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Occupational stress, job satisfaction and health state in male and female junior hospital doctors in Greece

Alexandros-Stamatios G. Antoniou
National School of Public Health (NSPH), Panteion University of Social and Political Sciences, Athens, Greece
Marilyn J. Davidson and Cary L. Cooper
Manchester School of Management, University of Manchester Institute of Science and Technology, Manchester, UK

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Abstract *This study investigates the occupational stress amongst 355 male and female Greek junior hospital doctors (JHDs) working in the Greater Athens area. The initial phase of the research involved in-depth interviews with a random stratified sample of sixty JHDs, both male and female, in a variety of specialties of junior hospital staff. An extended version of the occupational stress indicator (OSI) questionnaire was developed, incorporating additional items based on the results of the qualitative part of the study, and on previous research findings in the same area. The sample consisted of 193 males and 162 females JHDs, who completed the OSI. Analyses of the data demonstrated that, overall, JHDs presented significantly higher levels of sources of pressure than the normative population and other comparative occupational samples. As regards the various sub-group comparisons, bivariate analyses revealed that there were significant differences between male and female JHDs in certain aspects of pressure ("career and achievement" and "home/work interface"). Multivariate analyses revealed that predictors of physical and mental ill health and job dissatisfaction were type A behaviour and "demands of the profession" respectively. The research implications of the findings are discussed.*

1. Introduction

According to Cooper *et al.* (1988), dentists and doctors are considered to be members of high stress occupations, together with pilots, police, miners and social workers. The specific factors which make the doctors' profession so stressful include their responsibility for "people" rather than "objects" (Caplan *et al.*, 1975), and the fact that their actions or omissions have a profound impact on human life (Rees, 1995; Antoniou, 2001).

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Given the demand on junior hospital doctors (JHDs) of long hours, a demanding environment and patients, an apprentice role, etc., they are likely to be one of the high risk care workers. JHDs consist of house officers who are the newly qualified doctors in their pre-registration year, senior house officers (most posts are part of "rotations" of a series of four to six six-month posts), registrars and senior registrars, who are the most experienced of the JHDs. Registrar and senior registrar training is arranged in rotations of six- to 12-month postings in one or more hospitals. In general, all other grades below consultants can be called "junior" doctors (Griffiths, 1993).

Doctors' competence is under continual evaluation by both clients/patients and colleagues. Their mistakes are highly visible with potentially devastating results for patients as well as the doctors themselves (Payne and Firth-Cozens, 1987). Two potential additional sources of stress for health professionals include:

(1) their face-to-face relationships with patients, relatives, other staff and the hospital's management; and

(2) their exposure to increased risk of disease or injury (Antoniou, 2002).

These stressors could be exacerbated by the pressure placed on doctors to appear calm and controlled but at the same time remain emotionally involved and concerned with their patients' problems (Sutherland and Cooper, 1990; Kash *et al.*, 2000; Botseas, 2001).

Among the health professionals working in hospitals, JHDs are considered the most vulnerable group, since they have to adapt to a totally new and demanding environment. For several decades, the working conditions of JHDs have been characterized as particularly poor. A number of studies have investigated the psychological impact of these conditions on the overall well being of JHDs. For instance, Firth-Cozens' (1987) study which compared Junior House Officers with other occupational groups, indicated that the former experienced higher levels of emotional distress and depression.

The issue of temporal parameters and their influence on the performance and medical errors has been addressed in the literature during the last twenty years (the more recent being the ones by Kirckaldy *et al.*, 1997, 2002; Trimpop *et al.*, 2000). Sleep deprivation related to demanding work schedules has also been linked to poorer work performance in JHDs (Spurgeon and Harrington, 1989). Moreover, adverse changes in mood and cognitive performance of House Officers after night duty, have been reported by Orton and Gruzelier (1989). Similarly, recent research illustrated that a sample of British JHDs experienced substantial increases in certain stress symptoms (e.g. anxiety and insomnia) and were more likely to make errors in a medical context, eight weeks after beginning as junior house officers (Houson and Alit, 1997).

Olkinuora *et al.* (1990) concluded that doctors who worked in hospitals experienced higher levels of professional burnout than those working in other

settings (e.g. private practice, research institutions). The long working hours of JHDs has also been found to be one of the main sources of conflict with their partners (Gabbard *et al.*, 1987). With most JHDs being aged between mid-20s to mid-30s, the social and family demands combine with the work pressures to create potential problems. The difficulties become insuperable when the spouse is also a doctor.

Another stress source frequently mentioned by JHDs is inadequate support from senior staff, who often dismiss the situation by saying: "I went through it in my time; why shouldn't you?" (Dudley, 1990). Interestingly, McKevitt *et al.* (1995), in a study concerning doctors' health and their needs for services, stated that a significant proportion of a sample of British JHDs (approx. one fourth) reported that they were not very satisfied or not at all satisfied with their job. Furthermore, it has been found that younger physicians experienced significantly lower levels of both job and life satisfaction, and were disturbed more by "time pressures" than their older colleagues (Linn *et al.*, 1985).

It should also be noted that job insecurity (British Medical Association, 1992), the very real fear of unemployment, along with the vague job descriptions and the lack of general facilities, are also common sources of stress reported by JHDs. Finally, although attending a medical school's programme already constitutes a particularly demanding and stressful experience, since a considerable percentage of future doctors fails to complete, medical graduates generally do not receive any specific training to cope with stress (Kumari and Sharma, 1990; Herzberg, 2000). Maladaptive coping behaviours, such as high levels of alcohol consumption, smoking, substance abuse and even suicide may be manifested by JHDs as a result of high levels of stress (McKevitt *et al.*, 1995; Kumar and Basu, 2000; Pickard *et al.*, 2000; Newbury-Birch *et al.*, 2001). Depression and mental health in general have been also reported in the literature (Tyssen *et al.*, 2000; Tyssen and Vaglum, 2002). Tolerance of lack of sleep, availability of an effective social support system and the organizational climate of each hospital are factors that relate to doctors' vulnerability to stress (Spurgeon and Harrington, 1989).

JHDs, after a long period of student status, undertake new roles and major responsibilities, such as being responsible for clinical and ethical decisions, following a vague job description and tolerating sleepless on-call nights. A few years ago, the first-year residents had 24-hour "on-call" responsibility for one night out of three. Since the early 1980s, the Hospital Junior Staff Committee (HJSC) of the British Medical Association (BMA) has made considerable efforts to reduce the working hours of JHDs, by adopting a "one in two" rota system which is interpreted as 102 hours per week. Later, the aim was one night out of four for house officers "on call". Despite recent re-arrangements to JHDs' schedules, the general conditions in term of the number of working hours and the sleeping patterns, especially for junior house officers, remain undesirable

with detrimental effects on the physical and mental health of young doctors (Reid, 1995).

It has been proposed that residency comprises a particularly stressful period during the doctors' training since, except for their immediate "survival" needs, they have also to cover educational and patient care needs. Given the psychological toll which young doctors pay, due to this difficult combination, it is a great effort to achieve the basic aim of their first years in practice, which is the acquisition of the necessary knowledge and experience (Allen, 1997).

In an early study carried out by Wilkinson *et al.* (1975), a significant proportion of junior and senior house officers working in England, Scotland and Wales considered that long hours of duty "always" or "often" had a negative impact on their performance. A recent attempt by Rolfe *et al.* (1998) to develop a questionnaire which measures JHDs' attitudes concerning their life in hospital revealed various difficulties which they face on a daily basis. More than a quarter of junior doctors expressed a lot of complaints because they were forced to spend at least half of their working day dealing with clerical duties. Leslie *et al.* (1990), showed that pre-registration house officers had a quite heavy schedule (from 83 to 101 hours each week) and spent a considerable part of this time on inappropriate clerical tasks.

