Title: Protection of Pregnant Women at Work in Switzerland: Implementation and Experiences of Maternity Protection Legislation
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Journal: Advances in Intelligent Systems and Computing,Proceedings of the 20th Congress of the International Ergonomics Association (IEA 2018)
Year: 2019, Vol. 819
Pages: 622-633
DOI: 10.1007/978-3-319-96089_068

Protection of pregnant women at work in Switzerland: implementation and experiences of maternity protection legislation

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Abstract

Objectives Like most industrialized countries, Switzerland has introduced legislation to protect the health of pregnant workers and their unborn children from workplace hazards. This study aims to assess legislation's degree of implementation in the French-speaking part of Switzerland and understand the barriers to and resources supporting its implementation.

Methods Data were collected using mixed methods: 1) an online questionnaire send to 333 gynecologist-obstetricians (GOs) and 637 midwives; 2) exploratory semi-structured interviews with 5 workers who had had a pregnancy in the last 5 years.

Results Questionnaire response rates were 32% for GOs and 54% for midwives. Data showed that several aspects of the implementation of maternity protection policies could be improved. Where patients encounter workplace hazards, GOs and midwives estimated that they only received a risk assessment from the employer in about 5% and 2% of cases, respectively. Preventive leave is underprescribed: 32% of GOs reported that they "often" or "always" prescribed preventive leave in cases involving occupational hazards; 58% of GOs reported that they "often" or "always" prescribed sick leave instead.

Interviews with workers identified several barriers to the implementation of protective policies in workplaces: a lack of information about protective measures and pregnancy rights; organizational problems triggered by job and schedule adjustments; and discrepancies between some safety measures and their personal needs.

Conclusions Results demonstrate the need to improve the implementation and appropriateness of maternity protection legislation in Switzerland. More research is required to identify the factors affecting its implementation.

Keywords: Pregnancy; Occupational exposure; Maternity protection legislation.

1 Introduction

1.1 Background

Overall, the international medical literature shows that work in itself does not pose a risk to pregnancy [1; 2]. Nevertheless, chemical, physical, or biological exposure may affect pregnancy outcomes (miscarriage, preterm birth, small for gestational age) and child development (malformation, cognitive faculties) [2-5]. Even though a recent meta-analysis suggested that their impact may be weaker [6], certain work activities are also suspected of representing a risk to pregnancy and the unborn child, such as poor posture, lifting, work schedules, or psychological stress [4; 7; 8].

Most industrialized countries have introduced legal provisions for the protection of maternity at work [9]. This *maternity protection legislation* (hereafter MPL) requires that occupational risks to pregnancy be assessed and measures be taken to avoid the exposure of pregnant workers. This should primarily be done by eliminating those risks or adapting working conditions. If those options prove infeasible, employees should be transferred to another post or, as a last resort, granted paid leave.

In Switzerland, the Labor Law, its ordinances, and the Ordinance on Maternity Protection at Work (OProMa) set out which types of jobs are considered dangerous or arduous, the processes to be put in place to counter the risks, and the responsibilities of all the actors involved. If a company carries out specific activities which might be dangerous or arduous in case of pregnancy, then it must call in an officially authorized specialist to carry out a risk analysis. The gynecologist-obstetricians (GOs) must verify whether their patients are exposed to any professional activities banned under the OProMa. If they are, the GOs must ask employers for their risk analyses and decide on whether expectant mothers can safely continue employment at their workstations. In the absence of a risk analysis or workplace accommodations, but in the presence of presumed dangers, the GOs will prescribe preventive leave according to the precautionary principle. Employers finance preventive leave directly. Preventive leave is different from sick leave, which is financed either directly by the employer for short periods or by the employer's loss-of-income insurance for longer periods. Although midwives can and do monitor pregnancies, they have no legally defined role in or authority over maternity protection in the workplace: their role is both informal yet very important.

