TITLE: Implementation of the Swiss Ordinance on Maternity Protection at Work in companies in French-speaking Switzerland

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ABSTRACT

BACKGROUND: Switzerland's Ordinance on Maternity Protection at Work (OProMa) requires that companies take the necessary measures to ensure that pregnant employees can continue working without danger.

OBJECTIVE: To investigate the extent of compliance with OProMa within companies in French-speaking Switzerland as well as factors which facilitate and obstruct the ordinance's implementation.

METHODS: A stratified random telephone survey of 202 companies from the healthcare and food industry was conducted. Descriptive and correlational statistics were calculated. Responses to open questions were analysed thematically.

RESULTS: Only a minority of companies performed risk analyses or adapted employees' workstations, as per the legislation. OProMa was implemented more effectively in larger companies than smaller ones, in public rather than private ones, in the healthcare sector rather than the food industry, and when the person responsible for the

wellbeing of pregnant employees within the company had undergone specific training on the subject. Data extrapolation suggested that only 2% of pregnant employees in French-speaking Switzerland's food industry and 12% in its healthcare sector are properly protected according to OProMa's provisions.

CONCLUSIONS: Maternity protection in French-speaking Switzerland's companies urgently requires improvement. In addition to the apparent need for stronger incentives and for monitoring of companies, our findings indicate a need to provide them with resources to meet OProMa's provisions.

1 Background

In Switzerland, most pregnant women are at work. Indeed, among the 87,851 women living in Switzerland who gave birth in 2017, 92.5% (81,310) received the maternity benefits allocated to salaried or self-employed women, or received unemployment benefits [1, 2]. In view of the potential adverse effects of certain professional activities or occupational exposures on the health of pregnant workers and their unborn children [3, 4], most industrialised countries have put in place **maternity protection legislation** in accordance with the International Labour Organization's Maternity Protection Convention, 2000 (No. 183), and Maternity Protection Recommendation, 2000 (No. 191) [5].

Proper implementation of measures provided for by these legislations would not only protect pregnant workers efficiently from some of the risks which they face [6, 7] but could also reduce the rate of absenteeism during pregnancies [8, 9]. Several studies [10-13] have demonstrated that working environments that are either dangerous or arduous during pregnancy are associated with higher rates of sick leave.

In addition to the challenges of maintaining healthy and employed while women are pregnant, maternity protection is also at the centre of challenges related to gender equality and achieving a work–life balance. Upholding gender equality is an essential element in avoiding stereotypes and discrimination against pregnant workers [14-18].

1.1 Switzerland's legal framework for the protection of pregnant workers

Switzerland's Labour Law (LTr, art. 35) and its ordinances define a general framework for the protection of workers' health and contain specific provisions for maternity protection, in conformity with International Labour Organization Recommendation 191 on maternity protection (art. 6, ILO). In 2001, Switzerland has introduced the Ordinance on Maternity Protection at Work (OProMa) [19-21]. This Ordinance presents a list of professional activities that are potentially dangerous or arduous for pregnant workers. This includes occupational exposure to biological, chemical and physical risks, e.g. carrying heavy loads, exposure to radiation, strenuous movements or postures, and shift work. However, psychosocial risks are not included (**Annex 1**). The Swiss legislation does not provide any prenatal leave [18], nor does it oblige employees to announce their pregnancy to their employers; however, protection measures only can be implemented once that announcement has been made.

According to Swiss legislation [19], if a company is involved in activities which may be dangerous or arduous during pregnancy, the employer must rapidly contract a qualified specialist to carry out a risk analysis (RA) which should also include preventive measures to mitigate any risks found (OLT 1 art.63). Qualified specialists include occupational physicians and hygienists as well as ergonomists trained in psycho-organisational and ergonomic risk

evaluation [22]. When an employee at a potentially risky workstation announces her pregnancy, the employer must refer to the RA in order to make workstation adaptations or to reassign her to another post with no risks to her pregnancy. The employer is obliged to inform pregnant workers carrying out arduous or dangerous jobs about the relevant risks and prescribed measures [19] (OLT 1 art.63). Attending physicians (generally gynaecologist-obstetricians) are responsible for verifying whether their patients are carrying out any professional activities banned by the OProMa [21] (OProMa, art. 2). If this is the case, and in the absence of an appropriate RA or protection measures (adjustments to the workstation or a reassignment), the gynaecologist-obstetrician must prescribe preventive leave, which is financed by the employer (80% of the pregnant employee's salary), until the danger has been eliminated.

1.2 Factors influencing the implementation of legal dispositions on maternity protection at work

Proper implementation of maternity protection legislation is lacking in many different national contexts [18, 23]. Several factors influence the implementation of maternity protection legislation at the company level: knowledge about the legal dispositions concerning maternity protection at work [16], perceptions of the dangers inherent in certain professional activities [24, 25], companies characteristics (size, presence of a trades union) [16, 18], collaboration between companies and healthcare professionals [26, 27], and the organisational impacts of protection measures [28, 29], notably in terms of managing staff absences and adaptations to pregnant employees' workstations.

1.3 Study objectives

The present study aimed to assess the implementation of the OProMa in companies in the food industry and healthcare sectors in French-speaking Switzerland, as well as the factors which facilitate and obstruct the ordinance's application.

2 Methods

The Human Research Ethics Committee of the Canton Vaud (CER-VD) certified that the research study protocol fell outside of the field of application of the Swiss Federal Act on Research Involving Humans. The study has respected the following ethical principles: all the personal data gathered were treated confidentially; questionnaire participants were anonymised; data were securely stored and only used for research purposes. Participation in the study was voluntary. We informed all the participants about the research objectives and the standards of confidentiality regarding data use.

2.1 Company selection

To limit the number of variables involved, our investigation targeted companies in the economic sectors of the food industry and healthcare. According to Switzerland's Federal Statistical Office's (FSO) General Classification of Economic Activities [30], the food industry comprises activities which transform agriculture, forestry and fishing products into food. It does not include preparation of dishes for immediate consumption, as in restaurants. The healthcare sector comprises activities in hospitals as well as consultations and care given by doctors and other healthcare professionals. We selected these two economic sectors because they employ significant proportions of women (37% of food industry and 74% of healthcare sector employees in French-speaking Switzerland, as per the Business and Enterprise Register and calculations made using data given to the research team by the FSO) and may involve dangers or arduous activities requiring the implementation of measures for maternity protection at work. These include organisational and shift constraints, and physical (lifting, postural stresses, thermal constraints), biological and chemical risks [31]. The investigation was limited to French-speaking Switzerland for linguistic reasons.

