68% (61)	0.454†	1.34
Contact with the employer of a patient whose work poses a risk to pregnancy	52% (43)	58% (50)	0.333†	1.40	
Multiple-choice question: Reasons explaining no contact with employers in cases involving suspected occupational risk and the absence of a risk analysis	I have to maintain medical confidentiality	73% (27)	13% (11)		
	Refusal by the patient	NA	48% (40)		
	Time constraints	8% (3)	29% (24)		
	Self-perceived lack of experience or competencies	NA	26% (22)		
	It is the occupational health physician's responsibility	NA	18% (15)		
	I have never thought about it	NA	14% (12)		
Difficulties in contacting the employer		67% (29)	70% (35)	0.106†	0.46
Multiple-choice question: Reason explaining the difficulties in contacting the employer Gynaecologists-obstetricians in 2008: n = 29 Gynaecologists-obstetricians in 2017: n = 35	Time constraints	38% (11)	71% (25)	0.010†	6.78
	Lack of cooperation from the employer	76% (22)	57% (20)	0.033†	0.20
	Medical confidentiality	45% (13)	20% (7)	0.037†	0.23
Prescription of preventive leave during normal pregnancies with proven occupational risks		72% (59)	31% (27)	0.000†	0.16
Patients referred to occupational health physicians in cases involving suspected or proven occupational risks		25% (21)	62% (53)	0.000†	5.34
Multiple-choice question: Reasons explaining non-referral to an occupational health physician Gynaecologists-obstetricians 2008: n = 62 Gynaecologists-obstetricians 2017: n = 31	I do not know any occupational health physicians	52% (32)	74% (23)	0.001†	10.69
	I did not think about it	56% (35)	35% (11)	0.016†	0.25
	I can manage the situation myself	29% (18)	16% (5)	0.072†	0.30
	I could not find any occupational health physicians available	NA	13% (4)	-	-

NA = not asked in the 2008 questionnaire The model simultaneously includes gynaecologists-obstetricians who answered in 2008 and 2017, adjusting for sex and type of practice.

* Linear regression. † Logistic regression Significant **p values** are in bold.

Contact and cooperation with employers

In both 2008 and 2017, just over half of the gynaecologists-obstetricians said that they contacted employers when they believed that their patients' jobs posed a risk to their pregnancies. In cases involving a presumed pregnancy risk with no existing risk analysis, the principal reasons given by gynaecologists-obstetricians for not contacting employers were the need to maintain medical confidentiality in 2008 (73%) and a refusal by the patient in 2017 (48%). (The item, "Refusal by the patient", was not proposed on the 2008 questionnaire.) Other reasons mentioned in 2017 were the ob-gyn's self-perceived lack of experience or competence in occupational health (26%), the belief that it was the occupational health physician's responsibility to contact the employer (18%) and the fact that they had never thought about it (14%).

The majority of participants said that they had encountered difficulties when they had contacted employers (67% in 2008; 70% in 2017). In 2008, the principal reasons mentioned were the non-cooperation of employers (76%), the need to maintain medical confidentiality (45%) and a lack of time (38%). In 2017, the principal reasons evoked were a lack of time (71%), the non-cooperation of employers (57%) and the need to ensure medical confidentiality (20%).

Collaboration with an occupational health physician

In cases of suspected occupational health risks, 25% of the gynaecologists-obstetricians in 2008 reported that they oriented their patients towards occupational physicians, whereas in 2017, 62% took that option. The main reasons given by gynaecologists-obstetricians for not referring their patients to occupational physicians were that they did not know any ($n = 32$, 52% in 2008; $n = 23$, 74% in 2017) and that they did not think about it ($n = 35$, 56% in 2008; $n = 11$, 35% in 2017).

Preventive leave

In 2008, 67% of gynaecologists-obstetricians stated that they had prescribed preventive leave "more than 20 times" during their career. Given that the number of pregnant workers with occupational risks seen in consultation is unknown, this figure is impossible to interpret. For this reason, the response format was modified in the 2017 questionnaire. In 2017, 31% of gynaecologists-obstetricians declared that they "often/always" prescribed preventive leave in cases involving a non-pathological pregnancy with a suspected occupational risk.

