

BMJ Open Impaired mental well-being and psychosocial risk: a cross-sectional study in female nursing home direct staff

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ABSTRACT

Objectives: The present study sought to quantify the impaired mental well-being and psychosocial stress experienced by nursing home staff and to determine the relationship between impaired mental well-being assessed on the 12-item General Health Questionnaire (GHQ-12) and exposure to psychosocial stress assessed on Siegrist's effort/reward and overcommitment model.

Methods: A transverse study was conducted in France on 2471 female employees in 105 nursing homes for the elderly. Personal and occupational data were collected by questionnaire for 668 housekeepers, 1454 nursing assistants and 349 nurses.

Results: 36.8% of participants (n=896) showed impaired mental well-being, 42.7% (n=1039) overcommitment and 9% (n=224) effort/reward imbalance. Overcommitment (prevalence ratio (PR)=1.27; 95% CI (1.21 to 1.34)) and effort–reward imbalance (PR=1.19; 95% CI (1.12 to 1.27)) were significantly associated with presence of impaired mental well-being after adjustment for personal factors (age and private life events). Taking effort and reward levels into account, the frequency of impaired mental well-being was highest in case of exposure to great extrinsic effort and low rewards of any type: esteem, PR=3.53, 95% CI (3.06 to 4.08); earnings, PR=3.48, 95% CI (2.99 to 4.06); or job security, PR=3.30, 95% CI (2.88 to 3.78). Participants in situations of overcommitment and of effort/reward imbalance were at the highest risk of impaired mental well-being: PR=3.86, 95% CI (3.42 to 4.35).

Conclusions: Several changes in nursing home organisation can be suggested to reduce staff exposure to factors of psychosocial stress. Qualitative studies of the relation between impaired mental well-being and psychosocial stress in nursing home staff could guide prevention of impaired mental well-being at work.

INTRODUCTION

In French nursing homes for the elderly, household, residential and care-related and dependence-related tasks are shared out between housekeepers, nursing assistants and nurses. The nursing home staff is

Strengths and limitations of this study

- The findings confirmed the high prevalences of impaired mental well-being, effort/reward imbalance (ERI) and overcommitment in a sector that has been little studied.
- Overcommitment and ERI were significantly associated with presence of impaired mental well-being, even after adjustment for personal factors.
- It investigated the impact of combined ERI–overcommitment on presence of impaired mental well-being and compared the impact of the lack of various types of reward on presence of impaired mental well-being in female nursing home staff.
- The working conditions associated with ERI and overcommitment were investigated.
- The survey design was transversal, and thus could not establish a causal relation between occupational psychosocial risk and presence of impaired mental well-being.

exposed to high levels of occupational psychological stress, mainly in connection with managing increasingly dependent residents with multiple pathology.¹ In 2007, in France, 84% of nursing home residents were classified as dependent and half of them as very dependent; overall, they had a mean of seven diagnosed conditions each.² Demographic forecasting predicts an increasing number of dependent elderly persons. These forecasts suggest an increasing number of dependent elderly persons residing in nursing homes and an increasing work load for those employed there. Occupational stress levels are rising among care staff in elderly care.³ According to Brodaty *et al*,⁴ high levels of stress in nursing home staff are associated with working with more cognitively impaired resident populations. According to Jenkins *et al*,⁵ staff working in houses with residents who showed challenging behaviour were significantly

more anxious than staff working in houses with no challenging behaviour. Schmidt *et al*,⁶ in a study of distress experienced by nurses from German nursing homes, showed that the challenging behaviour of residents related to distress may be a workplace stressor for nursing staff with a corresponding impact on the risk of burning out, general health and work ability. In a study of health and satisfaction in care workers in France and Europe, 15.3% of French care staff reported mental health problems.⁷ Workers' psychological problems have a direct impact on the health of employees, as well as economic consequences for employers through sick leave and loss of productivity. Poor psychosocial health and sick leave are further likely to induce problems for patients, in that both the quantity and quality of care may be diminished.⁸ The 12-item General Health Questionnaire (GHQ-12) is a relevant instrument for measuring minor psychosocial distress. It has been extensively evaluated in terms of validity and reliability as a one-dimensional indicator of the severity of psychological morbidity.^{9–10} French researchers reported that 26% of female hospital workers had high scores on the GHQ.¹¹ Few studies suggested a link between occupational exposure to psychosocial stress and impaired mental health.^{12–15} Michie *et al*⁸ underlined how organisational factors may contribute to the level of psychological ill health experienced by staff. Certain surveys also reported a causal relation.^{12–15}

This study sought to quantify the impaired mental well-being and psychosocial stress experienced by female nursing home staff and to determine the relationship between impaired mental well-being assessed on the GHQ-12 and exposure to psychosocial stress assessed on Siegrist's effort–reward and overcommitment model.

METHODS

Design

The study design was a cross-sectional questionnaire survey.

Sample

The target population was employees working with elderly patients in nursing homes in the Rhône-Alpes Region. The Region has a population of over 6 million (10% of the population of France). This Region involved nearly 600 nursing homes with, on average, 50 workers in each institution. In order to be representative of this population, the aim of the study was to include 120–150 nursing homes and 3000 employees from height departments of this Region.

