

# Individual and organizational predictors of depression in general practitioners

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## SUMMARY

**Background.** High levels of stress and depression are seen in both general practitioners (GPs) and hospital doctors, and this has implications for patient care. It is therefore important to discover the individual and organizational causes of elevated symptoms so they can be tackled.

**Aim.** To discover the relative importance of individual characteristics measured 10 years earlier compared with current organizational stressors in predicting depression in GPs.

**Method.** Longitudinal questionnaire study, using data from those of the original cohort of 318 medical students who are now GPs ( $n = 131$ ), considering perceptions of current stressors and comparing through regression analyses the relative strength of early personality and mood with current organizational factors of sleep, hours worked, and practice size in predicting current depression levels.

**Results.** There were 22 (17%) stressors scoring above threshold for depression. Relationships with senior doctors and patients are the main reported stressors, followed by making mistakes and conflict of career with personal life. The predictors of symptom levels varied for men and women. In men, depression and self-criticism as students, and current sleep levels; and in women, sibling rivalry and current alcohol use, were the main predictors: in men, 27% of the variance was accounted for by early dispositional factors alone compared with 14% in women. A model is suggested linking sleep loss with workplace stressors, self-critical cognitions, and depression.

**Conclusion.** Interventions can be made throughout training, targeting self-criticism and recognizing early depression, while later addressing the organizational stressors, particularly work relationships and sleep patterns.

**Keywords:** general practitioners, stress, depression, questionnaire survey.

## Introduction

HIGH levels of stress and depression have been reported in junior hospital doctors,<sup>2-3</sup> consultants,<sup>4</sup> and general practitioners (GPs)<sup>5-7</sup> in Britain<sup>1-2</sup> and North America.<sup>3</sup> Alcohol abuse is similarly seen as a particular problem in doctors,<sup>8</sup> and as highly related to depression.<sup>9</sup> Such findings have great importance for the doctors concerned, but also for the care of patients owing to links between raised stress and depression levels and lower job performance.<sup>10</sup>

A large number of studies have considered the job-related causes of stress in medicine, though very few specifically consider the relationship of job factors to depression. Results indicate that overwork and lack of sleep, dealing with death, making mistakes, dealing with senior doctors, and loneliness are all implicated in levels of stress and depression.<sup>11-13</sup> A longitudinal study of

GPs, covering the period of the introduction of the new contract, suggested that this event raised stress levels.<sup>7</sup> It is also reported that, for them, difficult patients, staff relationships, and 24-hour responsibility are seen as particular stressors.<sup>14</sup>

However, there are also individual factors involved in the experience of both stress and depression, and it is important to seek these as well if we are to fully understand the process and intervene appropriately. Certainly, longitudinal research and reviews of work and life stress in non-medical populations have emphasized the high correlation in well-being measured over time.<sup>15-16</sup>

In addition, the role of individual variables, such as personality and early experience, have been reported.<sup>17-19</sup> In particular, self-criticism has been found to be important in terms of predicting depression in young doctors,<sup>19-20</sup> and is itself predicted by perceptions of early family relationships.<sup>21</sup> Poor work relationships correlate highly with depression<sup>1,2</sup> are a feature of some general practices,<sup>22</sup> and have been shown to be predicted by difficulties in early family relationships:<sup>19</sup> problematic relationships with siblings might, for example, resonate with those in the workplace.<sup>23</sup>

This study considers the levels and perceived sources of stress in GPs and compares the relative importance, in terms of predicting depression in male and female doctors, of present work-related factors (hours, sleep, practice size) with individual ones (mood, self-criticism, sibling rivalry) measured 10 years earlier, and with current use of alcohol as a means of coping. By doing this, it may be possible to identify precursors of later depression in doctors as well as present job-related factors, and so be more accurate in planning interventions.

## Method

### Subjects

The doctors included in the study were those 318 fourth-year medical students assessed in 1983-4 (Time 1) for stress and depression, personality, and early relationships and experiences: initial response rate of 78.5%.<sup>24</sup> In the present study (Time 2), addresses of 302 subjects were traced via the medical register.