Only in 2017, we asked gynaecologists-obstetricians to whom they sent their invoices following the prescription of preventive leave. Thirty-one percent of gynaecologists-obstetricians stated that they sent their invoices to employers, with 65% sending them to the LAMal (data not shown).

Significant differences in gynaecologists-obstetricians' practices and difficulties between 2008 and 2017

Analysis showed that questions about occupational risks faced by pregnant patients were asked significantly more often in 2017 than in 2008 ($p = 0.028$) during pregnancy consultations.

Regarding the reasons explaining difficulties in contacting employers, time constraints were evoked significantly

more by gynaecologists-obstetricians in 2017 ($p = 0.010$), whereas lack of employer cooperation and concerns about medical confidentiality were mentioned more by gynaecologists-obstetricians in 2008 ($p = 0.033$ and $p = 0.037$, respectively).

Concerning the collaboration with occupational physicians, the percentage of gynaecologists-obstetricians referring patients to an occupational physician in cases of occupational risk rose from 25% in 2008 to 62% in 2017 ($p = 0.000$). The reasons for non-referral to an occupational physician in cases of occupational risk varied between 2008 and 2017: the reason, "I do not know any occupational health physicians", was evoked more frequently by participants in 2017 than in 2008 ($p = 0.001$) and the reason, "I did not think about it", was more frequent in 2008 ($p = 0.016$).

Discussion

This study investigated the practices and difficulties encountered by gynaecologists-obstetricians working in the French-speaking part of Switzerland concerning the implementation of the OProMa, comparing the results of a survey conducted in 2008 and then repeated in 2017.

The proportion of pregnant women facing occupational health risks remained stable according to the gynaecologists-obstetricians' estimation. The main at-risk tasks encountered were almost the same in both questionnaires: four of the five tasks evoked in 2008 were still among the five most common at-risk activities encountered in 2017 (heavy loads, standing for long periods, a detrimental psychological atmosphere and a stressful job). Two of the most cited at-risk tasks – a *detrimental psychological atmosphere* and a *stressful job* – do not fall within the OProMa's predetermined occupational health risks [20]. However, some studies have found an association between maternal stress and negative pregnancy outcomes [26, 27]. The European Agency for Safety and Health at Work survey [28] shows that, in today's working world, the majority of employees identify psychosocial risks as factors affecting their health. The Swiss Health Survey of 2017 [29] points out that stress and psychosocial risks are increasingly present in work settings. Indeed, in 2017, 50% of people in employment were exposed to at least three psychosocial risks in their job, which represents an increase of 4% compared with the data collected in 2012. Therefore, the responses of the gynaecologists-obstetricians highlight what could be considered as a gap in Swiss pregnancy protection legislation.

The data show an improvement in the importance given to occupational health during pregnancy consultations between 2008 and 2017: gynaecologists-obstetricians more frequently asked questions about suspected occupational risks in 2017 than in 2008. It also appears that gynaecologists-obstetricians in 2017 were more inclined to refer their patients to an occupational physician in cases involving suspected or proven occupational risks. It is surprising that the main reason cited by the gynaecologists-obstetricians who responded in 2017, and the second one for those who responded in 2008, for not referring their patients to occupational physicians is that they do not know any. A possible explanation could be that the specialisation in occupational medicine has only been recognised by the Swiss

Medical Association (FMH) since 2000 [30]. These findings show the importance of raising awareness of occupational medicine amongst gynaecologists-obstetricians and finding ways to facilitate access to occupational health specialists.