With regard to statistical power, we aimed to include 100 companies respectively from the food industry and the health sectors. In order to have sufficient participating companies to be able to analyse all the different size categories, we over-sampled companies with 50 full-time equivalent (FTE) employees or more. The target percentages per size stratum were 30% between 5 and 10 FTE; 30% between 10 and 50 FTE; 30% between 50 and 250 FTE, and 10% with over 250 FTE. We selected the companies randomly in a file of 850 companies selected at random by the FSO from the Business and Enterprise Register and stratified by economic sector and size in FTE employees. **Table 1** shows the actual stratified numbers of companies in French-speaking Switzerland and the corresponding numbers included in the survey.

2.2 Telephone questionnaire

The telephone questionnaire covered the themes of knowledge and perceptions of OProMa, protection practices (RA, adaptations to workstations, reassigning employees to other jobs, informing employees), experiences with preventive leave, difficulties and resources in the management of pregnant employees. The authors developed the questions based on the scientific literature and their clinical experience. Two external evaluators tested the survey – notably in order to check the understanding and the readability of the questionnaire. A junior researcher conducted the telephone questionnaire among companies.

Annex 2 summarises the variables analysed in this paper and describes those items.

Companies, which had not had a pregnant employee within the last five years, were only asked to respond to a shortened questionnaire. Nearly all of the questionnaire respondents were company directors or the heads of human resources departments.

2.3 Statistical analyses

Statistical analyses were conducted using STATA 15 software. For binary variables, we performed comparisons using logistic regressions adjusting for the company's economic sector and size. We compared ordinal variables ("none at all, some, fairly good, very good" or "never/rarely, sometimes, often, nearly always/always") using ordered logistic regressions adjusting for the company's economic sector and size.

We compared the responses of respondents who had undergone training on pregnant workers and OProMa against those who had had no training on this topic. We subsequently compared the responses of companies whose legal form was public (vs private). Again, we adjusted for the company's economic sector and size. When the number of responses was too small to be modelled, responses were compared using Fisher's exact test without adjustment. Analyses were conducted on the whole questionnaire or the shortened version.

We estimated the percentage of women benefitting from the protection measures provided for by Swiss legislation in the food industry and healthcare sectors of French-speaking Switzerland. To do so we synthesised a composite variable describing whether the company was compliant with OProMa by implementing: 1) RAs carried out by qualified specialists; 2) adaptations to pregnant employees' workstations or job reassignments in accordance with the legislation; and 3) proactive distribution of information on protection measures to pregnant employees. Looking at both sectors and company sizes, we calculated the number of women covered by the proper implementation of OProMa. By taking the data provided by the FSO, we subsequently calculated the overall rate of women benefitting from the proper implementation of OProMa in each sector.

2.4 Qualitative analysis of open-ended questions

At the end of the telephone questionnaire, we asked interviewees to respond to two open-ended questions dealing with the perceived difficulties faced and the resources and requirements for managing pregnant employees. The summarised transcriptions were analysed thematically [32].

3 Results

Investigators made 377 telephone calls to actors in the food industry and 388 to actors in the healthcare sector. In all, 95 food industry companies and 107 healthcare companies were reached and agreed to take part in our survey.

3.1 Descriptive statistics

Table 2 shows the characteristics of the companies, which participated in the questionnaire, and the implementation of OProMa.

Table 3, **Table 4** and **Table 5** show the descriptive statistics of companies' responses.

Implementation of OProMa (Table 2). Just under half (48%) of the companies involved declared that they had internal company procedures that complied with Switzerland's OProMa. Nevertheless, only 25% (n = 51) of respondents declared that their company had undergone an RA, and only 15 of these had been carried out by a qualified specialist. The main reasons evoked by the participants to explain the absence of RAs in their companies were: the fact that they did not know that they were obliged to carry one out (41%), that they had an internal company procedure (16%) or that although their employees did face occupational risks, no female employees had to deal with occupational risks at their workstations (12%) (see **Annex 3**).

Among the 51 respondents who affirmed that they did have an RA, 88% declared that this instrument was useful or very useful (see **Annex 3**). Notably, they noted that an RA helped them to make adaptations to pregnant employees' workstations and to understand the particular risks and needs of pregnant women (open question, data not shown).

74% of companies claimed to "often or always" make adaptations to pregnant employees workstations or to reassign them if their job was assessed to be dangerous or arduous; 50% of them made those adaptations in line with the legislation, i.e. using an OProMa RA and/or with regard to the evaluation by an occupational physician or hygienist or by an ergonomist authorised to make evaluations of psycho-organisational and ergonomic risks; 71% of respondents stated that their company informed pregnant employees about the legislation and the protective measures to be put in place; and 34% stated that they did this proactively.

Special considerations for pregnant employees, attitudes and knowledge of OProMa (Table 3). The great majority of respondents (85%; n = 126) estimated that their company gave pregnant employees "high or very high" consideration, yet only 56% (n = 110) estimated that their personal knowledge of OProMa was "good or very

good". 94% (n = 136) of participants judged OProMa to be an important instrument for the protection of pregnant employees. Less than half (43%; n = 60) judged the legal protection measures to be too onerous for employers.

Difficulties encountered in the application of OProMa (Table 4). 48% of companies questioned considered the organisation and management of the workloads for pregnant employees' colleagues to be "quite or very difficult"; 30% judged managing the costs associated with maternity protection measures to be "quite or very difficult"; 7% of respondents thought that managing absences for preventive leave was "quite or very difficult" and 7% found it "quite or very easy"; however, 86% of respondents could not answer the question because they had never received a request for preventive leave. In comparison, 41% of respondents estimated that managing absences due to pregnant employees on sick leave was "quite or very difficult" and 58% found it "quite or very easy", a scenario which nearly every one of them knew.

In addition, 49% of respondents "agreed or totally agreed" with the statement that "The establishment of a prenatal leave would resolve some of the problems linked to maternity protection measures for pregnant employees".