The authors have carried out an international literature review [10] which points out shortcomings in the implementation of MPL in several states -e.g., Belgium, Quebec, UK [11-15]- in addition to Switzerland [16; 17]. One initial finding concerned the use of sick leave certificates instead of preventive leave certificates [18; 19]. Furthermore, in several contexts, workers are put on either preventive or sick leave rather than retained at work following ergonomic adaptations to their workstations or a transfer to another position [20]. A second finding was the complexity of the factors which either facilitate or hinder the implementation of MPL. At the individual level, the representations which stakeholders give to pregnancy at work and its risks play a crucial role in the implementation of MPL. Indeed, workers' individual attitudes can lead certain women to choose to continue working despite medically identified risks to their health

[15; 21]. Workers often considered other “risks”, such as the deterioration of relationships with colleagues and impacts on career paths or job retention. At the organizational level, the needs for adjustments to workstations, job reassignments, or maternity-leave cover makes companies see pregnancy as a complex problem [12; 13]. Moreover, the multiplicity of different stakeholders creates the requirement for a single, clear definition of the occupational risks faced by employees [22]. At the macrosocial level, some of the problems and solutions may reside in national-level incentives and policies to implement the law [23]. Another issue lies in social and cultural representations, which, for example, make women’s occupational health less visible [24].

1.2 Objectives

This article presents the first results from a wider study [25]. It focuses on: 1) the degree to which MPL are implemented, as reported by GOs and midwives, and 2) the barriers and resources identified by women workers in exploratory interviews.

1.3 Theoretical approach

Considering that MPL are complex intervention, this study is inspired by realist approaches [26]. A realist approach attempts to reveal the circumstances in which interventions are implemented or not, which mechanisms are at work in each context, and which effects are produced, expected, or not expected.

2 Methods

This paper draws on a mixed methodology combining quantitative and qualitative data sets.

GOs and midwives in the French-speaking part of Switzerland filled in an ad hoc online questionnaire about their experiences, practice, and difficulties in implementing MPL. The main themes concerned the frequency with which they received or asked for risk assessments, contacted employers, and prescribed sick leave or preventive leave[1], and their sensitivity to occupational health.

The qualitative investigation consisted of 5 exploratory, semi-structured interviews with workers (nurses), who had had a pregnancy in the last 5 years. Interviews focused on workers’ perceptions of workplace hazards during their pregnancy, their experiences of protective measures, and their perceptions of barriers to and resources helping maternity protection measures. Records were anonymized, and transcripts were analyzed thematically.

[1] Because midwives cannot legally sign a mother off for preventive leave, we investigated how frequently they referred their patients to GOs who could do so.

3 Results

3.1 Degree of implementation of MPL (Quantitative section)

The questionnaires were sent online to 333 gynecologist-obstetricians (GOs) and 637 midwives, in April 2017. The response rates were 32% (n=105) for GOs and 54% (n=356) for midwives. The question *"Do pregnancy consultations form a part of your professional activity?"* was used to filter these populations. Those answering "Yes" included 93 GOs and 205 midwives. **Table 1** displays simple descriptive statistics of the questionnaire responses.

Table 1. Simple descriptive statistics

		GOs (n=93)	**Midwives (n=205)**
Estimated percentage of risk analyses received for patients facing an occupational risk: mean (sd)		5.4 (15.9)	2.1 (5.8)
		% (n)	% (n)
Frequency at which professionals asked for an occupational risk analysis	Never/rarely	35 (30)	79 (159)
	Sometimes	37 (32)	15 (31)
	Often	13 (11)	3 (6)
	Always/nearly always	15 (13)	2 (5)
Contact with the employer of a patient whose work poses a risk to pregnancy		58 (50)	9 (19)
Difficulties implementing OProMa with the employer		70 (35)	53 (10)
Reasons explaining the difficulties in implementing OProMa with the employer	The employer asked for sick leave to be granted	97 (34)	32 (6)
	Absence of any risk analysis	66 (23)	32 (6)
	Lack of knowledge about employers' obligations	60 (21)	21 (4)
Frequency of prescription of preventive leave during normal pregnancies (or midwife refers patient to a GO for prescription of preventive leave)	Never/rarely	36 (31)	30 (60)
	Sometimes	32 (28)	27 (54)
	Often	20 (17)	23 (46)
	Always/nearly always	12 (10)	19 (37)
Frequency of prescription of sick leave during normal pregnancies (or midwife refers patient to a GO for prescription of sick leave)	Never/rarely	15 (13)	13 (26)
	Sometimes	28 (24)	30 (60)
	Often	40 (34)	31 (62)
	Always/nearly always	17 (15)	25 (49)
Reasons why professionals "always" or "nearly always" prescribe sick leave instead of preventive leave	A request by the patient	60 (51)	45 (55)
	Habit	34 (29)	28 (25)
	A lack of competency	34 (29)	59 (59)

Risk analysis. On average, GOs and midwives estimated that they received employers' risk analyses in only about 5% and 2%, respectively, of cases where their patients had a job involving a maternity protection risk. Furthermore, 35% of GOs and 79% of midwives declared that they rarely or never asked for a risk analysis when consulting a patient whose job entailed a risk to her pregnancy.