The contact and the cooperation with employers concerning the implementation of the OProMa remained difficult throughout the years examined. In 2017, lack of time appeared to be a major difficulty for gynaecologists-obstetricians, both when it came to deciding whether to contact an employer and once that contact had been initiated. This self-perceived lack of time might be explained by the format and content of pregnancy follow-up consultations today. These put a very strong focus on clinical and biomedical screening processes, and not on the social determinants of health [31]. Moreover, they are of fairly short duration. When billing their patients, physicians in Switzerland apply the TARMED official uniform tariff for predefined timed and monitored medical acts. Physicians are not reimbursed for any time spent beyond the prescribed duration for a certain act. According to the TARMED version in force in 2017, the first pregnancy examination and consultation should not last longer than 21 minutes. Ensuing pregnancy examinations are supposed to last around 8 minutes. It is therefore not surprising that gynaecologists-obstetricians feel that they did not have enough time to satisfactorily investigate the different aspects of their patients' occupational health and the risks they may face.

According to the OProMa, the costs of pregnancy consultations resulting in the prescription of preventive leave should be borne by the employer and not by the obligatory national health insurance scheme (LAMal). This also means that the consultation is not subject to the time constraints of TARMED rates. However, this does not in fact happen: 65% of gynaecologists-obstetricians in 2017 stated that invoices for these consultations were sent to the LAMal. This highlights a lack of knowledge in this area.

Gynaecologists-obstetricians in 2017 had a self-perceived lack of competence in occupational health and this was one of the principal reasons for their decision not to contact employers in cases involving an occupational risk and with an absence of a risk analysis. Therefore, not only did gynaecologists-obstetricians feel that they did not have time to investigate their pregnant patients' occupational exposures, but they also felt that they lacked the competence to do so. These results are consistent with studies showing that gynaecologists-obstetricians struggle to address issues about occupational health and occupational risks with their pregnant patients [32, 33], notably because of a lack of established guidelines on those subjects [23]. These difficulties may inhibit gynaecologists-obstetricians from adequately fulfilling the role which the current legislation has conferred upon them. In Switzerland, a guide designed specifically for attending physicians on the protection of pregnant workers was published in 2017 by the State Secretariat for Economic Affairs (SECO) [34].

In summary, our study investigating gynaecologists-obstetricians self-reported practises and experience on the implementation of the OProMa shows that:

1. The current legislation does not cover all the potential occupational risks for their pregnant patients (e.g., a

detrimental psychological atmosphere in the workplace or a stressful job). Therefore, the current legislation requires reassessment and possible modification. It is important to point out that the gynaecologists-obstetricians perception of risk could vary according to social and cultural representations and past experiences. Pregnant woman may perceive their work as being a significant threat to their ability to have normal healthy babies even if the actual occupational risks may not be of scientific or medical significance [35]. These concerns should be adequately addressed regardless of the actual level of risk in order to support and reassure pregnant employees, and offer them healthy and non-discriminatory working environments [6]. Thinking on how to consider and include the subjective point of view of pregnant workers should therefore be initiated.

2. The perceived lack of time, which gynaecologists-obstetricians persistently reported, deserves consideration. The European Board and College of Obstetrics and Gynaecology (EBCOG) Scientific Committee [31] states that antenatal care, which currently focuses mainly on medical risks, needs to evolve in order to include assessment of non-medical factors, particularly psychosocial issues. Working conditions would fall into these psychosocial determinants. Clearly, this change in the practises of gynaecologists-obstetricians towards a more preventive type of medicine would require additional resources in terms of time, support and training and appropriate remuneration.
3. Gynaecologists-obstetricians perceived that they lacked certain competencies in the domain of occupational health.

Both of these aspects (perceived lack of time and competencies) could limit the practitioners' ability to inform pregnant employees about their rights, and to act in conformity with the legislation. Training on the OProMa might help these professionals to act, consult and prescribe in a way that corresponds better with this legislation's objectives. From 2015, in order to support the stakeholders involved in maternity protection in the workplace and enhance OProMa's implementation, the Occupational Health and Environment Department (DSTE) within the Centre for Primary Care and Public Health (Unisanté) has offered training on the OProMa, pregnant workers' rights and the role of relevant stakeholders within this legislation. The DSTE has also developed a specialised occupational medicine consultation for pregnant workers. Conducted by an occupational physician, this consultation aims to: (1) identify risky tasks in the pregnant woman's job description and estimate her occupational risks, (2) inform pregnant workers of their rights, (3) inform and remind employers of their legal obligations and guide them through the process of risk analysis and subsequent adaptations of the workplace, and (4) support the ob-gyn in his or her opinion regarding the job's (un)suitability for the pregnant worker. Along with other factors, this additional training and the dedicated specialised consultation may have contributed towards gynaecologists-obstetricians' increased awareness and attention to occupational risks during pregnancy follow-up consultations and their higher collaboration with occupational health specialists that were highlighted in the