In answer to the open-ended questions, participants brought up several difficulties linked to maternity protection measures in their companies, mainly to do with finding replacements and organising and planning pregnant employees' work. Some respondents involved in managing pregnant employees also evoked how their commutes to work also became arduous: OProMa does not include the risks inherent in commuting. Participants also mentioned collaboration, or rather the absence of collaboration, with the employee's gynaecologist and the costs linked to implementing maternity protection measures within the company. Finally, some respondents estimated that one of the major difficulties in implementing OProMa was that the employees themselves did not want to take advantage of the measures proposed: they chose to delay announcing their pregnancy in order to avoid any changes being made to their occupational activities, especially in terms of their working hours.

Regarding existing resources and needs evoked by participants, only two companies estimated that they currently had useful resources necessary for ensuring maternity protection for their pregnant employees. Several declared that they had needs, however, such as the establishment of prenatal leave, more financial support, and access to and support from specialist resource persons (lawyers, occupational physicians or ergonomists, etc.). Finally, respondents expressed the need for further formalisation of the legislation by improving information and awareness-raising around effectively balancing maternity and work.

Collaboration between different stakeholders (Table 5). Implementing maternity protection measures in the workplace requires collaboration between several actors. Respondents claimed to mainly solicit collaboration with

the actors directly involved with managing pregnant employees within the company, such as human resources professionals and management (73% of respondents judged this collaboration to be "quite or very useful") or employees' line managers (86% judged this collaboration to be "quite or very useful"). Collaboration with the pregnant employee was also frequent and perceived as "quite or very useful" by 94% of respondents. However, the companies questioned only rarely called on specialist resources: collaboration with occupational health and safety specialists (health and safety managers, occupational physicians and hygienists, and ergonomist) and other healthcare professionals (gynaecologists, midwives) did not occur often and, in some cases, were perceived as "not useful". Collaboration with trades unions or personnel committees was also very rare (70% of respondents did not collaborate with these resources on questions linked to managing pregnant employees), and the majority judged them to be "not useful".

3.2 Associations

Table 6 and **Table 7** present the associations between the implementation of OProMa and company characteristics.

Associations between economic sector and company size (Table 6). Being a larger company was associated with better knowledge of OProMa (p =.000), the existence of internal procedures compliant with OProMa (p =.000) and having carried out an in-house RA (p =.000). Large companies also more often affirmed that they informed their pregnant employees about maternity protection measures (p =.001) and that they adapted their workstations or reassigned them if they performed dangerous or arduous activities (p =.000). Large companies gave out more information on maternity protection measures to pregnant employees proactively (p =.000) and adaptations to workstations and job reassignments were more likely to be done in compliance with the legislation (p =.000).

Healthcare sector companies were more likely to declare having internal procedures compliant with OProMa (p =.009), to give out information on maternity protection measures (p =.021) and to do so proactively (p =.000). Healthcare companies were more likely to state that they adapted pregnant employees' workstations or reassigned them if they performed dangerous or arduous activities (p =.015) and that those changes were made in compliance with the legislation (p =.020).

Finally, in order to reveal any potential associations between the proper implementation of OProMa and factors which characterised the company, e.g. economic sector or size, we used the synthetic variable of "implemented in compliance with OProMa". A proper implementation of OProMa's provisions requires that companies have had an RA carried out by an authorised specialist in the field, that they adapt workstations or reassign pregnant

employees to other roles in accordance with evaluations performed by authorised specialists, and that they proactively inform employees about the legal maternity protection measures in force.

Our analyses indicated that larger companies implemented OProMa better (p =.013). The healthcare sector implemented OProMa more effectively that the food industry, but the association was not statistically significant.

Associations with the legal form of the company (Table 7). Public or parapublic companies were more likely to state that their internal procedures were compliant with OProMa (p =.018) and that they proactively informed their pregnant employees about legally required maternity protection measures (p =.000). Finally, public or parapublic companies implemented OProMa better than private companies (p =.018).

Associations between having undergone training on pregnant employees and OProMa and implementing maternity protection measures (Table 7). 23 % (n = 46) of respondents declared having undergone training on pregnant employees and OProMa. Companies whose respondent underwent this training were more likely to state that they had good knowledge about maternity protection measures (p =.000), that they had in-house procedures compliant with OProMa (p =.014), that they adapted workstations or reassigned pregnant employees (p =.009), and that those adaptations or reassignments were done in compliance with OProMa (p =.005). Companies whose respondent underwent this training were also more likely to state that they gave out information on legal maternity protection measures to their pregnant employees (p =.016) and that they did this proactively (p =.000). Companies whose respondent had undergone training on OProMa were more likely to have carried out an RA than companies whose respondent had not (50% vs 18%), although the difference was not statistically significant. Finally, there was an association between properly implementing maternity protection measures in compliance with OProMa and respondents who had undergone training on it (p =.003).

Figure 1 summarises the associations between the proper implementation of OProMa and the company's economic sector, size and legal identity/structure and whether its respondent had undergone training on OProMa.

3.3 Estimation of the percentage of employees covered by maternity protection measures in French-speaking Switzerland

Extrapolating from the present dataset suggests that only 2% of the women working in French-speaking Switzerland's food industry sector and 12% of those working in its healthcare sector are properly covered (for the definition of a proper implementation of OProMa's provisions see section 3.2) by the maternity protection measures required by the legislation (see **Table 8**).

4 Discussion

4.1 Discrepancies between perceptions and practice

A little more than half of the respondents replied that they had "good or very good" knowledge of OProMa, and 85% judged that their company accorded pregnant employees "high or very high" consideration. However, these replies need to be put into perspective. Indeed, inconsistencies in the responses to the following questions showed that many respondents did not, in fact, have in-depth knowledge of OProMa provisions. For example, 48% claimed to have in-house procedures in compliance with OProMa but had never had an RA performed—a mandatory requirement of OProMa. An even higher percentage had not carried their RAs properly. These discrepancies between respondents' perceptions about knowing OProMa well and their objective knowledge of it may contribute to stasis in companies' actions because managers are unaware that they are not fulfilling their legal obligations and thus see no reason to change company practices.

