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Title page

Occupational stressors in healthcare workers in France

Stress au travail chez les personnels hospitaliers en France

Author information

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Author contributions

Laetitia Rollin designed the study, analyzed and interpreted data

Jean-François Gehanno designed the study and interpreted data

Ariane Leroyer designed the study, analyzed and interpreted data

Conflict of interest: none

1 Occupational stressors and mental health in healthcare workers in France

2

3 Abstract

4 **Objectives:** To describe psychosocial constraints and mental health of hospital workers, and
5 to identify the psychosocial constraints significantly associated with mental health difficulties,
6 especially in two groups: caregivers and other hospital workers.

7 **Method.** Data about working conditions and health status collected by the Evrest National
8 observatory in 2018-2019 during occupational health consultation were used. Psychosocial
9 constraints and mental health among caregivers, other hospital workers and non-hospital
10 workers were described.

11 **Results.** There were 1 251 hospital workers (843 caregivers, 408 other hospital workers) and
12 25 129 other workers. Intensity and working time (time pressure, extra working time, missing
13 or shortening a meal), and ethical dilemmas (not having the means to ensure high-quality
14 work, too rapidly handling a procedure that would require more painstaking care) were
15 significantly more reported by the caregivers than by the other hospital workers (50.8% vs
16 44.2%, 43.4% vs 32.5%, 47.2% vs 17.2%, 21.4% vs 16.4% and 41.5% vs 29.0% respectively).
17 Prevalence of psychological distress was not significantly higher for caregivers (12.3%) than
18 for other hospital workers (12.4%) but was significantly higher than for other workers (7.3%).
19 For caregivers, factors significantly associated with psychological distress were time pressure
20 (Odds Ratio adjusted on sociodemographic factors (OR) = 2.33 CI95% [1.35-4.04]), “difficulties
21 to reconcile private life and work life” (OR=2.95 [1.54-5.69]), “work not recognized in the
22 professional setting” (OR=1.89 [1.08-3.31]) and “fear of losing one’s job” (OR=2.98 [1.53-5.8]).
23 For other hospital workers, they were “difficulties to reconcile private life and work life
24 (OR=2.76 [1.04-7.30]), “insufficient possibilities of mutual aid” (OR=2.85 [1.24-6.53] and “not

25 having the means to ensure high-quality work” (OR=3.42 [1.62-7.21]).

26 **Conclusion:** Factors significantly associated with psychological distress were not the same for
27 caregivers and other hospital workers, nor were they the most frequently reported. Detailed
28 description of the constraints according to group of workers could help to develop a high-
29 priority preventive program regarding psychosocial risk factors.

30 **Trial registration:** CNIL n°906290 and 906290VI

31 **Keywords:** Caregivers, Evrest national observatory, Mental health, Hospital organization.

32

33 **Stress au travail chez les personnels hospitaliers en France**

34 **Objectifs :** Décrire les contraintes psychosociales et la santé mentale des travailleurs
35 hospitaliers et identifier les contraintes significativement associées à des troubles
36 neuropsychiques, en particulier chez les soignants et les autres salariés hospitaliers.

37 **Méthode.** Les données collectées par l'observatoire national Evrest durant les consultations
38 de santé au travail en 2018-2019 ont été utilisées. Les contraintes psychosociales et la santé
39 mentale ont été décrites parmi les personnels hospitaliers soignants, les autres salariés
40 hospitaliers et les travailleurs non hospitaliers.