According to the junior doctors' opinions (Rolfe *et al.*, 1998), their ability to cope effectively with the workload was relatively high, which may be due to some rearrangements to shift systems and certain reductions in their overall working week over the last decade. A large proportion of the sample reported that they were responsible for too few or too many patients and that they had a limited opportunity to see outpatients. Under such conditions, the educational benefits to junior doctors are significantly restricted. For example, with too many patients, their learning procedure and cognitive abilities may be impaired by workload. Simmons *et al.* (1994) suggest that JHDs experience an internal conflict between their learning needs and the service needs of the hospital.

As regards the quality of training of house staff, Kapur and House (1998) found that although the "new deal" on JHDs' working hours reduced continuous on-call duty and overall hours of work, the adopted shift systems (full shift and partial shifts) had negative effects on the quality of the training experience. Shift work reduces the access of JHDs to educational activities since they are organized mainly during the day, excluding house staff who work different shifts. Additionally, full and partial shifts create problems for the supervision of JHDs', as they are sometimes likely to spend more than one week in the hospital without having contact with their educational supervisor (Kapur and House, 1998; Firth-Cozens *et al.*, 2000).

Particularly worrying is the fact that inadequate training in the early stages of their professional career can lead JHDs to quit their profession, a common thought of a large number of junior doctors in the last few years (Lambert *et al.*,

1996). Furthermore, although there is a limited proportion of doctors who leave their profession altogether (Nicholl, 1990), the financial loss is particularly high, since it has been estimated that the cost of training each new doctor is more than £158,500 (*BMA News Review*, 1993, cited in Grainger *et al.*, 1995). In Kapur and House's (1998) study several house officers stated that they had not been adequately prepared to undertake a senior house officer post.

In a recent study (Williams *et al.*, 1997) of accident and emergency senior house officers, it was found that the most stressful factors in the workplace were coping with diagnostic uncertainty, working unsociable hours, working alone, experiencing fatigue and the intensity of workload. Another serious source of work stress for SHOs was represented by communication problems with quite demanding or aggressive patients. The importance of a training in communication skills for JHDs has been presented by Ramirez *et al.* (1996) who found that the lack of it is associated with higher levels of distress. In the same study, senior cancer clinicians reported that their balanced relationships with patients and relatives constitute a significant factor in their job satisfaction.

In addition to new sources of stress originating from professional duties, JHDs have to bear emotional stress relating to marriage, children and parents. Gabbard *et al.* (1987), investigating the sources of marital conflict in the traditional marriages of male physicians with female non-physician spouses, demonstrated that the time spent away from the family was the second most important reason of conflict for physicians. Thus, quite often, the lack of adequate time for family needs constitutes a factor that leads to the externalisation of marital conflicts onto agents, for example, in professional life. The differences in communication styles between the partners were reported by many couples as a common cause of conflicts in their marriage. In particular, spouses displayed a need for verbal communication and expressed their desire to talk more with their husbands.

The feeling of burnout is also high for medical doctors and especially so for junior doctors (Antoniou, 1999b; Caballero *et al.*, 2001; McManus *et al.*, 2002). Approximately one in five JHDs reported emotional exhaustion, reduced personal accomplishment and depersonalisation in a study by Gabbard *et al.* (1987). In addition, the specialties of general medicine, surgery and accident and emergency were considered by JHDs as particularly stressful compared to the other specialties. In some cases junior doctors expressed their preference for an independent counselling service, as a support service to assist in coping effectively with occupational stressors, by offering valid assessments and useful advice (Gabbard *et al.*, 1987).

The British Medical Association, Health Policy and Economic Research Unit (1998) cohort study shed light on many work-related stressors on a representative sample of 440 JHDs. This was a ten-year longitudinal study that followed the young doctors who graduated from medical school. It revealed that, quite often, working practices and changes in staffing levels

become serious obstacles to junior doctors. Moreover, one of the main conclusions of the BMA cohort study was that "the vast majority of work-related stress experienced by the junior doctors in the study could be avoided if unit managers ensured adherence to existing guidelines regarding the working environment, specifically staffing levels and locum cover" (British Medical Association, Health Policy and Economic Research Unit, 1998, p. ii).

Despite the growing empirical evidence on the levels of stress of the medical professionals, to date no systematic studies have been conducted in Greece to investigate the levels of stress experienced by Greek junior medical doctors. Reports and anecdotal evidence from the Greek Ministry of Health and the Greek Open University documented the difficult conditions of work in five main hospitals of Athens (first study) and in all public hospitals of Greece (second study) related to equipment, hygiene, levels of noise, outpatients clinics, shortage of nursing staff and the overall provision of facilities to patients (Pipili, 1998; Fintanidou, 2003; Niakas, 2003).

In order to address the issue of stress in the Greek context, this study aimed to:

(1) identify the stressors that may exist among Greek JHDs;

(2) examine the psychological and physical health of Greek JHDs in terms of recognized stressor outcome or symptoms (e.g. job satisfaction, mental and physical ill health);

(3) compare their levels of occupational stress with similar occupational groups;

(4) assess what personality and job-related factors were predicative of stress outcomes in different groups of Greek JHDs (e.g. married vs single, male vs female); and

(5) make recommendations for future action.

2. Method

2.1. Participants

Prior to the study, permission was sought from the management of the hospitals and the consultants of each hospital clinic. The participants were Greek JHDs working in nineteen clinics within 12 general public hospitals in the area of Greater Athens. In the spring of 1997, 810 questionnaires were distributed (430 were distributed first but due to the low return rate (22.3 per cent) another 380 were distributed again to the same clinics with a 68.1 per cent response rate). The total response rate was 43.8 per cent and 355 questionnaires were gathered. The difficulty in reaching the sample mainly related to the time restrictions of the junior doctors working in hospitals. From an approximately 2,300 JHDs working in the area of Athens this constituted 15.4 of the total population. 193 (54.3 per cent) male and 162 (45.6 per cent) female JHDs participated in the study. The age range of JHDs was between 25 and 42 years. The majority of the sample (63.3 per cent) belonged to the second age group

(31-35 years of age) and followed by the group 25-30 years of age (26.3 per cent). Finally, only 35 doctors were over 36 years old, from whom 24 were males. Generally, the age of the sample distribution appeared to be normal, with a peak in the 31-35 age group. From the total sample 62.5 per cent were single and 35.5 per cent were married. The majority of the married couples (48.8 per cent) had one child.

2.2. Measures

A number of independent and dependent measures used have been employed in the study and these found to be implicated in previous research in the stress-strain relationship (Cooper *et al.*, 1988).

2.2.1. Independent variables. The independent variables are described in the following sub-section.

2.2.1.1. Personal and job demographics. Each subject supplied data on gender, age, marital status, partner's work pattern, number and age of children, educational, work history, financial commitments, personal habits and interests, and recent life history.

2.2.1.2. Stress questionnaire. The instrument used to investigate and measure stress was the occupational stress indicator (OSI), a self-completion questionnaire devised by Cooper *et al.* (1988). The structure of the OSI consists of six scales (each of which provides a number of subscale scores) from a total of 167 items, using Likert-type rating scales. The OSI provides a number of independent variables (sources of pressure at work, type A behaviour pattern, perceived locus of control of the work environment, use of various coping with stress strategies) and dependent variables (ratings of current health, both mental and physical, and job satisfaction). Reliability and validity data for the OSI are widely available. The OSI provides a comprehensive analysis of work stress and has been widely used as a diagnostic tool, especially with samples of doctors (Cooper and Williams, 1991; Grainger *et al.*, 1995; Davis, 1996; Anderson *et al.*, 1996).