### The questionnaire

This consisted of many of the previous measures used in earlier assessments,<sup>2,12,24</sup> and some new ones. The measures reported in this paper are listed below:

**Depression.** This was measured at Time 1 using the depression scale from Zung;<sup>25</sup> however, it was felt that there was too much overlap at Time 2 between its items and aspects of the jobs (e.g. 'My life is pretty full'), and so it was changed to the depression scale (SCL-D; range = 0-4) of the well validated Symptom Check List 90,<sup>26</sup> using the item mean. As previously, the cut-off of 1.5 or above was used<sup>2</sup> as the threshold for potential depression, being one standard deviation below the mean of a clinically depressed patient sample.

**Alcohol use.** This was measured by a single item from a coping questionnaire, which asked to what extent each item listed (in this case alcohol) was used to cope with stress. The scale was 0 (never), 1 (occasionally), 2 (frequently).

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**Personality.** Self-criticism was measured as students using the five highest loading items from a scale (1–7) devised and shown to be valid by Blatt *et al.*<sup>27</sup>

**Siblings.** Data on the number of siblings and on family relationships were gathered at Time 1. Sibling rivalry was measured using an item from the Family Attitudes Questionnaire<sup>17</sup> (scale 1–7), developed and tested with United Kingdom doctors.<sup>19,21</sup>

**Work.** Subjects were asked about practice size and number of hours worked in the past week and number of hours slept in the past 48 hours: longer than this reduces accuracy and it was the effects of recent sleep loss that needed to be measured as a predictor of mood.<sup>10</sup> Potential stressors were measured quantitatively using the Sources of Stress questionnaire,<sup>2</sup> requiring completion of the levels of stress (scale 0–4) and frequency (scale 0–3) of stressors, and qualitatively using their Stress Incidents Record's [SIR]<sup>13</sup> descriptions of a stressful event within the last month, along with a Likert scale (1–4) to estimate levels of stress caused.

### Analyses

Non-parametric independent Mann-Whitney tests were used to investigate differences between two independent groups; Spearman's correlations for relationships between variables, and stepwise regression analyses with Time 1 assessments entered prior to present (Time 2) assessments were also used.

### Results

There were 224 (72%) responders overall, of whom 131 had become GPs: 76 men (58.0%) and 53 (40.5%) women, and two who did not state their sex. Though it is not possible to provide an accurate response rate of GPs without knowing the proportion of GPs in those who didn't respond, it must be between 63% and 100% and so acceptably high. Of the 71% who supplied their grade, 58 (64%) were principals: 43 (82%) of the men and 15 (41%) of the women. All but four of the responders reported having at least one sibling.

There were no significant differences in depression between this group of GPs and other doctors in the total cohort ( $U = 5804$ ;  $P = 0.3$ ), nor between Time 1 scores of responders and non-responders ( $U = 10603$ ;  $P = 0.5$ ). In the present sample, 22 (16.8%) were above threshold for depression on the SCL-D, with 9.9% having some suicidal ideation: 4.6% more than 'occasionally'. Eighty-nine (68%) reported using alcohol to cope with stress, and nine (7%) of these reported using it 'frequently'. Women were not significantly more depressed than men ( $U = 2175$ ;  $P = 0.36$ ), but were significantly less likely to be principals ( $\chi^2 = 6.92$ ;  $P < 0.05$ ) and worked significantly fewer hours ( $U = 674$ ;  $P < 0.001$ ).

The results of the sources of stress questionnaire are set out in Table 1, listed in order of severity. The table shows the perceived levels and frequencies of stressors and their relationships to depression. Relationships with senior doctors created the highest levels of stress (though infrequent), followed by making mistakes, and conflict of career with personal life. The most frequent stressors are dealing with the home-work interface, overload, and dealing with patients' relatives. Depression is highly related to the level of stress perceived in the home-work interface, overload, mistakes and litigation, conflict of career with personal life, and job responsibility; and to the frequency of conflict, overload, home-work interface, and responsibility.