41 **Résultats.** La population d'étude comprenait 1 251 travailleurs hospitaliers (843 soignants,
42 408 non soignants) et 25 129 autres travailleurs. L'intensité et le temps de travail (forte
43 pression temporelle, dépasser les horaires normaux, sauter ou écourter un repas), les conflits
44 de valeur (ne pas avoir les moyens de faire un travail de qualité, traiter trop vite une opération
45 qui demanderait davantage de soin) étaient significativement plus rapportés par les soignants
46 que par les non soignants (respectivement 50,8% vs 44,2%, 43,4% vs 32,5%, 47,2% vs 17,2%,
47 21,4% vs 16,4% and 41,5% vs 29,0%). La prévalence des troubles neuropsychiques n'était pas
48 significativement différente entre les soignants (12,3%) et les non soignants (12,4%), mais
49 était significativement plus importante que chez les autres travailleurs (7,3%). Chez les
50 soignants, les facteurs significativement associés à la présence de troubles neuropsychiques
51 étaient la forte pression temporelle (OR=2,33 IC95% [1,35-4,04]), les difficultés pour concilier
52 vie privée et vie professionnelle (OR=2,95 [1,54-5,69]), l'absence de reconnaissance par
53 l'entourage professionnel (OR=1.89 [1.08-3.31]) et la peur de perdre son travail (OR=2,98
54 [1,53-5,8]). Pour les autres travailleurs hospitaliers, il s'agissait des difficultés pour concilier
55 vies privée et professionnelle (OR=2,76 [1,04-7,30]), de manquer d'entraide (OR=2,85 [1,24-
56 6,53] et manquer de moyens pour faire un travail de qualité (OR=3,42 [1,62 – 7,21]).

57 Conclusions. Les facteurs associés aux troubles neuropsychiques ne sont pas les mêmes chez
58 les soignants et les autres travailleurs hospitaliers. Il ne s'agit pas non plus des facteurs les
59 plus fréquemment rapportés. La description détaillée des facteurs selon le groupe de
60 travailleurs peut être utilisée pour cibler les actions de prévention prioritaires en termes de
61 risque psychosociaux.

62 **Mots clés** : Personnels Hospitaliers. Soignants. Contraintes psychosociales. Observatoire
63 national Evrest. Santé Mentale.

64

65

66 **Introduction**

67 Healthcare workers (HCWs) are employed in organizations that are continuously evolving to
68 optimize effectiveness and efficiency [1]. Organizational changes in hospitals include working
69 time, work intensity, management, work-life balance, and health and safety policies.

70 Healthcare workers are intrinsically exposed to a variety of specific occupational stress factors.

71 They can lead to psychological distress, and numerous studies have shown high levels of such
72 psychological distress, with mental health complaints including burnout, post-traumatic stress

73 disorders, anxiety, and depression [2]. The consequences for physicians, nurses, and other

74 healthcare professionals are long-term sick leave, economic losses and medical errors in daily

75 practice situations [3-7]. However, it is difficult to disentangle the consequences of

76 psychosocial constraints associated with hospital organization evolution from the

77 consequences of being, as a caregiver, directly exposed to patients' difficulties. That is one

78 reason why it is extremely important to develop targeted preventive actions. With this in

79 mind, we decided to conduct a study aimed at better understanding the psychosocial

80 constraints of hospital workers. The objectives of this study were 1) to describe the

81 psychosocial constraints and their impact on the mental health of hospital workers, and 2) to
82 identify the psychosocial constraints significantly associated with mental health difficulties,
83 especially among two groups: caregivers and other hospital workers.

84

85 **Methods**

86 Data from the National Evrest Observatory (*Évolutions et Relations en Santé au Travail –*
87 *Evolutions and Relationships in Health at Work*) were used.

88 ***The Evrest observatory***

89 Evrest is a national observatory, set up in France in 2007 by occupational health physicians
90 and researchers aiming at collecting, for a representative sample of employees, a database
91 concerning their working conditions and their health. Data are collected using a short,
92 standardized questionnaire (one double-sided page), made up of closed-ended questions that
93 have been used in the large surveys on health in workplaces in France [8-9]
94 (<http://evrest.istnf.fr/page-0-0-0.html>, accessed November 30th 2021). The questions concern
95 working conditions, training, lifestyle and state of health. Activity sectors grouped into
96 professional categories received the French codes given by the National Institute of Statistics
97 and Economic Studies (Insee), NAF-2008 and PCS-ESE-2003.

98 The questionnaire is proposed to occupational health teams (physicians and nurses)
99 participating in the survey, and to employees during their periodic occupational health visit.