2017 questionnaire. The impact of these resources on gynaecologists-obstetricians' practices deserves to be further investigated. Depending on the results of this further investigation, implementation of these resources in other Swiss cantons could be considered.

Collaboration with other stakeholders who have specialist competencies could help gynaecologists-obstetricians in better implementing the current legal recommendations and play a role in improving maternity care and optimising outcomes for women and their babies [35]. Factors that facilitate or hinder the development of a network of specialised resources for gynaecologists-obstetricians (i.e., links with occupational health physicians, midwives, etc.) need investigation. Associating occupational health physicians more closely with decisions about preventive leave may represent one way of supporting gynaecologists-obstetricians in their decision-making processes. However, it should be noted that occupational medicine is relatively under-developed in Switzerland in comparison to other Western countries [36]. In addition, occupational medicine in Switzerland is the only speciality without an official TARMED point, which therefore allows only limited access to preventive care in this field. Finally, in the OProMa, the occupational physician's role is limited to carrying out a risk analysis.

The role of midwives also deserves attention. Firstly because, despite having no officially defined role in Switzerland's maternity protection legislation, midwives follow a significant proportion of pregnancies, particularly low-risk pregnancies, either autonomously or in collaboration with an ob-gyn. Secondly, their pregnancy consultations are usually longer than those of gynaecologists-obstetricians [37]. Thus, midwives are in a better position to identify pregnant women's healthcare needs by carrying out a comprehensive assessment including an examination of the social determinants of maternal health. Their profession and specific practises could be complementary to those of gynaecologists-obstetricians regarding occupational health issues.

Strengths and weaknesses

The present study provided an insight into gynaecologists-obstetricians' practices regarding the protection of pregnancy in the workplace. Response rates in both years correspond with the average response rates generally obtained in online surveys of health professionals [38] (47% in 2008; 32% in 2017), thus demonstrating an interest in this topic from gynaecologists-obstetricians working in French-speaking Switzerland.

However, our findings do have limitations. First, we formulated some questions more precisely in the 2017 questionnaire. The differences between the two administered questionnaires prevented us from making an exhaustive comparison. The participants in 2008 were anonymised and we were therefore unable to contact exactly the same population again in 2017. Some of the responding gynaecologists-obstetricians probably responded to both questionnaires, but we do not know which ones nor in what percentage. The difference observed in overall responses may therefore be due to factors other than the evolution of practises.

Another limitation pertains to the composition of the sample population. In 2017, we aimed to contact a broader population of gynaecologists-obstetricians than in 2008 when only the gynaecologists-obstetricians registered on the Swiss Medical Association (FMH) website were contacted. The study population's composition – sex balance and the type of practice – showed significant differences between the 2008 and 2017 populations. The comparisons described in the present paper have been adjusted with regards to these variables.

A positive selection bias is possible. The gynaecologists-obstetricians interested in and aware of the topic of occupational health in pregnant employees could be the ones who responded to the questionnaires. Furthermore, self-administered questionnaires can induce a social desirability bias.

Finally, when we carried out this study, we analysed quantitative data that did not enable us to understand the underlying subtleties of the daily practice of gynaecologists-obstetricians, particularly when they encounter a patient whose pregnancy is potentially at risk. We therefore would like to carry out a qualitative study to complete and enrich the present one.

