

Psychosocial risks in Psychiatry and Anaesthesiology residents in a Portuguese General and University Hospital

P. ALVES DE MOURA, F. SERRANHEIRA*, EMA SACADURA-LEITE**

Hospital de Santa Maria-CHLN, Lisboa, Portugal, Department of Psychiatry and Mental Health

* Department of Occupational and Environmental Health; CISP; Escola Nacional de Saúde Pública, Universidade Nova de Lisboa, Portugal

** Department of Occupational Health, Hospital Santa Maria-CHLN, Lisboa, Portugal; Department of Occupational and Environmental Health; Escola Nacional de Saúde Pública, Universidade Nova de Lisboa, Portugal

KEY WORDS

Physicians; psychosocial risks; medical residents; psychiatry residents; anaesthesiology residents; COPSQQ

PAROLE CHIAVE

Medici; rischio psicosociale; specializzandi in medicina; specializzandi in psichiatria; specializzandi in anestesologia; COPSQQ

SUMMARY

Background: *Medical Doctors (MD), although at the front line of response to patients and their families, are seldom study subjects for occupational psychosocial risks and work related stress.* **Objectives:** *Assess psychiatry and anaesthesiology residents in a central and university Portuguese Hospital for the presence of psychosocial risks at work.* **Methods:** *We used the Copenhagen Psychosocial Questionnaire version 2 (COPSQQ), which was applied face-to-face in two group settings, in April 2014. It comprised a sample of 19 Psychiatry residents and 20 Anaesthesiology residents. Statistical analysis was done by correlational analysis using Pearson's coefficient (r) and the t-student test for categorical variables.* **Results:** *An occupational health risk (red flag) was found for residents in the "Cognitive demands" dimension of COPSQQ and a health risk (red flag) in the "Work influence" dimension for the female Anaesthesiology sub-group. A possible risk (yellow flag) was found in 17 dimensions. Results also showed moderate correlations between various COPSQQ dimensions and the emergency department workload, workload, home study, number of children, year of training and the medical specialty variables.* **Conclusions:** *These results suggest that residents have a health risk which derives from the cognitive demands of their work and that it increases with the workload. This implicates the need for occupational health measures to be taken to manage and reduce these psychological risks.*

RIASSUNTO

«Rischi psicosociali tra i medici specializzandi in psichiatria e anestesologia in un ospedale centrale e universitario portoghese». **Introduzione:** *Il personale medico, benché in prima linea nell'interfaccia con i pazienti e i loro familiari, raramente è oggetto di indagini per quanto riguarda i rischi psicosociali occupazionali e lo stress lavoro-correlato.* **Obiettivi:** *Vengono esaminati medici specializzandi in psichiatria ed anestesologia in un ospedale centrale e universitario portoghese per la presenza di rischi psicosociali sul lavoro.* **Metodi:** *E' stato utilizzato il Questionario Psicosociale Copenhagen versione 2 (COPSQQ); è stato somministrato personalmente ai due gruppi nell'aprile del*

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Corrispondenza: Pedro Miguel Alves de Moura, Psychiatrist (MD), Hospital de Santa Maria-CHLN, 1649-035 Lisboa, Portugal, Department of Psychiatry and Mental Health - Tel. +351217805000 - E-mail: pedro108@gmail.com

2014. Il campione comprende 19 specializzandi in psichiatria e 20 in anesthesiologia. E' stata fatta un'analisi statistica di correlazione utilizzando il coefficiente di Pearson (r) e il test t di student per le variabili di categoria. **Risultati:** E' risultato un rischio occupazionale per la salute (codice rosso) per i medici nella dimensione "domanda cognitiva" del COPSQ e un rischio per la salute (codice rosso) nella dimensione "influenza sul lavoro" per il sotto-gruppo femminile di anestesisti. E' emerso un possibile rischio (codice giallo) in altre 17 dimensioni. I risultati hanno inoltre evidenziato moderate correlazioni tra varie dimensioni COPSQ e il carico di lavoro nei reparti di pronto soccorso, il carico di lavoro e studio a casa, il numero di figli, gli anni di tirocinio e il tipo di specializzazione medica. **Conclusione:** Questi risultati suggeriscono che esiste un rischio per la salute per i medici in specializzazione che deriva dalle domande cognitive del loro lavoro e che aumenta con il carico di lavoro. Ciò implica la necessità di prendere misure per la salute occupazionale onde gestire e ridurre questi rischi psicosociali.

