

# Occupational factors for mood and anxiety disorders among junior medical doctors

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## KEY WORDS

Quality of life; health personnel psychology; physicians

## PAROLE CHIAVE

Qualità della vita; psicologia del personale della sanità, medici

## SUMMARY

*Junior doctors are exposed to multiple occupational risks. The aim of this study was to assess the risk factors and protective factors for mood and anxiety disorders among junior doctors. **Materials and methods:** We conducted a cross-sectional study via an anonymous online questionnaire between October 2011 and June 2012. All the junior doctors in our faculty were included. The questionnaire inquired about demographic and health data. It contained four validated scales: the Center for Epidemiologic Studies Depression Scale (CES-D), the Spielberger anxiety questionnaire, the WHO quality of life (WHO - QOL) questionnaire and the Job Content Questionnaire. Finally, it sought to clarify the conditions of professional practice and the interactions between university programmes and junior doctorate students (change of specialty, pregnancy, leave of absence, etc.). **Results:** 192 junior doctors participated in the study, 68.2% of whom were women. Out of the group, 13.0% presented a depressive syndrome, while 28.7% presented an anxiety disorder, 32.8% were experiencing Job Strain and 29.7% Iso Strain. The risk factor for anxiety was competition between junior doctors: OR=4.23 (1.06-16.82). The protective factors for mood disorders were the help provided by senior physicians and the respect shown by patients: OR=0.21 (0.06-0.74) and 0.20 (0.06-0.75), respectively. **Conclusion:** This study demonstrated the impact of the relationships with senior physicians and patients on junior doctors' health at work. Consequently, prevention should not be focused uniquely on work organization, but should increase physicians' awareness of the importance of this relationship.*

## RIASSUNTO

*«Fattori professionali alla base di alterazioni dell'umore e dell'ansia tra i giovani medici». I giovani medici sono esposti a molteplici rischi occupazionali. Scopo del presente studio è valutare i fattori di rischio e i fattori protettivi per i disturbi depressivi e di ansia tra i giovani medici. **Materiali e metodi:** Tra l'ottobre 2011 e il giugno 2012 abbiamo condotto uno studio trasversale mediante un questionario anonimo online. Sono stati considerati tutti i*

*giovani medici della nostra facoltà. Il questionario verteva su informazioni relative a dati demografici e di salute. Conteneva quattro scale validate: il Centro per la scala degli studi epidemiologici della depressione (CES-D), il questionario Spielberger per l'ansia, il questionario WHO per la qualità della vita (WHO-QOL) e il Job Content questionnaire. Inoltre si è cercato di evidenziare le modalità della pratica professionale e le interazioni tra programmi universitari e giovani dottorandi (cambio di specializzazione, gravidanza, abbandono etc.).* **Risultati:** Hanno partecipato allo studio 192 giovani medici, di cui il 68.2% donne. Del gruppo il 13.0% presentava una sindrome depressiva, mentre il 28.7% presentava disturbi d'ansia, il 32.8% presentava job strain e il 29.7% Iso strain. Il fattore di rischio per l'ansia è risultato la competitività tra i giovani medici: OR=4.23 (1.06-16.82). Il fattore protettivo per i disturbi d'umore è l'aiuto dato loro dai medici senior e la stima dei pazienti nei loro confronti: OR=0.21 (0.06-0.74) e 0.20 (0.06-0.75) rispettivamente. **Conclusioni:** Lo studio dimostra l'impatto sulla salute dei giovani medici in ambiente di lavoro dei rapporti con medici senior e pazienti. Di conseguenza la prevenzione non dovrebbe vertere esclusivamente sull'organizzazione del lavoro, ma dovrebbe incrementare l'attenzione dei medici sull'importanza di questi rapporti.

## INTRODUCTION

Studies have shown a high prevalence among physicians of disorders linked to work. Several studies have been dedicated to burnout syndrome among physicians (10, 24, 35). The same applies to anxiety disorders and mood disorders (21, 33). Other studies have focused on the physical effects of stress: arterial hypertension, acute coronary syndromes, or cerebrovascular accidents (29).