The occupational physicians of the Region were asked to participate in the survey by the Regional Department of Businesses, Competition, Consumption, Work and Employment (DIRECCTE), a state business consultancy. Volunteer occupational physicians could include the employees of only one or two of the nursing homes they oversaw; if they were involved in several establishments,

two of them were randomly selected. The occupational physicians filled out a working conditions assessment questionnaire, and asked all employees meeting the inclusion criteria in the nursing homes which they oversaw to take part.

New recruits were excluded so as to avoid attributing to the nursing home problems that had more to do with a previous job. Only employees who had been working with the elderly for at least 6 months on at least a half-time basis were included. The questionnaire was not allowed to be sent back late to the occupational physician, so as to avoid differences in data collection.

Employees were free to agree or decline to participate. They were given an information leaflet explaining the study objectives. Only anonymous data were transmitted to the investigators, and occupational physicians kept the link between the identification number and the worker identity.

Data collection

Between October 2009 and September 2010, volunteer employees' socio-occupational data were collected by self-administered questionnaires, including:

- ▶ *Personal characteristics*: age, gender, family status, private life events and medical characteristics. A few studies have reported associations between negative private life events such as divorce or financial difficulties and mental well-being.^{16–17}
- ▶ *Work-related characteristics*: job title, part time/full-time contract, night shifts, working hours, seniority in the establishment with years of experience, duration of experience of working with the elderly, type of nursing home and psychosocial factors. Occupational status distinguished between long-term (titular or other long-term contract) and short-term contracts (internship, temporary or other short-term contract).

Measures

Quantitative seniority in the establishment was transformed into an ordinal qualitative variable for statistical purposes: <5; 5–10; >10 years. The GHQ-12 was used as a screening instrument to determine impaired mental well-being. Respondents had to indicate on a points scale (1: less than usual; 2: no more than usual; 3: rather more than usual; 4: much more than usual) how frequently they had recently experienced the various symptoms listed on the scale. Each item was rated on the four-point scale, with weights from 0 to 3 according to the Likert type (0–1–2–3).⁹ The Likert score was preferred to the scoring method suggested by Goldberg in order to allow comparisons with other working populations.¹⁰ According to the standards, scores higher than 12 were considered as indicating impaired mental well-being.^{11–17}

Work-related psychosocial demand and social support were assessed on the Siegrist questionnaire, comprising three scales: two measuring the extrinsic components of 'effort' and 'reward' and one measuring the intrinsic

component of 'overcommitment'.^{18 19} Overcommitment defines a set of attitudes, behaviours and emotions that reflect excessive endeavour combined with a strong desire for approval and esteem.²⁰

- ▶ Effort was measured by six items on the demanding aspect of the work environment: three measuring quantitative load, one qualitative load, one increase in total load over time, and one physical load.
- ▶ Reward was measured by 11 items: 3 concerning earnings, 5 esteem and 3 job security.

For each item, the possible answers were (1) does not apply, (2) does apply but the respondent does not consider herself distressed; (3) does apply and the respondent considers herself somewhat distressed, (4) does apply and the respondent considers herself distressed, or (5) does apply and the respondent considers herself very distressed.

Overcommitment was measured by six items.

- ▶ A sum score of these ratings was constructed, as documented in several studies.^{18 19} The extrinsic effort score was dichotomised using the upper tercile to indicate high effort: the higher the extrinsic effort score, the greater the effort.
- ▶ To obtain a more precise view of which rewards are related to which indicators of employee health, three occupational rewards (earnings, esteem and job security) were assessed separately. Each of the free reward scores were dichotomised separately using the most adverse tercile to indicate low reward: the higher the reward score, the lower the reward.
- ▶ Overcommitment was defined by an intrinsic effort score greater than the upper tercile: the greater the effort, the greater the overcommitment.

According to the effort/reward imbalance (ERI) model, extrinsic effort and overcommitment scores are directly proportional to effort, whereas rewards score is inversely proportional to reward.

ERI was measured by calculating the ratio between the extrinsic effort index (E) and the inverse reward index (R): $E/(R \times c)$, with c as a correction factor ($c: 6/11$); $ERI > 1$ indicates a critical condition of high cost/low gain, or ERI.^{18 21}

Data analysis

The prevalence of psychosocial distress is different between men and women.²² In nursing homes, staff are mainly female workers, which is why we chose to limit our study to female staff working in direct contact with the elderly: housekeepers, nursing assistants and nurses.

Anonymity and confidentiality will be maintained throughout the processing of these data.

A descriptive step characterised the employee population according to personal characteristics, working conditions, including occupational psychosocial factors, and mental health status.

Associations were sought between presence of impaired mental well-being and:

- ▶ *Personal factors*, such as age, family situation, private life events (separation, divorce, costly purchase, hospital admission, change of job or work location);
- ▶ *Occupational factors*, such as job title, part time/full-time contract, night shifts, working hours, seniority in the establishment with years of experience, duration of experience of working with the elderly, and type of nursing home;
- ▶ *Occupational psychosocial factors*: effort, reward and overcommitment.

Interaction between overcommitment and ERI was examined.