There were 105 qualitative accounts of stressors occurring within the last month of the study, which were coded as described previously<sup>13</sup> into the categories set out in Table 2. Any

with fewer than five accounts have been omitted. By far the largest category involved dealing with patients (35%); followed by making mistakes (10%), dealing with patients' relatives (9%), and relationships with peers (6%). The most stress was seen as caused by dealing with senior doctors, followed by patients' relatives, and death and suffering.

The correlation matrix in Table 3 shows that current depression scores were highly significantly related ( $p < 0.01$ ) to the Time 1 measures of self-criticism (Spearman's  $\rho = 0.36$ ) and sibling rivalry (Spearman's  $\rho = 0.35$ ), but not to Time 1 depression (Spearman's  $\rho = 0.14$ ). At Time 2, depression was highly related to the number of hours slept in the last 48 (Pearson's  $\rho = -0.26$ ), but not to the number of hours worked in the past week (Spearman's  $\rho = 0.06$ ), nor to using alcohol as a coping mechanism (Spearman's  $\rho = 0.15$ ). Practice size was not significantly related to any of the variables except that those in large practices worked fewer hours (Spearman's  $\rho = -0.22$ ).

**Table 1.** Sources of stress: mean (SD) levels and frequencies correlated with depression.

| Source of stress                      | Level (0–4) | r SCL             | Frequency (0–3) | r scl             |
|---------------------------------------|-------------|-------------------|-----------------|-------------------|
| Relationships with senior doctors     | 3.58 (2.48) | -0.16             | 0.63 (0.30)     | -0.14 (16)        |
| Making mistakes                       | 2.48 (1.09) | 0.32 <sup>a</sup> | 0.97 (0.25)     | 0.21 <sup>c</sup> |
| Conflict of career with personal life | 2.24 (1.12) | 0.28 <sup>a</sup> | 1.12 (0.52)     | 0.40 <sup>a</sup> |
| Litigation fears                      | 2.41 (1.25) | 0.29 <sup>a</sup> | 1.05 (0.52)     | 0.19 <sup>c</sup> |
| Overload                              | 2.15 (1.09) | 0.33 <sup>a</sup> | 1.37 (0.67)     | 0.37              |
| Home-work interface                   | 1.98 (1.04) | 0.47 <sup>a</sup> | 1.47 (0.56)     | 0.42 <sup>a</sup> |
| Dealing with patient's relatives      | 1.71 (1.05) | 0.10              | 1.15 (0.48)     | 0.05              |
| Responsibility                        | 1.71 (1.05) | 0.22 <sup>b</sup> | 0.82 (0.53)     | 0.31 <sup>a</sup> |
| Threat of violence                    | 1.85 (1.50) | -0.12             | 0.55 (0.54)     | 0.06              |
| Dealing with death and suffering      | 1.58 (0.84) | 0.03              | 1.05 (0.52)     | 0.06              |

<sup>a</sup> $P < 0.001$ ; <sup>b</sup> $P < 0.01$ ; <sup>c</sup> $P < 0.05$ .

**Table 2.** Qualitative stressors from the Stress Incident Record, with perceived mean stressfulness of each.

| Stressor                          | Frequency | Percentage | Mean stressfulness (1–4) |
|-----------------------------------|-----------|------------|--------------------------|
| Dealing with patients             | 46        | 35         | 2.61                     |
| Making mistakes                   | 13        | 10         | 2.69                     |
| Dealing with relatives            | 12        | 9          | 2.83                     |
| Relationships with peers          | 8         | 6          | 2.50                     |
| Overwork                          | 7         | 5          | 2.14                     |
| Relationships with senior doctors | 6         | 5          | 3.12                     |
| Dealing with death and suffering  | 5         | 4          | 2.80                     |