We also observed a discrepancy between the fact that although respondents generally perceived maternity protection legislation to be useful, their implementation of its provisions was often lacking. Firstly, only 25% of the companies interviewed had had an RA performed. These findings are similar to those of Rudin, Stutz [18], in which 16% of companies in Switzerland had had an RA performed (in a non-representative sample). In Belgium, 62% of workers interviewed by Lembrechts and Valgaeren [16] stated that their workstation had never been subject to an RA. Yet the absence or poor quality of RAs implies that a large proportion of Switzerland's female employees are working in conditions which could put their health or that of their unborn child in danger. An absence of any RA could also have consequences on the running of the company. Indeed, it seems to indicate that a companies poorly anticipated occupational risks and that, as a consequence, there will be a greater probability of disorganisation when an employee announces her pregnancy. Although deliberately not performing an RA may save time and money in the short term, this strategy could prove costly in the medium term.

Secondly, workstation adaptations and job reassignments are not done systematically. In addition to potentially endangering the health of pregnant employees and their unborn children, poor implementation of maternity protection measures can result in them leaving the workplace earlier than necessary, usually on sick leave, with negative consequences both for them (e.g. effects on their careers, social relations, income) [24, 33, 34] and the company (e.g. loss of skills, the need to find replacements). On the contrary, a study in a hospital in Quebec showed that workstation adaptations and job reassignments helped to keep nurses working longer during their pregnancy and to maintain staffing levels in this sector [9, 29]. Studies have revealed that dangerous work activities or

exposure risks were associated with significant rates of sick leave [10, 12], indicating that the implementation of workstation adaptations for pregnant employees would also enable a reduction in absences from work. It has also been demonstrated that employees who feel supported by their hierarchies during their pregnancies are more likely to return to the same job at the end of their maternity leave [35].

4.2 Factors influencing the implementation of maternity protection legislation

The present results highlight the factors influencing whether companies implement maternity protection legislation. Two general aspects confirm the findings in the literature. Firstly, respondents reported several difficulties linked to workplace organisation when pregnant employees required workstation adaptations or job reassignment: according to the literature, these difficulties are exacerbated when adaptations made for pregnant employees put a greater workload on their colleagues [28, 36, 37]. Secondly, some companies seem to have few resources with which to respond to the legislation's provisions, whether financially or in terms of establishing the necessary collaborations and organising the required interventions, notably by healthcare specialists [38] (see Section 4.3).

The implementation of maternity protection measures differed according to companies' characteristics. Proper implementation was less common among small and medium-sized companies, private companies and those in the food industry sector.

Results concerning company size were consistent with those of Rudin, Stutz [18]: small companies were less likely to implement the legislation, notably with regards to workstation adaptations and job reassignments. The literature reveals that small companies generally have more considerable difficulties in meeting the prerequisite legal standards for occupational health and safety [39, 40], notably because they lack the financial and human resources to do so. Those small companies also seem less convinced by the utility of the evaluation of occupational risks and by the activities of risk management in the workplaces [41]. Adams, Winterbotham [28] revealed that small companies were less inclined to agree that supporting pregnant women or those on maternity leave was in their interests. Furthermore, among companies which had recently had to deal with a pregnant employee, smaller ones were more likely to consider that pregnancy at work represented an excessive burden on the company (22% vs 16% of medium-sized and 9% of large companies) [28]. We suppose that large companies with greater resources—potential job openings for reassignment or dedicated occupational health professionals—encounter fewer difficulties in implementing maternity protection measures than do smaller companies. An institution able to

mutualise costs (e.g. salaries during preventive leave) and pool resources (e.g. for RAs and specialist occupational health interventions) among individual firms would be particularly useful for small- and medium-sized enterprises.

We have several interpretive hypotheses about the potential reasons for differences between economic sectors. Firstly, because of their intrinsic missions and the types of professionals which they employ, healthcare sector companies may well be more sensitive to and more knowledgeable about health issues in general than the food industry sector. The healthcare sector is also characterised by a high proportion of female staff: not only are pregnancies very frequent but the presence of so many women (including at management level) may increase the sector's sensitivity to the need for a work–pregnancy balance.

Finally, we were also able to show that public and parapublic organisations/companies implemented maternity protection measures at work better than private ones. These findings were consistent with those reported by Adams, Winterbotham [28], who showed that public sector employers believe that they have a higher level of awareness about pregnant employees' legal rights and more often consider those rights to be both acceptable and reasonable. The reasons for this have yet to be explored, however, we might suppose that private sector companies are less sensitive to issues concerning gender equality, as evidenced by the fact that male–female salary differences (14.6% in 2016) are greater than in the public sector (12.5%) [42]. This also manifests itself through weaker implementation of maternity protection measures which help to balance work and pregnancy or the family. We might also hypothesise that working environments, workplace organisation and managerial objectives are more favourable to pregnancy in public sector companies because their financing is not directly linked to the services which they provide, which removes them from certain competitive market pressures [43].

4.3 Resources and collaboration

The present findings reveal that there are resources and measures available to improve the maternity protection of pregnant employees. Firstly, respondents who had undergone training on OProMa and pregnant employees both declared that their companies were implementing and applying the legislation better. Since 2015, the Center for Primary Care and Public Health (Unisanté), Lausanne, has been training many different target groups on maternity protection at work (e.g. gynaecologist-obstetricians and midwives, but also company directors), and spreading this training more widely might provide leverage for improved action. However, in view of the low percentage of respondents who stated that they had undergone training, some sort of incentive may be necessary to increase participation rates.

In addition, we observed that respondents mostly claimed to solicit collaborations with in-house actors directly involved in managing pregnant employees or with those employees themselves. Other collaborations provided for in Switzerland's legislation—with occupational health and safety specialists and gynaecologists—were perceived to be "not useful" or did not occur. We also note that when responding to the questionnaire's open-ended questions, respondents cited the lack of collaboration from gynaecologists as being one difficulty in implementing maternity protection measures in the workplace. Favouring collaborations, or introducing public occupational health services, might also create resources for implementing maternity protection measures. According to Gravel and Malenfant [38], adding a health and safety resource person within companies would help to support decisional processes for modifying workplace organisation to ensure that pregnant employees can work in a suitably adapted working environment and still maintain the companies level of performance. The study by Jensen, Alstrup [44] also revealed that companies, especially small ones, often require somebody who can mediate legislative demands. Studies from Belgium and Quebec have shown the importance of bodies which represent staff to underpin and support pregnant workers' demands and to ensure that their rights are respected [9, 16, 45]. The present data indicate that there is usually no collaboration with these bodies or that it is considered either "not very useful" or "not useful". According to the findings of Krieger, Graf [46], trades unions are only poorly represented in companies in Switzerland (36% of employees) compared to the European mean (51%). Developing these bodies and creating collaboration with them could help pregnant workers to have their rights better protected, including job and salary protection.