Contact with the employer and difficulties implementing the OProMa. Some 58% of GOs and 9% of midwives stated that they contacted the employers of patients whose work posed a risk to their pregnancies. These professionals also said that they encountered complications when attempting to implement the OProMa with employers (70% of GOs; 53% of midwives). The main reasons mentioned as the causes of these difficulties were, for both types of professionals, the absence of any risk analysis (66% of GOs ; 32% of midwives) and above all that employers asked for their employees to be put on sick leave (97% of GOs; 32% of midwives).

Preventive leave or sick leave. In cases involving a normal pregnancy and a confirmed risk, only 32% of GOs "often" or "always" prescribed preventive leave, whereas 57% of GOs declared that they "often" or "always" prescribed sick leave. In the same situations, 42% of midwives stated that they "often" or "always" referred their patients to a GO for the prescription of preventive leave, and 56% of them "often" or "always" prescribed sick leave or asked a GO to do so. The reasons why GOs would "often" or "always" prescribe sick leave rather than preventive leave were: a request by the patient (60%), habit (34%), or a perceived lack of competency specifically in the domain of occupational risk (34%). The main reasons declared by midwives were: a perceived lack of competency (59%), a request by the patient (45%), and habit (28%).

3.2 Workers' qualitative experiences

Five exploratory interviews were organized with nurses who had had a pregnancy in the last 5 years. **Table 2** shows participants' principal characteristics.

Table 2: Characteristics of participants

Pseudonym	Workplace when pregnant	Activity rate when pregnant
Marie	Cantonal hospital, Surgery Department	100%
Diane	University hospital, Adult Intensive Care Unit	80%
Léa	Cantonal hospital, Oncological Outpatients Unit	80%
Amanda	1st pregnancy: University hospital, Pediatric Intensive Care Unit 2nd pregnancy: University hospital, Neonatology Department	100% 70%
Julia	University hospital, Pediatric Intensive Care Department	1st pregnancy: 80% 2nd pregnancy: 60%

Workers pointed out several hindrances to the implementation of protective policies in workplaces.

Lack of information about protective measures and pregnancy rights. Three women stated that they had no prior knowledge about MPL when they announced their pregnancies to their management. Diane and Julia, on the other hand, thought that they had good knowledge about these measures when they announced their pregnancies.

None of the nurses interviewed knew about the possibility of preventive leave in cases where the work is arduous or dangerous, nor did they know of the existence of any risk analysis in their departments.

The majority of the nurses felt that they received little or no information from their supervisors about their rights as a pregnant employee. Notably, related Amanda, the little information which she received from her superiors seemed to focus exclusively on questions surrounding maternity leave. Julia and Diane, on the other hand, not only stated that they knew about the protection measures in place (see paragraph above) but they also felt that they had been well informed by their supervisors: *"We had this lady in HR who was super, who really explained things to us well. [...] every time that a woman announced that she was pregnant, she got a meeting with her, and we were very, very, very well informed."* (Julia)

Organizational problems triggered by job and schedule adjustments. The principal difficulty, mentioned by all the participants, was the perception of a certain incompatibility between their state of pregnancy and the work asked of them in their hospital departments. The physical arduousness of the work, ergonomic difficulties, contact with and manipulation of dangerous substances, and the feeling of never being suitable for the tasks at hand, were all factors making nurses believe that reconciling work and pregnancy was very complicated. Marie, for example, admitted that the difficulties which she encountered during her pregnancy were not linked to any medical condition, but rather to ergonomic constraints: *"[...] my pregnancy was totally normal, I had no problems at all, but it was really in relation to the space there was between the bedside table and the bed. I had become so voluminous that in the end, bending down was a bit of a problem. We have to be able to look after people."*

