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Work conditions and mental health among prison staff in France

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Objectives A cross-sectional epidemiologic survey was conducted among prison staff in France to investigate the relationships between work conditions and mental health.

Methods The sample included men and women 20 to 64 years of age belonging to all categories of prison personnel (prison guards, administrative staff, socioeducational workers, technicians, health care workers, and managers). A postal self-administered questionnaire was used to assess sociodemographic factors, work conditions, and physical and mental disorders. Multiple logistic regression analyses were conducted to determine the effects of work conditions and social relationships on the mental health of prison staff.

Results The results presented in this report only concern depressive symptomatology (measured by the French version of the Center for Epidemiologic Studies Depression Scale), anxiety (measured by the state version of the State-Trait Anxiety Inventory), and sleep disorders. The percentage of mental disorders was higher among prison staff than that determined for other occupational samples. Guards comprised the prison staff least affected by these symptoms.

Conclusions The results show that, in our sample, the factors concerning the subjective evaluation of work conditions and social support were more closely related to mental disorders than work conditions. In addition, seniority was associated with depressive symptoms and anxiety among the men.

Key terms Center for Epidemiologic Studies Depression Scales, epidemiologic study, sleep disorders, social relationships, State Trait Anxiety Inventory.

Work conditions in prisons include various sources of stress and rigorous constraints which are relatively specific to the prison environment (1). They include a closed coercive work environment, the need to deal with violence and perform arduous tasks, an occupation dependent on the maintenance of security and order inside prisons, as well as more general constraints affecting, in particular, the organization of work, such as certain work schedules, and relationships within the prison hierarchy.

Several studies of prison guards have already shown the associations between work conditions and mental health. In Australia, Webster et al (2) showed that sleeping tablet consumption was higher among prison guards than among the general population and that more prison guards were subject to psychological difficulties. In New Zealand, Long et al (3) observed that there was more stress among prison staff than among army personnel, but that among prison staff the degree of stress differed depending on the occupational category. In Great Britain, the study by Rutter & Fielding showed the parts respectively played by the organization of work (4) and relationships with the inmates (5) in the development of stress among prison guards. A study conducted in Finland (6) also showed that the risk of stress among prison personnel is linked to the organization of work and to prison characteristics such as category and size. Two American studies of prison personnel (7, 8) revealed the preponderance of occupational over individual characteristics in causing the job burnout syndrome.

Many problems concerning the associations between mental health and work in prisons have not yet been

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clarified. Little study has been devoted to the roles of various personal and nonoccupational factors, of work characteristics such as the organization of tasks, physical constraints, and relationships with colleagues, professional experts and inmates, or to the part played by social support both at work and outside the work environment, and the potentially diverse effects of all these factors on the different categories of staff. The occupational and nonoccupational environments provide stressors which can be related to the state of health, as well as stress moderators such as social support, as was shown by Karasek et al in their study of Swedish employees (9).

The objectives of the present study were to analyze the relationships between certain aspects of mental health, such as the symptoms of depression, anxiety, and sleep disorders, and the occupational factors characterizing each category of personnel. The goal was to find broad patterns of association by comparing the magnitude of effects of stressors and stress moderators from both the work and the nonwork environment.

Population and methods

Type of study

The survey was cross-sectional and was conducted via a self-administered questionnaire mailed to a random sample population designed to represent all of the occupational categories among prison staff in France.

Sample

The source population comprised about 17 000 members of the French Prison Administration, who were divided into the following six occupational categories: prison guards (11 000 men and 2000 women), administrative staff, socioeducational, technical and health care workers, and management. As male prison guards make up about 65% of the total population, one out of two male guards was randomly selected for inclusion in the study, whereas in the other categories, the entire group was included. In all, 10 039 subjects were contacted in January and February 1991, the response rate was 45.7%, and the number of valid questionnaires was 4587.