Conclusion

Gynaecologists-obstetricians have a key role in Switzerland's legislation on maternity protection at work (OProMa). However, they seem to have trouble fulfilling that role in their day-to-day practise. The specific training offered by the University of Lausanne's Occupational Health and Environment Department (DSTE), in addition to a specialised consultation for pregnant workers may help and support these healthcare professionals in their daily practice. However, our study identified certain problems which could not be resolved exclusively by raising professional awareness via training. Some of the difficulties which gynaecologists-obstetricians have pointed out with regards to the implementation of the OProMa show that parts of the legislation itself ought to be rethought and that gynaecologists-obstetricians should benefit from sufficient resources. These include additional time for consultations, specific guidelines, appropriate financial valorisation and stronger cooperation with other relevant stakeholders.

Financial disclosure

This work was supported by the Swiss National Science Foundation, by the Vaud Public Health Service and by a research fund from the University of Applied Sciences and Arts of Western Switzerland (HES-SO). The Centre for Primary Care and Public Health (Unisanté), University of Lausanne, Switzerland, and the School of Health Sciences (HESAV) of the University of Applied Sciences and Arts of Western Switzerland (HES-SO) contributed to salaries of certain authors.

Potential competing interests

The authors declare no conflicts of interest.

References

- 1 Casas M, Cordier S, Martínez D, Barros H, Bonde JP, Burdorf A, et al. Maternal occupation during pregnancy, birth weight, and length of gestation: combined analysis of 13 European birth cohorts. *Scand J Work Environ Health*. 2015;41(4):384–96. doi: <http://dx.doi.org/10.5271/sjweh.3500>. PubMed.
- 2 Fowler JR, Culpepper L. Working during pregnancy. UpToDate [Internet]. 2020. Available from: <https://www.uptodate.com/contents/working-during-pregnancy>.