In order to highlight specific sources of work stressors associated with Greek JHDs, 46 specific stressor items for JHDs were included. These items were selected from the relevant literature and a content data analysis of 60 in-depth interviews conducted with a random stratified sample of Greek JHDs before the main study (Antoniou, 1999a). Effort was made to avoid overlapping categories in the corresponding items of the OSI "pressure of work" subscale such as having too much work to do, having to work long hours, misuse of time by other people and the implications of any mistakes. The specific "pressure-of-work" 46-item stressor subscale for Greek JHDs covered a wide range of various personal and occupational thematic categories and included: working conditions, relationships with patients, training/education, and career prospects. Similar specific scales for sources of stress for different occupational

groups have been constructed and used in other studies (Travers and Cooper, 1996; Rout *et al.*, 1996).

2.2.1.3. Sources of job pressure. This OSI scale consists of six subscales that measure a variety of job stressors and a specific scale with the Greek doctors' stressors:

(1) "Factors intrinsic to the job" explore workload, variety of tasks and rates of pay.

(2) "Management role" is concerned with how individuals perceive the expectations others have of them and includes role ambiguity and role conflict.

(3) "Relationships with others" looks at pressures that arise from personal contacts at work including "office politics" and asks about possible lack of support from superiors.

(4) "Career and achievement" is concerned with respondents' perception of their career development, their promotion prospects and perceived threats of redundancy.

(5) "Organizational structure and climate" examines problems that may arise from bureaucracy, communication problems and morale in the organization.

(6) "Home and work" is concerned with the interface between home and work. It asks about whether home problems are brought to work and whether work has a negative impact on home life.

The Cronbach alpha reliability coefficient was calculated 0.80 for the British sample ($\alpha = 0.94$[1]). The last source of pressure was (7) "Greek JHDs' stressors", which concerns problems associated with working conditions, relationships with patients, training/education, and career prospects. The Cronbach alpha reliability coefficient was calculated 0.97 for the Greek sample.

*2.2.1.4. Type A behaviour pattern.*This OSI scale is composed of three subscale scores, which are summated to produce a total type A score:

(1) "Attitude of living" measures attitudinal aspects of type A such as confidence, commitment to work and how much of a priority it is.

(2) "Style of behaviour" assesses the behavioural aspects of type A, including time pressure and abruptness of behaviour.

(3) "Ambition" measures aspects of achievement needs.

The Cronbach alpha coefficient for total type A behaviour scores was 0.70 ($\alpha = 0.78$).

*2.2.1.5. Perceived locus of control.*This OSI scale produces three subscale scores that are summated to produce an overall perceived LOC score. The items in this scale ask about an individual's control or autonomy over a number of work situations:

- "Organizational forces" control measures the extent to which respondents perceive their influence over the "invisible" influences and constants within the organization.
- "Management processes" looks at how subjects' performance is appraised, how they get promoted or progress and their influence over these.
- "Individual influence" looks at a more general ability to have influence within the workplace.

The Cronbach alpha coefficient for total locus of control was 0.61 ($\alpha = 0.59$).

*2.2.1.6. Coping with stress.*This OSI scales asks respondents to rate the frequency of use of six kinds of stress-coping strategies:

(1) "Social support" looks at subjects' use of various means of informal and formal personal support networks.

(2) "Task strategies" looks at how individuals organize their work into manageable chunks and forward planning.

(3) "Logic" addresses respondents' adoption of an unemotional and rational approach to situations.

(4) "Home and work relationships" is concerned with the use of non -working time to dissipate stress.

(5) "Time management" measures aspects of work organization in terms of priority setting and use of delegation.

(6) "Involvement" is concerned with individuals' job commitment and acceptance of the situation in which they work.

The Cronbach alpha coefficient for coping strategies was 0.44 (0.93).

2.2.2. Dependent variables. The OSI provides two kinds of criterion measures, current state of health and job satisfaction.

*2.2.2.1. Current state of health.*This is in two parts, mental and physical ill health. These two aspects of well-being are measured using six-point Likert-type scales of symptom frequency:

(1) "Mental ill health" taps a range of cognitive aspects of strain.

(2) "Physical ill health" looks at the somatic symptoms of anxiety and depression.

The Cronbach alpha coefficient for mental ill health was 0.88 (0.74) and for physical ill health 0.85 (0.89).

*2.2.2.2. Job satisfaction.*This OSI scale produces five subscale scores which are summated to provide an overall job satisfaction score:

(1) "Achievement, value and growth" looks at respondents' perceived opportunities for advancement, how valued they feel and whether their job is rewarding.

(2) "Job itself" measures satisfaction with the type of work undertaken.

(3) "Organizational design and structure" looks at how well the organization functions.

(4) "Organizational processes" looks at perceptions of whether the organization facilitates or hinders getting things done.

(5) "Personal relationships" examines views about the quality of personal relationships at work.

The Cronbach alpha coefficient for total job satisfaction was 0.92 (0.93).

3. Results

3.1. Sources of pressure of Greek JHDs

In order to identify the particular stressors that exist among Greek doctors, their stress levels were assessed for each of the 46 sources of pressure of the OSI. Table I shows the means and standard deviations of the 10 most highly rated sources of pressure experienced by Greek JHDs mainly in their workplace.

The pressures which created the greatest strain to them were related to the following areas:

- the consequences of their likely mistakes (M = 4.41);
- the long working hours (M = 4.34);
- decreased psychological support from their superiors (M = 4.25); and
- the insufficient financial assistance and lack of other means necessary for working effectively (M = 4.25).

In order to test for differences between male and female JHDs, Tables II and III present the means and standard deviations for the top ten OSI sources of pressure for males and females respectively.

Source of pressure	Mean	SD
1. Implications of mistakes you make	4.41	1.43
2. Having to work very long hours	4.34	1.54
3. A lack of encouragement from superiors	4.25	1.37
3. Insufficient finance or resource to work with	4.25	3.17
4. Conflicting job tasks and demands in the role I play	4.24	1.49
5. Ambiguity in the nature of job role	4.21	1.53
6. The accumulative effects of minor tasks	4.13	1.28
7. Having to take risks	4.11	1.38
8. Rate of pay (including perks and fringe benefits	4.10	1.49
9. Covert discrimination and favouritism	4.09	1.42
9. Lack of consultation and communication	4.09	1.35
10. Making important decisions	4.08	1.49
10. Having to adopt a negative role	4.08	1.28

Note: 1 = very definitely is not a source ... 6 = very definitely is a source

Table I.
JHDs' top ten sources of pressure

Source of pressure	Mean	SD
1. Implications of mistakes you make	4.37	1.45
2. A lack of encouragement from superiors	4.30	1.41
3. Having to work very long hours	4.20	1.55
4. Ambiguity in the nature of job role	4.16	1.55
5. Conflicting job tasks and demands in the role I play	4.15	1.50
6. The accumulative effects of minor tasks	4.13	1.28
7. Insufficient finance or resources to work with	4.10	1.54
8. Lack of consultation and communication	4.07	1.36
9. Having to adopt a negative role	4.06	1.55
9. Making important decisions	4.06	1.55
9. Having far too much work to do	4.06	1.58
9. Inability to delegate	4.06	1.26
10. Having to take risks	4.03	1.42