The sample consisted of 3474 men and 1113 women. The mean age was 37.1 (SD 8.6) years for the men and 35.0 (SD 8.3) years for the women. Among the men, prison guards represented the largest occupational category (84% of the men). The largest category among the women was that of administrative personnel (40%), whereas 32% were prison guards.

The largest proportions of the sample population (55% of the men and 45% of the women) were working in establishments for prisoners awaiting judgment or for those sentenced to terms of less than one year. The type of prison less frequently represented was the central prison designed for those serving long terms.

Data

In all, the questionnaire included 135 questions concerning the occupational and nonoccupational environments and the subject's experience of specific work conditions. As regards work conditions which were not specific to the prison environment, we included questions already used and validated in a large national health survey on work conditions in France (10); these questions dealt with the work schedule (including night work), work commute, posture, noise, heat, lighting, lifting, dust, exposure to chemicals, and so on. For work conditions particular to prisons, we developed specific questions aimed at identifying work stressors and stress moderators and attempted to take into account what seemed important to the workers.

Depending on the specific question, the following three types of response categories were used: quantitative (ie, "During the last month, how many days have you worked without a day off?"); yes/no (ie, "During the last month, did you perform the following tasks?"); and ordinal, using a six-point scale going from none to most (ie, "Do you feel that your professional relationships with the following type of person are frequent?").

The following two states of mental health were evaluated with standardized scales: depressive symptomatology, which was measured by the CES-D scale (Center for Epidemiologic Studies — Depression Scale) (11, 12), and the state of anxiety, measured by the STAI (State-Trait Anxiety Inventory) (13) using the version describing the subject's state as opposed to anxiety as a personality trait.

The CES-D scale consists of 20 questions describing symptoms or behavior connected with depression, and a total score is computed from the responses coded from 0 to 3. We used the thresholds established for the French population (12), 17 or more for men and 23 or more for women, to identify individuals with an elevated level of depressive symptomatology. The STAI evaluates the state of anxiety and was measured according to a similar principle (13); we defined the threshold at 45 or more as indicative of a high level of anxiety. Variations in this threshold did not modify the results.

The questions concerning sleep disorders were derived from the questionnaire developed by Niedhammer et al and validated in France (14). A score was calculated, and sleep disorders were considered to be present when the score was 2 or more, the threshold being based on the distribution of the scores.

Statistical analysis

The number of variables generated by the different modalities of response to the questionnaire was reduced

during the first stage of the analysis, using factorial correspondence analyses (15). The main principles of factorial correspondence analysis are as follows. The main inertia axes of the set of points in the subjects' space are computed, and a section through the planes defined by the main inertia axes gives the distance between questions and thereby suggests the grouping of variables. For instance, the "social support at work" variable used in the subsequent analyses was constructed from seven variables totaling 36 modalities. In that specific example, we found that the best possible grouping of variables was a score; a histogram of the distribution of that score allowed us to define a threshold above which social support at work was satisfactory. For other variables, such as work schedule, the findings of the factorial analysis showed that the best grouping was based on identifying a heavy schedule each time there is a positive answer to any of the six questions used for describing the work schedule. Factorial correspondence analyses made it possible to reduce the number of variables used in the subsequent analyses (correspondence analysis not shown). In addition to the health variables, the data after reduction were grouped into 53 variables corresponding to domains describing the occupational and nonoccupational environments.

The method of statistical analysis used to study the relations between the mental health variables and the environmental factors was a multiple logistic regression model derived from the procedure proposed for large numbers of variables by Hosmer & Lemeshow (16). EGRET (17) was used to estimate the parameters, and Wald's test was used to compute the P-values.

Two models were studied. One concerned the nonoccupational environment (ie, the variables grouped into three domains: living conditions, nonoccupational relationships and individual factors) and the other concerned the occupational environment (ie, the variables belonging to four domains: professional history, work conditions, subjective experience of work conditions and occupational relationships).