Frequencies were compared on χ^2 tests, with χ^2 trend tests depending on the results of cross-analysis. The survey design was transversal, and thus could not establish a causal relation between occupational psychosocial risk and presence of impaired mental well-being. That is why 'prevalence ratios' (PRs) were assessed instead of 'relative risk'. Ratios of event probabilities per case of impaired mental well-being were studied. As the prevalence of each event was high, ORs would not provide a good estimate of PRs:²³ rather, the log-linked binomial model was applied, using the PROC GENMOD procedure in the SAS statistical package (V.9.3) with DIST=BINOMIAL and LINK=LOG options. In case of non-convergence of PROC GENMOD because the maximum likelihood estimate (MLE) lay on the boundary of the parameter space, the SAS COPY macro was used providing a good approximation of the exact MLEs, as well as yielding good estimates of the true population parameters.²⁴

The binary response of each case of impaired mental well-being was modelled in two steps: first, all independent variables underwent univariate analysis; second, variables with a p value ≤ 0.1 were included in a multivariate model by a step-forward procedure: the variable with the lowest p value was first included in the model, followed by the next lowest and so on. Variables with p values < 0.05 remained in the model, and the other variables were excluded.

RESULTS

Seventy-eight occupational physicians agreed to participate in the survey. Five nursing home managers refused staff participation; six occupational physicians who were initially willing finally decided not to take part.

In total, 2471 women (27% housekeepers, 59% nursing assistants and 15% nurses) working in direct contact with the elderly in 105 nursing homes were included. Forty-seven participants refused to participate, leading to a participation rate of 98%. The mean age of non-respondents was 44.4 years ($SD=12.24$); 27.7% ($n=13$) had between 1 and 4 years' experience of work with elderly persons, 21.3% ($n=10$) between 5 and 9 years, 31.9% ($n=15$) between 10 and 19 years and 19.1% ($n=9$) more than 19 years. The most frequent grounds for non-participation were lack of time and/or interest in the survey.

Socio-occupational and medical data

Almost two-thirds of respondents were living as couples (table 1). More than half were aged over 40 years. Three-quarters had permanent work contracts; 27% were working part time.

In total, 36.8% (n=896) showed impaired mental well-being on the GHQ-12.

In total, 42.7% (n=1039) were in a situation of overcommitment and 9.2% (n=224) in ERI.

The distributions of ERI and overcommitment

62.89% (n=1339) of respondents were without overcommitment/without ERI; 27.38% (n=583) of respondents were with overcommitment/without ERI; 7.47% (n=159) of respondents were with overcommitment/with ERI; and 2.26% (n=48) of respondents were with ERI/without overcommitment.

The relation between prevalence of impaired mental well-being and personal and psychosocial factors

The only private life events in the preceding 12 months significantly associated with presence of impaired mental well-being were separation or divorce (PR=1.33,

95% CI (1.13 to 1.58)), costly purchase (PR=1.29, 95% CI (1.15 to 1.46)) and hospital admission (PR=1.38, 95% CI (1.18 to 1.62); table 2). Occupational psychosocial factors (ERI: PR=2.48, 95% CI (2.28 to 2.72); overcommitment: PR=2.62, 95% CI (2.37 to 2.91)) were significantly associated with presence of impaired mental well-being. The other occupational factors significantly associated with presence of impaired mental well-being were type of work contract, job title, type of shift and working hours.

On multivariate analysis, psychosocial factors (ERI: PR=1.19, 95% CI (1.12 to 1.27); overcommitment: PR=1.27, 95% CI (1.21 to 1.34)) remained significantly associated with presence of impaired mental well-being after adjustment for age and separation/divorce during the preceding 12 months. In terms of occupational psychosocial risk, overcommitment was more strongly associated with presence of impaired mental well-being than was ERI, and this trend persisted after adjustment for personal factors (age and separation/divorce during the preceding 12 months).

The PR of presence of impaired mental well-being varied according to type of reward and extrinsic effort

In the absence of high extrinsic effort, poor recognition in terms of earnings, poor esteem on the part of colleagues and superiors and job insecurity emerged as risk factors for impaired mental well-being (table 3).

Whatever the type of reward, the PR of presence of impaired mental well-being was highest in case of high extrinsic effort and low reward.

The PR of presence of impaired mental well-being varied according to ERI and overcommitment, being highest in case of overcommitment with ERI (table 4).

The relation between ERI-overcommitment and other occupational factors

Participants in a situation of overcommitment without ERI presented the following occupational features: nurse, working day shifts, full-time, on a permanent contract, working more than 11 h a day, having been the victim of verbal or physical abuse, reporting a high level of subjective hardship on the five dimensions explored, and considering the institution understaffed (table 5). The rate of overcommitment increased significantly with seniority in the institution, in work with the elderly and with the number of washes performed alone.

Participants in a situation of overcommitment with ERI had certain features in common with the previous group: permanent work contract, victim of verbal or physical abuse, reporting a high level of subjective hardship on the five dimensions explored, and considering the institution understaffed; they also presented certain specific occupational features: making more than 10 beds alone, and having less than 5 years' seniority in the institution. Among those with overcommitment and ERI, the frequency of nursing assistants was significantly higher than nurses or housekeepers.

Table 1 Description of the sample of staff working in direct contact with elderly nursing home residents

	Women (n=2471)	
	N	Per cent
Age (years)		
<30	537	21.75
30–39	514	20.82
40–49	773	31.31
≥50	645	26.12
Marital status		
Single	469	19.10
In couple	1601	65.21
Separate/divorced/widowed	385	15.68
Work contract		
Temporary contract	593	24.24
Permanent contract	1853	75.76
Full-time/part time work		
Part time	1775	72.45
Full-time	675	27.55
Working hours		
≤7	300	17.51
8–9	420	24.52
10–11	497	29.01
>11	496	28.92
Occupational group		
Housekeeper	668	27.03
Nursing assistant	1454	58.84
Nurse	349	14.82
Impaired mental well-being (GHQ-12≥12)	896	36.83
Effort-reward imbalance	224	9.18
Overcommitment (Siegrist; >3rd tercile)	1039	42.74

GHQ-12, 12-item General Health Questionnaire.