**Table 3.** Correlation coefficients of variables at Times 1 and 2.

|                              | Depression<br>(Time 2) | Depression<br>(Time 1) | Self criticism<br>(Time 1) | Sibling rivalry<br>(Time 1) | Hours<br>(Time 2)  | Sleep<br>(Time 2) | Coping with<br>alcohol (Time 2) |
|------------------------------|------------------------|------------------------|----------------------------|-----------------------------|--------------------|-------------------|---------------------------------|
| Depression (Time 1)          | 0.14                   |                        |                            |                             |                    |                   |                                 |
| Self-criticism (Time 1)      | 0.36 <sup>a</sup>      | 0.41 <sup>a</sup>      |                            |                             |                    |                   |                                 |
| Sibling rivalry (Time 1)     | 0.35 <sup>a</sup>      | 0.11                   | -0.19 <sup>c</sup>         |                             |                    |                   |                                 |
| Hours (Time 2)               | 0.06                   | -0.06                  | -0.10                      | 0.07                        |                    |                   |                                 |
| Sleep (Time 2)               | -0.26 <sup>b</sup>     | 0.02                   | -0.20 <sup>c</sup>         | 0.10                        | -0.13              |                   |                                 |
| Coping with alcohol (Time 2) | 0.15                   | 0.02                   | 0.03                       | 0.11                        | -0.05              | -0.17             |                                 |
| Practice size (Time 2)       | -0.07                  | 0.15                   | 0.13                       | -0.04                       | -0.22 <sup>b</sup> | 0.10              | 0.05                            |

<sup>a</sup>P<0.001; <sup>b</sup>P<0.01; <sup>c</sup>P<0.05.

Regression analyses were carried out for the whole sample, and for men and women separately with Time 1 variables (depression, self criticism, and sibling rivalry) entered before the Time 2 variables of work hours, sleep, and alcohol use. For the combined sample, depression at Time 1 was not a significant predictor of current depression ( $T = 1.96$ ;  $P = 0.052$ ), but self criticism ( $T = 3.27$ ;  $P = 0.001$ ) and sibling rivalry ( $T = 3.09$ ;  $P = 0.003$ ) both were. At Time 2, hours worked ( $T = 1.07$ ;  $P = 0.29$ ) and alcohol use ( $T = 1.15$ ;  $P = 0.25$ ) were not significant predictors, but hours of sleep were ( $T = -2.67$ ;  $P = 0.009$ ). In all, these variables accounted for 24% of the variance ( $F = 6.09$ ;  $df = 118$ ;  $P < 0.001$ ).

The same stepwise regression for men showed that Time 1 depression ( $T = 3.70$ ;  $P < 0.001$ ) and self criticism ( $T = 2.83$ ;  $P = 0.006$ ) were significant predictors of current depression, while sibling rivalry was not ( $T = 1.91$ ;  $P = 0.06$ ). Time 2 hours of sleep was a significant predictor ( $T = -2.27$ ;  $P = 0.03$ ), but work hours ( $T = 1.23$ ;  $P = 0.22$ ) and alcohol use ( $T = -0.24$ ;  $P = 0.8$ ) were not. In all, these variables accounted for 36% of the variance ( $F = 5.98$ ;  $df = 64$ ;  $P < 0.001$ ), with 29% accounted for by Time 1 variables alone. For women, only the Time 1 measure of sibling rivalry was significant ( $T = 2.24$ ;  $P = 0.03$ ), but depression was not ( $T = -0.39$ ;  $P = 0.7$ ), nor was self criticism ( $T = 1.61$ ;  $P = 0.12$ ). At Time 2, only alcohol use was a significant predictor ( $T = 2.2$ ;  $P = 0.03$ ), but not hours worked ( $T = 1.22$ ;  $P = 0.23$ ) nor sleep ( $T = -1.27$ ;  $P = 0.27$ ). In all, these variables accounted for 28% of the variance ( $F = 2.85$ ;  $df = 45$ ;  $P = 0.02$ ), with 14% of this accounted for by Time 1 variables.