Junior doctors also present these disorders in relation to their work. A 1999 study concerning the health effects for caregivers in some Parisian hospitals working atypical hours showed that junior doctors had one of the highest scores in the General Health Questionnaire (30). Mood disorder prevalence changed, according to studies, by between 15.8% and 87% in the junior doctor population (1, 32). De Oliveira et al. studied mood disorder prevalence and burnout prevalence in a population of 1508 anesthesiology junior doctors (9). In this population 22% of the junior doctors presented a mood disorder and 41% were in burnout. These data are consistent with other studies (4, 38). Cases of suicide have also been described (11).

These high prevalences may be due to many risk factors in hospitals. Junior doctors discover their specialty and their mode of practice (5). They come face to face with patient suffering and also with suffering of patients' families. Some factors are linked to nursing organization: the more hours junior doc-

tors work, the higher the prevalence of anxiety disorder. Aminzadeh et al. showed that 83% of junior doctors consider long working hours as a risk factor for anxiety disorder (1). Golub et al. showed that frequent interruptions in daily work was linked to burnout:  $r=0.38$ ;  $p<0.01$  (15). The lack of rest between on-calls is another risk factor of burnout. Also Le Gall et al. showed that lack of sleep increases burnout (24). Job insecurity and lack of income may also lead to these disorders (7). Junior doctor can be exposed to workplace bullying (26).

In addition, they have to provide care and also study at the same time (4, 12). Several features related to their status explain these disorders: constraints linked to training and constraints linked to medical decision-making, as well as the transition between the second and third cycles of medical studies that is perceived as difficult (5, 27, 34).

However, the potential links with certain work constraints remain unclear. The objective of our study was to ascertain the existence of risk factors or protective factors for anxiety or mood disorders linked to work for this population.

## MATERIALS AND METHODS

### Study population

We conducted a transversal study based on a questionnaire distributed by e-mail between Octo-

ber 2011 and April 2012. All junior doctors enrolled in the third cycle of medical studies for the year 2011 2012 in the faculty (n=564) were invited by e-mail to respond anonymously to an online questionnaire (SurveyMonkey®, France). There were no exclusion criteria. Two reminders were sent at two-monthly intervals.

### Data collected

The questionnaire covered two main aspects, the first

- demographic data: age, experience (number of semesters already completed), sex, place of training in second cycle;
- general health data: medical history (notably anything that may lead to a mood disorder: systemic disease such as lupus, thyroid and endocrinological disorders) (13), treatments, consumption of toxic substances (tobacco, alcohol, cannabis, other psychoactive substances);
- the intern programme and the practice conditions (specialty, experience, working hours, relationships between the junior doctors and seniors, relationships with patients);
- the interactions between academic, hospital and personal careers (change of specialty, pregnancy, leave of absence).

Secondly, the questionnaire included four validated scales:

- a depression scale, the Center for Epidemiologic Studies Depression Scale (CES-D): the threshold indicating depressive symptomatology was 17 for men and 23 for women (14);
- the Spielberger anxiety questionnaire: people with scores above 56 were considered to present an anxiety disorder (22,37);
- the WHO quality of life questionnaire (WHO QOL BREF): the questionnaire explores 4 fields of health and well-being: physical health, psychological health, social relations and environment (39);
- the Karasek professional experience (Job Content) questionnaire that evaluates the Job Strain (professional pressure) and its components (demands, decision latitude, social support). We defined Job Strain as the combination of low decision

latitude (less than 71) and high psychological demands (greater than 20) (20). The Iso-Strain was defined as the combination of a Job Strain and a support of less than 24.

### Statistical analyses

The data collected were analyzed using the SAS® (France) software.

As a first step, to compare the qualitative variables, the Pearson Chi-squared test and Fisher's exact test (depending on the verifications of the validity conditions) were used. To compare the quantitative variables, the analysis of variance test or the Kruskal Wallis test were used (depending on the verifications of the validity conditions). Correlations between the different quantitative variables were obtained using the Spearman correlation test.

In a second step, multivariate analyses were performed using logistic regression to study the risk of mood disorders and anxiety disorders. The variables included in the analyses were those reported in the literature or univariate-associated variables with  $p < 0.20$ . The final models were obtained by a stepwise backward selection ( $p < 0.20$ ). The results are reported in the form of odds ratios (OR) with a confidence interval of 95% (95% CI). A  $p$  value less than 0.05 was considered to be significant.