With improved resources in mind, pursuing discussions about the potential establishment of prenatal leave into Switzerland's legislation seems important. Indeed, nearly half of the companies questioned believed that prenatal leave would resolve some of the problems linked to protecting the health of pregnant employees.

More generally, maternity protection is part of the broader framework for creating a suitable work–pregnancy balance. The vast majority of respondents estimated that an employee's announcement of her pregnancy did not lead to tensions with her hierarchy. Other studies carried out in Switzerland have shown more alarming results, however. According to the study carried out in Switzerland by Rudin, Stutz [18] "for more than 10% of the women, a mutually agreed termination of the employment contract was discussed when they announced their pregnancy, or there was even the prospect of being dismissed by their employer after their maternity leave".

4.4 Study strengths and limitations

The present study was the first to carry out an in-depth investigation of the measures for the maternity protection of pregnant employees and their unborn children implemented in French-speaking Switzerland's companies: it underlined the difficulties and resources encountered by actors involved with this issue in those companies. We revealed discrepancies between the declarations made about how companies treated pregnant employees and knowledge of OProMa on the one hand, and statements regarding the practical implementation of OProMa on the other. We must suppose that respondents overestimated their levels of knowledge and understanding of the legislation in place. It is also possible that a social desirability bias also came into play in their responses to this issue.

Because of our methodological choices—voluntary participation—we cannot exclude the presence of positive selection bias in our sample. Our data relative to the implementation of OProMa by companies in the two economic sectors chosen could thus have presented an over-favourable view of the reality. Despite a potential positive selection bias, our findings showed significant deficiencies in the effective implementation of OProMa, and they underlined the necessity of developing new resources to improve the maternity protection of pregnant workers and their unborn children.

Although the OProMa is a federal legislation, variations in local practice may exist. The extrapolation of our results to the rest of Switzerland (German-speaking side and Italian-speaking side) thus faces limitations. Moreover, the comparison to other countries cannot be straightforward. National legislations in line with the Recommendation N° 191 of the ILO share common principles: they require the assessment of the risks for the safety and health of the pregnant worker and her child; measures to avoid the risks should in order of priority include the elimination of risk, the adaptation of work conditions or the transfer to another, safe, post. If this is infeasible, workers should be granted a paid preventive leave. However, national legislations differ on how they achieve these principles and show differences mainly on: the range of workers they cover; the range of risks they include; the actors in charge of the risk assessment and the implementation of protective measures; the level and source of compensation for the salary in case of preventive leave [23].

Nevertheless, some deficiencies and resources revealed by the present study may provide interesting thoughts as well as practical suggestions for others national contexts.

5 Conclusions and perspectives for the future

Despite the favourable attitudes towards maternity protection revealed by the respondents to our questionnaire, the companies they worked for were shown to have grave deficiencies in their practical implementation of OProMa. Indeed, this leads us to suggest that most women in French-speaking Switzerland do not, in fact, benefit fully from the legislative protection measures which they are legally entitled to. The absence of any effective precautionary approach in response to the occupational risks facing pregnant employees has consequences in three areas. Firstly, it endangers the health of both pregnant employees and their unborn children [3, 4, 47-49]. Secondly, it affects the company through increased sick leave and the disorganisation created by failing to anticipate the implementation of the necessary protection measures. Thirdly, it can contribute to reinforcing discrimination against pregnant employees, because some will be obliged to withdraw from the workforce, on the one hand, and because unanticipated adaptations to workstations or job reassignments may lead to conflicts with suddenly overburdened colleagues or the hierarchy, on the other hand.

In order to improve the effective implementation of maternity protection measures at work, we would advise to raise the awareness of managers through specific training and to reinforce the collaboration of managers with occupational health and safety specialists, gynaecologists and staff representatives. Another route is the use of positive and negative incentives. The study by Gravel, Riel [9] showed that when companies are obliged to find strategies for maintaining pregnant employees at work for as long as possible—i.e. because there is a shortage of qualified labour—they manage to implement the appropriate measures or workplace adaptations. The greater difficulties which smaller companies face when attempting to fulfil their legislative obligations shows that there is a need for a framework to help them. Some thought might be given to mutualising costs, e.g. through the social insurance system, the establishment of a legal prenatal leave or a fund for pooling the costs linked to preventive leave, and to pooling resources, e.g. through the provision of public occupational health services.

Finally, on a more general note, the deficiencies revealed by the present study are also a reflection of insufficiencies in other domains of occupational health in Switzerland [50]. Indeed, the implementation of measures which can improve the balance between work and pregnancy might constitute a model for adapting working conditions for any employee (male or female) experiencing health challenges that impact work [9].

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8 Tables and figures

Table 1: Number of companies in French-speaking Switzerland, by economic sector and size (measured in full-time equivalent employees) (Business and Enterprise Register data supplied by Switzerland's Federal Statistical Office, March 2017)

		Companies active in French-speaking Switzerland	**Employees**	**Female employees**	**Percentage of female employees**	**Number of companies (%) included in each size stratum**
Food industry sector (NOGA 10)	5–10	181 (45%)	1660	785	47%	42 (39%)
	10–50	180 (45%)	3992	1830	46%	31 (29%)
	50–250	30 (7%)	3036	1121	37%	17 (18%)
	> 250	11 (3%)	4202	1054	25%	10 (11%)
	Total	402 (100%)	12,890	4,790	37%	95 (100%)
Healthcare sector (NOGA 86)	5–10	390 (42%)	3991	3109	78%	31 (29%)
	10–50	356 (38%)	11076	8591	78%	31 (29%)
	50–250	134 (14%)	18140	14123	78%	26 (25%)
	>250	47 (5%)	40678	29000	71%	18 (17%)
	Total	927 (100%)	73,885	54,823	74%	107 (100%)