- 3 Cai C, Vandermeer B, Khurana R, Nerenberg K, Featherstone R, Sebastianski M, et al. The impact of occupational activities during pregnancy on pregnancy outcomes: a systematic review and meta-analysis. *Am J Obstet Gynecol.* 2020;222(3):224–38. doi: <http://dx.doi.org/10.1016/j.ajog.2019.06.051>. PubMed.
- 4 Cai C, Vandermeer B, Khurana R, Nerenberg K, Featherstone R, Sebastianski M, et al. The impact of occupational shift work and working hours during pregnancy on health outcomes: a systematic review and meta-analysis. *Am J Obstet Gynecol.* 2019;221(6):563–76. doi: <http://dx.doi.org/10.1016/j.ajog.2019.06.051>. PubMed.
- 5 Croteau A. Occupational lifting and adverse pregnancy outcome: a systematic review and meta-analysis. *Occup Environ Med.* 2020;77(7):496–505. doi: <http://dx.doi.org/10.1136/oemed-2019-106334>. PubMed.
- 6 The Royal Australasian College of Physicians (RACP). The Australasian Faculty of Occupational and Environmental Medicine Guide to Pregnancy and Work. Australasian Faculty of Occupational & Environmental Medicine (AFOEM) of The Royal Australasian College of Physicians (RACP) 2017. p. 4.
- 7 Croteau A, Marcoux S, Brisson C. Work activity in pregnancy, preventive measures, and the risk of delivering a small-for-gestational-age infant. *Am J Public Health.* 2006;96(5):846–55. doi: <http://dx.doi.org/10.2105/AJPH.2004.058552>. PubMed.
- 8 Croteau A, Marcoux S, Brisson C. Work activity in pregnancy, preventive measures, and the risk of preterm delivery. *Am J Epidemiol.* 2007;166(8):951–65. doi: <http://dx.doi.org/10.1093/aje/kwm171>. PubMed.
- 9 Adams L, Winterbotham M, Oldfield K, McLeish J, Stuart A, Large A, et al. Pregnancy and maternity-related discrimination and disadvantage: experiences of mothers. London: Department for Business, Innovation and Skills, Equality and Human Rights Commission; 2016.
- 10 Lembrechts L, Valgaeren E. Grossesse au travail. Le vécu et les obstacles rencontrés par les travailleuses en Belgique. Etude quantitative et qualitative. Bruxelles: Institut pour l'égalité des femmes et des hommes, hommes Iplédfed; 2010.
- 11 Rudin M, Stutz H, Bischof S, Jäggi J, Bannwart L. Erwerbsunterbrüche vor der Geburt. Bern: Bundesamt für Sozialversicherungen (BSV); 2018.
- 12 Baud D, Greub G, Favre G, Gengler C, Jaton K, Dubruc E, et al. Second-Trimester Miscarriage in a Pregnant Woman With SARS-CoV-2 Infection. *JAMA.* 2020;323(21):2198–200. doi: <http://dx.doi.org/10.1001/jama.2020.7233>. PubMed.
- 13 Favre G, Pomar L, Musso D, Baud D. 2019-nCoV epidemic: what about pregnancies? *Lancet.* 2020;395(10224):e40. doi: [http://dx.doi.org/10.1016/S0140-6736\(20\)30311-1](http://dx.doi.org/10.1016/S0140-6736(20)30311-1). PubMed.
- 14 Schwartz DA, Morotti D, Beigi B, Moshfegh F, Zafaranloo N, Patane L. Confirming Vertical Fetal Infection With Coronavirus Disease 2019: Neonatal and Pathology Criteria for Early Onset and Transplacental Transmission of Severe Acute Respiratory Syndrome Coronavirus 2 From Infected Pregnant Mothers. *Arch Pathol Lab Med.* 2020;144(12):1451–6. doi: <http://dx.doi.org/10.5858/arpa.2020-0442-SA>. PubMed.
- 15 Baud D, Martinez De Tejada B. « Docteur, mon employeur vous demande un certificat médical ». *Rev Med Suisse.* 2020;16(712):2023–4. PubMed.
- 16 C183 - Maternity Protection Convention. 2000 (No. 183). International Labour Organization.
- 17 Council Directive 92/85/EEC of 19 October 1992 on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding (tenth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC). The Council Of The European Community; 1992.
- 18 Loi fédérale sur le travail dans l'industrie, l'artisanat et le commerce (Loi sur le travail, LTr). L'Assemblée fédérale de la Confédération suisse. 1964. Available from: https://www.fedlex.admin.ch/eli/cc/1966/57_57_57/fr
- 19 Ordonnance du DEFR sur les activités dangereuses ou pénibles en cas de grossesse et de maternité (Ordonnance sur la protection de la maternité) du 20 mars 2001. Le Département fédéral de l'économie, de la formation et de la recherche (DEFR). Available from: <https://fedlex.data.admin.ch/filestore/fedlex.data.admin.ch/eli/cc/2001/127/20150701/fr/pdf-a/fedlex-data-admin-ch-eli-cc-2001-127-20150701-fr-pdf-a.pdf>