100 In France, all employees are required to attend an occupational health visit every two, three
101 or five years, depending on the employee's level of exposure to risk and state of health
102 (<http://evrest.istnf.fr/page-0-0-0.html>). To obtain a random sample of employees, only those
103 born in October were asked to complete the questionnaire. The part of the questionnaire
104 concerning working conditions, training and lifestyle is completed by the employee in a sitting

105 room and the second part, concerning state of health, is completed by the occupational health
106 physician or the nurse during the visit. Since 2008, the Evrest database has included about
107 100 000 questionnaires, completed by about 80 000 employees and 1 700 occupational health
108 teams. Every year the Evrest observatory produces a consolidated weighting database
109 covering the two last years. This database is built in two steps: firstly, for employees who
110 completed several Evrest questionnaires during the two-year period, only one questionnaire
111 (the most recent) is included, and secondly, a weighting methodology allowing results to be
112 extrapolated to the French employees is used. The weighting method includes two steps: 1) a
113 first weighting to take into account the probability of participation of each employee; and 2)
114 a marginal calibration method to correct potential distortions of the sample in comparison
115 with the scope of the survey. The detailed weighted methodology is available in a previously
116 published article [10]. The observatory obtained an authorization from the informatics and
117 liberty commission for the database (CNIL n°906290 and 906290VI). Employees can decline to
118 complete the questionnaire

119

120 ***Database used***

121 The study used the most recent Evrest weighted database available: the Evrest 2018-2019
122 database. Firstly, two groups were built and compared: “hospital workers” defined as people
123 who worked in hospital activities (NAF-2008 code: 8610Z) and “national sample excluding
124 workers in hospital activities” defined as people who did not work in the hospital activities.
125 Secondly, among hospital workers, two groups were built and compared: “caregivers”
126 (physicians, interns, nurses, nursing auxiliaries, senior nurses, midwives, physiotherapists,
127 ambulance drivers, dental assistants, rehabilitation specialists) and “other hospital workers”
128 (administrative, educational and social personnel, medico-technical and technical personnel).

129 In this study, we focused on the part of the questionnaire relative to psychosocial constraints,
130 which were explored according to 5 main axes as recommended by the *College d'expertise sur*
131 *le suivi statistique des risques psychosociaux au travail* [11]: intensity and working time (items
132 1 to 4, Q1-Q4), lack of autonomy (Q5-Q8), occupational social relationships (Q9-11), ethical
133 dilemmas (Q12-13) and job insecurity (Q14). Psychological distress was estimated based on
134 the presence of the following associated symptoms: fatigue, sleeping disorders and anxiety-
135 nervousness during the last 7 days.

136 **Statistical analysis**

137 All statistical analyses were conducted using the R software program, version 4.0.3. The
138 statistical analyses included calculations of proportions for every psychosocial constraint. Two
139 comparisons were conducted: the first compared “hospital workers” with “national sample
140 excluding workers in hospital activities” and the second compared “caregivers” with “other
141 hospital workers”. Differences between groups were evaluated using the Rao-Scott test, with
142 α risk set at 5%. In a second step, in each group the variables associated with the presence of
143 psychological distress, defined as the association of fatigue, anxiety and sleeping disorders,
144 were evaluated, once again using the Rao-Scott test. In this bivariate analysis, variables
145 presenting an alpha risk lower than 0.20 were then introduced into a multivariate model
146 (logistic regression) adjusted on the socio-demographic data (sex, age and social and
147 occupational group). Only the significant variables ($p < 0.05$) were retained in the final logistic
148 regression models.

149

150 **Results**

151 The Evrest 2018-2019 consolidated and weighted database included 26 380 workers: 1 251
152 hospital workers and 25 129 who did not work in hospital activities. Among hospital workers,

153 there were 843 caregivers and 408 other hospital workers (Figure 1).

154 ***Comparison between “hospital workers” and “national sample excluding workers in hospital***
155 ***activities”***

156 Table 1 describes the socio-demographic and occupational characteristics of the different
157 groups. In the hospital worker group, proportions of women, employees and associate
158 professions were higher than in the other worker group.

159 Table 2 details the proportions of the different psychosocial constraints. All of the items
160 related to intensity and working time, and ethical dilemma axes were significantly more
161 reported by hospital workers than by other workers ($p < 0.001$) (Table 2). Concerning lack of
162 autonomy, while the items “no choice in the way of proceeding” and “give up a task to another
163 one not planned” were significantly more reported by hospital workers than by other workers
164 ($p = 0.001$), the items “the work does not allow to learn things” ($p = 0.001$) and “the work is not
165 varied” ($p = 0.058$) were significantly and nearly significantly less reported, respectively.