The models were constructed in three stages. The first stage consisted of selecting the control variables from the individual characteristics of the population studied (ie, age, educational level and residential region), which were considered as potential confounding variables. For this purpose, we applied logistic regression to these variables and retained as control variables those for which the P-value was less than 0.05. The second stage consisted of selecting the variables in each domain for inclusion in the final model. For this purpose we applied logistic regression separately for each domain and the control variables and only retained the domain variables for which the P-value was less than 0.30.

The last stage was that of constructing the final model on the basis of the variables selected during the first two stages. For this purpose, we included in the model the variables for which the P-value was less than 0.30, as well as the control variables.

We then explored the links between the occupational environment variables and the mental health disorders

Table 1. Subjects exhibiting depressive symptomatology, a state of anxiety, or sleep disorders according to various individual characteristics.

Characteristics	Men							Women						
	Depressive symptomatology[a]		Anxiety[b]		Mean[c]	Sleep disorders		Depressive symptomatology[a]		Anxiety[b]		Mean[c]	Sleep disorders	
	N	%	N	%		N	%	N	%	N	%		N	%
Age														
20—30 years	159	18.1	148	16.8	33.9	308	34.5	76	20.4	117	31.6	39.5	158	41.4
31—40 years	334	25.3	301	22.9	36.4	557	41.2	88	19.6	137	31.3	39.1	207	44.2
41—64 years	345	29.6	297	25.9	36.9	548	44.6	65	26.3	83	33.3	40.2	140	53.2
Total	838		746		36.0	1413		229		337		39.5	505	
Occupation														
Guards	701	24.9	623	22.2	35.8	1242	42.6	66	19.5	93	27.6	38.2	182	51.6
Administration	35	25.5	36	27.3	38.2	40	28.8	107	25.1	155	36.6	40.9	193	43.5
Socioeducation	38	25.3	30	20.3	37.6	41	27.2	35	16.2	57	27.4	38.4	89	39.9
Technicians	46	26.7	40	23.4	36.2	66	36.3	3	33.3	4	36.4	41.1	5	45.5
Management	14	20.3	12	17.1	35.5	21	30.0	2	7.4	3	11.5	34.7	8	29.6
Medical	4	25.0	5	35.7	36.6	3	18.8	16	30.2	25	48.1	43.1	28	50.9
Total	838		746		36.0	1413		229		337		39.5	505	
Education														
Earned certificate[d]	182	24.1	162	21.7	36.2	243	31.8	134	20.7	204	32.1	39.7	292	43.7
Did not earn certificate[d]	655	25.2	584	22.6	35.9	1167	43.2	95	22.7	133	31.7	39.3	211	47.7
Total	837		746		36.0	1410		229		337		39.5	503	

[a] Threshold: score ≥ 17 for the men, ≥ 23 for the women.
[b] Threshold: score ≥ 45.
[c] Mean score of anxiety scale.
[d] Baccalaureat or French School Leaving Certificate.

Table 2. Models for depressive symptomatology — results of logistic regression analyses.[a] (OR = odds ratio, 95% CI = 95% confidence interval)