## RESULTS

### Sample description

One hundred and ninety-two junior doctors replied to the questionnaire. The participation rate was 34%. There were 131 (68.2%) women in the sample and 209 (57.3%) in the non-respondents ( $p=0.02$ ). Sixty (32.1%) junior doctors were specializing in general medicine, 53 (28.3%) in medicine, 47 (25.1%) in surgery and 27 (14.4%) in other disciplines (occupational medicine, public health, psychiatry). The junior doctors had an average of 2 years experience. Half of the junior doctors did more than 4 shifts per month and worked 1.5 weekends per month (table 2). Seven (3.6%) junior doctors had a history of a potential risk fac-

**Table 1 - Working routine, medical history, treatment and lifestyle**

Items	Median (extreme values)
Number of years of internship	2 (0,2-7)
Number of weekends worked per month	1.5 (0-5)
Number of shifts per month	4 (0-8)
	Yes n (%)
Single	67 (34.9%)
Children	24 (12.5%)
Outside work activity	87 (45.5%)
Medical and surgical history*	29 (23.0%)
Tobacco addiction	41 (21.5%)
Alcohol consumption	104 (55.0%)
Cannabis consumption	3 (1.7%)

\* History: lupus, thyroid pathologies, brain injury

tor for anxiety and depressive disorders: 1 had lupus, 3 had thyroid diseases and 1 had a history of brain injury (table 1). Two (1.0%) were undergoing antidepressant treatment with serotonin reuptake inhibitors.

Twenty-five (13.0%) junior doctors presented a mood disorder and 49 (28.7%) had an anxiety disorder. In addition, 32.8% junior doctors had Job Strain and 29.7% had Iso Strain.

**Risk factors for mood and anxiety disorders**

A univariate analysis showed that men presented more mood disorders (p <0.01) (table 2). Anxiety disorders were more common among the junior doctors who had suffered a verbal assault or who did not have good relationships with the other junior

**Table 2 - Risk factors for mood disorders and anxiety disorders in the univariate analysis**

Items		Sample	Presence of mood disorder	Sample	Presence of anxiety disorder
		N (%)	N (%)	N (%)	N (%)
Sex	Male	61 (31.7%)	14 (56.0%)**	58 (33.9%)	2 (12.5%)
	Female	131 (68.3%)	11 (44.0%)**	113 (66.1%)	14 (87.5%)
Works less than one weekend per month	Yes	164 (87.7%)	21 (84.0%)	148 (88.6%)	14 (87.5%)
Works 3 or 4 weekends per month	Yes	163 (87.2%)	6 (25.0%)	110 (65.9%)	13 (81.2%)
Works more than 3 shifts per month	Yes	86 (45.7%)	8 (32.0%)	76 (45.5%)	5 (31.2%)
Accommodation	Residence	33 (17.4%)	6(24.0%)	31 (18.3%)	12 (75.0%)
	Private	157 (82.6%)	19(76.0%)	138 (81.7%)	4 (25.0%)
Has children	Yes	24 (12.5%)	4 (16.0%)	22 (12.9%)	1 (6.3%)
Outside work activity	Yes	87 (45.5%)	10 (41.7%)	78 (45.9%)	6 (37.5%)
Feels respected by patients	Yes	32 (16.8%)	7 (29.2%)	31 (18.2%)	5 (31.5%)
Feels respected by families	Yes	48 (25.1%)	9 (36.0%)	44 (25.7%)	5 (31.5%)
Verbal aggression	Yes	131 (68.2%)	21 (84.0%)	119 (69.6%)	15 (93.7%)*
Switched specialties	Yes	11 (6.1%)	0 (-)	9 (5.7%)	1 (6.3%)
Complementarity of hospital university	Yes	42 (22.1%)	9 (36.0%)	36 (21.3%)	5 (31.5%)
Hospital activity leaves time for studies	Yes	146 (76.4%)	19 (76%)	130 (76.5%)	15 (93.7%)
	No	45 (23.6%)	6 (24.0%)	40 (23.5%)	1 (6.3%)
Second cycle prepares well for internship	Yes	88 (45.8%)	14 (56.0%)	75 (43.9%)	9 (56.3%)
Relationship of mutual help between interns	Yes	158 (86.3%)	19 (76.0%)	143 (86.7%)	11 (68.7%)*
Availability of seniors	Yes	166 (88.8%)	21 (87.5%)	149 (88.7%)	13 (86.7%)
Support of seniors for relationships	Yes	12 (6.4%)	3 (12.5%)	11 (6.5%)	3 (20.0%)
Advice from seniors about studies	Yes	68 (36.4%)	12 (50.0%)	59 (35.1%)	4 (26.7%)
Help from seniors for organization	Yes	64 (35.0%)	9 (37.5%)	59 (35.5%)	8 (53.3%)