166 Concerning occupational social relationships, the items “work not recognized by my
167 professional environment” and “do things I disapprove of” were significantly more reported
168 by hospital workers than by other workers ($p = 0.001$), whereas there were no differences
169 between the two groups for the item “insufficient possibilities of mutual aid”. Lastly, there
170 was no significant difference between hospital workers and other workers regarding job
171 insecurity.

172 Table 3 presents the prevalence of psychological distress among the two groups of hospital
173 workers. Prevalence of psychological distress was significantly higher for hospital workers
174 than for other workers ($p = 0.001$).

175 ***Comparison between “caregivers” and “other hospital workers”***

176 In the caregiver group, the proportions of women ($p = 0.001$) and employees ($p = 0.001$) were

177 markedly higher than in the other hospital worker groups (Table 1). All items from two
178 psychosocial axes were significantly or nearly significantly more reported by the caregiver
179 group than by the other hospital workers group: intensity and working time, and ethical
180 dilemmas (Table 2). For the three other psychosocial axes (lack of autonomy, occupational
181 relationships and job insecurity), no item was significantly more declared by the caregivers.
182 Prevalence of psychological distress did not differ between the two professional groups (Table
183 3).

184 Multivariate analyses showed that factors significantly associated with the presence of
185 psychological distress, defined as the combination of "fatigue and anxiety-nervousness and
186 sleeping disorders", differed between the three groups (caregivers, other hospital workers,
187 other workers).

188 For caregivers, four items were significantly associated with psychological distress:
189 "undergoing strong time pressure" (OR = 2.33 CI95% [1.35-4.04]), "difficulties to reconcile
190 private life and work life" (OR = 2.95 CI95% [1.54-5.69]), "work not recognized in my
191 professional setting" (OR = 1.89 CI95% [1.08-3.31]) and "work with the fear of losing my job"
192 (OR = 2.98 CI95% [1.53-5.8]).

193 For other hospital workers, there were three items significantly associated with psychological
194 distress but they differed from those of caregivers: they were "difficulties to reconcile private
195 life and work life" (OR = 2.76 CI95% [1.04-7.3]), "insufficient possibilities of mutual aid" (OR =
196 2.85 CI95% [1.24-6.53]) and "do not have the means to do high-quality work" (OR = 3.42 CI95%
197 [1.62-7.21]).

198 For other workers from the National sample, 10 out of 13 items were associated with
199 psychological distress, at least one item for each psychosocial axis.

200

201 **Discussion**

202 The aim of this cross-sectional study was to compare, using data from a large-scale national
203 study, the psychosocial constraints and mental health of caregivers, other hospital workers
204 and other workers.

205 Intensity and working time, and ethical dilemma were the two psychosocial constraint factors
206 significantly more reported by caregivers than by other hospital workers. These two axes were
207 also more often reported by hospital workers than by other workers.

208 While prevalence of psychological distress did not significantly differ between caregivers and
209 other hospital workers, it was higher in hospital workers than in other workers. The
210 psychosocial constraints associated with psychological distress among caregivers were “to
211 undergo strong time pressure”, “difficulties to reconcile private life and work life”, “Work not
212 recognized in my professional setting” and “work with the fear of losing my job”.

213 In this study, comparison of caregivers with other hospital workers enabled us to distinguish
214 between hospital-specific organizational constraints and patient care constraints. Hospital-
215 specific constraints were high in the years preceding the COVID-19 pandemic; due to
216 technological innovations, evolving patient expectations evolution and financial crises,
217 hospital organization was transformed so as to enhance the efficacy of health interventions
218 [12]. Aimed at reducing costs, these organizational changes could entail considerable
219 psychological constraint among all types of hospital workers. As for caregivers, they were
220 faced with intrinsic professional constraints such as emotional stress, emergency, fear of
221 making mistakes, shiftwork... [13-17] Since the level of psychosocial constraints was higher
222 among caregivers than among the other hospital workers, we can presume that psychosocial
223 constraints result from a combination of patients care and type of organization rather than the
224 organizational changes alone. As a consequence, reflection is needed to establish a specific

225 psychosocial prevention plan for caregivers. This is a major issue for hospitals insofar as it has
226 been demonstrated that high levels of psychosocial constraints, particularly workload and
227 decision-making latitude, have a serious impact on quality of care [17].