Model	P-value	OR	95% CI
Occupational model			
Men[b]			
Prior experience			
No		1	
Yes	0.007	0.67	0.50—0.89
Seniority			
0—4 years		1	
5—9 years	0.66	0.93	0.67—1.29
10—14 years	0.046	1.45	1.01—2.08
≥ 15 years	< 0.001	2.17	1.47—3.22
Type of prison			
Long-term prisoners		1	
Short-term prisoners	0.21	1.14	0.93—1.40
Administration	0.01	1.65	1.12—2.44
Tasks alternating			
Satisfactory		1	
Unsatisfactory	< 0.001	1.58	1.31—1.90
Problems with inmate behavior			
Yes		1	
No	0.04	1.25	1.01—1.55
Difficult schedules			
No		1	
Yes irregular	0.19	1.17	0.93—1.46
Yes too long	0.004	1.48	1.13—1.93
Work satisfaction			
Yes		1	
No	< 0.001	1.64	1.35—2.00
Professional image			
Positive		1	
Negative	< 0.001	1.59	1.25—2.03
Quality frequency relationships			
No		1	
Yes	< 0.001	0.68	0.57—0.81
Support at work			
Unsatisfactory		1	
Satisfactory	< 0.001	0.59	0.46—0.76
Women[c]			
Expression of difficulties			
No		1	
Yes	0.02	1.47	1.06—2.04
Work satisfaction			
Yes		1	
No	0.01	1.60	1.11—2.29
Consideration at work			
No		1	
Yes	0.04	0.64	0.42—0.99
Support at work			
Unsatisfactory		1	
Satisfactory	0.001	0.47	0.30—0.74
Nonoccupational model			
Men			
Occupational category			
Guard		1	
Administrative	0.08	1.50	0.95—2.35
Socioeducator	0.03	1.60	1.04—2.46
Technician	0.16	1.33	0.89—1.97
Manager	0.36	1.34	0.71—2.52
Medical	0.92	1.06	0.31—3.68
Women			
Occupational category			
Guard		1	
Administrative	0.001	2.02	1.35—3.04
Socioeducator	0.20	1.42	0.83—2.40
Technician	0.12	3.62	0.72—18.1
Manager	0.43	0.55	0.12—2.45
Medical	0.03	2.28	1.10—4.74

[a] Only significant variables are shown ($P \leq 0.05$).
[b] Adjustment for age.
[c] No adjustment variable.

under study to see if they were modified, and therefore partly explained, by the significant variables of the nonoccupational model. For this purpose, the significant nonoccupational variables were introduced one by one into the occupational model, and the resulting changes in the odds ratios (OR) were examined.

Last, as within each occupational category, the distribution of work situations and conditions were fairly homogeneous, we calculated the odds ratios for each occupational category by introducing this variable into the nonoccupational model. By means of its odds ratio, this variable, which was linked in a complex fashion to the occupational variables, gave an overall view of the situation of each occupational category in relation to the health disorders studied.

We performed separate analyses for the men and the women because there could be gender differences between either the prisons or the guards. Indeed, within the prison guard category, the job contents varied according to the type of prison (for those serving long terms and for those awaiting judgment or sentenced to terms of less than one year), and female prison guards work almost only in prisons for women.

Results

Depressive symptomatology

Complete data were available for 97% of the sample. The overall proportion of subjects with depressive symptomatology was 24% (men 24.9%, women 21.4%).

Table 1 shows the percentage of persons exhibiting depressive symptomatology, according to the main characteristics of the sample. Age played a part in these symptoms for both genders, but especially for the men. Guards did not report more depressive symptomatology than the other categories. The management staff reported the lowest frequency of this disorder. The categories most affected seemed to be the women among the health care workers and technicians (30.2% and 33.3%, respectively). There was little difference according to educational level.

Table 2 gives the results for the fitted occupational model. For the men the odds ratios were adjusted for age, as the other variables initially considered for adjustment were not significant at the 5% level. No adjustment was made for the women. Results are only given for the significant variables ($P \leq 0.05$).

For the men, the occupational model shows the increased effect of seniority in the prison administration, with a clear gradient. Work conditions (type of prison, unsatisfactory alternating task, and problems with inmate behavior) and subjective experience with work con-

Table 3. Models for state of anxiety — results of logistic regression analyses.[a] (OR = odds ratio, 95% CI = 95% confidence interval)