Table 2: Characteristics of the companies which participated in the questionnaire and the implementation of OProMa

		Total number of companies with or without employees of childbearing age in the past 5 years (n = 202)	**Economic sector**		**Companies with or having had employees of childbearing age in the past 5 years (n = 148)**	**Economic sector**	
			Food industry (n = 95)	**Healthcare (n = 107)**		**Food industry (n = 57)**	**Healthcare (n = 91)**
		% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
Company's legal structure according to OFS data	Private, Public/parapublic	79 (159) 21 (43)	99 (94) 1 (1)	61 (65) 39 (42)	72 (107) 28 (41)	98 (2) 2 (1)	56 (51) 44 (40)
Organisation/company size, calculated in full-time job equivalents (FTE)	5–10 10–50 50–250 > 250	34 (69) 30 (61) 22 (43) 14 (28)	40 (38) 32 (30) 18 (17) 11 (10)	29 (31) 29 (31) 25 (26) 17 (18)	23 (34) 29 (42) 29 (43) 19 (28)	28 (16) 25 (14) 30 (17) 18 (10)	20 (18) 31 (28) 29 (26) 20 (18)
The respondent declared having undergone training on pregnant employees and OProMa		23 (46)	16 (15)	29 (31)	30 (44)	25 (14)	33 (30)
Existence of in-house procedures compliant with OProMa		48 (97)	36 (34)	59 (63)	56 (83)	42 (24)	65 (59)
The company has had a risk analysis performed in compliance with OProMa		25 (51)	17 (16)	33 (35)	32 (48)	25 (14)	37 (34)
A specific RA by: (n = 30 for the short-form questionnaire and n = 29 for the full questionnaire)	Qualified specialist (occupational physician, hygienist or ergonomist) Another non-qualified person (Head of safety, company nurse, RH, etc.)	47 (14) 53 (16)	33 (4) 67 (8)	56 (10) 44 (8)	48 (14) 52 (15)	36 (4) 64 (7)	56 (10) 44 (8)
General RA adapted to the company by: (n = 6 for the short-form questionnaire and n = 5 for the full questionnaire)	Qualified specialist (occupational physician, hygienist or ergonomist) Another non-qualified person (Head of safety, company nurse, RH, etc.)	17 (1) 83 (5)	- 100 (1)	20 (1) 80 (4)	20 (1) 80 (4)	- 100 (1)	25 (1) 75 (3)
The company often/always adapts the employees' workstation or reassigns her:					74 (109)	70 (40)	76 (69)
The company adapts the employees' workstation or reassigns her (n = 109):	In compliance with OProMa Not in compliance with OProMa (according to an evaluation by HR, the employer)				50 (55) 50 (54)	40 (16) 60 (24)	57 (39) 43 (30)
The company states that it informs pregnant employees about the maternity protection measures required by law					71 (105)	60 (34)	78 (71)
The company informs pregnant employees about maternity protection measures (n = 105; multiple choice on an open question):	Proactively Non proactively				34 (36) 66 (69)	15 (5) 85 (29)	44 (31) 56 (40)

Table 3: Consideration given to pregnant employees, attitudes to and knowledge about OProMa

		Total number of companies with or without employees of childbearing age in the past 5 years (n = 202)	**Economic sector**		**Companies with or having had employees of childbearing age in the past 5 years (n = 148)**	**Economic sector**	
			Food industry (n = 95)	**Healthcare (n = 107)**		**Food industry (n = 57)**	**Healthcare (n = 91)**
		% (n)	% (n)	% (n)	% (n)	% (n)	% (n)
Knowledge of OProMa	None at all	23 (46)	26 (24)	21 (22)	15 (22)	13 (7)	17 (15)
	Some	21 (42)	29 (27)	14 (15)	16 (23)	25 (14)	10 (9)
	Fairly good	43 (84)	35 (32)	49 (52)	52 (75)	45 (25)	26 (50)
	Very good	13 (26)	10 (9)	16 (17)	17 (25)	16 (9)	18 (16)
Consideration given to pregnant employees	Very low				5 (7)	4 (2)	5 (5)
	Fairly low				10 (15)	16 (9)	7 (6)
	Fairly high				41 (61)	46 (26)	38 (35)
	Very high				44 (65)	35 (20)	49 (45)
Once employees had announced their pregnancies, tensions arose with other colleagues and the hierarchy	Totally disagree				76 (110)	64 (35)	84 (75)
	Somewhat disagree				16 (23)	20 (11)	14 (12)
	Somewhat agree				5 (7)	13 (7)	-
	Totally agree				3 (4)	3 (2)	2 (2)
OProMa is an important instrument for the protection of pregnant employees	Totally disagree				3 (5)	7 (4)	1 (1)
	Somewhat disagree				3 (4)	4 (2)	2 (2)
	Somewhat agree				20 (29)	31 (17)	13 (12)
	Totally agree				74 (107)	58 (32)	84 (75)
OProMa is too heavy a burden on employers	Totally disagree				28 (38)	23 (12)	30 (26)
	Somewhat disagree				29 (40)	35 (18)	26 (22)
	Somewhat agree				30 (42)	36 (19)	27 (23)
	Totally agree				13 (18)	6 (3)	17 (15)

Table 4: Difficulties encountered in the application of OProMa

		Companies with or having had employees of childbearing age in the past 5 years (n = 148)	**Economic sector**	
			Food industry (n = 57)	**Healthcare (n = 91)**
		% (n)	% (n)	% (n)
Organisation and management of workloads for other colleagues during an employee's pregnancy	Very or quite easy	49 (72)	53 (30)	46 (42)
	Quite or very difficult	48 (71)	42 (24)	52 (47)
	Not applicable	36 (53)	5 (3)	2 (2)
Costs associated maternity protection measures	Very or quite easy	57 (85)	63 (36)	54 (49)
	Quite or very difficult	30 (45)	28 (16)	32 (29)
	Not applicable	12 (18)	9 (5)	14 (13)
Management of preventive leave for pregnant employees	Very or quite easy	7 (10)	11 (6)	4 (4)
	Quite or very difficult	7 (10)	5 (3)	8 (7)
	Not applicable	86 (128)	84 (48)	88 (80)
Management of sick leave for pregnant employees	Very or quite easy	58 (86)	56 (32)	59 (54)
	Quite or very difficult	41 (60)	42 (24)	40 (36)
	Not applicable	1 (2)	2 (1)	1 (1)
The establishment of a prenatal leave would resolve some of the problems linked to maternity protection measures for pregnant employees	Totally disagree	34 (46)	36 (20)	32 (26)
	Somewhat disagree	17 (24)	13 (7)	21 (17)
	Somewhat agree	23 (32)	30 (17)	19 (15)
	Totally agree	26 (35)	21 (12)	28 (23)