228 This study demonstrated that factors usually significantly associated with psychological
229 distress were not exactly those reported the most by caregivers. While “strong time pressure”
230 was more often reported by caregivers and associated with psychological distress, “difficulties
231 to reconcile private life and work life” and “work not recognized in the professional setting”
232 were not significantly more reported by caregivers but were significantly associated with
233 psychological distress. “Ethical dilemmas” was more reported by caregivers but not
234 significantly associated with psychological distress, while “job insecurity” was not significantly
235 reported by caregivers but strongly associated with psychological distress.

236 In the literature, several studies have highlighted an association between sizable workload
237 and anxiety, depression or burnout among caregivers [15-19]. On the other hand, although
238 often described in other occupations, "fear of losing my job" has less often been reported as
239 a determinant of caregivers' mental health [20]. This constraint, although rarely reported
240 among hospital personnel [21], is to be taken into consideration since it seems associated with
241 psychological distress. In the literature, some studies have shown links between "fear of losing
242 my job" and "fear of making errors" [22] while among caregivers, “fear of losing my job” may
243 be induced by the fear of not being able to maintain one’s job if a medical condition were to
244 impair one’s ability to work [23].

245 Proportions of psychological distress were significantly higher among hospital workers in
246 comparison with the other workers from the nationwide sample, without significant
247 difference between caregivers and other hospital workers. That said, proportion of
248 psychological distress among caregivers is of concern considering the young age of this group

249 (median age for caregivers: 40 years old compared to that of other hospital workers: 44 years
250 old). Several previous studies have likewise observed burnout, anxiety and depression among
251 caregivers [24-28]. As an example, 9% of 17 437 Canadian nurses suffered from a major
252 depressive episode in the previous year, prevalence twice as high as the average among
253 Canadian women [29]. Psychological distress calls for special attention insofar as it is a
254 predictive factor for depression [30].

255 This study was conducted before the COVID-19 health crisis, and hospital organizations were
256 considerably transformed during 2020. That is one reason why we intend to conduct similar
257 analyses in the near future to appraise these changes.

258 The strengths of this study consisted in the opportunity to apply the data of a large ongoing
259 national study and to constructively use weighted data [10]. Questionnaires were
260 administered during health consultations with occupational health services. It would be
261 interesting to pursue this study with a focus group of professionals having participated in
262 these consultations, the objective being to obtain concrete examples illustrating each one of
263 the items.

264 Caregivers are exposed to psychosocial risk-factors, and hospital workers declared
265 psychological distress in major proportions. Significant links between psychological distress
266 and these psychosocial constraints were highlighted. The implications of this study are
267 important for hospital organizations, especially in the context of COVID-19 pandemic since
268 hospital organizations are evolving. Hospital managers can use the study results to guide
269 dedicated actions on specific issues of concern. The detailed description of the constraints
270 according to group of workers could be used to develop a concrete prevention plan based on
271 psychosocial risk factors. Several risk factors that correlated with psychological distress can be
272 potentially improved by future preventive activities. A number of strategies could be applied

273 to improve working conditions and reduce psychological distress among caregivers. For
274 example and based on the results of present study, it is important to monitor time pressure,
275 to develop solutions to better reconcile private life and work life, to enhance recognition by
276 the professional setting and to diminish people's fears of losing their jobs.

277

278 **List of abbreviations**

279 *Evrest: Evolutions et Relations en Santé au Travail*

280 **Ethics approval and consent to participate:**

281 Employees can decline to complete the questionnaire. The Evrest observatory obtained an
282 authorization from the informatics and liberty commission for the database (CNIL n°906290
283 and 906290VI).

284 **Consent for publication:** not applicable

285 **Availability of data and materials:** The datasets used and/or analysed during the current
286 study are available from the corresponding author on reasonable request.