INTRODUCTION

Medical Doctors (MDs), although at the front line of response to patients and their families, are seldom study subjects for occupational psychosocial risks and work related stress. A recent survey of 13,575 MDs in the USA (16) showed that 68.2% have negative or very negative feelings towards the profession, 77.4% feel pessimistic or very pessimistic about their future and 80.4% classify general morale among colleagues as negative or very negative. The main explanations were an excess of regulations/bureaucracy (79.2%), loss of clinical autonomy (64.5%) and lack of compensation for medical quality (58.6%).

The impact of exposure to psychosocial hazards may be expressed in several ways, such as compromising healthy functioning at an organic, emotional, cognitive, social and behavioural level. Some of the symptoms were related to anxiety and depressive disorders, difficulty in sleeping, social isolation, substance abuse, irritability, increased aggressiveness and cognitive and decision-making difficulties. There are many studies linking psychosocial risk exposure to cardiovascular, endocrine and mental disorders, among others (10, 22-25).

The presence of psychosocial hazards has been linked with a higher prevalence of Major Depression and Suicide (12) and, in the medical profession, Psychiatrists and Anaesthesiologists are, unfortunately, ranked very high in suicide prevalence studies (31). There is also evidence that psychological distress and burnout syndrome (a specific psychosocial hazard) may be more common and/or more severe among medical residents (5, 13, 36).

Therefore, in this study we aimed to assess psychosocial hazards at work, stress, perceived general health, well-being and some psychopathological symptoms related with burnout and depressive syndromes in medical residents of the Psychiatry (n=19) and Anaesthesiology (n=20) departments of a Portuguese General and University Hospital, using the Copenhagen Psychosocial Questionnaire (COPSQ) and comparing them with the Portuguese data. However, it should be noted that there are many other tools that address the same research issue, or at least parts of it, and we shall attempt to describe some of the papers, using them in the discussion section and how they relate to our results. This being said, to our knowledge, COPSQ remains one of the most comprehensive tools regarding psychosocial risks of workers.

METHODS

Participants: Medical residents of the Psychiatry (n=19) and Anaesthesiology (n=20) departments in a Portuguese General and University Hospital. The response rate was 90.5% for Psychiatry residents and 100% for Anaesthesiology residents.

Study design: This was an observational, cross-sectional study, with an analytical exploratory component of variables' association. The unique inclusion criterion was to be a medical resident of the said departments at the time of the study. There were no time constraints and all precautions were taken to ensure confidentiality and anonymity, with only

the authors allowed to access the questionnaires and their results. Questionnaires were applied face-to-face in April 2014, in two group settings, Psychiatry and Anaesthesiology, with a previous explanation of the aims and goals of the study. No other person was present in the room at the time besides participants and authors.

Questionnaire: COPSOQ II tool, Portuguese medium version (40).

The COPSOQ II questionnaire, Portuguese medium version, consisted of a group of 72 questions on a Likert scale, from 1 to 5. This eclectic tool, developed by Kristensen (26) with the collaboration of the Danish National Institute for Occupational Health in Copenhagen, covers a wide range of current concepts and theories, attempting to cope with the construct “psychosocial factors”. It follows a multidimensional approach based on the model of “demand and control” which attempts to explain occupational stress as a consequence of high demands at work and low social support and is a widely used tool in evaluating psychosocial risks (24). In a study of the Spanish work force, the authors concluded that COPSOQ is a valid tool and allows the establishment of reference levels for psychosocial risks in the work force and the possibility for the development of strategies for their prevention (33).

The medium version presents a more complete identification of psychosocial dimensions (the long version is only for research purposes), therefore we used the medium version validated in the Portuguese working population (40).