Note: 1 = very definitely is not a source ... 6 = very definitely is a source

Table II.
Male JHDs' top ten OSI sources of pressure

	Mean	SD
1. Having to work very long hours	4.52	1.51
2. Implications of mistakes you make	4.45	1.41
3. Insufficient finance or resource to work with	4.42	2.67
4. Conflicting job tasks and demands in the role I play	4.36	1.48
5. Covert discrimination and favouritism	4.32	1.42
6. Rate of pay (including perks and fringe benefits)	4.30	1.46
7. Ambiguity in the nature of job role	4.27	1.52
8. Having to take risks	4.21	1.31
9. A lack of encouragement from superiors	4.19	1.32
10. Personal beliefs conflicting with those of the organisation	4.15	1.28

Note: 1 = very definitely is not a source ... 6 = very definitely is a source

Table III.
Female JHDs' top OSI ten sources of pressure

Comparing the most important factors which stressed male and female JHDs (Tables II and III), it can be observed that the "implications of mistakes you make", "having to work very long hours" and "conflicting job tasks and demands in the role I play" are among the first top five stressors for both genders. Nevertheless, for male doctors the "lack of encouragement from superiors" is the second source of pressure whilst that is lower in the list for the females (ninth). Similarly the "ambiguity in the nature of job role" was a greater source of pressure for the males than the female JHDs.

As regards the differences between males and females on the stressors, Table IV presents the OSI scores and the statistical analysis. Independent samples *t*-tests were carried out to test this hypothesis.

According to Table IV, there were no significant differences between men and women JHDs in terms of their current state of health (both mental and

OSI variables	Male JHDs Mean	SD	Female JHDs Mean	SD	*t*-test *t*	*p*
Sources of pressure						
Factors intrinsic to the job	34.58	7.60	34.45	7.09	0.16	NS
The managerial role	39.18	9.28	38.74	8.75	0.45	NS
Relationships with people	32.90	6.57	33.21	6.84	−0.43	NS
Career and achievement	29.96	6.89	32.37	7.51	−3.14	< 0.002
Org. structure and climate	37.11	8.89	38.12	8.23	−1.09	NS
Home/work interface	35.25	7.76	38.51	9.37	−3.59	< 0.000
General behaviour						
Attitude to living	23.09	5.62	22.40	5.70	1.14	NS
Style of behaviour	18.54	4.17	18.06	4.16	1.08	NS
Ambition	11.53	2.78	11.32	2.73	0.71	NS
Total type A	53.19	51.82	51.82	9.68	1.3	NS
Perceived locus of control						
Organisation forces	17.68	3.33	17.73	3.82	−0.13	NS
Management processes	13.50	3.25	14.74	3.39	−3.51	< 0.001
Individual influence	9.20	2.99	9.76	2.98	−1.75	NS
Total locus of control	40.39	6.29	42.24	7.3	−2.56	< 0.011
Coping with stress						
Social support	16.05	3.73	16.01	3.91	0.08	NS
Task strategies	25.90	5.74	26.55	5.85	−1.06	NS
Logic	12.05	2.73	12.09	2.90	−0.13	NS
Home and work relationships	16.73	3.99	16.81	3.86	−0.19	NS
Effective use of time	14.38	3.53	14.87	3.45	−1.32	NS
Involvement	23.02	3.72	23.72	4.68	−1.38	NS
Current state of health						
Mental ill health	60.27	12.43	61.25	12.08	−0.75	NS
Physical ill health	32.52	12.44	31.17	11.81	1.04	NS
Job satisfaction						
Achievement/value and growth	19.98	5.23	18.30	5.95	2.81	< 0.005
The job itself	14.87	3.76	13.99	4.34	2.04	< 0.043
Organisational design and structure	17.30	4.47	16.67	4.92	1.27	NS
Organisational processes	14.36	3.82	13.71	3.77	1.6	NS
Personal relationships	11.14	2.45	11.04	2.75	0.39	NS
Total job satisfaction	77.66	16.06	73.71	19.09	2.11	< 0.035

Table IV. Comparison between male and female JHDs on OSI

physical), type A behaviour and coping strategies. In terms of the sources of pressure, female young doctors in Greece reported significantly higher levels of stress relating to "career and achievement" ($p < 0.05$) and "home/work interface" ($p < 0.001$). Moreover, females scored higher on the "Total locus of control" subscale ($p < 0.01$). This means that women in general had more external locus of control than males. Finally, men had higher levels of job satisfaction than women ($p < 0.03$). Male doctors appeared to be more satisfied with their job than their female colleagues.

3.2 JHDs' specific sources of stress

In order to identify the specific sources of stress that are present especially for the Greek sample, the JHDs specific stressors questionnaire was constructed after interviews with sixty JHDs before the beginning of the main part of study. After content analysis 46 specific sources of stress were derived. Table V present the means (in descending order) and standard deviations on the ten most important JHDs' specific sources of stress.

According to Table V, the five most important stressors experienced by Greek JHDs referred to the consequences of their mistakes, the long working hours, the non-supportive supervisors, the lack of insufficient finance and resources, role conflict and role ambiguity.

3.3. An examination of the relationship between the dependent and independent variables

In order to examine the relationship between the dependent with the independent variables of the study, multiple regression analysis was used which related a given set of independent variables to a given dependent variable. In this study, the aim was to assess the optimum prediction of the dependent variable, i.e. stress outcomes in different sub-groups of Greek JHDs based on a set of independent variables, i.e. personality and job-related factors.

Before carrying out the regression, principal components factor analysis with orthogonal varimax rotation was used through SPSS for Windows in

Table V.
JHDs' top ten sources of stress (according to JHDs specific stressors questionnaire)

Source of pressure	Mean	SD
1. The perceived difficulty in getting funding to run a private practice after the completion of my training	5.01	1.22
2. The length of time between the first and the second year of training because there is no vacancy for the particular specialty in demand in the same hospital	4.95	1.21
3. The prospect of being unemployed for some periods due to the saturation of the medical profession and especially of certain specialities	4.89	1.27
4. I feel that the spectrum of medical knowledge is too wide for me to cope with	4.71	1.15
5. There is an imbalance between theoretical and practical hospital training	4.69	1.08
6. There are some insurmountable obstacles when doctors decide to pursue an academic career, e.g. a PhD degree	4.67	1.27
7. There is insufficient collaboration amongst the doctors of different specialties and different departments	4.64	1.09
8. The sudden/unforeseen development of a patient's health	4.61	1.32
9. Being over 31 or 32 and still in a stage of training	4.55	1.39
10. I feel that it is necessary to become a member of a hospital network or "clique" in order to succeed	4.46	1.44

Note: 1 = very definitely is not a source ... 6 = very definitely is a source

order to categorise the 46 sources of stress into coherent sets. The breakdown of data into a meaningful and manageable number of factors will serve as a preparatory step for the regression analysis, where the factors will be used as independent variables. Before the analysis, practical issues were examined such as the sample size, missing data, normality and outliers among cases (Tabachnick and Fidell, 1989). The Kaiser criterion suggests that only factors with eigenvalues greater than 1 are accepted (Tabachnick and Fidell, 1989).

The summary table below (Table VI) highlights the main results of each of the seven factors. The names given for each factor are subjective and are used for convenient reference.