287

288 **Competing Interests:** The authors have declared that no competing interests exist

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290

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293

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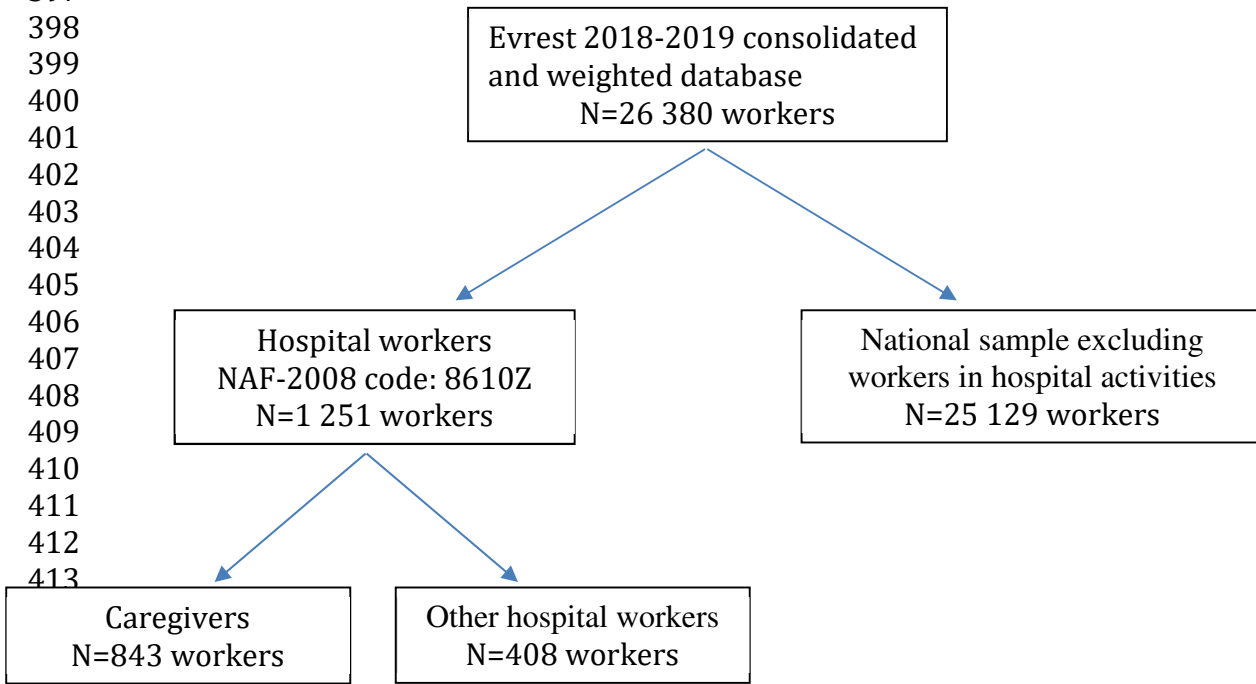
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396 **Figure 1. Flow chart of the study**