Table 2 Relations between impaired mental well-being and personal and occupational factors

	Prevalence of impaired mental well-being		Univariate analysis		Multivariate analysis	
	N	Per cent	PR	95% CI	PR	95% CI
Age (years)∇						
<30	212	39.6	1		1	
30–39	201	39.7	1.00	0.86 to 1.16	0.98	0.92 to 1.05
40–49	255	33.6	0.85	0.73 to 0.98	0.93	0.87 to 0.99
≥50	226	35.8	0.90	0.78 to 1.05	0.93	0.87 to 0.99
Separation or divorce*						
Yes	81	48.2	1.33	1.13 to 1.58	1.09	1.00 to 1.17
No	815	36.0	1		1	
Costly purchase*						
Yes	204	45.2	1.29	1.15 to 1.46	/	/
No	692	34.9	1		/	/
Hospital admission*						
Yes	89	49.4	1.38	1.18 to 1.62	/	/
No	807	35.8	1		/	/
Change of jobs∇						
Yes	99	42.0	1.15	0.99 to 1.36	/	/
No	797	36.3	1		/	/
Change of workplace∇						
Yes	15	51.7	1.41	0.99 to 2.01	/	/
No	881	36.6	1		/	/
Occupational group						
Housekeeper	217	33.3	1		/	/
Nursing assistant	535	37.3	1.12	(0.99 to 1.27)	/	/
Nurse	144	41.4	1.24	(1.05 to 1.47)	/	/
Working hours						
≤7	203	31.2	0.74	(0.60 to 0.91)	/	/
8–9	240	42.0	1	1	/	/
10–11	348	28.9	0.69	(0.58 to 0.82)	/	/
>11	284	42.0	1	(0.86 to 1.17)	/	/
Work contract*						
Permanent contract	186	31.9	1	1	/	/
Temporary contract	699	38.3	1.19	(1.05 to 1.37)	/	/
Night shifts***						
No	1269	61.1	1		/	/
Yes	268	75.3	0.64	(0.53 to 0.77)	/	/
Effort/reward imbalance***						
Yes	179	80.6	2.48	2.28 to 2.72	1.19	1.12 to 1.27
No	708	32.4	1		1	
Overcommitment****						
Yes	601	58.6	2.62	2.37 to 2.91	1.27	1.21 to 1.34
No	286	20.8	1		1	

There was no significant relationship between “seniority in the establishment with years of experience”, “duration of experience of working with the elderly” or “type of nursing home” and “impaired mental well-being”.

∇p Value <0.1; *p<0.05; **p<0.01; ***p<0.001; ****p≤10⁻⁴.

PR, prevalence ratio.

DISCUSSION

The present frequency of impaired mental well-being (36.83%) was higher than that reported by Fanello *et al* (30.2%) for teaching hospital care staff.²⁵ The psychosocial factors (ERI and overcommitment) in this study were significantly associated with impaired mental well-being even after adjustment for personal factors. These findings are in agreement with the literature. In several studies, ERI was strongly associated with common

mental disorders.^{13 26} Most studies consistently reported a positive relation between ERI at work and (psycho) somatic health symptoms.²⁷ Schulz *et al*²⁸ found ERI scales to be strong predictors for burnout, and especially for emotional exhaustion. In this study, in the absence of high extrinsic effort, poor recognition in terms of earnings, poor esteem on the part of colleagues and superiors and job insecurity all emerged as risk factors for impaired mental well-being. This is comparable to

Table 3 Univariate analysis, prevalence ratio (PR) and 95% CI for impaired mental well-being by effort–reward, distinguishing earnings, esteem and job security as reward indicators (n=2303)

	PR	(95% CI)
Composite rewards		
Low effort and high reward	1	
Low effort and low reward	2.24	(1.84 to 2.72)
High effort and high reward	2.23	(1.87 to 2.66)
High effort and low reward	3.64	(3.16 to 4.19)
Earnings		
Low effort and high earnings	1	
Low effort and low earnings	1.89	(1.56 to 2.29)
High effort and high earnings	2.55	(2.14 to 3.05)
High effort and low earnings	3.48	(2.99 to 4.06)
Esteem		
Low effort and high esteem	1	
Low effort and low esteem	2.24	(1.86 to 2.71)
High effort and high esteem	2.49	(2.10 to 2.95)
High effort and low esteem	3.53	(3.06 to 4.08)
Job security		
Low effort and high job security	1	
Low effort and low job security	1.72	(1.43 to 2.09)
High effort and high job security	2.23	(1.91 to 2.62)
High effort and low job security	3.30	(2.88 to 3.78)

van Vegchel *et al*'s²⁹ findings that the risk of exhaustion or psychosomatic symptoms was higher in case of low reward of whatever type. In several cross-sectional surveys, high levels of perceived job insecurity were associated with poor health.^{30 31} Stansfeld and Candy's¹³ meta-analysis highlighted the significant predictive power of job insecurity for mental health disorder. Van Vegchel *et al* showed a high effort–low reward imbalance incorporating esteem as a reward and having the most detrimental health effects. Job insecurity was hypothesised to have average adverse health effects and salary was assumed to have the lowest adverse health effects.²⁹ Van Vegchel *et al*²⁷ reported that participants with high overcommitment were 1.92–5.92 times more likely to

Table 4 Univariate analysis, prevalence ratio (PR) and 95% CI for impaired mental well-being according to effort/reward imbalance and overcommitment

	PR	(95% CI)
Without overcommitment and without effort/reward imbalance	1	
With overcommitment and without effort/reward imbalance	2.60	(2.30 to 2.94)
Without overcommitment and with effort/reward imbalance	3.02	(2.42 to 3.79)
With overcommitment and with effort/reward imbalance	3.86	(3.42 to 4.35)

p Value <1. 10^{exp -4}.