The items of the 29 dimensions (“Quantitative demands”, “Work pace”, “Cognitive demands”, “Emotional demands”, “Influence” on the subjects’ work, “Possibilities for development”, “Predictability”, “Role clarity”, “Rewards”, “Role conflicts”, “Social support from colleagues”, “Social support from supervisor”, “Social community at work”, “Quality of leadership”, “Mutual trust between employees”, “Trust regarding management”, “Justice and respect”, “Self-efficacy”, “Meaning of work”, “Commitment to the workplace”, “Job satisfaction”, “Job insecurity”, “Self-rated health”, “Work-family conflict”, “Sleep troubles”, “Burnout”, “Stress”, “Depressive symptoms” and “Offensive behaviour”) are

evaluated on a 5-point Likert scale (1-Never/almost never; 2- Rarely; 3-Sometimes; 4- Frequently and 5-Always or 1-Nothing/almost nothing, 2-A little; 3- Moderately; 4- A lot; 5- Extremely). The analysis of results presupposes a factor by factor interpretation, meaning the tool does not measure a single construct but several psychosocial risks and variables for health, stress and satisfaction.

Statistical Analysis: Quantitative results were changed into percentages using a mathematical transformation (result–minimum value of the scale/ maximum value of the scale–minimum value of the scale) according to Pestana and Gageiro (33) and compared with the Portuguese COPSOQ dimension results. We used the Shapiro-Wilk test to assess the distribution for normality and we found a normal distribution of variables. Therefore, it was possible to perform a correlational analysis using Pearson’s coefficient for numerical variables and the t-student test for categorical variables. As a general rule, using Pearson’s r , $r < 0.2$ indicates a very weak correlation, between 0.2 and 0.39 means weak, from 0.4 to 0.69 means moderate, between 0.7 and 0.89 means a high correlation and $r > 0.9$ a very high correlation (33). All calculations used IBM’s SPSS software, v21.0.

Ethics: The study had been previously approved by the Medical Ethics Council of the Hospital and the participants were made aware of this. They were also asked to complete a complementary questionnaire (designed by the authors) detailing age, gender, year of training, weekly workload, emergency department weekly workload, number of hours per week in home study and number of children.

RESULTS

Socio-demographic results revealed a young sample (table 1) with a high weekly workload.

COPSOQ dimensions (table 2) for which higher scores were related with worse outcomes were cognitive (Cog) and emotional demands (Emo).

The COPSOQ dimensions (table 3) for which higher scores were related with better outcomes, in

Table 1 - Socio-demographic variables in studied residents. Considered units for workload, emergency department work and home study are in hours/week

Age (mean, SD)	Gender (n; %)	Medical Specialty (n; %)	Year of training (mean, SD)	Workload (mean, SD)	Emergency department (mean, SD)	Home study (mean, SD)	Children (mean, SD)
28.41±2.9	Males (16; 41%)	Psychiatry: (19; 48.7%)	2.74±1.4	50.11±15.28	15.65±7.3	7±5.3	0.27±0.6
	Females (23; 59%)	Anaesthesiology (20; 51.3%)					

SD – Standard deviation

Table 2 - Averages of COPSOQ dimensions in which higher scores were related with worse results

Quant	Wpace	Cog	Emo	Rconf	Mutu	JobIn	Workfam	Sleep	Burn	Stress	Depr	Offens
2.99	3.10	3.90	4.05	3.42	3.01	3.28	3.36	2.23	2.90	2.79	2.12	1.30

Quant - Quantitative demands, Wpace - Work pace, Cog - Cognitive demands, Emo - emotional demands, Rconf - Role conflicts, Mutu - Mutual Trust between employees, JobIn - Job insecurity, Workfam - family conflict, Sleep - Sleeping troubles, Burn - Burnout, Stress - Stress, Depr - Depressive symptoms, Offens - Offensive behaviour

Table 3 - Averages of COPSOQ dimensions in which higher scores were related with better results.

Influ	Poss	Pred	Rclar	Rew	SSC	SSS	SCW
2.50	3.98	2.66	3.44	3.22	3.28	2.82	3.52
Qual	Trus	Just	Selfe	Mean	Commi	Jobsat	Selfr
3.17	3.42	2.90	3.32	4.05	3.45	3.18	2.49

Influ - Influence, Poss - Possibilities for development, Pred - Predictability, Rclar - Role clarity, Rew - Rewards, SSC - social support from colleagues, SSS - Social Support from Supervisor, SCW - Social Community at Work, Qual - Quality of Leadership, Trus - Trust regarding management, Just - Justice and respect, Selfe - Self-efficacy, Mean - Meaning of work, Commi - Commitment to workplace, Jobsat - Job satisfaction, Selfr - Self rated health

our sample, were the “Possibilities for development (Poss) and the “Meaning of work” (Mean).