\*p<0.05 \*\*p<0.01

**Table 3** - Risk factors for mood disorders and for anxiety disorders in the multivariate analysis

Logistic regression by a stepwise backward selection	
Integrated factors	If $p < 0.20$ in univariate analysis*
Significant risk factors	OR (IC 95%)
Mood disorders	
Male sex	0.10 (0.03 0.38)
Lives in private housing	0.20 (0.04 0.90)
Respected by patients	0.20 (0.06 0.75)
Advice from senior physicians about future career	0.05 (0.01 0.40)
Help from senior physicians for organization of service	0.21 (0.06 0.74)
Anxiety disorders	
Respected by patients	0.27 (0.08 0.98)
Competition among junior doctors	4.23 (1.06 16.82)
Advice from senior physicians about future career	0.18 (0.04 0.85)

\*Sex, Age, Number of weekends worked per month, number of worked nights per month, Number of working hours per week, Accommodation, Single, Child, Feels respected by patients, Feels helped by senior doctor, Verbal aggression, Sick leave, Having a hobby, Changing medical speciality, Feelings about study

doctors: 97.7% *vs* 69.6% ( $p=0.02$ ) and 31.5% *vs* 13.3% ( $p=0.04$ ) respectively (table 2). Neither the number of weekends on duty per month, nor the number of weekly working hours, nor the number of shifts per month were risk factors (table 2).

In a multivariate analysis, neither being single, having children, alcohol consumption, smoking, or having a hobby were statistically associated with mood disorders or anxiety disorders, nor were parameters of the Karasek Job Content Questionnaire. Similarly, the quality of life scale parameters were neither protective factors nor risk factors. In contrast, the feeling of being respected by patients and their families was a protective factor against depression and anxiety. In the same way the feeling of being advised by senior physicians about preparing their future career (training, placement) was also a protective factor (tables 3).

## DISCUSSION

This study ascertained the prevalence of depression (13.0%) and anxiety (28.7%) symptoms among junior doctors, as well as certain occupational risk factors and protective factors. Neither work parameters (such as weekly work-hours,

shifts etc.), nor the parameters of the Karasek Job Content Questionnaire were risk factors for mood and/or anxiety disorders. Several risk factors for mood disorder resulted from the multivariate analysis, some being directly related to work (respect from patients, help and advice from senior physicians). These same occupational factors were risk factors for anxiety disorder, as was competition among junior doctors.

The main disadvantage of this study was the participation rate of 34%. However, this was in agreement with the literature data on questionnaire surveys of healthcare staff, but was below the average rate of responses from physicians (8). A selection bias in the respondent population cannot be excluded. Indeed, it is possible that junior doctors presenting a mood disorder or an anxiety disorder responded to a greater extent than the other junior doctors. Conversely, the junior doctors presenting these disorders may have responded to a lesser extent than the others. It is therefore possible that the prevalence of these disorders is different in the source population.

In our study, the junior doctors who did more on-call duties or shifts did not present more anxiety or mood disorders. In contrast, Oschman et al. found a significant impact of overtime. Similarly, a

study in 2001 of the working hours of staff in Parisian hospitals showed comparable results: the junior doctors had some of the highest scores in the General Health Questionnaire (30).