Threshold: overcommitment >upper tercile; effort/reward imbalance >1.

suffer from various (psycho)somatic symptoms (ranging from musculoskeletal disorder to depression) than less overcommitted employees.

The literature data on the interaction between overcommitment and ERI and impaired mental well-being are inconsistent: according to Siegrist, participants with great overcommitment at work tend to expend more effort than is necessary and are thus more exposed to ERI; overcommitment is thus itself a health risk factor and combined ERI–overcommitment is the highest risk situation, overcommitment exacerbating the health impact of imbalance.^{32 33} For Van Vegchel *et al*,²⁷ the risk of poor well-being (ie, exhaustion, less personal accomplishment and job dissatisfaction) due to ERI is higher in highly overcommitted employees. Watanabe *et al*³⁴ highlighted positive associations between low social support, ERI, overcommitment and depressive state. Lau underlined a positive interaction between ERI and overcommitment for psychological distress.³⁵

In contrast, according to Silva and Barreto,³⁶ overcommitted participants are less affected by ERI at work in terms of psychological distress. Moreover, according to Watanabe *et al*,³⁴ there is no significant interaction between ERI and overcommitment regarding depressive state.

In this study, the PR of presence of impaired mental well-being was highest in case of combined overcommitment and ERI. This is in agreement with the ORSOSA study, which showed that ERI and a high level of overcommitment were related to depressive symptoms.³⁷ In the Press-Next study, nursing assistants and housekeepers had the most contact with patients or residents, inducing high levels of physical and emotional fatigue; hardship was exacerbated by a feeling of working on a production line without the possibility of team discussion of personalised care projects for their patients.⁷ According to Gollac and Bodier, tense relations with the public expose staff to a feeling of being unappreciated when the tension results from a mismatch between what they actually do and what they should be doing. Tense relations with the public are especially strong and badly accepted when the employee feels helpless, prevented from responding to the needs of the user's situation for reasons relating to almost irreconcilable contradictions in the job or lack of material or human resources.^{38 39} Overcommitment may be the result of the employee's psychological traits or those of the work organisation.³⁹

Organisational causes may include the intensity and complexity of the job. Commitment may also result from a feeling of job insecurity. A very high level of commitment may be related to the type of work (traditional 'vocations'). A risk of overcommitment emerges when it is impossible to do good quality professional work or when inappropriate assessment criteria are enforced. According to the literature, it is especially when high levels of commitment are imposed by the work organisation, management techniques or enforced competition

Table 5 Relations between psychosocial factors (O, and ERI) and other occupational factors

	O– ERI– (n=1339; 62.89%)		O– ERI+ (n=48; 2.26%)		O+ ERI– (n=583; 27.38%)		O+ ERI+ (n=159; 7.47%)	
	n	Per cent	n	Per cent	n	Per cent	n	Per cent
Occupational group**								
Housekeeper	361	64.70	13	2.33	156	27.96	28	5.02
Nursing assistant	814	63.69	31	2.43	326	25.52	107	8.37
Nurse	173	55.45	4	1.28	110	35.26	25	8.01
Night shifts****								
No	1110	60.46	39	2.12	542	29.52	145	7.90
Yes	238	76.28	9	2.88	50	16.03	15	4.81
Full-time/part time work*								
Full-time	953	61.21	40	2.57	447	28.71	117	7.57
Part time	386	67.01	8	1.39	139	24.13	43	7.47
Duration of work with elderly persons (years)**								
<5	492	68.05	12	1.66	179	24.76	40	5.53
5–9	330	61.22	17	3.15	143	26.53	49	9.09
10–19	351	61.26	10	1.75	162	28.27	50	8.73
≥20	169	55.41	9	2.95	107	35.08	20	6.56
Seniority in the establishment (years of experience)***								
<5	695	66.32	12	1.15	261	24.90	80	17.63
5–10	285	60.25	19	4.02	133	28.12	36	7.61
>10	351	58.50	14	2.33	193	32.17	42	7.00
Work contract*								
Temporary contract	348	68.24	11	2.16	122	23.92	29	5.69
Permanent contract	988	61.06	37	2.29	464	28.68	129	7.97
Working hours****								
≤7	183	71.48	1	0.39	60	23.44	13	4.69
8–9	229	61.56	14	3.76	106	28.49	23	6.18
10–11	284	70.12	14	3.46	82	20.25	25	6.17
>11	251	55.53	9	1.99	139	30.75	53	11.73
Physical attack****								
No	735	69.01	11	1.31	261	24.51	55	5.16
Yes	613	56.60	34	3.14	331	30.56	105	9.70
Verbal abuse****								
No	383	77.53	3	0.61	96	19.43	12	2.43
Yes	965	58.34	45	2.72	496	29.99	148	8.95
Hardship related to handling of residents****								
Slight	348	79.82	5	1.15	74	16.97	9	2.06
Moderate	499	67.98	7	0.95	203	27.66	25	3.41
Great	469	50.59	36	3.88	297	32.04	125	13.48
Hardship related to premises****								
Slight	715	71.72	14	1.4	224	22.47	44	4.41
Moderate	381	57.38	18	2.71	212	2.71	53	7.98
Great	238	51.40	16	3.46	147	31.75	62	13.39
Hardship related to residents' mental deterioration****								
Slight	391	74.76	5	0.96	108	20.65	19	3.63
Moderate	470	66.67	10	1.42	189	26.81	36	5.11
Great	469	52.29	32	3.57	291	32.44	105	11.71
Hardship related to residents' physical deterioration****								
Slight	354	77.46	3	0.65	87	19.04	13	2.84
Moderate	469	66.43	8	1.13	201	28.47	28	3.97
Great	512	52.89	37	3.82	300	30.99	119	12.29
Hardship related to proximity to death****								
Slight	455	71.77	14	2.21	142	22.40	23	3.63
Moderate	470	65.46	13	1.81	191	26.60	44	6.13
Great	415	53.00	21	2.68	254	32.44	93	11.88
Adequate staffing****								
No	978	57.53	43	2.53	528	31.06	151	8.88
Yes	353	83.25	4	0.94	58	13.68	9	2.12