Work in healthcare is perceived to be very arduous, yet three nurses described how their hospital proposed absolutely no adaptations for dealing with pregnant employees. *"No, so basically, either you continued working and you did the same things, or you were put on leave: there was no middle ground. They couldn't put us in an office, or anything like that. No."* (Julia)

Colleagues and supervisors as resources. Contrastingly, colleagues and a positive reception to the announcement of the pregnancy by their supervisors were key aids in achieving balance between work and pregnancy. Indeed, all the study participants mentioned that support from their colleagues was a precious resource: *"And then there was the kindness of all my colleagues, […] they were thoughtful with regard to all the physical handling, they did it to relieve me, which meant that I was able to work a little longer."* (Diane).

Perceived discrepancy between some protective measures and workers' needs. Most of the employees raised the issue of the mismatch between certain characteristics of the MPL and their implementation in the reality of the workplace. *"Once it has been announced, they don't have the right to make you do overtime. So, all the extra hours that you do can't be counted, because they'll be breaking the law. And you do those*

extra hours! There is no other way […] and then at 16h00 I have to leave, I have to hand back my patients, my colleagues can't take them on because they've got something else, and then you stay one hour, you stay two hours more… that was really very complicated. It's clear, there's no choice! I can't say, 'Right. See you. I'm leaving!' Really, that's just not possible. There are patients involved." (Julia)

Two nurses also had the perception that the protective measures suggested for their benefit in fact represented extra work for them. This was notably the case when they were meant to cut their working hours by 50%. *"It is always difficult to manage a 50% part-time role in these departments, […] I had another child at home, so I had to get up early just as often as usual to work during the busiest time of the day, the morning […]. So, in the end, I was tired and stressed out because I had to have finished my work before 11h30, and it's just impossible."* (Marie)

The inappropriateness of the measures put in place vis-à-vis the real needs of employees generated several negative effects felt by the participants, such as feelings of being a burden on their colleagues if no replacement staff had been foreseen or feelings of frustration or a drop in motivation linked to their jobs. *"I did lots of little supporting jobs, actually. So, I mean that when I arrived at 10h30, I put everybody on their drips Because I didn't feel really… I was doing the support jobs, it was like I was doing the dirty work, and I wasn't responsible for any of the patients."* (Amanda)

Personal strategies. Workers sometimes put in place unexpected strategies to deal with the perceived discrepancy between protective measures with their needs. For example, three nurses decided to delay the announcement of their pregnancies, for different reasons. Although Amanda decided not to reveal her pregnancy immediately because *"during the first three months, you don't announce it because you're always scared about miscarriage"*, the others delayed announcing their pregnancies so as to avoid any adaptations being set up that they would have considered inadequate anyway. *"My strategy was to announce my pregnancy as late as possible, because as soon as I announced it to my boss, in fact, she'd have put me on 8-hour shifts when I had been working 12-hour shifts. And that would have raised the number of days that I worked per month."* (Marie)

4 Discussion/Conclusions

This study is limited to the French-speaking part of Switzerland, and the exploratory interviews include only one profession (nurses) with a very small sample, so that results cannot be generalized to the overall situation in Switzerland. However, the present study's results highlight the need to improve the implementation of MPL in Switzerland and to adapt its provisions.

Quantitative results revealed three difficult aspects in applying MPL.

1) The absence of risk analyses, or the fact that employers fail to provide them to healthcare staff, represents a failure of companies to apply MPL. Yet only a minority of GOs and midwives asked for analyses when consulting for a patient whose job involved a risk to her pregnancy.

2) The majority of the professionals questioned claimed to have encountered difficulties implementing the OProMa with employers. The principal reasons for this were that employers asked for their employees to be prescribed sick leave, even when there was no medical diagnosis to justify this.
3) Indeed, professionals themselves under-prescribed preventive leave and over-prescribed sick leave. The two professional groups cited different reasons, however. Although the majority of GOs mentioned that they usually prescribed sick leave at the patient's request, midwives instead mentioned problems linked to their perceived lack of competency in this area. It should be noted here that the OProMa gives midwives no official authority in the prescription of preventive leave, which may well explain that perception.