Table 5: Collaboration between different stakeholders

		Companies with or having had workers of childbearing age in the past 5 years (n=148)	Economic sector	
			Food industry (n = 57)	Healthcare (n = 91)
		% (n)	% (n)	% (n)
Collaboration with the pregnant employee's line manager	Not useful/not very useful	2 (2)	-	2 (2)
	Quite useful/very useful	86 (128)	81 (46)	90 (82)
	Not applicable	12 (18)	19 (11)	8 (7)
Collaboration with Human Resources or the management	Not useful/not very useful	6 (9)	5 (3)	7 (6)
	Quite useful/very useful	73 (108)	67 (38)	77 (70)
	Not applicable	21 (31)	28 (16)	16 (15)
Collaboration with the pregnant employee	Not useful/not very useful	5 (7)	5 (3)	4 (4)
	Quite useful/very useful	94 (140)	93 (53)	96 (87)
	Not applicable	1 (1)	2 (1)	-
Collaboration with the pregnant employee's gynaecologist	Not useful/not very useful	18 (27)	23 (13)	15 (14)
	Quite useful/very useful	12 (19)	7 (4)	16 (15)
	Not applicable	69 (102)	70 (40)	68 (62)
Collaboration the pregnant employee's midwife	Not useful/not very useful	9 (14)	7 (4)	11 (10)
	Quite useful/very useful	4 (6)	-	7 (6)
	Not applicable	87 (128)	93 (53)	82 (75)
Collaboration with an occupational physician	Not useful/not very useful	8 (12)	5 (3)	10 (9)
	Quite useful/very useful	24 (35)	14 (8)	30 (27)
	Not applicable	68 (24)	81 (46)	60 (55)
Collaboration with a qualified occupational hygienist or ergonomist	Not useful/not very useful	9 (14)	4 (2)	13 (12)
	Quite useful/very useful	12 (17)	7 (4)	14 (13)
	Not applicable	79 (117)	89 (51)	73 (66)
Collaboration with the head of safety or the safety engineer	Not useful/not very useful	8 (12)	7 (4)	8 (8)
	Quite useful/very useful	26 (39)	25 (14)	27 (25)
	Not applicable	66 (97)	68 (39)	64 (58)
Collaboration with a GP, a nurse or another healthcare professional in the company	Not useful/not very useful	13 (20)	5 (3)	19 (17)
	Quite useful/very useful	23 (34)	11 (6)	31 (28)
	Not applicable	64 (94)	84 (48)	51 (46)
Collaboration with the loss of income insurance company (APG)	Not useful/not very useful	25 (37)	26 (15)	24 (22)
	Quite useful/very useful	39 (57)	40 (23)	37 (34)
	Not applicable	36 (54)	33 (19)	38 (35)
Collaboration with a trades union or personnel committee	Not useful/not very useful	23 (35)	23 (13)	24 (22)
	Quite useful/very useful	5 (8)	5 (3)	5 (5)
	Not applicable	71 (105)	72 (41)	70 (64)

Table 6: Associations between relevant items and companies' characteristics (sector and size) (n = 148)

		Economic sector				**Company's size (FTE)**					
		Food industry	Healthcare			5–10	10–50	50–250	> 250		
		% (n)	% (n)	***p-value***	**OR**	% (n)	% (n)	% (n)	% (n)	***p-value***	**OR**
Knowledge about maternity protection legislation[a]	None at all	26 (24)	21 (22)			41 (28)	23 (14)	10 (4)	-		
	Some	29 (27)	14 (15)			30 (20)	25 (15)	12 (5)	7 (2)		
	Fairly good	35 (32)	49 (52)			21 (14)	43 (26)	68 (28)	54 (15)		
	Very good	10 (9)	16 (17)	.116	1.53	7 (5)	8 (5)	12 (5)	39 (11)	**.000**	20.11
Existence of an internal company procedure in compliance with OProMa[b]		36 (34)	59 (63)	**.009**	2.28	28 (19)	41 (25)	65 (28)	86 (24)	**.000**	14.79
Existence of an RA[b]		17 (16)	33 (35)	.081	1.99	7 (5)	13 (8)	40 (17)	71 (20)	**.000**	30.13
The company informs pregnant employees about maternity protection measures [b]		60 (34)	78 (71)	**.021**	2.66	44 (15)	60 (25)	86 (37)	96 (27)	**.001**	34.59
Information is distributed proactively [c]		9 (5)	34 (31)	**.000**	3.77	-	24 (10)	33 (14)	43 (12)	**.000**	-
The company adapts pregnant employees' workstations or reassigns them [b]		70 (40)	76 (69)	**.015**	2.24	59 (20)	64 (27)	86 (37)	86 (24)	**.000**	13.73
Adaptations are made in compliance with OProMa[b]		28 (16)	43 (39)	**.020**	2.47	15 (5)	21 (9)	51 (22)	64 (18)	**.000**	21.6
Implementation is made in compliance with OProMa[c]		1 (2)	6 (7)	.250	4.03	-	-	7 (3)	14 (4)	**.013**	-

The analysis simultaneously includes the company's economic sector and size.
[a] Ordered logistic regression.
[b] Logistic regression.
[c] Fisher's exact test.