## Discussion

The epidemiology of medical depression remains imprecise; nevertheless, this study confirms the results of previous reports that show that the levels of symptoms in GPs and other doctors are unacceptably high:<sup>1,28</sup> 17% are above threshold for depression, 5% have frequent suicidal ideation, and 7% are admitting to using alcohol frequently in order to cope. The implications of this for doctors, their colleagues, and their patients imply that well targeted remedial actions are essential. If we are not to rely upon simple solutions that may be inadequate, it is important to recognize the complexity of medical stress and depression as a phenomenon arising from both dispositional factors and their interaction with the conditions of the workplace, and to use longitudinal data to explore it.

### Individual factors

It is clear from the analyses that self criticism is strongly related to depression 10 years later — more strongly than depression levels over time — confirming earlier findings.<sup>6,20</sup> Blatt<sup>29</sup> has described sufferers with self critical depression: they show harsh self-evaluation, strive for achievement and perfection, and have a marked fear of criticism. If we think about the competitive,

humiliating,<sup>30</sup> status-conscious environment of medicine throughout training and beyond, we can see these characteristics might indeed both encourage some people into the field of medicine and make life difficult for them once there. Moreover, the patients who may once have provided consolation for other relationship difficulties are becoming much less likely to do so.<sup>31</sup> However, it appears from the regression analyses that the routes to depression for men and women differ. While high depression and high self-criticism scores as students may predict depression in males, they are entirely absent or weaker as predictors for females. For the whole sample, on the other hand, sibling rivalry is a relatively strong predictor of depression. It is remarkable that almost all these doctors actually have siblings, and psychodynamic arguments might be put forth that they have entered general practice partially to recapture or make good those early experiences within a new close-knit organizational family; an unconscious strategy that may not always be successful.

### *The role of the workplace and interactions with the individual*

Previous studies of the causes of GPs' stress and depression, as well as medical stress in general, tend to emphasize the role of overload,<sup>7,31</sup> and the present data, to some extent, confirms its importance both directly and indirectly. While overload is not seen as causing the highest levels of stress, it is the most frequent, along with the home-work interface, which is likely to be worsened by overload and which is also highly related to depression levels. In addition, qualitative accounts from the study<sup>13,32</sup> suggest that many of the situations faced by doctors are made worse by the tiredness they experience. Although the number of hours worked in the past week is not related to symptom levels, the number of hours slept is significantly related and is one of the main predictors of current symptom levels for male doctors, in particular — supporting findings from other medical and industrial studies on the negative effects of sleep loss upon mood.<sup>10</sup> This is important in terms of providing interventions since it suggests that ensuring adequate sleep may be more beneficial than simply reducing working hours.<sup>33</sup>

Stress, depression and sleep loss are all known to produce irritability and hostility,<sup>32,34,35</sup> and poor relationships with colleagues, patients and their relatives are a prominent feature of these data. The links between doctors' emotional states and patient satisfaction have been strongly suggested in other studies,<sup>36</sup> and it may be that sleep loss is involved in this dynamic. The direction of causation between negative interactions and symptom levels is unclear but is likely to involve a negative feedback loop. For example, poor support from senior doctors may lead to increased symptoms leading to greater irritability, a further withdrawal of support, and so on. Senior doctors certainly appear to cause the greatest distress: it seems they may underesti-

mate their importance (for better or for worse) in the lives of juniors and the effects that they can have on the quality of their work satisfaction.<sup>33,37</sup> However, there is a strong suggestion in these findings that the difficult relationships that have been seen as a problem in some primary care practices<sup>22</sup> may also be affected by earlier family relationships; in particular, by the rivalries experienced with siblings. In earlier phases of the study, junior house officers' difficulties with seniors were highly correlated with Time 1 judgments of a strict, intolerant, and hard-to-please father.<sup>19</sup> While it may not be a factor that is easy to change, having insight into some of the effects of early relationships in the workplace can be useful.<sup>23</sup>

Other major stressors that are highly related to depression are the fear of making mistakes, conflict of career with personal life, and litigation fears. Making mistakes has been shown to be much more of a problem for those who are highly stressed,<sup>13</sup> and this could be a genuine reflection of stress symptoms on performance. However, in that study, those reporting mistakes were also significantly more self critical; perhaps again indicating a negative dynamic between self criticism, depression, and mistakes, both perceived and actual, especially as those who are self critical may be more likely to blame themselves for accidents.