Model	P-value	OR	95% CI
Occupational model			
Men[b]			
Unemployment			
No		1	
Yes	0.001	1.42	1.14—1.77
Seniority			
0—4 years		1	
5—9 years	0.43	1.15	0.82—1.60
10—14 years	0.009	1.65	1.14—2.40
≥ 15 years	< 0.001	2.06	1.37—3.08
Task			
Socioeducational		1	
Others	0.17	1.24	0.91—1.69
Detention	0.12	0.80	0.61—1.06
Tasks alternating			
Satisfactory		1	
Unsatisfactory	< 0.001	1.47	1.21—1.78
Commute home-work site			
Normal		1	
Long	< 0.01	1.38	1.14—1.66
Difficult schedules			
No		1	
Yes irregular	0.03	1.32	1.03—1.70
Yes too long	0.004	1.50	1.14—1.99
Interest and responsibility			
Great		1	
Small	0.02	1.64	1.08—2.50
Work satisfaction			
Yes		1	
No	< 0.001	1.81	1.48—2.21
Professional image			
Positive		1	
Negative	< 0.001	1.55	1.21—2.00
Quality frequency relationships			
No		1	
Yes	0.006	0.77	0.64—0.92
Dependency at work			
Yes		1	
No	0.047	0.77	0.60—0.99
Support at work			
Unsatisfactory		1	
Satisfactory	< 0.001	0.52	0.41—0.67
Women[c]			
Satisfactory hygiene			
Yes		1	
No	0.02	1.46	1.05—2.02
Difficult situations			
No		1	
Yes	0.10	0.62	0.35—1.10
No response	0.99	1.01	0.56—1.79
Expression of difficulties			
No		1	
Yes	0.008	1.48	1.11—1.97
Work satisfaction			
Yes		1	
No	0.03	1.45	1.04—2.03
Consideration at work			
No		1	
Yes	0.04	0.65	0.44—0.97
Nonoccupational model			
Men			
Occupational category			
Guard		1	
Administrative	0.003	1.99	1.27—3.12
Socioeducator	0.16	1.39	0.88—2.20
Technician	0.34	1.28	0.85—1.92
Manager	0.53	1.24	0.64—2.41
Medical	0.15	2.38	0.73—7.76
Women			
Occupational category			
Guard		1	
Administrative	0.003	1.62	1.18—2.23
Socioeducator	0.59	1.12	0.75—1.66
Technician	0.40	1.73	0.48—6.24
Manager	0.16	0.41	0.11—1.43
Medical	0.01	2.23	1.21—4.11

[a] Only significant variables are shown ($P \leq 0.05$).
[b] Adjustment for age.
[c] No adjustment variable.

ditions (difficult schedules, poor work satisfaction and negative professional image) were associated with depressive symptomatology, as well as with occupational relationships, which acted as protective factors, with odds ratios below one for the quality and frequency of the relationships and support at work.

For the women, the variables showing an association with depressive symptomatology reflected subjective experience with work conditions (expression of difficulties and poor satisfaction at work), whereas consideration and support at work played a protective role.

For both the men and the women, the introduction of significant nonoccupational factors into the occupational model only led to slight modifications (analysis not shown).

Finally, the odds ratios concerning the occupational category confirmed that fewer prison guards than other staff reported depressive symptomatology when the nonoccupational environment was taken into account. Among the men, this disorder seemed to characterize the socioeducational and administrative staff, and, among the women, it described the medical and administrative staff, the values of the odds ratios being higher than among the men.

Anxiety

Complete data were available for 96% of the sample. The percentage of the subjects exhibiting a state of anxiety was 24.6 (22.3% for the men and 31.9% for the women). The general mean STAI score was 36.8 (36 for the men and 39.5 for the women).

For the men only, there was a positive association between age and anxiety (table 1). As for depressive symptomatology, the prison guard category was not more

affected by anxiety than the other categories. Among the men, the most affected were the administrative and the socioeducational staff. Among the women, administrative personnel also reported anxiety, but the most affected were the health care staff. As in the case of depressive symptomatology, educational level did not appear to be related to report of anxiety.