Results from COPSOQ dimensions in our sample were adapted to the Portuguese healthcare workers data (40) and showed “Cognitive demands” as the major psychosocial health risk in psychiatric and anaesthesiology residents of the studied hospital. “Emotional demands” were only classified as an intermediate situation for health risk in our sample of physicians (figure 1).

Results had no significant variance when analysed by specialty or gender, except for high scores

(red flag) that were observed in the dimension “Influence” in female Anaesthesiology residents.

Variables correlation (table 4) showed that “Cognitive demands” of residents of these medical specialties were correlated with weekly workload and the workload in the emergency department.

DISCUSSION

In this study we had a very high response rate (90.5% for Psychiatry and 100% for Anaesthesiol-

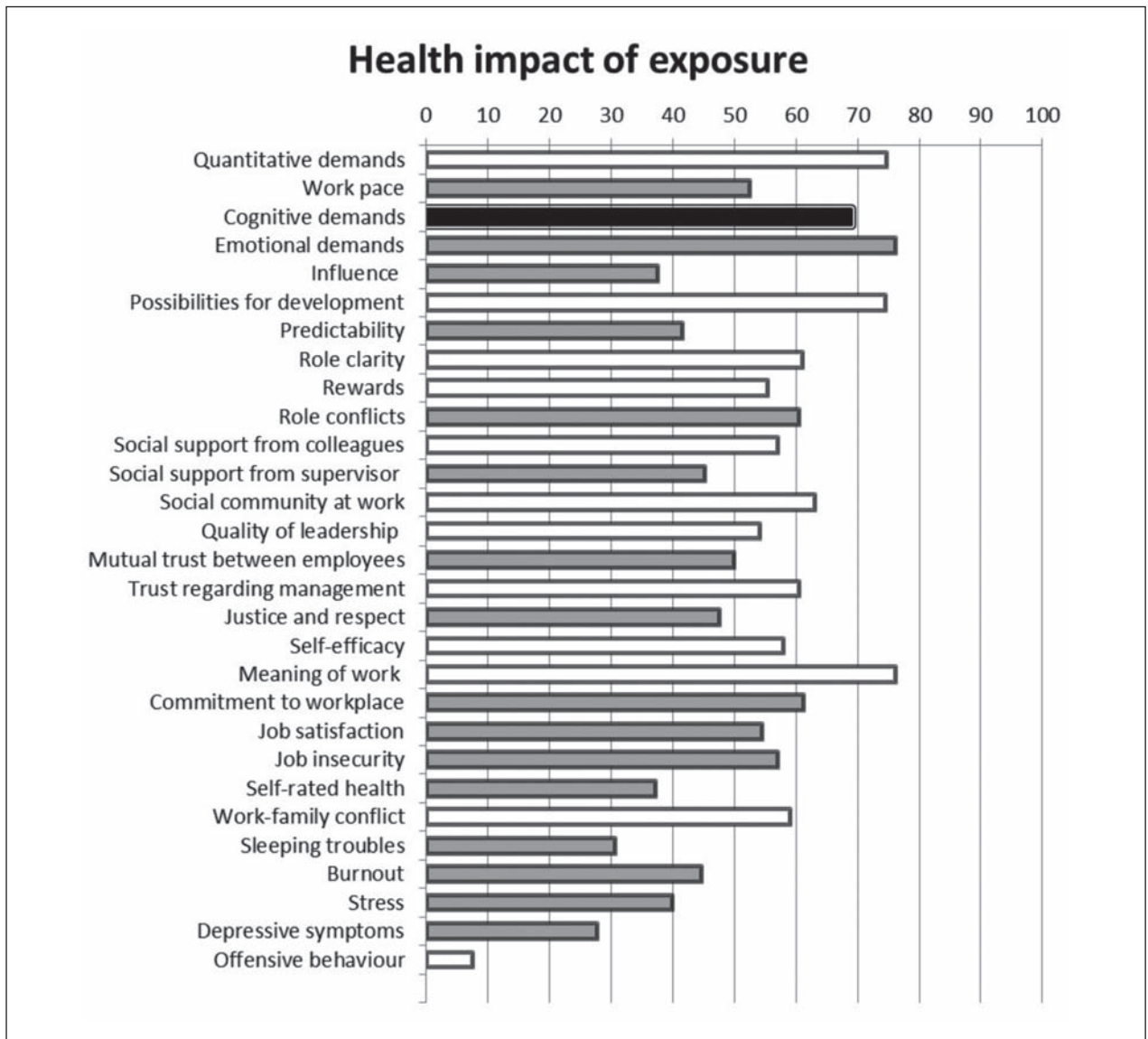


Figure 1 - Health impact of exposure to occupational stress by COPSOQ dimension. For each dimension adjusted for the Portuguese population, white means a favourable situation, grey means an intermediate one and black means a health risk

ogy) which compares very well with other international studies that reported between 40-60% responders (13, 19), which is probably related to the method of face-to-face interviews used. This contributed to a higher reliability of the results.