### Sex differences

There are no sex differences for depression levels in these data. In previous studies of women doctors only, conflict between career and personal life has been reported as a major cause of stress and depression.<sup>38</sup> However, in this study, men and women were asked to complete the same questionnaire and no sex differences were found for this item.<sup>12</sup> Male doctors, it seems, are as likely as female ones to experience conflict over this, though it is possibly expressed in different ways. Nevertheless, the regressions demonstrate that mood and dispositional factors as students are less important as predictors of depression in women than they are in men. While men with a predisposition to depression and self criticism may be able to be identified when students, this is not so with women, suggesting the causes of their distress may lie more within the workplace, though precisely what these are and when they begin require further research. What is clear is that using alcohol to cope with symptoms is a very poor strategy for female doctors, and this has implications for counselling and for how alcohol use is handled within the practice.

### Interventions to reverse the cycle

The data allow the development of an explanatory model (Figure 1), more true for men than for women, showing medical stress and depression to be part of a negative feedback system where overwork, and especially lack of sleep, affect relationships and the perception of stressors which, in the self critical, may produce depressive symptoms. These in turn affect sleep and may make potential stressors more harmful; for example, more mistakes, or the further reduction of supportive relationships. In addition, sleep loss can have a direct negative effect upon depressive symptoms and vice versa. In women, the stressors may also be exacerbated by the use of alcohol to cope. For men, alcohol may still provide a temporary but successful way for dealing with problems, while the difficulties it causes, used over time, are already apparent in the women.

The model demonstrates that interventions reversing the cycle are possible at a number of points:

- Structural and policy changes to ensure more adequate sleep patterns.<sup>33</sup>
- Stressors can be reduced individually; for example, better team management,<sup>33</sup> learning ways to develop support and

deal with conflict, creating more effective home-work boundaries, etc.

- Self criticism can be tackled using cognitive restructuring<sup>39</sup> taught in undergraduate training and beyond, perhaps attached to discussions of mistakes and uncertainty.
- Effective coping strategies can be taught throughout training; in particular, using alcohol to cope needs guarding against.<sup>40</sup>
- Clinical depression can be treated with medication and/or psychotherapy.

### Conclusions

Over the past decade we have seen a number of studies describing the levels and sources of stress and depression in various groups of doctors. The model put forward in this paper may allow us to recognize earlier those at risk and to address the complex causes more accurately by developing and testing focused interventions at different points of the cycle and at different times in the medical career.

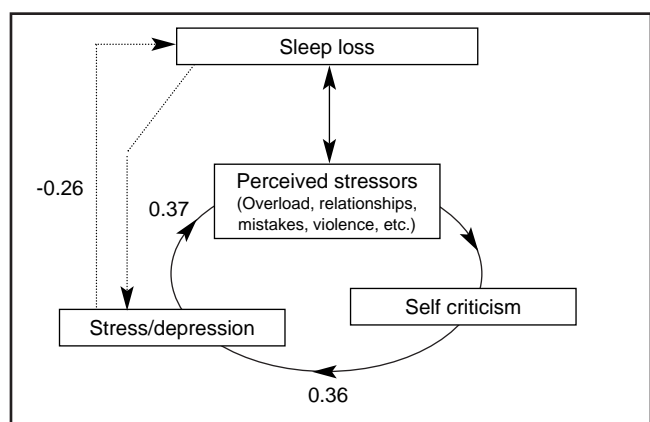


Figure 1. Possible relationships between sleep loss, medical stressors and depression.

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