Table 4. Models for sleep disorders — results of logistic regression analyses.[a] (OR = odds ratio, 95% CI = 95% confidence interval)

Model	P-value	OR	95% CI
Occupational model			
Men[b]			
Alternating tasks			
Satisfactory		1	
Unsatisfactory	< 0.001	1.35	1.14—1.59
Constraints			
No		1	
Yes	< 0.001	1.33	1.13—1.56
Difficult schedules			
No		1	
Yes irregular	0.01	1.29	1.06—1.56
Yes too long	0.009	1.36	1.08—1.70
Work satisfaction			
Yes		1	
No	0.03	1.21	1.02—1.43
Professional image			
Positive		1	
Negative	< 0.001	1.54	1.28—1.86
Support at work			
Satisfactory		1	
Unsatisfactory	< 0.001	0.62	0.49—0.79
Women[c]			
Constraints			
No		1	
Yes	0.03	1.37	1.02—1.83
Difficult schedules			
No		1	
Yes irregular	0.04	1.45	1.02—2.04
Yes too long	0.04	1.41	1.02—1.94
Nonoccupational model			
Men			
Occupational category			
Guard		1	
Administrative	0.26	0.79	0.52—1.20
Socioeducator	0.37	0.82	0.53—1.26
Technician	0.64	0.92	0.65—1.30
Manager	0.52	0.83	0.47—1.46
Medical	0.07	0.30	0.08—1.10
Women			
Occupational category			
Guard		1	
Administrative	0.70	0.94	0.68—1.29
Socioeducator	0.33	0.83	0.56—1.22
Technician	0.65	0.75	0.21—2.60
Manager	0.27	0.61	0.25—1.47
Medical	0.97	1.01	0.56—1.84

[a] Only significant variables are shown ($P \leq 0.05$).
[b] Adjustment for age and educational level.
[c] Adjustment for age.

Table 3 presents the results of the occupational model for anxiety. The adjustment variables were the same as for depressive symptomatology.

Among the men, there was a negative effect for seniority in the prison administration, with a gradient. Unemployment was an experience connected with the development of anxiety. The results for the three domains comprising work conditions, subjective experience with work conditions, and relationships at work were very close to those observed for depressive symptomatology. In addition, a long commute between home and work, lack of interest and responsibility, and dependency at work were aggravating factors.

As for depressive symptomatology, fewer occupational variables were associated with a state of anxiety among the women than among the men.

As was the case for depressive symptomatology, the introduction of nonoccupational factors into the occupational model only produced slight changes for the variables of borderline significance (analysis not shown).

Last, the odds ratios for the occupational categories confirmed that, as for depressive symptomatology, fewer prison guards than other staff displayed anxiety when the nonoccupational environment was taken into account. Anxiety seemed, above all, to characterize the health care workers and the administrative staff.

Sleep

The percentage of the sample with sleep disorders was 41.8%. Fewer men than women stated they had such disorders (40.7 versus 45.4%).

The descriptive results (table 1) showed that for both genders, sleep disorders increased with age. For both genders, fewer of those whose educational level had enabled them to obtain at least the Baccalaureate or French School Leaving Certificate (12 years of schooling) had sleep disorders than the others. For both genders, the prison guards formed the category most affected by sleep disorders, and female health care workers were next.

For sleep disorders, the adjustment variables for the occupational logistic regression model were age, and, for the men only, educational level, which showed the protective role of a higher level of education.

In the occupational model (table 4), no factor from the domain representing professional history was included; this result indicated the absence of a link between this historical aspect of occupational life and sleep disorders. Of the work conditions, for the men, those which played a role in sleep pathology concerned the alternation of tasks and the existence of constraints or harmful factors at work. The factors belonging to the domain characterizing subjective experience with work conditions in relation to sleep disorders were the problems of difficult schedules, job dissatisfaction, and a

negative image of the profession. Relationships at work only intervened via social support and thus showed its protective effect. Among the women, the only variables associated with sleep disorders were job constraints and difficult schedules.

The introduction of significant nonoccupational variables into the occupational model did not modify the latter model in any way (analysis not shown).

As regards occupational categories, the odds ratios confirmed that, for an identical occupational environment, more prison guards, male or female, than members of other categories stated that they had sleep disorders, but the differences between the categories were not significant.