Multiple regression analysis was performed in order to identify which of the independent variables of the study can best predict each of the OSI dependent variables. All the JHDs' specific factors were included in the regression equation since they all had high reliability coefficient. Stepwise multiple regression analysis was used in this study since it determines the independent variables that would give the optimum prediction equation for a dependent variable. Despite criticisms that it gives priority to statistical criteria for inclusion rather than theoretical criteria, it is the most commonly used approach to determining when and how the independent variables should be entered into the equation. The criterion of the ratio of cases to independent variables was met (ratio was 14.5:1, minimum is 5:1). Two criteria were used to determine the cut-off point for inclusion of the variables in the equation. All variables that contributed a minimum of 1 percent to the equation were included in the regression and the overall F ratio of the equation was significant at the 5 per cent level (Kerlinger and Pedhazer, 1973). As regards the latter, F was significant at the 1 per cent level for the equations.

In this study, stepwise multiple regression analyses were performed for both sexes and also the total sample to examine the relationships between the dependent variable (job satisfaction, mental health and physical health) and the independent variables (biographical data, the sources of pressure from the OSI and the factors of the specific stressor questionnaire). Only the most significant biographical data are considered as independent variables in the multiple regression analyses, that is, gender, age, years of experience, marital status and specialty.

The results of the stepwise multiple regression analysis are presented in Tables VII-IX. For each variable, the multiple regression coefficients, R^2, adjusted R^2 and the standardized regression coefficients (beta) are displayed in order to suggest the nature of the relationship following complete substitution of all variables.

3.4. Predictors of mental ill health

Table VII shows the stepwise multiple regression of the independent variables against the overall mental health index for all the sample of JHDs

Factor number/name	Per cent variance on factors
Factor one: demands of the profession (ten items)	
Fear of starting a family because of the long work hours associated with my work/postponement or cancellation of wedding plans due to the long period of training	0.767
There is a lack of psychological support for JHDs	0.715
Colleagues being indifferent and insensitive towards their work and patients	0.704
Daily completion of detailed patients' records	0.621
Adequate attainment of medical skills training to my private practice	0.605
The frustration felt when I cannot treat a patient	0.604
Shortage of educational opportunities and appropriate means in order to have access to medical information (libraries and computers)	0.564
The lack of freedom to choose specialty or style of practice (private or hospital) because of objective difficulties	0.575
Nursing staff does not always work in harmony	0.551
Shortage of sleep	0.549
Factor two: hospital working conditions (eight items)	
Funding is not allocated according to the real needs of the hospital	0.717
The danger of contagious diseases	0.651
The sudden/unforeseen development of a patient's health	0.651
Insufficient space in the hospital (not enough rooms for patients, offices, doctors' common rooms)	0.615
Negative attitudes towards me from patients and relatives because I am not a qualified doctor	0.587
Sometimes laboratory examinations are unreliable	0.561
The perceived difficulty in getting funding to run a private practice after the completion of my training	0.556
Hospital management is administrative and does not often relate to the medical profession	0.527
Factor three: relationships with patients and their relatives (eight items)	
Patients and patients' relatives exploit my good will to help (demanding and interfering with my work)	0.732
The perception of some patients and their relatives that in order to be competent at my job they have to bribe or promise me gifts	0.677
The struggle to combine a number of roles (e.g. hospital versus home conflicts)	0.651
Lack of systematic information given by medical institutions and journals	0.580
Having inconvenience patients by referring him/her for some examinations in other hospitals/centres because of the lack of adequate equipment in my hospital	0.580
Situations when the patient is a relative or a friend of mine	0.578
Revealing information about health progress to dying patients/giving false hopes to dying patients	0.559
I am not allowed to take initiatives even for minor issues	0.557

(*continued*)

Table VI.
Factor analysis for the JHDs specific stressors (68.3 per cent of the variance)

Factor number/name	Per cent variance on factors
Factor four: education/training (six items)	
The length of time between the first and the second year of training because there is no vacancy for the particular specialty in demand in the same hospital	0.732
The limited Greek medical bibliography and the very expensive foreign one	0.638
I feel that the spectrum of medical knowledge is too wide for me to cope with	0.542
There are some insurmountable obstacles when doctors decide to pursue an academic career, e.g. a Ph.D. degree	0.537
There is an imbalance between theoretical and practical hospital training	0.536
Factor five: gender issues (six items)	
Concern about the likelihood of a scandal in the mass media regarding the hospital	0.737
Enjoyment of privileges because of gender or family situation amongst the colleagues	0.734
The "chase" of cases from colleagues in order to gain more experience	0.675
Patients' attitudes towards the staff because of my gender	0.597
Discriminating attitudes towards me by superiors because of my gender	0.531
Factor six: promotion opportunities (eight items)	
Being over 31 or 32 and still in a stage of training	0.769
Sometimes there is a prolonged period of vocational training of doctors and a delay of qualification	0.689
There is partial or major shortage of necessary medical equipment/sometimes, the shortage of even necessary materials such as syringes, bandages, gloves etc.	0.593
Factor seven: problematic procedures (two items)	
The scientific mediocrity amongst my colleagues	0.724
There is a long bureaucratic procedure for patients' admission and delays in the results of patients' examinations	0.624

Table VI.

and female and male doctors. For the total sample nine variables, including personality variables, specific stressors, and coping strategies were all significantly predictive of mental ill health or lack of well-being (59 per cent of the total variance). The final F was significantly different from zero $F(9, 326) = 50.09$ at $p < 0.000$. Total type A behaviour was the most important predictor explaining 36 per cent (35 per cent adjusted) of the total equation. The positive sign in the beta value implied that JHDs who were at risk for mental ill health were those who displayed more type A behaviour patterns. The next predictor was the specific stress factor "relationships with patients and their relatives" reported by the Greek JHDs and adding 7 per cent to the variance in the dependent variable. This included stressors deriving from patients and relatives exploiting the JHDs' good will to help and inconvenience patients by referring them to other hospitals for examinations because of inadequate equipment in that hospital. It is

Step	Variable	Multiple R	R^2	Adjusted R^2	Beta
Female JHDs					
1	Total type A	0.62	0.38	0.38	0.29
2	Demands of the profession	0.68	0.47	0.46	0.33
3	Total locus of control	0.74	0.55	0.54	0.33
4	Relationships with patients and their relatives	0.79	0.62	0.61	0.24
5	"Buy time" and stall the issue	0.80	0.64	0.63	0.20
6	Look for ways to make the work more interesting	0.81	0.65	0.64	−0.15
7	Years of experience	0.82	0.67	0.65	0.11
Male JHDs					
1	Total type A behaviour	0.59	0.34	0.34	0.20
2	Relationships with patients and relatives	0.64	0.41	0.41	0.25
3	Demands of the profession	0.68	0.47	0.46	0.25
4	Try to recognise my own limitations	0.71	0.50	0.49	0.25
5	Problematic Procedures	0.73	0.53	0.51	0.21
6	Promotion opportunities	0.73	0.54	0.52	0.14
7	Not having enough work to do	0.74	0.55	0.53	−0.22
8	Overpromotion – being promoted beyond the level of my ability	0.76	0.57	0.55	0.21
Total sample					
1	Total type A behaviour	0.60	0.36	0.35	0.21
2	Relationships with patients and relatives	0.65	0.43	0.42	0.22
3	Demands of the profession	0.69	0.49	0.48	0.36
4	Total locus of control	0.73	0.54	0.53	0.21
5	"Buy time" and stall the issue	0.74	0.55	0.55	0.14
6	Problematic procedures	0.75	0.56	0.55	0.11
7	Hospital working conditions	0.76	0.57	0.56	0.12
8	Deal with the problem immediately as they occur	0.76	0.58	0.57	0.13
9	Look for ways to make the work more interesting	0.77	0.59	0.57	−0.12

Notes: Final $F = 50.09$, $p < 0.000$; males final $F = 28.27$, $p < 0.000$; females final $F = 39.81$, $p < 0.000$

Table VII.
Stepwise multiple regression analysis of factors loading on to OSI mental ill health for male, female and total sample of JHDs

important that among the first three variables that accounted for 49 per cent of the whole variability were the JHDs' specific stressors found in the factor analysis. This implied that the more JHDs felt stressed about these problems the higher their mental ill health. Moreover, those JHDs who had an external locus of control and used this type of coping strategy were more likely to have higher levels of mental ill health.