GOs seem to have difficulty taking up the essential role which Swiss legislation has conferred upon them, namely the prescription of preventive leave when pregnant employees face an occupational danger. Statements in the literature concerning Sweden [27] revealed that GOs considered themselves to be *"bad judges"* when it came to evaluating the arduousness of their patients' working conditions. Likewise, in the USA, Stotland et al. (2014) showed that GOs felt that they did not know enough about occupational health to be able to answer the patients' questions about issues of occupational exposure. These realizations raise questions about whether GOs have the necessary skills to deal with occupational risks. One solution might be to redefine roles, associating the occupational health physician more closely with decisions about preventive leave. Swiss legislation should also make the role of midwives more explicit. Notably, the essential tasks which should be given to midwives include informing patients about the law, identifying activities involving risks, referring women to the appropriate occupational healthcare specialist, and collaborating with the GOs. Another interesting element was GOs' prescription of sick leave in place of preventive leave. Several publications in the international literature have shown increasing rates of sick leave among pregnant employees [27; 29]. These increases involve many factors, however, consistent evidence indicates that occupational exposure and arduous working conditions are leading to higher rates of sick leave during pregnancy [29-32]. Granting sick leave thus seems to be one means adopted by GOs, or requested by pregnant employees themselves or by their employers, to react to a potential danger in the workplace.

The results from the qualitative section of our study corroborate the existence of deficient application of MPL within some healthcare institutions in Switzerland. Analysis of our interviews showed furthermore that the types of adaptations implemented by employers were not necessarily in line with the needs of their pregnant employees. Indeed, interview participants perceived some of the adaptations proposed by their employers to be additional burdens on them. The perceived inappropriateness of the protection measures can also engender a lack of employee motivation and reduce their enjoyment at work. The finding that certain workplace adaptations were perceived to have been poorly implemented was also revealed by Fanello et al. (2005) in France and Malenfant et al. (2011) in Quebec.

In a recent qualitative study in ten hospitals in Quebec Gravel et al. (2017) showed that the majority of pregnant nurses are now maintained at the workplace longer thanks

to job adjustments or reassignment. Our data bring a different situation to light. Indeed most of the interviewees felt that adaptations were difficult to reach in their hospital: *"basically, either you continued working and you did the same things, or you were put on leave"* (Julia).

The studies included in our literature review [10] often demonstrated a deterioration in professional relationships (negative comments from colleagues and supervisors) following pregnancy announcements or the implementation of MPL [15; 20; 34]. Our interviews failed to duplicate this finding, maybe because nursing is a heavily female profession and lots of colleagues have been through this experience. Nevertheless, it seems clear that colleagues and supervisors play a vital role in reconciling pregnancy and work.

Delaying the announcement of their pregnancy was one of the employees' strategies for combatting the perceived inappropriateness of some of the workplace adaptations put in place for them (for example, in order to continue to work 12-hours shifts, something which Swiss legislation prohibits). These personal strategies echoed a key concept in ergonomics and occupational health: the concept of *margin for manoeuvre*, which is a testament to the wide range of personal strategies implemented by all workers in order to continue doing their jobs while being able to adjust their professional tasks to their personal state of health [35; 36].

Without wishing to have pregnancy considered an illness, the condition's extraordinary nature cannot be denied and nor can the fact that it can put limits on an employee's ability to carry out certain professional tasks and activities. Thus, it seems pertinent to take margin for manoeuvre into consideration when looking at the personal strategies put in place by pregnant workers. For example, if in Gravel et al. (2017) the interviewed pregnant nurses display an important margin for manoeuvre, notably by challenging not only working conditions but also reassignments that they judge inappropriate for their health or their career, in our interviews some nurses choose instead to acting upon the announcement's conditions of their pregnancy. However, this choice is not a trivial one. A pregnancy has to be announced before a woman can benefit from MPL. Recent studies have shown that the period presenting the greatest risks of fetal malformation or miscarriage is between the 3rd and 8th weeks of gestation [37]. Employees might be encouraged to announce their pregnancies to their supervisors earlier if the adaptations put in place for them were closer to their perceived needs and by establishing some sort of participative management for the implementation of those adaptations.

More research is required to evaluate the degree of implementation of this legislation in workplaces. Qualitative interviews with others relevant stakeholders from various workplaces would be useful in order to more accurately understand the barriers to maternity protection's implementation and establish ways to overcome them.