Continued

Table 5 Continued

	O- ERI-		O- ERI+		O+ ERI-		O+ ERI+	
	n	Per cent	n	Per cent	n	Per cent	n	Per cent
Group-leading task**								
No	533	66.96	14	1.76	201	25.25	48	6.03
Yes	757	60.17	34	2.70	363	28.86	106	8.27
Drug administration task**								
No	519	67.14	17	2.20	194	25.10	43	5.56
Yes	777	60.09	29	2.24	375	29.00	112	8.66
Administrative task****								
No	872	66.41	31	2.36	325	24.75	85	6.47
Yes	390	55.24	15	2.12	236	33.43	65	9.21
Getting residents in and out of bed*								
No	220	67.48	5	1.53	87	26.69	14	4.29
Yes	1093	61.82	43	2.43	488	27.60	144	8.14
Hygiene care and dressing task*								
No	210	67.96	4	1.29	83	26.86	12	3.88
Yes	1111	61.86	44	2.45	496	27.62	145	8.07
Nursing care task*								
No	1063	63.88	42	2.52	441	26.50	118	7.09
Yes	172	56.03	4	1.30	106	19.38	25	8.14
Technical care task**								
No	419	68.46	11	1.80	156	25.49	26	4.25
Yes	873	59.96	37	2.54	418	28.71	128	8.79
Feeding task**								
No	271	70.03	10	2.58	90	23.26	16	4.13
Yes	1039	60.97	38	2.23	486	28.52	141	8.27
Housework****								
No	504	68.76	21	2.86	163	22.24	45	6.14
Yes	784	59.26	26	1.97	402	30.39	111	8.39
Number of washings performed alone****								
<1	339	68.48	12	2.42	120	24.24	24	4.85
1-4	154	65.53	4	1.70	65	27.66	12	5.11
5-9	470	64.03	11	1.50	198	26.98	55	7.49
≥10	274	54.15	18	3.56	156	30.83	58	11.46
Number of beds made alone****								
<1	355	65.99	6	1.12	145	26.95	32	5.95
1-4	228	69.09	6	1.82	78	23.64	18	5.45
5-9	342	62.18	12	2.18	154	28.00	42	7.64
≥10	319	56.26	19	3.35	169	29.81	60	10.58

O-, low overcommitment ($O \leq$ upper tercile).

O+, high overcommitment ($O >$ upper tercile).

ERI-, no effort/reward imbalance ($ERI \leq 1$).

ERI+, effort/reward imbalance ($ERI > 1$).

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; **** $p \leq 10^{-4}$.

between staff that burnout due to physical and mental overload ensues.³⁹⁻⁴¹ In our study, overcommitment was significantly associated with physical attack and verbal abuse. Magnavita⁴² indicated in a follow-up study that job strain and lack of social support were predictors of the occurrence of non-physical assault among healthcare workers. This author highlighted that a violence prevention programme including educational, organisational and medical measures contributed to reducing violence in the workplace.⁴³

In this study, participants reporting overcommitment without ERI were mainly nurses, working full-time and more than 11 h per day. In nursing homes, nurses

shoulder heavy human and technical responsibilities, often being in the front line in emergencies or facing what may be uncomfortable family issues at any time of the day or night.⁴⁴ According to Karlsson *et al*,⁴⁵ the nurses in a residential care home reported that they had great responsibility and often had to carry out duties which they had no authority to influence, and thus felt frustrated. According to Kikuchi *et al*,⁴⁶ the overcommitment of nurses may be reduced through mental health services such as group cognitive therapy, and improving the work situation (eg, better promotion prospects or higher salary) may be predictive of a reduction in depression.

To enhance the quality of working life of nursing staff in nursing homes, Kennedy *et al* recommended providing support, team work, evaluating job duties and workload, assessing staffing needs, educating staff and stress reduction activities. Special emphasis on educating staff should include dealing with the emotional needs of an ageing population, such as strategies to help clients deal with grief and behavioural intervention techniques for cognitively impaired clients. These strategies should help to improve patient care outcomes.⁴⁷

This study was conducted in 105 nursing homes (15% of the nursing homes in the Rhône-Alpes Region), including 2471 employees, with a high rate of participation (98%).