For both males and females, the type A behaviour pattern was the most significant predictor of mental ill health explaining 34 per cent and 38 per cent of the total variability in the dependent variable. In addition, the specific factors for the Greek JHDs "relationships with patients and relatives" and the "demands of the profession" were found among the most important predictors of mental ill health for both genders.

Step	Variable	Multiple R	R^2	Adjusted R^2	Beta
Female JHDs					
1	Relationships with patients and relatives	0.52	0.27	0.26	0.46
2	Total type A behaviour	0.65	0.42	0.41	0.33
3	Demands of the profession	0.68	0.47	0.45	0.27
4	Promotion opportunities	0.71	0.51	0.50	0.23
5	Look for ways to make to work more interesting	0.73	0.53	0.52	−0.20
6	Education/training	0.74	0.55	0.53	0.14
Male JHDs					
1	Total type A	0.57	0.33	0.32	0.48
2	Relationships with patients and relatives	0.62	0.39	0.38	0.22
3	Promotion opportunities	0.65	0.43	0.42	0.23
4	Demands of the profession	0.68	0.46	0.45	0.21
5	Seek support and advice from my superiors	0.69	0.47	0.46	−0.23
6	Having far too much work to do	0.71	0.50	0.48	0.19
7	Problematic procedures	0.72	0.51	0.49	0.13
Total sample					
1	Total type A	0.53	0.29	0.28	0.35
2	Relationships with patients and relatives	0.62	0.39	0.39	0.30
3	Demands of the profession	0.66	0.43	0.43	0.29
4	Promotion opportunities	0.68	0.47	0.46	0.22
5	Look for ways to make the work more interesting	0.69	0.48	0.47	−0.17
6	Having far too much work to do	0.71	0.50	0.49	0.21
7	Problematic procedures	0.72	0.51	0.50	0.15
8	Seek support and advice from my superiors	0.73	0.53	0.51	−0.98
9	Education/training	0.73	0.54	0.52	0.11
10	Hospital working conditions	0.74	0.54	0.53	0.10
11	Not having enough work to do	0.74	0.55	0.53	−0.12

Notes: Final $F = 34.80$, $p < 0.000$; males final $F = 25.63$, $p < 0.000$; females final $F = 28.62$, $p < 0.000$

Table VIII. Stepwise multiple regression analysis of factors loading on to OSI physical ill health for male, female and total sample of JHDs

3.5. Predictors of physical ill health

Table VIII presents stepwise multiple regression of the independent variables against total physical ill health scores. For the total sample, eleven steps proved to be significant in this regression, altogether accounting for 55 per cent (53 per cent adjusted) of the variability in physical ill health. It is worth noting that the three most important predictors of physical ill health were the same that predicted mental ill health. The most important predictor of physical health is again total type A behaviour, which explains 29 per cent of the total variance in physical ill health. Many studies have been conducted about the link between type A behaviour pattern and health problems. Although the causal direction of that relationship has not been proved, it has been suggested that under certain conditions and with other contributory traits, type A behaviour can lead to heart disease, hypertension, coronary artery disease (CAD) and myocardial infarction. Next, explaining a further 10 per cent is the specific factor

Step	Variable	Multiple R	R^2	Adjusted R^2	Beta
Female JHDs					
1	Demands of the profession	0.26	0.07	0.06	0.26
2	Having far too much work to do	0.37	0.14	0.13	0.82
3	Lack of power and influence	0.58	0.34	0.33	0.68
4	Hospital working conditions	0.60	0.36	0.34	0.15
Male JHDs					
1	Gender Issues	0.31	0.10	0.09	0.39
2	Demands of the profession	0.43	0.18	0.17	0.34
3	Having far too much work to do	0.54	0.29	0.28	−0.37
4	Hospital working conditions	0.57	0.33	0.31	0.19
5	Relationships with patients and relatives	0.59	0.34	0.32	−0.14
Total sample					
1	Demands of the profession	0.28	0.08	0.07	0.27
2	Having far too much work to do	0.38	0.14	0.14	0.57
3	Lack of power and influence	0.47	0.22	0.21	0.32
4	Gender issues	0.52	0.27	0.26	0.23
5	Hospital working conditions	0.54	0.29	0.28	0.16
6	Problematic procedures	0.56	0.31	0.30	0.15
7	Total locus of control	0.57	0.32	0.31	−0.16
8	Look for ways to make the work more interesting	0.58	0.33	0.31	0.11

Notes: Final $F = 19.75$, $p < 0.000$; males final $F = 18.13$, $p < 0.000$; females final $F = 20.19$, $p < 0.000$

Table IX.
Stepwise multiple regression analysis of factors loading on to OSI job dissatisfaction for male, female and total sample of JHDs

"relationships with patients and relatives" and "demands of the profession" adding a further 3 per cent to the total variability. Another stress factor related to the "promotion opportunities" for the Greek JHDs explained a further 2 per cent of the total variance.

The physical ill health of female and male JHDs was predicted by several variables, including personality, sources of pressure, specific stress factors of the JHDs and coping strategies. A similar pattern emerged for the two groups, with four variables appearing as the most important predictors for both. "Total type A behaviour" was the most important for the males, explaining 33 per cent of the total variance (32 per cent adjusted) and "relationships with patients" the most important for females, explaining 27 per cent of the total variance (26 per cent adjusted). The other three were the" demands of the profession" and the "promotion opportunities".

3.6. Predictors of job dissatisfaction

Stepwise multiple regression of the independent variables against the overall job dissatisfaction indicates that for the total sample 33 per cent (31 per cent adjusted) of the variability in job dissatisfaction was predicted by knowing scores on these variables which included Greek JHDs' specific occupational stressors, sources of pressure, and less importantly personality variables and

coping strategies. R for regression was significantly different from zero in each step and the overall was $F(8, 326) = 19.75$, $p < 0.000$. The most important job-related predictor was the demands of the job, although it accounted for only 8 per cent of the total variability in job dissatisfaction. The more the demands of the profession the more the JHDs' job dissatisfaction. It is interesting that the most important predictor was one of the specific factors reported by the JHDs themselves.

When regression analysis was carried out separately for males and females it was found that the predictors of job dissatisfaction are similar for males and females (apart from "gender issues") although their relative importance varies. The JHDs' specific stressors found in the factor analysis and the sources of pressure were the predictors of job dissatisfaction, predicting 34 per cent (32 per cent adjusted) and 36 per cent (34 per cent adjusted) of the total variance for males and females respectively. It is interesting that, for males, the most important factor was "gender issues", explaining 10 per cent of the total variability. This factor includes items such as "enjoyment of privileges because of gender or family situation amongst colleagues" and "discriminating attitudes towards me by superiors because of my gender". This implies that the more stressed the JHDs were for this issue, the less their job satisfaction. For women, the most important predictor was "demands of the profession", although it explained only 7 per cent of the total variance. The predictors of job dissatisfaction common to both males and females were the "demands of the profession", "long working hours" and "hospital working conditions".