Acknowledgments: This work is supported by the Swiss National Science Foundation (grant number 162713), by Canton Vaud's Public Health Service and by a research fund belonging to the University of Applied Sciences and Arts Western Switzerland (HES-SO).

5 References

1. Casas M et al. (2015) Maternal occupation during pregnancy, birth weight, and length of gestation: combined analysis of 13 European birth cohorts. Scand J Work Environ Health 41:384-396 doi:10.5271/sjweh.3500
2. Fowler JR, Culpepper L (2018) Working during pregnancy. UpToDate
3. Figà-Talamanca I (2006) Occupational risk factors and reproductive health of women. Occupational Medicine 56:521-531 doi:10.1093/occmed/kql114
4. Lafon D (2010) Grossesse et travail : quels sont les risques pour l'enfant à naître? , EDP Sciences edn. Institut National de recherche et de Sécurité (INRS), Les Ulis
5. Goldman RH, Wylie JB (2017) Overview of occupational and environmental risks to reproduction in females. UpToDate
6. Palmer KT, Bonzini M, Bonde J-PE (2013) Pregnancy: occupational aspects of management: concise guidance. Clinical Medicine 13:75-59 doi:10.7861/clinmedicine.13-1-75
7. Larsen AD (2015) The effect of maternal exposure to psychosocial job strain on pregnancy outcomes and child development. Dan Med J 62
8. Glover V (2014) Maternal depression, anxiety and stress during pregnancy and child outcome; what needs to be done. Best practice & research Clinical obstetrics & gynaecology 28:25-35 doi:10.1016/j.bpobgyn.2013.08.017
9. International Labour Organization (2010) Maternity at work: a review of national legislation: findings from the ILO database of conditions of work and employment laws. Geneva
10. Probst I, Zellweger A, Politis Mercier M-P, Danuser B, Krief P (Under review) Implementation, mechanisms, and effects of maternity protection legislation: a realist narrative review of the literature.
11. Lembrechts L, Valgaeren E (2010) Grossesse au travail. Le vécu et les obstacles rencontrés par les travailleuses en Belgique. Etude quantitative et qualitative. Institut pour l'égalité des femmes et des hommes, Bruxelles
12. Lippel K (1998) Preventive reassignment of pregnant or breast-feeding workers: the Quebec model. New Solutions: A Journal of Environmental and Occupational Health Policy 8:267-280
13. Malenfant R, Gravel A-R, Laplante N, Plante R (2011) Grossesse et travail : au-delà des facteurs de risques pour la santé. Revue multidisciplinaire sur l'emploi, le syndicalisme et le travail 6:50-72
14. Adams L et al. (2016) Pregnancy and maternity-related discrimination and disadvantage: experiences of employers. Department for Business, Innovation and Skills and the Equality and Human Rights Commission, London
15. Adams L et al. (2016) Pregnancy and maternity-related discrimination and disadvantage: experiences of mothers. Department for Business, Innovation and Skills, Equality and Human Rights Commission, London
16. Grolimund-Berset D, Krief P, Praz-Christinaz S (2011) Difficultés pratiques de la mise en application de l'Ordonnance sur la protection maternité (Oproma) en Suisse à la

lumière de deux cas cliniques. Archives des maladies professionnelles et de l'environnement 73:524-525