419 **Table 1: Description of the population**

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		Hospital activities (n = 1 251)			National sample (n = 26 380)		
		Caregivers	Other hospital workers	p-value ^a	Hospital workers (caregivers and other hospital workers)	National Sample excluding workers in hospital activities	p-value ^b
		(n = 843) weighted %	(n = 408) weighted %	(Rao-Scott) Caregivers vs other hospital workers	(n = 1 251) weighted %	(n = 25 129) weighted %	(Rao-Scott) Hospital workers vs other workers
Gender	Female	85.9	65.5	<0.001	79.2	47.8	<0.001
	Male	14.1	34.5		20.8	52.2	
Age	<=25 years	7.2	5.2	0.286	6.6	14.6	<0.001
	26-35 years	25.5	22.1		24.4	24.3	
	36-45 years	26.8	26.1		26.6	23.9	
	46-55 years	24.7	29.8		26.4	24.4	
	56 years and more	15.8	16.8		16.1	12.8	
Activities sector NAF-2008 code	1-Mining and Quarrying			-	0.0	1.8	<0.001
	2-Manufacturing				0.0	13.4	
	3-Construction				0.0	6.8	
	4-Wholesale and retail trade, transport and storage, accommodation and food service activities				0.0	28.0	
	5-Information and communication, real estate, financial and insurance activities				0.0	8.1	
	6-Public administration, education				0.0	13.1	
	7-Human health and social activities				100.0	9.7	
	8-Other service activities				0.0	19.1	
Profession category (PCS-ESE Code)	3 Executive manager	10.5	10.2		10.4	16.1	<0.001
	4 Associate professionals	39.5	34.6		37.9	18.8	
	5 Clerks	50.0	35.1		45.1	36.3	
	6 Workers	0	20.0		6.6	28.8	
Professions included (%)	Physicians:9.1	Technical personnel ^c : 40.0					
	Interns: 4.2	Medico-technical ^b personnel: 21.5					
	Midwives: 3.9	Educational and social personnel: 3.4					
	Supervisory nurses: 4.2	Administrative personnel: 35.1					
	Nurses: 32.9						
	Assistants nurses: 34.3						
	Physiotherapists: 3.2						
	Other (ambulance drivers, dental assistants): 8.2						

^a Technical personnel (cleaners, construction workers, workers of the laundry, workers of kitchen)

^b Medico technical personnel (medical technicians, technicians of laboratories, pharmaceutical assistants)

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Table 2: Prevalence of the psychosocial risk factors.

Psychosocial risk factors	Items	Hospital activities (n=1251)			National sample (n=26380)		
		Caregivers	Other hospital workers	p-value	Hospital workers (Caregivers and other hospital workers) (n = 1251)	National sample excluding workers in hospital activities (n = 25129)	p-value
		(n = 843)	(n = 408)	(Rao-Scott)	(n = 1251)	(n = 25129)	(Rao-Scott)
		weighted %	weighted %	Caregivers vs other hospital workers	weighted %	weighted %	Hospital workers vs other workers
Intensity and working time	Q1. Undergo strong time pressure \geq 6 on a scale from 0 to 10	50.8	44.2	0.045	48.7	33.2	<0.001
	Q2. Exceed the usual working time	43.4	32.5	0.001	39.8	34.2	<0.001
	Q3. Miss or shorten a meal	47.2	17.2	<0.001	37.4	20.2	<0.001
	Q4. Difficulties to reconcile private life and work life	10.9	8.8	0.301	10.2	10.4	0.882
Lack of autonomy	Q5. No choice in the way of proceeding	29.3	26.6	0.355	28.4	22.6	<0.001
	Q6. Give up a task for another one not planned	61.0	60.0	0.768	60.6	46.1	<0.001
	Q7. The work is not varied	15.3	12.6	0.251	14.4	16.7	0.058
	Q8. The work does not allow to learn things	9.1	12.9	0.056	10.3	15.4	<0.001
Occupational social relationships	Q9. Work not recognized by the professional environment	20.2	23.7	0.193	21.3	14.8	<0.001
	Q10. No sufficient possibilities of mutual aid	13.6	15.9	0.304	14.3	13.4	0.407
	Q11. Do things I disapprove of	23.8	19.8	0.144	22.5	18.0	<0.001
Ethical dilemma	Q12. Do not have the means to ensure high-quality work	21.4	16.4	0.054	19.7	10.4	<0.001
	Q13. Handle too fast an operation which would ask for more care	41.5	29.0	<0.001	37.4	21.0	<0.001
Job insecurity	Q14. Work with the fear of losing my job	10.4	10.3	0.963	10.4	10.2	0.833

Significant results are bold.

Table 3: Prevalence of psychological distress.

	Hospital activities (n=1 251)			National sample (n=26 380)		
	Caregivers (n = 843) weighted %	Other hospital workers (n = 408) weighted %	p-value (Rao- Scott) Caregivers vs other hospital workers	Hospital workers (Caregivers and other hospital workers) (n = 1 251) weighted %	National sample excluding workers in hospital activities (n = 25 129) weighted %	p-value (Rao- Scott) Hospital workers vs other workers
Fatigue	35.5	37.7	0.479	37.0	23.3	<0.001
Anxiety, nervousness	24.0	23.9	0.963	23.9	17.3	<0.001
Sleeping disorders	26.7	26.2	0.865	26.4	18.9	<0.001
Association of fatigue and anxiety nervousness and sleeping disorders	12.3	12.4	0.983	12.3	7.3	<0.001

Significant results are bold.