The socio-demographic features of the sample were similar to those of other authors (35), referring to a population that is homogenous by definition, especially regarding age. We also observed a majority of female residents as in other studies (7, 13),

reflecting the known worldwide process of “feminization” of medicine.

Residents go through the heaviest period of the medical profession in terms of demands (28), however, a *Pubmed* search of papers evaluating psychosocial risk using the COPSOQ tool found only one study in which residents were included (17). This German study evaluated burnout risk in 3.541 Anaesthesiologists by using the COPSOQ “Burnout” dimension sub-scale. The study found no increased

Table 4 - Correlation between COPSOQ dimensions and numerical and categorical variables, using Pearson's coefficient and t-student test. Results are shown only when there is a statistically significant correlation. COPSOQ dimensions without any statistically significant correlations are not shown

COPSOQ dimensions	Age	Gender	Year of training	Workload	Emergency department	Home Children study	Specialty
Quantitative demands		Male, t(37)=3.759**		r=0.364**	r=0.429*		
Work pace					r=0.464*	r=0.354**	
Cognitive demands				r=0.363**	r=0.389**		
Emotional demands	r=0.358**						Psych, t(37)=3.155**
Influence	r=0.358**						
Possibilities for development				r=0.354**	r=0.408**	r=0.351**	
Rewards						r=-0.403**	
Role conflicts				r=0.596*	r=0.461*		
Social support from colleagues					r=-0.388**		
Social support from supervisor					r=-0.353**		
Social community at work			r=-0.396**				
Mutual trust between employees				r=0.360**		r=-0.409**	
Self-efficacy			r=0.442*				
Meaning of work			r=-0.383**				
Commitment to the workplace			r=-0.379**	r=0.361**			
Job satisfaction			r=-0.378**	r=0.361**			
Work-family conflict				r=0.452*	r=0.452*		Anaest, t(36)=3.821**
Depressive symptoms				r=0.351**			

* - $p < 0.01$; ** - $p < 0.05$

risk compared to a sample of the general population or to a sample of hospital MDs. However, the study identified a risk for burnout in the female residents sub-group, deserving of social support according to the authors.

Since we set out to use the COPSOQ tool to evaluate psychosocial risks in our study population, we also carried out a broader *Pubmed* search with the MeSH terms "COPSOQ" and "physicians" and found only five studies. Four of them only assessed

one COPSOQ dimension, including the above cited study where interns were evaluated. Andreassen (1), in a Danish study, evaluated 220 Oncology physicians (67% response rate) working in 6 hospital oncology centres and 7 community oncology centres using COPSOQ II's short version and compared the results with a Danish workforce sample. They reported worse results (red flag) in the "Quantitative demands", "Work pace", "Emotional demands", "Influence", "Burnout" and "Stress" dimensions and

better results (green flag) in the “Possibilities for development”, “Meaning of work” and “Commitment to the workplace” dimensions.

The relevance of the present paper is therefore attested by the absence of studies utilizing COPSOQ’s full medium version on physicians, including medical residents or Psychiatry physicians or comparisons between medical specialties.

In this study we found that the “Cognitive demands” dimension in our sample was equated with a high health risk for our studied residents. This might be derived from the intellectual demands of their daily routine, which for Psychiatry residents would rest mostly upon the challenges of inpatient and outpatient consultation and for Anaesthesiology residents in their work in the operating room; or with the specific requirements of their training and accreditation by the Portuguese Medical Association (31), such as attendance at congresses, writing medical papers or revising the medical literature; or, most likely, the accumulation of both.