Health status and psychosocial factors were assessed on questionnaires (GHQ-12 and Siegrist 2004) that had been validated in French populations. The findings confirmed the high prevalences of impaired mental well-being ERI and overcommitment in a sector that has been little studied. Overcommitment and ERI were significantly associated with presence of impaired mental well-being, even after adjustment for personal factors. The study demonstrated an association between overcommitment and impaired mental well-being in female nursing home staff, even in the absence of ERI. It investigated the impact of combined ERI–overcommitment on presence of impaired mental well-being and compared the impact of the lack of various types of reward on presence of impaired mental well-being in female nursing home staff. The findings showed different results for different types of reward, indicating the importance of separating the different types of occupational reward. The working conditions associated with ERI and overcommitment were investigated.

The survey design was transversal, and thus could not establish a causal relation between occupational psychosocial risk and presence of impaired mental well-being. Participants on sick leave related to impaired mental well-being during the study period were not questioned, so that the reported frequencies are probably underestimations.

In conclusion, the prevalence of impaired mental well-being in female nursing home staff exposed to psychosocial risk at work was high. Early identification of psychological distress is important.

There are means of preventing occupational impaired mental well-being. To reduce ERI and overcommitment, several organisational changes may be considered: daily work time could be reduced; staff levels could be increased, especially as regards housekeepers and nursing assistants; team discussion could be promoted.

An ergonomic study of the various jobs could provide management with information on the real work requirements (intensity, complexity, emotional charge) of housekeepers, nursing assistants and nurses. Perceived physical and psychological hardship could be reduced by adapted training and encouragement of mutual help within the team. Greater medical presence could

alleviate the responsibilities of nurses, reducing overcommitment. Qualitative studies of the relation between impaired mental well-being and psychosocial stress in nursing home staff could guide prevention of impaired mental well-being at work.

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REFERENCES

- Hasson H, Arnetz JE. Nursing staff competence, work strain, stress and satisfaction in elderly care: a comparison of home-based care and nursing homes. *J Clin Nurs* 2008;17:468–81.
- Rogez I. Isabelle Etablissements d'hébergement pour Personnes Agées dépendantes. Synthèse sur les conditions de travail et les actions de prévention. *Les dossiers l'ARACT Nord Pas Calais* 2009;7:1–23.
- Testad I, Mikkelsen A, Ballard C, *et al*. Health and well-being in care staff and their relations to organizational and psychosocial factors, care staff and resident factors in nursing homes. *Int J Geriatr Psychiatry* 2010;25:789–97.
- Brodady H, Draper B, Low L-F. Nursing home staff attitudes towards residents with dementia: strain and satisfaction with work. *J Adv Nurs* 2003;44:583–90.
- Jenkins R, Rose J, Lovell C. Psychological well-being of staff working with people who have challenging behaviour. *J Intellect Disabil Res* 1997;41:502–11.
- Schmidt SG, Dichter MN, Palm R, *et al*. Distress experienced by nurses in response to the challenging behaviour of residents—evidence from German nursing homes. *J Clin Nurs* 2012;21:3134–42.