Table 7: Associations between relevant items, the company's legal form and whether respondents participated in training on pregnant workers and OProMa (n = 148)

		The company's legal form				**Training on pregnant workers and OProMa**			
		Public	Private			**Yes**	**No**		
		% (n)	% (n)	***p-value***	**OR**	% (n)	% (n)	***p-value***	**OR**
Knowledge about maternity protection legislation[a]	None at all	9 (4)	27 (42)			4 (2)	29 (44)		
	Some	7 (3)	25 (39)			4 (2)	26 (40)		
	Fairly good	58 (25)	38 (59)			54 (25)	39 (59)		
	Very good	26 (11)	10 (15)	.269	1.58	37 (17)	6 (9)	**.000**	6.61
Existence of an internal company procedure in compliance with OProMa[b]		84 (36)	38 (61)	**.018**	3.42	76 (35)	40 (62)	**.014**	2.82
Existence of an RA[b]		49 (21)	19 (30)	.965	0.98	50 (23)	18 (28)	.062	2.23
The company informs pregnant employees about maternity protection measures [b]		93 (38)	62 (67)	.218	2.44	91 (40)	63 (65)	**.016**	4.39
Information is distributed proactively [c]		54 (22)	13 (14)	**.000**	-	39 (17)	18 (19)	**.000**	-
The company adapts pregnant employees' workstations or reassigns them[b]		80 (33)	71 (76)	.479	0.69	86 (38)	68 (71)	**.009**	3.46
Adaptations are made in compliance with OProMa[b]		59 (24)	29 (31)	.627	1.28	59 (26)	28 (29)	**.005**	3.25
Implementation is made in compliance with OProMa[c]		12 (5)	1 (2)	**.018**	-	13 (6)	1 (1)	**.003**	-

The analysis simultaneously includes the company's legal form adjusting for its economic sector and size.
[a] Ordered logistic regression.
[b] Logistic regression.
[c] Fisher's exact test.

Table 8: Estimated percentage of female employees in French-speaking Switzerland effectively covered by the maternity protection legislation to which they are legally entitled (Business and Enterprise Register data supplied by the Federal Statistics Office, March 2017).

FOOD INDUSTRY SECTOR NOGA 10						
FSO data for French-speaking Switzerland						
FTE	**5–10**	**10–50**	**50–250**	**> 250**	**Total**	
Number of women	785	1,830	1,121	1,054	4,790	
The present study						
FTE	**5–10**	**10–50**	**50–250**	**> 250**	**Total**	**Estimated % of women covered[c]**
Percentage of organisations/companies which properly implement OProMa[a]	0	0	0	10% (n = 1)		
Estimated number of women effectively covered in compliance with OProMa[b]	0	0	0	105	105	**2%**

HEALTHCARE SECTOR NOGA 86						
FSO data for French-speaking Switzerland						
FTE	**5–10**	**10–50**	**50–250**	**> 250**	**Total**	
Number of women	3,109	8,591	14,123	29,000	54,823	
The present study						
FTE	**5–10**	**10–50**	**50–250**	**> 250**	**Total**	**Estimated % of women covered[c]**
Percentage of organisations/companies which properly implement OProMa[a]	0	0	11% (n = 3)	17% (n = 3)		
Estimated number of women effectively covered in compliance with OProMa[b]	0	0	1,554	4,930	6,484	**12%**

[a] Percentage of companies which have had an RA carried out by an OProMa-qualified specialist, which often/always adapt employees' workstations or reassign them in compliance with the legislation and which claim to proactively inform their employees on the prescribed maternity protection measures.

[b] Estimated number of women covered in compliance with OProMa = (percentage of companies which properly implement the OProMa * the number of women in that FTE category) / 100.

[c] Estimated percentage of women covered in French-speaking Switzerland = (estimated number of women protected * 100) / total number of women in that economic sector.

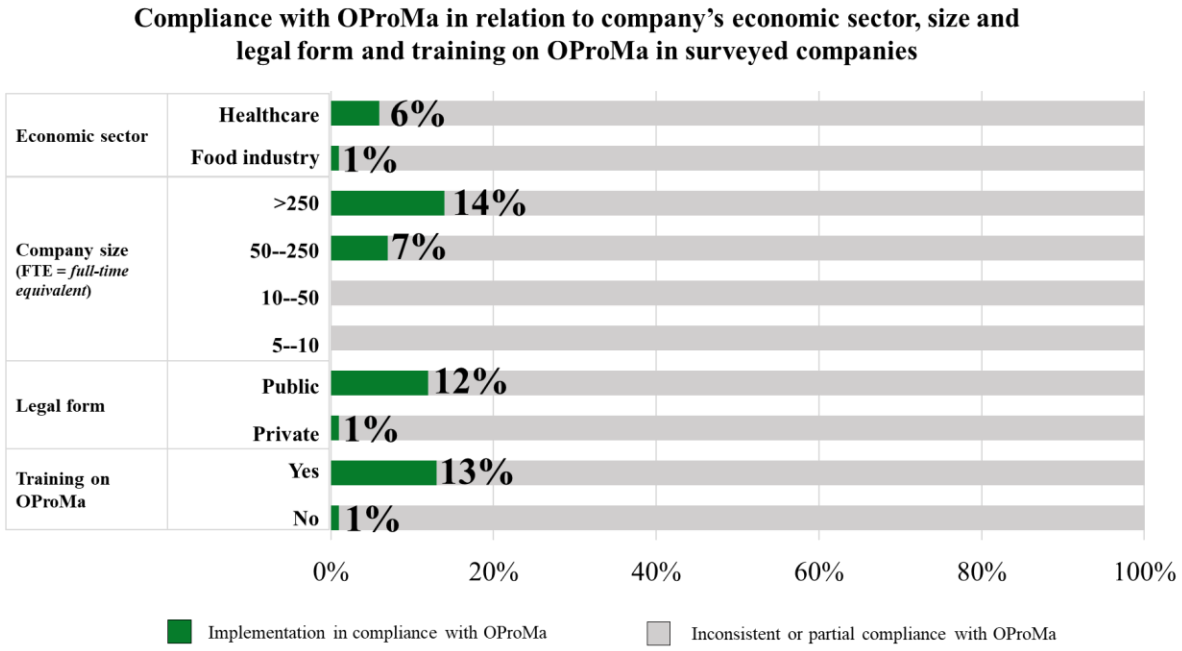

Fig. 1. Compliance with OProMa in relation to company's economic sector, size and legal form and training on OProMa in surveyed companies.