Correlations between “Cognitive demands” and weekly workload ($r=0.363$, $p=0.05$) or emergency department workload ($r=0.389$, $p=0.05$) were also found, which might suggest a possible aetiology and the need to review the workload in the medical training programmes of these specialties, since we found a high workload for the residents, in some cases as high as 65 hours/week. It should be noted that medical residents’ contracts in Portugal are regulated centrally by government institutions and are set at 40 hours/week. This means that these residents were consistently doing overtime work and, unless it was done in the Emergency department, they were not financially compensated.

This study also found a risk (red flag) in the “Influence” of the work dimension for the female Anaesthesiology sub-group, which is a measure of how far workers have the possibility of influencing the conditions, timing, environment and the quality of their work. In line with the above cited study that found a risk for burnout in female Anaesthesiology (17) residents, this suggests that these residents might have a higher and gender specific risk in their work, which implies the need to study their specific job difficulties. One of these might be higher Work-family conflicts, since we found an associa-

tion between this COPSOQ dimension and the Anaesthesiology sub-group ($t(36)=3.821$, $p=0.05$). In fact, there appear to be gender differences in patient communication, feelings of work-family conflict and barriers to career advancement for physicians (18), which can all play a role in explaining our results. Also, on the subject of gender differences, we also found higher “Quantitative demands” in the Male gender ($t(37)=3.759$, $p=0.05$), which might signify greater difficulties with interpersonal skills (18) or a lower capacity for multitasking (21).

For the remaining dimensions a possible risk (grey colour) was found in “Depressive symptoms”, “Stress”, “Burnout”, “Sleeping troubles”, “Self-rated Health”, “Job Insecurity”, “Job Satisfaction”, “Commitment to the workplace”, “Justice and respect”, “Mutual trust between employees”, “Social support from Supervisor”, “Role conflicts”, “Predictability”, “Influence”, “Emotional demands” and “Work pace”. These results may warrant some concern, since so many dimensions are involved and the subjects were young professionals with few years of professional experience. Some authors cite as reasons for young doctors’ higher susceptibility to psychosocial distress: 1) increased exposure to a contrast between higher ideals and work reality (19), 2) ambiguity of a role that is neither student or professional, 3) limited involvement in work systems and decision processes and 4) the risk of professional isolation and work overload (13).

Correlations were found between the “Quantitative demands” dimension and the weekly workload ($r=0.364$, $p=0.05$), or the emergency department workload ($r=0.429$, $p=0.05$), which were expected and understandable results.

The emergency department workload ($r=0.464$, $p=0.01$) and the number of children ($r=0.354$, $p=0.05$) were correlated with the “Work pace” dimension, meaning that the subjects “feel” that the rhythm of their work is more demanding when the workload in the emergency department increases, which might be expected since this type of work involves a quick decision-making process. Subjects with children might tend to “overwork” at a faster pace in their usual work routines in order to “make time” for their family obligations, which might explain the correlation found.

This study also found a direct correlation between age and the “Emotional demands” ($r=0.358$, $p=0.05$) and “Influence” ($r=0.358$, $p=0.05$) dimensions. A possible explanation is that subjects felt they had a higher degree of influence in their work as they grow older, which is expected since medical residency programmes were designed to implement progressive levels of clinical autonomy as individuals progress through the training years. Subjects also felt that their emotional demands increased with this progressive autonomy, which might be explained by a variation of this mechanism, in which further autonomy means more responsibility for clinical decisions.

In addition, a correlation was found between weekly workload ($r=0.354$, $p=0.05$), emergency department workload ($r=0.408$, $p=0.05$), home study ($r=0.351$, $p=0.05$) and the “Possibilities for development” dimension. In fact, subjects felt they would have more chances of developing their clinical expertise if they worked and studied longer hours.

The study found an inverse correlation between home study ($r=-0.403$, $p=0.05$) and the “Rewards” dimension. This is a cause of concern, since the longer the hours of study, the lower the feeling of it “being worth it”. These professionals did not feel that their job rewarded them adequately for making an extra effort. A reason for this might have to do with recent changes in the work environment for doctors in Portugal and cuts in financial pay in the sequence of the global financial crisis since 2008 (12).

The correlation between Workload ($r=0.596$, $p=0.01$), the Emergency department workload ($r=0.461$, $p=0.01$) and the “Role conflicts” dimension is important because of the high r values involved, meaning that the workload is an important causal factor in the subjects’ estimation of higher conflictuality in their work.