4. Discussion

The number one stressor for the specific sample of JHDs in the study was the implications of their mistakes. It was apparent that JHDs felt a fear of making a mistake and the possible publicity about this in the mass media. Chatzioannidou (1996) pointed out that the number of patients who suffer damages due to malpractice and proceed to sue doctors has increased and is constantly rising. During the last decade in Greece, the mass media, especially the TV channels have repeatedly investigated suspicions of medical errors.

The introduction illustrated evidence maintaining that hospital doctors work in stressful environments. The findings of the present study showed that JHDs who are not familiar with such an environment experienced additional sources of stress. As reported in the media, Greek JHDs are among the hospital doctors who suffer mostly from the adverse working conditions in the hospitals where they spend more hours than doctors of any other rank (Pipili, 1996). Furthermore, the shortage of nursing staff and especially of specialized nurses aggravates the whole problem for JHDs and creates additional workload (Niakas, 2003). A considerable number of studies have shown that problematic general facilities for junior doctors in the hospitals, such as those of eating and sleeping, are directly associated with increased levels of stress and limited

opportunities for social interaction (Firth-Cozens, 1987, 1989; Dudley, 1990; British Medical Association, 1992).

The problem of long working hours has been quoted as the second most common source of stress for junior doctors according to the OSI. This particular stressor represents the most widely quoted stressful situation for JHDs, having been defined in the literature as the "pre-residency syndrome" or the "house officer syndrome" (Small, 1981). Furthermore, consequences of medical errors and high workload were reported as sources of stress in a more recent study with a general sample of Greek hospital doctors (Antoniou and Antonodimitrakis, 2003)

Relationships with superiors were a "sensitive" area for JHDs. In fact, according to the sources of stress stated, lack of acknowledgement and praise from superiors were among the top three stressful situations for young doctors. Moreover, several JHDs of both genders reported that receiving feedback from supervisors was particularly important for them giving them strength to continue their work more effectively. They also added that sometimes the lack of concern of the part of the supervisors is so much that JHDs are not certain whether they have really made a mistake. It has been found that the personality characteristics of JHDs' supervisors make a great impact on their decision regarding the selection of a specialty (Thomaides *et al.*, 1982).

According to Law 2071/92 No. 60, responsibility for the training of JHDs lies not only with the supervisors and consultants of the clinics but also with the scientific committees of the hospitals. In many cases, these committees are not able to design a complete training programme for JHDs since their members have little communication with JHDs and are unaware of their real difficulties and needs. For these reasons, the establishment has proposed unified training/educational centres within the university hospitals for the total number of specialties throughout Greece.

Moreover, a significant number of JHDs also considered insufficient finances or resources as a source of occupational stress. This problem is closely interwoven with the inadequate training of junior doctors as their wages do not correspond to their increased educational needs. It is worth pointing out that the wages of Greek hospital doctors have been frozen for over a decade. When the Greek National Health System was founded 15 years ago, a specific rate of payments for hospital doctors was laid down, but this is now ignored. It has been admitted that doctors' wages cannot cover expenses of continuous professional development (participation in medical conferences, subscription to professional journals, etc.). This can have consequences for the self-respect of doctors since they often rely on pharmaceutical companies for these expenses (Pipili, 1996).

This survey also demonstrated that the inadequately defined roles are considerably stressful for Greek JHDs. For years, JHDs attempted to determine and legislate a clear job description. The existing informal job description is

frequently the cause of conflicts, not only between doctors from different ranks, but also between doctors and the nursing staff. Overall, the lack of a clear job description has a negative impact on the scientific orientation of JHDs, most of whom spend a lot of time in jobs irrelevant to their job description.

Comparing the most important sources of stress for male and female JHDs, both genders reported that implications of mistakes, long working hours, conflicting job tasks and demands in their role were among the first top five stressors. In addition, there were some stressors that were only reported by females such as the "covert discrimination and favouritism" which may be related to the gender segregation that some female JHDs complained of, in the interviews (Antoniou, 1999a). Moreover, "rate of pay" was more stressful for women confirming young women doctors' views in the interviews arguing that one of the primary motives in choosing medicine was high levels of earnings.

According to the specific stressors questionnaire that was constructed specifically for use with the Greek sample, Greek JHDs are stressed about their career choice, unemployment, and lack of training. Even before completing their training, they are in a dilemma about the type of practice they will choose. They admitted that they felt trapped by their options, since the objective problems were equally serious both in NHS and private practice. More analytically, if a newly qualified doctor decides to run a private practice after the completion of his/her training, it is necessary to ensure funding since equipping a modern surgery is quite expensive. Moreover, taxes are quite high for doctors generally, and especially for new professionals it is difficult to cover. It has been proposed by the doctors' associations that new doctors should be exempted from tax during their first (e.g. five) years of practice.

On the other hand, JHDs who prefer to work in the National Health System (NHS) have to wait for several years, as the appointments to new positions are quite few and the mobility between different ranks in the hospitals almost stagnant. It is generally accepted that the opportunities for a hospital career for new doctors in the European Community are extremely limited (Verschuren *et al.*, 1995). In addition, the new Bill which has been prepared by the Greek Ministry of Health, proposes that from here on, the newly appointed doctors in the NHS will no longer be permanent employees but will be assessed at fixed periods. Thus, the doctors in lower ranks feel constantly insecure, since they might well lose their job at any time.

Regarding unemployment, the majority of Greek JHDs felt that they would be unemployed in the future primarily due to the increased number of graduates of medicine during the last decade. Over two decades ago, Greek doctors occupied the highest position in the social taxonomy of all professions in terms of earnings and social prestige (KEPE, 1976). Undoubtedly, the young doctors nowadays have to cope with more obstacles in finding employment that suits their needs in comparison with older colleagues. It has also been stated that the anxiety due to the fear of unemployment can reduce the coping

ability of JHDs in relation to specific aspects of their work (British Medical Association, 1992).

The data regarding the trend of the annual increase of doctors' unemployment (i.e. 175 doctors) in the area of Greater Athens, where the majority of Greek doctors practise, is quite discouraging. According to the Athens Medical Association (1998), in December 1994, the proportion of unemployed doctors was 5.8 per cent (940 doctors) while in October 1997 it had risen to 8.1 per cent (1,475). If this trend continues, the unemployment percentage is expected to reach approx. 11 per cent in three years and in eight years it may approach the 13.5 per cent of the total population.

As far as the lack of training is concerned, 25 out of 37 specialities in Greece are considered saturated and four of them (i.e. general, work and social medicine, and public health) have a very low rate of completion. This implies a lack of long term policy for many years as regards the training of new doctors (Ifantopoulos, 1985). Surprisingly, every year a phenomenon is observed: a larger number of positions are announced for the already saturated specialities than for those that need more staff.

Research evidence (Dardavesis *et al.*, 1991; Fakiolas, 1997) has shown that the complete lack of vocational guidance and the relativity of the criteria for the selection of young Greek doctors have resulted in the unbalanced accumulation of them to certain specialities. However, Fakiolas (1997) demonstrated that the initial decisions of medical students concerning the selection of specialty and the type of practice are subject to considerable alterations during their university studies. There appears to be a steady tendency for the graduates of medicine to choose from a quite limited number of specialities (e.g. surgery, pathology, paediatric, cardiology, gynaecology and orthopaedic) which are considered the most popular ones for various reasons (KEPE, 1976; Laoutari and Molivda, 1980).