Table 4: Psychosocial factors associated to psychological distress, bivariate analysis and logistic regression adjusted on socio-demographic factors.

Psychosocial risk factors	Items	Bivariate analysis			Multivariate analysis		
		Hospital activities		National sample excluding hospital activities	Hospital activities		National sample excluding hospital activities
		Caregivers (n = 843) OR [95%CI]	Other hospital workers (n = 408) OR [95%CI]	(n = 25 129) OR [95%CI]	Caregivers (n = 843) OR [95%CI]	Other hospital workers (n = 408) OR [95%CI]	(n = 25 129) OR [95%CI]
Intensity and working time	Q1. Undergo a strong time pressure ≥ 6 on a scale from 0 to 10	2.88 [1.73 - 4.81]	2.54 [1.27 - 5.09]	3.09 [2.72 - 3.50]	2.33 [1.35 - 4.04]	-	1.74 [1.49 - 2.04]
	Q2. Exceed the usual working time	1.41 [0.89 - 2.25]	1.26 [0.64 - 2.52]	1.77 [1.56 - 2.00]	-	-	-
	Q3. Miss or shorten a meal	1.35 [0.86 - 2.13]	3.66 [1.76 - 7.59]	2.15 [1.88 - 2.45]	-	-	-
	Q4. Difficulties to conciliate private life and work life	4.17 [2.30 - 7.54]	4.80 [1.88 - 12.27]	3.39 [2.92 - 3.93]	2.95 [1.54 - 5.69]	2.76 [1.04 - 7.30]	2.18 [1.84 - 2.59]
Lack of autonomy	Q5. No choice in the way of proceeding	1.69 [1.06 - 2.71]	1.26 [0.63 - 2.53]	1.80 [1.58 - 2.05]	-	-	1.19 [1.02 - 1.38]
	Q6. Give up a task for another one not planned	1.47 [0.90 - 2.40]	2.12 [1.03 - 4.37]	2.12 [1.86 - 2.40]	-	-	1.43 [1.23 - 1.66]
	Q7. The work is not varied	1.44 [0.81 - 2.56]	1.60 [0.62 - 4.15]	1.52 [1.31 - 1.75]	-	-	-
	Q8. The work does not allow to learn things	2.63 [1.36 - 5.10]	2.54 [1.09 - 5.9]	1.72 [1.48 - 1.99]	-	-	1.31 [1.10 - 1.56]
Occupational social relationships	Q9. Work not recognized by the professional environment	2.39 [1.44 - 3.95]	2.14 [1.04 - 4.40]	2.47 [2.15 - 2.84]	1.89 [1.08 - 3.31]	-	1.27 [1.07 - 1.52]
	Q10. No sufficient possibilities of mutual aid	1.80 [0.97 - 3.34]	5.12 [2.46 - 10.65]	2.58 [2.23 - 2.97]	-	2.85 [1.24 - 6.53]	1.34 [1.12 - 1.60]
	Q11. Make things I disapprove	2.41 [1.49 - 3.90]	1.72 [0.83 - 3.59]	2.72 [2.38 - 3.10]	-	-	1.47 [1.26 - 1.72]
Ethical dilemma	Q12. Do not have the means to make a good quality work	2.93 [1.78 - 4.83]	5.74 [2.78 - 11.87]	3.02 [2.60 - 3.51]	-	3.42 [1.62 - 7.21]	-
	Q13. Handle too quickly a procedure operation which would require more care	1.62 [1.01 - 2.60]	3.00 [1.50 - 5.99]	3.06 [2.70 - 3.48]	-	-	1.58 [1.35 - 1.84]
Job insecurity	Q14. Work with the fear of losing my job	2.93 [1.58 - 5.44]	2.94 [1.17 - 7.37]	2.52 [2.16 - 2.94]	2.98 [1.53 - 5.80]	-	1.60 [1.35 - 1.91]

Significant results are bold.