7. Estryn-Behar M, Estryn-Béhar, M. *Santé et Satisfaction des soignants au travail en France et en Europe*. Rennes: Presses de l'École des hautes Etudes en Santé Publique, 2008.
8. Michie S, Williams S. Reducing work related psychological ill health and sickness absence: a systematic literature review. *Occup Environ Med* 2003;60:3–9.
9. Lesage F, Martens-Resende S, Deschamps F, et al. Validation of the General Health Questionnaire (GHQ-12) adapted to a work-related context. *Open J Prev Med* 2011;1:44–8.
10. Goldberg D, Williams P. *A user's guide to the general health questionnaire*. NFER-Nelson, 1991. 129 p.
11. Estryn-Behar M, Kaminski M, Peigne E, et al. Stress at work and mental health status among female hospital workers. *Br J Ind Med* 1990;47:20–8.
12. Netterström B, Conrad N, Bech P, et al. The relation between work-related psychosocial factors and the development of depression. *Epidemiol Rev* 2008;30:118–32.
13. Stansfeld S, Candy B. Psychosocial work environment and mental health—a meta-analytic review. *Scand J Work Environ Health* 2006;32:443–62.
14. Romanov K, Appelberg K, Honkasalo ML, et al. Recent interpersonal conflict at work and psychiatric morbidity: a prospective study of 15,530 employees aged 24–64. *J Psychosom Res* 1996;40:169–76.
15. Dragano N, He Y, Moebs S, et al. Two models of job stress and depressive symptoms. Results from a population-based study. *Soc Psychiatry Psychiatr Epidemiol* 2008;43:72–8.
16. McIntyre KP, Korn JH, Matsuo H. Sweating the small stuff: how different types of hassles result in the experience of stress. *Stress Health* 2008;24:383–92.
17. Charbotel B, Croidieu S, Vohito M, et al. Working conditions in call-centers, the impact on employee health: a transversal study. Part II. *Int Arch Occup Environ Health* 2009;82:747–56.
18. Siegrist J, Starke D, Chandola T, et al. The measurement of effort–reward imbalance at work: European comparisons. *Soc Sci Med* 2004;58:1483–99.
19. Niedhammer I, Siegrist J, Landre MF, et al. [Psychometric properties of the French version of the Effort-Reward Imbalance model]. *Rev Dépidémiol Santé Publique* 2000;48:419–37.
20. Tsutsumi A, Nagami M, Morimoto K, et al. Responsiveness of measures in the effort–reward imbalance questionnaire to organizational changes: a validation study. *J Psychosom Res* 2002;52:249–56.
21. Niedhammer I, Siegrist J, Landre MF, et al. Étude des qualités psychométriques de la version française du modèle du Déséquilibre Efforts/Récompenses. *Rev Dépidémiol Santé Publique* 48:419–37.
22. Cohidon C, Arnaudo B, Murcia M. Mal-être et environnement psychosocial au travail: premiers résultats du programme Samotrace, volet entreprise, France. *Bull Epidemiol Hebd* 2009;25–26:265–9.
23. Agresti A. *Categorical data analysis*. John Wiley & Sons, 2002:736 p.
24. Deddens JA, Petersen MR, Lei X. Estimation of prevalence ratios when PROC GENMOD does not converge. Washington: Seattle; 2003. (In proceedings at the SAS users group international proceedings: March 30 SUGI28).
25. Fanello S, Ripault B, Heuze V, et al. Souffrance psychique liée au travail: étude réalisée chez 456 soignants d'un centre hospitalier universitaire. *Arch Mal Prof Médecine Trav* 2003;64:70–6.
26. Niedhammer I, Goldberg M, Leclerc A, et al. Psychosocial factors at work and subsequent depressive symptoms in the Gazel cohort. *Scand J Work Environ Health* 1998;24:197–205.
27. Van Vegchel N, de Jonge J, Bosma H, et al. Reviewing the effort–reward imbalance model: drawing up the balance of 45 empirical studies. *Soc Sci Med* 2005;60:1117–31.
28. Schulz M, Damkröger A, Heins C, et al. Effort–reward imbalance and burnout among German nurses in medical compared with psychiatric hospital settings. *J Psychiatr Ment Health Nurs* 2009;16:225–33.
29. Van Vegchel N, de Jonge J, Bakker A, et al. Testing global and specific indicators of rewards in the Effort–reward Imbalance model: does it make any difference? *Eur J Work Organ Psychol* 2002;11:403–21.
30. Domenighetti G, D'Avanzo B, Bisig B. Health effects of job insecurity among employees in the Swiss general population. *Int J Health Serv* 2000;30:477–90.
31. McDonough P. Job insecurity and health. *Int J Health Serv* 2000;30:453–76.
32. Algara E, Chouanière D, Cohidon C, et al. Facteurs psychosociaux au travail: modèles et concepts en épidémiologie. Stress au travail et santé, situation chez les indépendants Editions Inserm 2011:25–46.
33. Siegrist J. Adverse health effects of high-effort/low-reward conditions. *J Occup Health Psychol* 1996;1:27–41.
34. Watanabe M, Irie M, Kobayashi F. Relationship between effort–reward imbalance, low social support and depressive state among Japanese male workers. *J Occup Health* 2004;46:78–81.
35. Lau B. Effort–reward imbalance and overcommitment in employees in a Norwegian municipality: a cross sectional study. *J Occup Med Toxicol* 2008;3:9.
36. Silva LS, Barreto SM. Adverse psychosocial working conditions and minor psychiatric disorders among bank workers. *BMC Public Health* 2010;10:686.
37. Jolivet A, Caroly S, Ehlinger V, et al. Linking hospital workers' organisational work environment to depressive symptoms: a mediating effect of effort–reward imbalance? The ORSOSA study. *Soc Sci Med* 2010;71:534–40.
38. Goussard L. Le consentement limité au travail. Résistances et consentements des salariés dans l'ingénierie automobile. *Tracés* 2008;14:175–94.
39. Gollac M, Bodier M. Mesurer les facteurs psychosociaux de risque au travail pour les maîtriser. Rapport du collège d'expertise sur le suivi des risques psychosociaux au travail, faisant suite à la demande du Ministre du Travail, de l'emploi et de la Santé, 2011. http://travail-emploi.gouv.fr/IMG/pdf/rapport_SRPST_definitif_rectifie_11_05_10.pdf
40. Aubert N, De Gaulejac V. *le coût de l'excellence*. Seuil, 1991.
41. Balazs G, Faguer J. Une nouvelle forme de management: l'évaluation. *Actes Rech En Sci Soc* 1996;1:68–78.
42. Magnavita N. Workplace violence and occupational stress in healthcare workers: a chicken-and-egg situation—results of a 6-year follow-up study. *J Nurs Scholarsh* 2014;46:366–76.
43. Magnavita N. Violence prevention in a small-scale psychiatric unit: program planning and evaluation. *Int J Occup Environ Health* 2011;17:336–44.
44. Sipos I. Evolution des différentes fonctions en maison de retraite. *Fond Natl Gérontol Gérontol Soc* 2003;104:35–43.
45. Karlsson I, Ekman S-L, Fagerberg I. A difficult mission to work as a nurse in a residential care home—some registered nurses' experiences of their work situation. *Scand J Caring Sci* 2009;23:265–73.
46. Kikuchi Y, Nakaya M, Ikeda M, et al. Effort–reward imbalance and depressive state in nurses. *Occup Med* 2010;60:231–3.
47. Kennedy BR. Stress and burnout of nursing staff working with geriatric clients in long-term care. *J Nurs Scholarsh* 2005;37:381–2.