Our results did not show any link between organizational factors and anxiety and/or mood disorders. In recent years, there has been an increase in the junior doctor population in our hospital in order to minimize the effects in the future of the retirement of a large number of senior doctors. Consequently in each unit of our hospital there are more junior doctors than a few years ago. This can explain why they work less shifts per month and perhaps have a smaller amount of work during the week. The Authors believe that this may explain the fact that no link between organizational factors and mood and anxiety disorders was found. Nonetheless, junior doctors are subject to organizational factors. For example, Afzal et al. pointed out in a multivariate analysis that working 30 hours in a row increased the risk of burnout: OR=2,91 (95% Confidence Interval: 1,20 - 7,05) (2). Several other factors were highlighted in the junior doctor population, such as lack of sleep, psychological tension due to healthcare, or professional task interruptions because of other unplanned urgent tasks (2, 15).

Likewise, this study did not ascertain the impact of personal, social, and family factors. Nonetheless, in the literature junior doctors' health is often linked to these data. For instance, Sargent et al. recalled the role of the support from orthopaedic junior doctors' wives, and the effect of one's mood on another person (36). Some studies also showed that having children was linked to mood disorder (7). In our study, some of the known protective factors mentioned in the literature were not in fact found to be protective factors. For example, Lebensohn et al. showed that rest, sport, or going out were protective factors ( $p < 0,01$  each) (23).

Our results tended rather to demonstrate the impact of the quality of the junior doctors' relationships with senior physicians and other junior doctors on their health at work. These data are similar to those from several studies that showed the influence of help provided by senior physicians and to a lesser extent, by intern colleagues (16, 31). This raises several questions for occupational med-

icine. First, despite the high workload, despite the mental and physical constraints, despite the time pressure inherent in the junior doctors' medical activity, it is mainly the relationships with colleagues, or even with patients and their families, that disrupt the moral health of junior doctors.

Given the impact of the relationships on junior doctors' health, it would clearly be useful to increase physicians' awareness of the importance of this relationship. This concerns first and foremost an ethical issue that involves viewing the person opposite you as a person, as an end in him- or herself, and not as a means to achieve patient care (19). This means that physicians and junior doctors should consider the feelings of their colleagues and provide mutual support in the management of patients. The quality of these relationships is also enshrined in the Hippocratic oath (25). Nevertheless, the personalistic reflections of the 20<sup>th</sup> century mean that we should probably consider these relationships between colleagues in more depth. The risk is always to view a colleague as a means of providing patient care; especially for the senior physician, who may be tempted to treat more patients and leave the intern to work autonomously. Based on the dialectic of Martin Buber, we could say that the issue is the type of relationship that will develop between physicians: either an "I-Thou" relationship in view of the other for him- or herself, or an I-It relationship in view of what the other offers (6, 28, 40). In other words, there is an ethical tension between benefits for the patient, which could lead to considering a colleague as a means of healthcare, and respect for this colleague, according to a conception of the categorical imperative of Kant that enjoins us to consider others as an end in themselves, and that here would imply taking into account his needs and limitations (17, 18). However, the tension could also be extended to the principle of non-maleficence, i.e., causing no harm to the patient, if by any chance the intern accepted tasks for which he or she was insufficiently well trained (3).

Becoming aware of this should improve work organization. On the one hand, risk factors are linked to bad work organization and on the other hand, working conditions have an influence on relationship quality.

## CONCLUSION

This study demonstrated the high prevalence of mood disorders and anxiety disorders, as well as the occupational risk factors for junior doctors in a French teaching hospital. Our aim was to study factors associated with the manifestation or not of these disorders linked to work. This can be used for prevention. Indeed, these disorders were linked notably to problems in the relationships and the supervision by senior physicians, to competition among junior doctors when this existed, and to problems in the relationships with patients and their families. It would therefore be useful to make these populations more aware of the impact of professional relationships on their health. From a Kantian viewpoint, the challenge in the relationship between colleagues, which by its very nature is a relationship where each person is a means of care for another person, is therefore to create and work within an area of recognition of the colleague as an end in him- or herself.

NO POTENTIAL CONFLICT OF INTEREST RELEVANT TO THIS ARTICLE WAS REPORTED

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