17. Aellen G, Nicollier L, Outdili Z, Ribeiro K, Stritt K (2013) Application de l'Ordonnance sur la protection de la maternité chez les femmes médecins. Revue médicale suisse:1433-1434
18. Makowiec-Dabrowska T, Hanke W, Radwan-Wlodarczyk Z, Koszada-Wlodarczyk W, Sobala W (2003) [Working condition of pregnant women. Departures from regulation on occupations especially noxious or hazardous to women]. Medycyna pracy 54:33-43
19. Fanello C, Ripault B, Drüker S, Moisan S, Parot E, Fontbonne D (2005) Déroulement des grossesses du personnel d'un établissement hospitalier. Evolution en vingt ans. Archives des Maladies Professionnelles et de l'Environnement 66:244-251 doi:10.1016/S1775-8785(05)79089-5
20. Malenfant R, De Koninck M (2002) Production and reproduction: the issues involved in reconciling work and pregnancy. New Solutions: A Journal of Environmental and Occupational Health Policy 12:61-77
21. Legrand E (2015) Santé reproductive et travail : la prévention des risques reprotoxiques. Rapport final dans le cadre du Programme national de recherche Environnement-Santé Travail. Université du Havre, Le Havre
22. Aviles-Palacios C, Lopez-Quero M, Garcia-Lopez M-J (2013) Gender and maternity considerations and techniques in occupational health services: The Spanish case. Safety Science:27-31 doi:10.1016/j.ssci.2013.03.011
23. Tarchi M, Bartoli D, Demi A, Dini F, Farina GA, Sannino G (2007) [Emerging problems in enforcement of safe maternity and feeding protection at work: a public prevention service experience]. Giornale italiano di medicina del lavoro ed ergonomia 29:385-386
24. Messing K, Boutin S (1997) Les conditions difficiles dans les emplois des femmes et les instances gouvernementales en santé et en sécurité du travail. Industrial Relations 52:333-363 doi:10.7202/051169ar
25. Krief P, Zellweger A, Politis Mercier M-P, Danuser B, Wild P, Zenoni M, Probst I (2018) Protection of pregnant women at work in Switzerland: practices, obstacles and resources. A mixed-methods study protocol. BMJ Open
26. Pawson R, Greenhalgh T, Harvey G, Walshe K (2005) Realist review--a new method of systematic review designed for complex policy interventions. J Health Serv Res Policy 10 Suppl 1:21-34 doi:10.1258/1355819054308530
27. Larsson C, Sydsjo A, Alexanderson K, Sydsjo G (2006) Obstetricians' attitudes and opinions on sickness absence and benefits during pregnancy. Acta Obstet Gynecol Scand 85:165-170
28. Stotland NE et al. (2014) Counseling patients on preventing prenatal environmental exposures--a mixed-methods study of obstetricians. PLoS One 9:e98771 doi:10.1371/journal.pone.0098771
29. Sydsjo G, Sydsjo A (2002) Newly delivered women's evaluation of personal health status and attitudes towards sickness absence and social benefits. Acta Obstet Gynecol Scand 81:104-111 doi:10.1034/j.1600-0412.2002.810203.x

30. Hansen M, Thulstrup A, Juhl M, Kristensen J, Ramlau-Hansen C (2015) Occupational exposures and sick leave during pregnancy: results from a Danish cohort study. Scandin 41
31. Henrotin JB, Vaissiere M, Etaix M, Dziurla M, Malard S, Lafon D (2017) Exposure to occupational hazards for pregnancy and sick leave in pregnant workers: a cross-sectional study. Ann Occup Environ Me 29 doi:10.1186/s40557-017-0170-3
32. Kaerlev L, Jacobsen LB, Olsen J, Bonde JP (2004) Long-term sick leave and its risk factors during pregnancy among Danish hospital employees. Scandinavian journal of public health 32:111-117 doi:10.1080/14034940310017517
33. Gravel AR, Riel J, Messing K (2017) Protecting Pregnant Workers while Fighting Sexism: Work-Pregnancy Balance and Pregnant Nurses' Resistance in Quebec Hospitals. New Solutions-a Journal of Environmental and Occupational Health Policy 27:424-437 doi:10.1177/1048291117724847
34. Bretin H, De Koninck M, Saurel-Cubizolles M-J (2004) Conciliation travail/famille: quel prix pour l'emploi et le travail des femmes? À propos de la protection de la grossesse et de la maternité en France et au Québec. Santé, Société et Solidarité 3:149-160 doi:10.3406/oss.2004.1006
35. Durand MJ, Vezina N, Baril R, Loisel P, Richard MC, Ngomo S (2009) Margin of manoeuvre indicators in the workplace during the rehabilitation process: a qualitative analysis. J Occup Rehabil 19:194-202 doi:10.1007/s10926-009-9173-4
36. Durand MJ, Vezina N, Baril R, Loisel P, Richard MC, Ngomo S (2011) Relationship between the margin of manoeuvre and the return to work after a long-term absence due to a musculoskeletal disorder: an exploratory study. Disabil Rehabil 33:1245-1252 doi:10.3109/09638288.2010.526164
37. Romano D, Moreno N (2010) Barriers for the prevention of chemical exposures in pregnant and breast-feeding workers? Journal of epidemiology and community health 64:193 doi:10.1136/jech.2008.085282