Discussion

This study of prison staff in France showed a high prevalence of mental health problems among this population. It found that factors concerning subjective experience with work conditions and social relationships at work were closely associated with mental health disturbances.

The voluntary nature of subject participation and the 45% response rate may, however, have led to a selection bias. For instance, one may wonder whether a larger proportion of those most affected by mental disturbances replied to the questionnaire. Given the completely anonymous nature of the replies — which was very important to maximize the level of participation — it is extremely difficult to give a simple answer to the question of a possible selection bias. In any case, however, the overall rate of participation (45%) was close to that usually found in France for epidemiologic surveys conducted by mail; thus, for a comparable study of workers in the French electrical industry, the response rate was 47% (18).

Another bias could be due to the fact that people suffering from mental disturbances may have a more negative judgment of their work conditions and social relationships. However, if such an effect had occurred, one would expect that mental disturbances would have been associated with any judgmental variable, which was not the case.

For depressive symptomatology, the present results were compared with those obtained in France for two groups of electrical industry workers: men whose work involved traveling (19) and a group of men and women, comparable with those in our sample, working in a nuclear power station (20). For these two groups, 14.9 and 14% of the samples, respectively, exhibited depressive symptomatology, whereas in our sample this disturbance affected 24.9% of the men and 21.4% of the women.

The mean score for anxiety, evaluated according to the State-Trait Anxiety Inventory (STAI), for the group of nuclear power station workers was 35 (20), and it was similar for different categories of employees (34.3 and 35.7). For our sample, this score was 36 for the men and 39.5 for the women. In another survey using the same instrument and concerning male policemen, firemen and municipal workers, Pendelton et al (21) found mean scores of 34.1, 30.7 and 35.9, respectively, for anxiety state.

Niedhammer et al (22) published results on sleep disturbance using the same questionnaire for female nurses and aides working in hospitals. These results are comparable with those for the women in our sample, although our sample was a little younger than the women in the Niedhammer survey (20% were under 30 years of age in their study compared with 30% in ours). Nevertheless, more of the women in our sample stated that they had sleep disturbances in their replies to the questions concerning sleep that were comparable in the two surveys. Thus, in our sample, the percentages with disturbances ranged from 11 (light sleepers on days of rest) to 32 (waking up during sleep on work days) whereas, in the hospital nurse group, the corresponding figures ranged from 3% (difficulty in falling asleep on days of rest) to 17% (waking up during sleep on workdays).

The relationships between depressive symptomatology, measured by the Center for Epidemiologic Studies Depression Scale (CES-D), and various sociodemographic characteristics have already been studied, and some of the associations established were found among prison staff in this study. Thus three American surveys of the general population (23—25) showed the effects of marital status and income on the development of depressive symptomatology, and this effect was also found in our survey in the nonoccupational models (results not shown). In a survey of Japanese tax administration workers, Iwata et al (26) stressed the negative effects of unsatisfactory social relations and stress, both outside work and in the work environment, on depressive symptomatology. Neither the Japanese survey nor the present study produced the same results as the American surveys for the role played by age and gender in the development of depressive symptomatology. Among the prison staff surveyed in our study, we did not find that a high level of education had an effect on symptomatology, unlike that observed in the American studies.

Two studies of occupational stress among police personnel, by Brown & Campbell in England (27) and Evans & Coman in Australia (28), used the STAI as one of the measures of stress. The first used the same version as the one we applied, reflecting the state, and the second used the version reflecting the subject's trait. In both surveys, the authors reported that the development of stress was linked to the organization of work and social relations at

work, rather than to the nature of the work itself, except for the officers in the English study, for whom the nature of work was also related to stress.

We did not find large differences between the men and women. However, there were fewer significant associations with variables related to work conditions among the women, both for depressive symptomatology and anxiety, and most of the associations were related to the subjective evaluation and to social relationships at work. In addition, there were proportionally more significant associations in the nonoccupational models than in the occupational ones (analyses not shown), implying that the nonwork environment may have a greater importance for mental health among women.