An inverse correlation was also found between Emergency department workload ($r=-0.388$, $p=0.05$; $r=-0.353$, $p=0.05$) and “Social support from colleagues” and “Social support from Supervisor” dimensions, respectively. Medical work, organized in shifts in the emergency departments, implicates a need for team work and in the case of residents effective supervision by their specialist supervisors who oversee the quality of their work. However, res-

idents in the study found that the more hours they worked in the emergency department, the less peer and supervisor support they had in their work.

In addition, the study found an inverse correlation between the year of training ($r=-0.396$, $p=0.05$) and the “Social community at work” dimension, meaning that as they progress through their training they find that the “atmosphere” of support among colleagues declines, which is also a cause of concern. The “Mutual trust between employees” dimension was correlated with the workload ($r=0.360$, $p=0.05$), which might mean that subjects felt that the more hours they worked, the greater the confidence they had in their peers. The “Mutual trust between employees” dimension was inversely correlated with the number of children ($r=-0.409$, $p=0.05$), which is difficult to explain with the data from this study and might warrant further study.

The dimension “Self-efficacy” was correlated with the year of training ($r=0.442$, $p=0.01$), which was expected because as residents progress through their training, the more they have a notion of adequate performance and proficiency in their work. The dimensions “Meaning of work”, “Commitment to the workplace” and “Job satisfaction” were inversely correlated with the year of training. This is also a cause of concern, since the higher the level of training the lower is its significance for subjects. Interestingly, the last two dimensions were directly correlated with workload ($r=0.340$, $p=0.05$; $r=0.361$, $p=0.05$). These results highlight the complex relationships between psychosocial stress, job satisfaction and workload in which conclusions are not straightforward. While some authors advocate a reduction in working hours (6) to increase job satisfaction, others point out that this would decrease pay and make the medical career unattractive (9).

One study in the USA (11) on 7.288 MDs showed that 44.3% experienced a conflict between occupational and family responsibilities in the three previous weeks, with an increased likelihood of conflict when the partner also had a demanding career (so-called double career couples). The majority reported having settled the occupational issue to the detriment of the family problem, when incompatible. That study also showed a relationship between the increase in the number of hours worked and the

potential for work-home conflicts (for every 10 h of additional work, and particularly with more than 56 h weekly). It also showed an increased probability of depressive symptoms, increased physical and mental fatigue, reduction in perceived mental health in general and quality of life and an increased probability of dissatisfaction with partners and divorce. These results were also associated, in the cited study, with younger age, female gender and work in academic centres.

We also found in our study that the dimension “Work-family conflict” was correlated with Workload ($r=0.597$, $p=0.01$) and Emergency department workload ($r=0.452$, $p=0.01$). Again these are correlations that signify an important association between the number of hours worked and the emergence of conflicts between family and professional responsibilities, confirming results from the study by Dyrbye (11). The “Depressive symptoms” dimension was correlated with workload ($r=0.351$, $p=0.05$), which further adds weight to the results in the cited studies (11, 12). Interestingly, we found no association between the “Burnout” dimension, which increases with the workload and is a risk factor for depression (13) and the other variables analysed, as in another study (11) that reported an increase of 47.1% in the probability of development of burnout syndrome for MDs working more than 56 hours weekly. In fact, burnout syndrome should be considered as only prodromal of a full-blown psychiatric disorder (4) and some authors point out that in its late stage, though overlapping with a clinical picture of Major Depressive Disorder, it rarely shows characteristics of self-blame, which suggests different psychopathological impairments (3).

Further studies should be carried out in order to confirm the statistically significant superiority of “Emotional demands” in Psychiatry ($t(37)=3.155$, $p=0.05$). This can support the long held observation that medical work in this field is more “emotionally intense” than other specialties (15) and might also have to do with exposure to threats and violence in the workplace. The risk of this exposure is considerably higher among mental health professionals and emergency workers when compared with laboratory or radiology workers (29). In our study we found no association between the “Offensive behaviour”

dimension in COPSQ, which measures exposure to violent situations in the workplace, and the Psychiatry residents sub-group. Nor was the “Offensive behaviour” dimension a possible risk for all residents (yellow flag). However, we might be jumping to conclusions to say this has no effect, since the workers had been working for only a few years and might have had fewer occasions to experience such incidents. It might have been informative to follow up these residents to see if these problems arise and whether they correlated with any reported development of psychological distress (30).