- 20 Secrétariat d'Etat à l'Economie (SECO). Protection de la maternité et mesures de protection (tableau synoptique) Bern: Secrétariat d'Etat à l'Economie (SECO); 2019. Available from: https://www.seco.admin.ch/seco/fr/home/Publikationen_Dienstleistungen/Publikationen_und_Formulare/Arbeit/Arbeitsbedingungen/Merkblätter_und_Checklisten/mutterschutz-und-schutzmassnahmen.html.
- 21 822.111 Ordonnance 1 relative à la loi sur le travail (OLT 1) du 10 mai 2000. Available from: <https://www.fedlex.admin.ch/eli/cc/2000/243/fr>
- 22 De Pietro C, Camenzind P, Sturny I, Crivelli L, Edwards-Garavoglia S, Spranger A, et al. Switzerland: Health system review. *Health Syst Transit.* 2015;17(4):1–288. xix. PubMed.
- 23 Grajewski B, Rocheleau CM, Lawson CC, Johnson CY. “Will my work affect my pregnancy?” Resources for anticipating and answering patients' questions. *Am J Obstet Gynecol.* 2016;214(5):597–602. doi: <http://dx.doi.org/10.1016/j.ajog.2016.03.005>. PubMed.
- 24 Larsson C, Sydsjö A, Alexanderson K, Sydsjö G. Obstetricians' attitudes and opinions on sickness absence and benefits during pregnancy. *Acta Obstet Gynecol Scand.* 2006;85(2):165–70. doi: <http://dx.doi.org/10.1080/00016340500430345>. PubMed.
- 25 Stotland NE, Sutton P, Trowbridge J, Atchley DS, Conry J, Trasande L, et al. Counseling patients on preventing prenatal environmental exposures—a mixed-methods study of obstetricians. *PLoS One.* 2014;9(6):e98771. doi: <http://dx.doi.org/10.1371/journal.pone.0098771>. PubMed.
- 26 Glover V. Maternal depression, anxiety and stress during pregnancy and child outcome; what needs to be done. *Best Pract Res Clin Obstet Gynaecol.* 2014;28(1):25–35. doi: <http://dx.doi.org/10.1016/j.bpobgyn.2013.08.017>. PubMed.
- 27 Lojewski J, Flothow A, Harth V, Mache S. Employed and expecting in Germany: A qualitative investigation into pregnancy-related occupational stress and coping behavior. *Work.* 2018;59(2):183–99. doi: <http://dx.doi.org/10.3233/WOR-172673>. PubMed.
- 28 European Agency for Safety and Health at Work (EU-OSHA). Deuxième enquête européenne des entreprises sur les risques nouveaux et émergents - ESENER-2. Luxembourg: Publications Office of the European Union; 2015.
- 29 Le stress et les risques psychosociaux ont augmenté dans le monde professionnel en 2017 [Internet]. 2019. Available from: <https://www.bfs.admin.ch/bfs/fr/home/statistiques/sante/etat-sante/psychique.assetdetail.9366232.html#:~:text=20.08.2019%20%2D%20Le%20stress%20p%C3%A8s,ptre%20stable>.
- 30 Chouanière D, Praz-Christina S-M, Danuser B. Mieux connaître la médecine du travail. *Rev Med Suisse.* 2009;5:694–5.
- 31 EBCOG Scientific Committee. The public health importance of antenatal care. *Facts Views Vis ObGyn.* 2015;7(1):5–6. PubMed.
- 32 Frazier LM, Ho HL, Molgaard CA. Variability in physician management of employment during pregnancy. *Women Health.* 2011;34(4):51–63. doi: http://dx.doi.org/10.1300/J013v34n04_04. PubMed.
- 33 Polańska K, Jurewicz J, Marcinkiewicz A, Makowiec-Dabrowska T, Hanke W. [Occupational activity during pregnancy based on the Polish mother and child cohort study]. *Med Pr.* 2014;65(1):65–72. doi: <http://dx.doi.org/10.13075/mp.5893.2014.004>. PubMed.
- 34 Secrétariat d'Etat à l'Economie (SECO). GUIDE pour les médecins traitants des femmes enceintes. Berne 2017. Available from: https://www.seco.admin.ch/seco/fr/home/Publikationen_Dienstleistungen/Publikationen_und_Formulare/Arbeit/Arbeitsbedingungen/Broschuren/leitfaden_gynaekologisch_taeftige_aerzte.html
- 35 The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG). Maternity Care in Australia. A framework for a healthy new generation of Australians. Melbourne: The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG); 2017.
- 36 Danuser B. Comment soigner la santé au travail? REISO [Internet]. 2014. Available from: <https://www.reiso.org/articles/themes/travail/277-comment-soigner-la-sante-au-travail>.
- 37 van Teijlingen E. A critical analysis of the medical model as used in the study of pregnancy and childbirth. *Sociol Res Online.* 2005;10(2):63–77. doi: <http://dx.doi.org/10.5153/sro.1034>.
- 38 Cunningham CT, Quan H, Hemmelgarn B, Noseworthy T, Beck CA, Dixon E, et al. Exploring physician specialist response rates to web-based surveys. *BMC Med Res Methodol.* 2015;15(1):32. doi: <http://dx.doi.org/10.1186/s12874-015-0016-z>. PubMed.