One of the striking results of the present study concerned the fact that prison guards were the least affected by depressive symptomatology and by anxiety. At first, this finding might seem paradoxical, because of the assumption that the prison guards are those most exposed to the different sources of stress and occupational difficulties. It may be partly due to the selection of the staff taken during the most recent period and also to better adaptation to the specific constraints of the prison environment; thus these constraints might be perceived by prison guards as an integral part of their work, whereas other categories might consider them less essential and therefore feel more hampered by them. Our observation of fewer mental health disorders among prison guards, and, among men, those with less seniority in the prison administration, might also be explained by the fact that mental health disorders are not directly related to tasks and work conditions (ie, exposure to inmates' violence and threats) and maintenance of order in prison, but rather by social relationships at work (ie, frequency and quality of relationships and communication with colleagues, superiors and the central administration). This possibility is strengthened by the absence, in our study, of strong effects on depressive symptomatology and anxiety attributable to the variables concerning the nature of the tasks, whereas the effects of the variables reflecting the subjective experience of work conditions and social relations at work were clearly important in this respect, as in the aforementioned English and Australian studies (27, 28). It is important to note that, in the present sample, the prison guards constituted the great majority of the men and that consequently the other categories were of marginal significance, both as regards occupational values and social support at work in a prison environment. However, although our study showed that prison guards reported fewer depressive symptoms and anxiety states than other occupational categories, this relationship seemed to weaken with seniority for the men, since, for subjects of the same age, the risk of such symptomatology and anxiety increased evenly with seniority (tables 2 and 3). This result was not due to any change in task content or to the greater responsibilities of the managerial staff, since promotions occurred in the course of the subjects' careers. Thus the risks relating to seniority were almost unchanged when grade was taken into account and, rather, tended towards a slight decrease (results not shown). This decrease can be interpreted as a weakening of the various protective mechanisms, which gradually became less effective with time. The fact that a similar effect, often mentioned in connection with occupational psychopathology (29), was not seen among the women may be due to the lack of statistical power, the number of female guards being small in the sample.

A similar result was found for men in a large study of Swedish prison staff (30, 31), in which the level of plasma cortisol was used as an indicator of psychological strain at work. For the men, there was no significant difference between the occupational groups, whereas female guards had the highest mean level of plasma cortisol and they reported more psychiatric symptoms.

The hypothesis given by Cheek & Miller (32) to explain that the prison guards working in New Jersey (United States) seemed less affected by stress than other occupational groups could also be evoked: the denial of stress leads to minimized reporting of stress-related problems. However the American study found a different result for prevalence ratios of hypertension and ulcers, which were higher for prison guards of New Jersey than for other occupational groups. This was not the case in our sample, after control for the other variables (results not shown).

Some studies of sleep disorders among working and general populations, such as the surveys of workers in small and medium-size businesses in the Paris area (33), of a general working population (34), and of the general French population (35), have shown that gender and age affect self-reported sleep disturbances. Jacquinet-Salord et al (33) and Butat et al (34) studied the effects of certain factors in the work environment on sleep. The Butat study showed the role played by noise, a result found indirectly in our study in the synthesized variable entitled "constraints" at work. In the Jacquinet-Salord study, no relationship was found between work conditions (assembly-line work, work schedules and noise) and sleep pathology. But the results indicated a link between the latter and experience with work conditions, and the same link was found in our study. Thus subjects who reported intellectual and psychological burdens and lack of interest and satisfaction at work stated more sleep disturbance.

Despite the usual limitations of cross-sectional studies conducted with the aid of a questionnaire, our survey corroborated some of the results already reported and enabled us to define the effects of various occupational and nonoccupational factors on the mental health of

prison staff. The factors connected with experience with work conditions and with social relations, which seem to have a potentially important protective role, should help to orientate the future policies of those responsible for prison management towards integrating more of these factors into the organization of tasks and social relations at work in the prison environment.

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