Limitations: This study was performed in one of the biggest hospitals in Portugal but the results only reflect that specific reality and cannot be generalized. It was a study with a very high participation rate but it only reflects the “micro-reality” being studied. Therefore, our sample is not representative of anaesthesiologist residents and psychiatric residents in general, which constitutes one important limitation of this study. Another limitation is that, due to the limited sample size, the statistical instruments that were used were also limited, which then makes it impossible to draw conclusions that can be applied to the general Portuguese population of Psychiatry and Anaesthesiology residents or guarantee a high statistical validity for associations.

Also, we did not control for Psychiatry and Anaesthesiology being the first career choices, which might influence motivational levels and therefore individual resilience to psychosocial stress (43). However, a recent survey of Portuguese Psychiatry residents found good levels of satisfaction with the quality of their training (35).

Implications for interventions and prevention: One study (20) found that an intensive training in mindfulness, communication and self-awareness achieved enhanced measures of physicians’ mindfulness, and less perceived stress, burnout, and impact of mood disturbances. Such a psychosocial training may improve protective skill factors such as resilience and self-efficacy and be sustained for at least a 6 months follow-up (27).

Additional studies on resilience training and/or cognitive behavioural therapy also showed compa-

rable results (44). It appears that focusing on protective factors against mental health problems is one of the most effective approaches in mental health prevention (8) and that worksite interventions directed only towards the individual and not to the work environment itself are less effective in achieving changes in job satisfaction (37). So it is likely that a comprehensive intervention is needed to decrease psychosocial stress in our population of residents and increase their job satisfaction. This might include organizational and environmental measures and changes, like decreased emergency department work or a review of the intellectual demands and requirements for residents' training, and possibly a dedicated training programme for resilience and coping skills.

Some authors reason that a career choice in Psychiatry may have a self-therapy valence (13) and that these vulnerabilities might combine with the cited career specific psychosocial risks. Since there are huge potential negative consequences for professionals and their patients, effective preventive strategies should be developed and implemented from the start of these professionals' careers, as suggested by many authors (2, 14, 28, 41). This study emphasizes the need for a more comprehensive assessment of all Portuguese residents of these specialties using COPSOQ, to improve the degree of generalization of results and identify those residents that are at risk so that appropriate preventive measures might be considered.

CONCLUSIONS

This study found an occupational health risk (red flag) for residents in the "Cognitive demands" dimension of COPSOQ and a health risk (red flag) in the "Work influence" dimension for the female Anaesthesiology sub-group. A possible risk (yellow flag) was found in 17 dimensions. These results were obtained according to the Portuguese version of COPSOQ including dimension interpretation scores.

Results also identified moderate correlations between: (i) emergency department workload ($r=0.429$, $p=0.05$) and "Quantitative demands" dimension; (ii)

emergency department workload ($r=0.464$, $p=0.01$) and the "Work rhythm" dimension. A correlation was found between: (iii) emergency department workload ($r=0.408$, $p=0.05$), and the "Possibilities for development" dimension; (iv); Workload ($r=0.596$, $p=0.01$), emergency department workload ($r=0.461$, $p=0.01$) and the "Conflicts" dimension and (v) an inverse correlation between home study ($r=-0.403$, $p=0.05$) and the "Rewards" dimension. The "Horizontal confidence" dimension was inversely correlated with the number of children ($r=-0.409$, $p=0.05$). The dimension "Self-efficiency" was correlated with the year of training ($r=0.442$, $p=0.01$). The dimension "Work-home conflict" was correlated with Workload ($r=0.597$, $p=0.01$) and emergency department workload ($r=0.452$, $p=0.01$). There was also a statistically significant increase of "Work-home conflicts" in Anaesthesiology ($t(36)=3.821$, $p=0.05$), "Emotional demands" in Psychiatry ($t(37)=3.155$, $p=0.05$) and "Quantitative demands" in the male gender ($t(37)=3.759$, $p=0.05$).

This study suggests that residents of these medical specialties may have health problems that derive from the cognitive demands of their work and that increase with the workload and the workload in the emergency department, which implicates the need for occupational health measures to be taken to manage and reduce the psychosocial risks at work and recognize early determinants of onset.

NO POTENTIAL CONFLICT OF INTEREST RELEVANT TO THIS ARTICLE WAS REPORTED

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