A range of predictors of job dissatisfaction, mainly including sources of pressure and JHDs' specific stressors were revealed in the multiple regression analysis. The major predictor of job dissatisfaction and its subscales for the total group of JHDs was the "demands of the profession". High demands such as "fear of starting a family because of the long hours associated with work" and "lack of psychological support for junior hospital doctors", predicted lower job satisfaction. The same stressor was the most important predictor for the female and the single JHDs' job dissatisfaction and second most important for the males with first being "gender issues".

Likewise, it appeared that being stressed over the demands of the medical profession and believing that females are usually favoured by superiors due to their gender and family circumstances, led to lower job satisfaction. However, the total contribution of the factors to the variance of job dissatisfaction was

not very high, implying that there were other explanatory variables not included in this study.

In addition, it was found that type A behavioural style was the major indicator of mental ill health for the total sample, male and female JHDs. According to this, professionals who exhibited behaviours such as excessive drive and ambition and increased control were more likely to have symptoms of mental illness. Other predictors with a positive association with mental ill health included additional stressors. It is important that in the case of mental ill health, a substantial amount of the total variance was predicted by the various variables.

Finally, type A behaviour predicted the physical health of the total sample and male JHDs. The professionals who exhibited these types of characteristics tend to manifest symptoms of physical ill health, such as headaches, indigestion, feeling of tiredness and decrease of sexual interest.

It is of great interest that among the major predictors of the above dependent variables were the JHDs' specific stressors which reflected the opinions volunteered by the JHDs' themselves and were not included in pre-constructed standardised questionnaire.

Regression analysis showed that the most significant predictors of low levels of job satisfaction of the sample were: demands of the profession, great volume of work and lack of power and influence. It is evident from the results of the regression analysis presented above, that concerning the total sample, for the dependent variable of job dissatisfaction the best predictor was "demands of the profession". Interestingly, individuals with a type A behaviour pattern were more likely to score higher on both mental and physical ill health.

The first factor from the specific stressors found in the present study, "demands of the profession" constituted one of the stronger predictors for all dependent variable and especially for job dissatisfaction. It should be noted that the item with the highest loading in this factor was the delay of JHDs to start a family due to the demanding work schedule. An additional predictor for job dissatisfaction was the volume of work, whilst for mental and physical ill health, it was the relationships with patients. In addition, total type A behaviour was the best predictor for both of these variables, thus confirming the significant effect of this behaviour on individuals' general well-being.

The importance of this predictor is justified due to the general difficult conditions of the JHDs' training with the most significant ones being the "daily completion of detailed patients' records", "the frustration felt when I cannot treat a patient" and the "shortage of sleep", as reported in the JHDs' interviews. In addition, there is a strong case linking the lack of cooperation with the nursing staff with stress. These demands have in turn, a knock on effect on the personal life of the JHDs, in that they delay starting a family. On the other hand, it should be explained that many JHDs did not have problems with additional demands, when they were relevant to their job. The most important difference

in the predictors between males and females was detected in job dissatisfaction. For males it was gender issues that explained more of the variance, whilst for females it was the demands of the job.

The most important predictors for JHDs' mental and physical ill health included: total type A behaviour, relationships with patients and their relatives, and demands of the profession. There is a growing body of evidence suggesting that type A behaviour with characteristics such as competitiveness, abruption of speech and gesture and excessive time consciousness, has an adverse effect on the mental state of the individuals and causes problems in the communication with colleagues and family members (Cooper *et al.*, 2001). The next predictor was the specific stress factor "relationships with patients and their relatives" reported by the Greek JHDs. This included stressors deriving from patients and relatives exploiting the JHDs' good will to help and inconvenience patients by referring them to other hospitals for examinations because of lack of adequate equipment in that hospital. This is an important finding which was confirmed throughout the stages of the study. In the interviews it was maintained by both males and female JHDs that what they called, "patients' harassment" existed (Antoniou, 1999a).

It should be noted that since JHDs are those of the hospital staff who deal with patients more frequently and for longer periods, they are the receivers of complaints, mainly regarding the conditions of the hospital and other factors that JHDs are not responsible for. The personality variable of total locus of control, and the coping strategy of "buying time and stalling the issue" were among variables which were predictors of mental ill health. According to these results, those JHDs who had an external locus of control and used this type of coping strategy were more likely to have higher levels of mental ill health. It is easy to understand why those individuals who believe that they have little personal control of events experience lower levels of mental health.

In summary, this study revealed that the five most important stressors experienced by Greek JHDs referred to the consequences of their mistakes, the long working hours, the non-supportive supervisors, the lack of insufficient finance and resources, role conflict and role ambiguity. It has been shown that, in general, the existing working conditions in teaching hospitals that Greek JHDs face on a daily basis are far from supportive for their training and practice. The heavy schedules of junior staff constitute a source of many adverse effects such as the anxiety for likely mistakes. Furthermore, problematic relationships with the superiors play a critical role in their decisions regarding their future career plans.

Although many JHDs confirmed the academic competence of their superiors, they were more doubtful about their teaching ability. The dilemma of choosing between a post in the NHS and a private surgery was a constant stress factor for young doctors since both choices have significant disadvantages. Greek JHDs also emphasised the need for national planning concerning their training

in order to cope with problems such as the increase in the number of doctors in the last decade, the concentration in few "popular" specialities and certain University hospitals, as well as a specific job description for junior doctors and a more reasonable rate of payments.

The implications of these results for policy and practice are many (Cooper, 1998; Cooper and Palmer, 2000). Formal training programmes for JHDs of all specialties should be organized, clear job description should be legislated, rates of pay should be improved so that doctors become financially independent. Since career prospects were one of the main stressors for young doctors, career guidance programmes should help future doctors avoid oversubscribed specialties and therefore contribute to the decrease of waiting lists.

Concerning the Greek junior doctors, a number of organisational changes can be suggested in order to reduce levels of stress and facilitate their hospital duties. Apart from an updated code of ethics, which can be planned in order to respond to the real needs of health professionals and patients, there is also a need to determine the training programme for JHDs in each specialty. There is no such unified educational policy for each specialty in Greece. The lack of certain criteria for the evaluation of the given training, results in an increasing dependence of JHDs on consultants in every clinic. In fact, a standard for the training of JHDs is fixed occasionally and it does not take into account their real educational needs. Several JHDs admitted that, not infrequently, they had to come into conflict with their colleagues in order to participate in certain medical procedures (e.g. a difficult diagnosis or a surgery). This situation has consequences for the relationships between JHDs which, particularly in certain specialties, are usually reported as quite competitive.

A well-organized national planning of JHDs' training would contribute to the decrease of the waiting lists for some specialities which as this study showed, constitute the second specific source of stress for the Greek doctors. The existence of a unified National programme for the JHDs' training, would decrease the period of waiting for vacancies in certain posts (especially in the case of university hospitals). Additionally, the existence of systematic training programmes would provide JHDs with complete information about educational targets and the practical tasks which they ought to carry out in each specific year of their training (Athanassiades, 1985). A national plan in this area could also include the possibility for JHDs to participate in a rotation system in different clinics or even hospitals, which would enable them to obtain more experience in a greater spectrum of skills. Following this approach, a balance between theoretical and practical training could be achieved.

The emphasis on the general mental health status of junior doctors is inevitable since it has a direct impact on the effective treatment of patients. The evidence presented in this study can be interpreted in the light of the current health system in Greece that is continuously under scrutiny. The need to take

the appropriate measures in order to assist the junior medical staff to overcome their sources of stress is paramount.

Note

1. Alpha coefficients of the subscales of the present study are presented in parentheses.

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